

4^D

The Wireless World

THE PRACTICAL RADIO JOURNAL

with

Complete Foreign Programmes

Friday, May 5th, 1933.

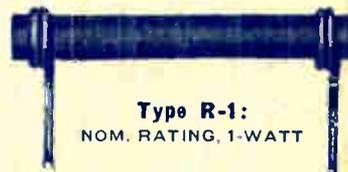
H.T. forever for 1/- a year



EKCO POWER UNITS

Write to: E. K. Cole, Ltd., Dept. W.7, Ekco Works, Southend-on-Sea.

AN INTERESTING GIFT



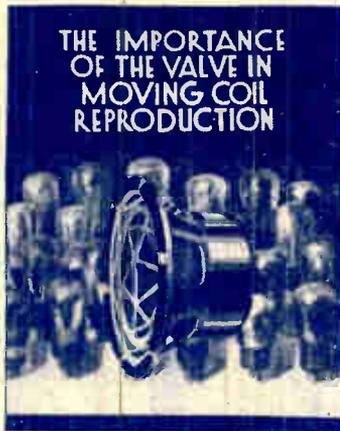
RESISTORS

To prove the superiority of our "B.A.T." (Best—After—Test) BRITISH-MADE FIXED RESISTANCES (1, 1/2, 2, 3, and 5-WATTS) we will send Free and Post-Free to applicants mentioning this Journal, our 2-Colour Art Booklet, 2nd, ENLARGED EDITION 16pp., entitled:

"OHMS LAW WITHOUT TEARS"

A Complete Treatise, with Circuits, Simple Formulae, Voltage-Dropping and Current-Carrying Charts, "ABAC," worked examples, etc. It tells you all you ought to know about the "mysteries" of Volts, Amps, Resistance Values and Watts-Dissipation as applied to the use of Resistors for Radio purposes. The edition is limited.

CLAUDE LYONS, LIMITED,
76, OLDHALL STREET, LIVERPOOL.
40, BUCKINGHAM GATE, LONDON, S.W.1.



THE IMPORTANCE OF THE VALVE IN MOVING COIL REPRODUCTION

Have you written for your copy of this free leaflet?

If not, do so to-day. The supply is limited.

REPRODUCERS & AMPLIFIERS LTD. WOLVERHAMPTON

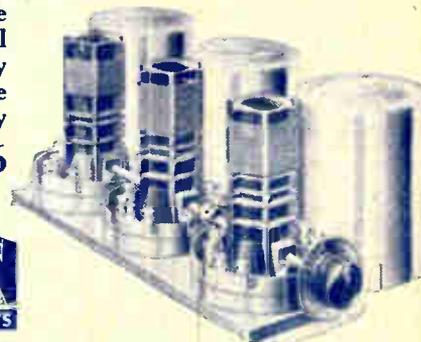
Write for Leaflet 125 and enclose 1½d. stamp for postage.

376

TELSEN SUPERHET COILS

TYPE No. S.330

Specified for the W. W. Monodial Super Battery Receiver. The ideal coils for any superhet circuit. 25/6



Announcement of the TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

WHAT A PERFECT COMBINATION!

This is the opinion of those who have purchased the 137 R.G. Atwater Kent Model. Without doubt it would be difficult to get, at anything approaching the price, such a perfect combination of Radio and Gramophone. On the radio side is a 7-valve Super-het of unusual selectivity (9 to 10 k.c.s.) with ample range and power. Gramophone reproduction is most beautiful in tone. Cabinet is figured walnut of solid construction and singular beauty. All models have **AUTOMATIC VOLUME CONTROL** and cover a range of 200/2000 metres. Can we arrange a demonstration of your choice of model in your home? Illustrated literature will be gladly sent on request.



PRICES.

Radio Table Model 137	25 Gns.
Radio Console Model 137 G.	32 Gns.
Radiogram Model 137 R.G. (as illustrated)	45 Gns.
With Garrard Automatic Record Changer 7 Guineas extra.	

These prices do not apply in I.F.S.

ATWATER KENT

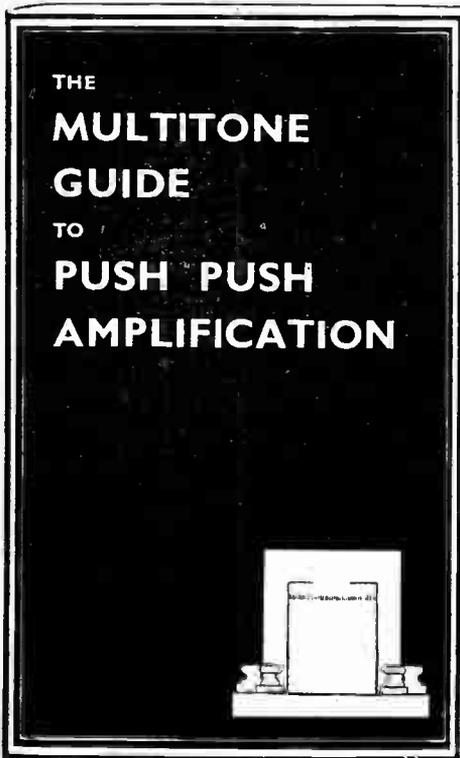
G. A. BRITAIN LTD., Showrooms, 5, Hanover Square, London, W.1.

Telephone: Mayfair 3466 T. Telegrams: Atwakento, Westo, London.
Also Sole Distributors for Irish Free State. Dublin Depot: 40 Dawson Street.

MULTITONE

IN PUSH-PUSH MEANS

30% EXTRA H.T. ECONOMY!



MULTITONE IS BEING DEMONSTRATED IN ALL PARTS OF THE COUNTRY by dealers who will also supply you with copies of the MULTITONE GUIDE. This guide helps you to convert any set to CLASS "B" or Q.P.P., and is the *only* guide that compares the merits of the two systems. We shall be glad to tell you who is your nearest demonstrating dealer. The following are the MULTITONE components needed for CLASS "B":—

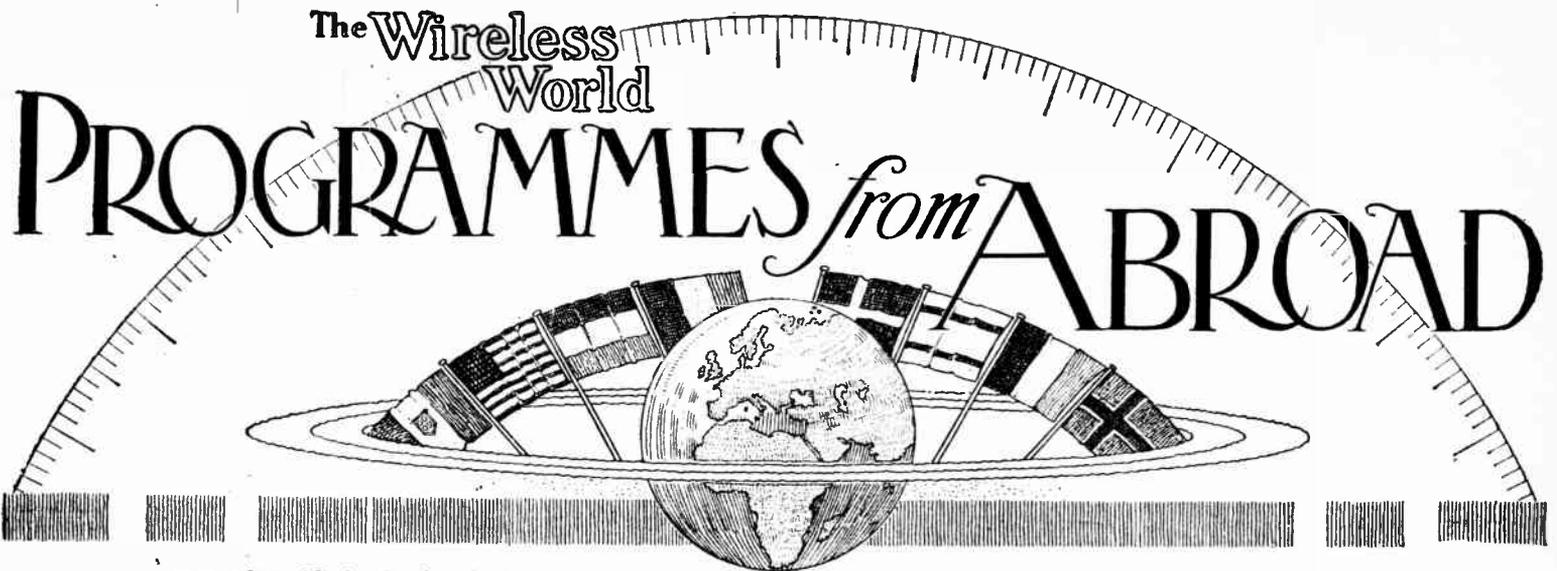
The TONE CONTROL Transformer TOCO 1/4 ... **17/6**
Controlling Potentiometer ... **3/6**

The DRIVER TRANSFORMER BEPU 1/1 ... **9/6**
(Power efficiency over 85%; overall secondary resistance only 100 ohms).

The OUTPUT CHOKE to match your existing loudspeaker to the CLASS "B" or Q.P.P. output is the PUCHOKE ... **9/6**
(Low plate to plate resistance 150 ohms; inductance 45 henries).

MULTITONE
ELECTRIC COMPANY LIMITED
95-98, White Lion Street, London, N.1. North 5063

If your own dealer does not stock, please let us know. Write to our Technical Department (Reference D) if you are ever in difficulty.



**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovne) (Lithuania) .. .. .	.....	453.2	662	0.25	Agen (France) .. .. .	.....
1875	160	8.5	Huizen (Holland) .. .. .	.....	453.2	662	7	Milan (<i>Experimental Relays Rome</i>) .. .. .	.....
1796	167	40	Lahti (Finland) .. .. .	.....	450.3	666	20	Madona (Latvia) .. .. .	.....
1725	174	75	Radio Paris, C.F.R. .. .. .	.....	447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (<i>relays Oslo</i>).	.....
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m.) .. .. .	.....	441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.) .. .. .	.....
1554.4	193	30	Daventry National .. .. .	.....	435.4	689	55	Stockholm, SASA (Sweden) .. .. .	.....
1538	195	7	Ankara (Angora) (Turkey) .. .. .	.....	430.4	697	2.5	Belgrade (Yugoslavia) .. .. .	.....
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia) .. .. .	.....	424.3	707	2	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>) .. .. .	.....
1448	207.5	13	Eiffel Tower, FL, Paris .. .. .	.....	424.3	707	100	Moscow, Imini Stalina (Russia) .. .. .	.....
1412	212.5	120	Warsaw 1 (Poland) .. .. .	.....	419.5	715	1.5	Berlin, No. 1, Witzleben (Germany) .. .. .	.....
1380	217.5	100	Novosibirsk, RV6 (Russia) .. .. .	.....	416.4	720.5	5	Rabat (Morocco) .. .. .	.....
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	413	725	60	Athlone (Irish Free State) .. .. .	.....
1304	230	100	Moscow, WZSPS (Trade Union) (Russia) .. .. .	.....	408.7	734	16	Katowitz (Poland) .. .. .	.....
1275	235	0.5	Tunis-Kasbah (Tunisia) .. .. .	.....	403.8	743	25	Sottens (Radio Suisse Romande) (<i>Switzerland</i>) .. .. .	.....
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	398.9	752	25	Midland Regional .. .. .	.....
1200	250	5	Stamboul (Turkey) .. .. .	.....	394.2	761	12	Bucharest (Roumania) .. .. .	.....
1200	250	21	Reykjavik (Iceland) .. .. .	.....	389.6	770	120	Leipzig (Germany) .. .. .	.....
1190	252	200	Luxembourg (<i>Testing</i>) .. .. .	.....	385.1	779	8	Toulouse (Radiophonie du Midi) (France) .. .. .	.....
1170	256	25	Tashkent, RV11 (Russia) .. .. .	.....	385.1	779	10	Stalino, RV26 (Russia) .. .. .	.....
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>) .. .. .	.....	381	788	16	Lwow (Lemberg) (Poland) .. .. .	.....
1117	268.5	40	Moscow, Popoff RV58 (Russia) .. .. .	.....	376.4	797	50	Scottish Regional (Falkirk) .. .. .	.....
1083	277	60	Oslo (Norway) .. .. .	.....	372.2	806	1.5	Hamburg (Germany) .. .. .	.....
1071	280	35	Tiflis, RV7 (Russia) .. .. .	.....	370.1	810.5	0.8	Radio, I.L., Paris .. .. .	.....
1035	290	36	Kiev, RV9 (Russia) .. .. .	.....	368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Hel- sinki (10 kW.) (Finland) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia) .. .. .	.....
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.) .. .. .	.....	365.8	821	0.7	Fredrikstad (Norway). (<i>Relays Oslo</i>) .. .. .	.....
938	320	20	Kharkov, RV4 (Russia) .. .. .	.....	364.1	824	1	Bergen (Norway) .. .. .	.....
857	350	100	Leningrad (Russia) .. .. .	.....	363.6	825	13	Algiers (Algeria) .. .. .	.....
840	357	18.5	Budapest (Hungary) .. .. .	.....	360.6	832	60	Mühlacker (Stuttgart) (Germany) .. .. .	.....
825	363.6	50	Sverdlovsk, RV5 (Russia) .. .. .	.....	355.9	843	50	London Regional (Brookmans Park) .. .. .	.....
770	389	0.6	Ostersund (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>) .. .. .	.....
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>) .. .. .	.....	348.8	860	7.6	Barcelona, EAJ1 (Spain) .. .. .	.....
720	416.6	20	Moscow, RV2 (Experimental) (Russia) .. .. .	.....	348.8	860	10	Leningrad, RV70 (Russia) .. .. .	.....
690	434.6	1.5	Oulu (Uleaborg) (Finland) .. .. .	.....	345.2	869	11.5	Strasbourg, PTT (France) .. .. .	.....
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>) .. .. .	.....	341.7	878	35	Brno (Brunn) (Czechoslovakia) .. .. .	.....
574.7	522	0.7	Hamar (Norway). (<i>Relays Oslo</i>) .. .. .	.....	338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>) .. .. .	.....
574.7	522	7	Ljubljana (Yugoslavia) .. .. .	.....	335	896	5	Cadiz (Spain) .. .. .	.....
569	527	0.25	Freiburg im Breisgau (Germany). (<i>Relay Stn.</i>) .. .. .	.....	334.4	897	1.9	Poznan (Poland) .. .. .	.....
568.1	528	2	Grenoble (France) .. .. .	.....	331.5	905	50	Milan (Italy). (<i>Relays Turin</i>) .. .. .	.....
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>) .. .. .	.....	328.2	914	60	Poste Parisien (France) .. .. .	.....
563	533	16	Wilno (Poland). (<i>Relay Station</i>) .. .. .	.....	325	923	60	Breslau (Germany) .. .. .	.....
560	536	0.25	Angsburg (Germany). (<i>Relays Munich</i>) .. .. .	.....	321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>) .. .. .	.....	318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>) .. .. .	.....
558.8	537	1	Tampere (Finland). (<i>Relays Helsinki</i>) .. .. .	.....	318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>) .. .. .	.....
550	545	18.5	Budapest No. 1 Lakihegy (Hungary) .. .. .	.....	315.8	950	1.6	Marseilles, PTT (France) .. .. .	.....
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	312.8	959	1.7	Cracow (Poland) .. .. .	.....
537.6	558	3	Palermo (Italy) .. .. .	.....	312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>) .. .. .	.....
533	563	60	Munich (Germany) .. .. .	.....	309.9	968	1	Cardiff .. .. .	.....
525	571	15	Riga (Latvia) .. .. .	.....	309.9	968	50	West Regional (<i>Reception Tests 11.10— 11.50 a.m.</i>) .. .. .	.....
517	580	15	Vienna (Rosenhügel) (Austria) .. .. .	.....	312.8	959	0.7	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.) .. .. .	.....
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>) .. .. .	.....	307	977	0.75	Zagreb (Yugoslavia) .. .. .	.....
500.8	599	20	Florence, IF1 (Italy). (<i>Relays Turin</i>) .. .. .	.....	304	986	13	Bordeaux Lafayette, PTT (France) .. .. .	.....
495.8	605	1.2	Troudheim (Norway) .. .. .	.....	301.5	995	50	North National (Manchester) .. .. .	.....
488.8	614	120	Prague, No. 1 (Czechoslovakia) .. .. .	.....	298.8	1004	11	Tallinn (Estonia) .. .. .	.....
480	625	50	North Regional (Manchester) .. .. .	.....	296.1	1013	20	Hilversum (Holland). (<i>7 kW. before 4.40 p.m.</i>) .. .. .	.....
472.4	635	60	Langenberg (Germany) .. .. .	.....	293.5	1022	0.7	Limoges, PTT (France) .. .. .	.....
465.8	644	1.5	Lyon la Doua, PTT (France) .. .. .	.....	293.5	1022	2.6	Kosice (Czechoslovakia) .. .. .	.....
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland). .. .. .	.....	291	1031	10	Viipuri (Viborg) (Finland). (<i>Relays Helsinki</i>) .. .. .	.....
			San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrund (0.7 kW.) (<i>relays Oslo</i>); Tromsø (0.1 kW.) Bodo (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>).	.....	288.3	1040	50	Scottish National (Falkirk) .. .. .	.....
				.....	288.3	1040	1	Bournemouth (<i>Relay Station</i>) .. .. .	.....

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, Kc., kW., Station, Tuning Positions, Metres, Kc., kW., Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Table with columns: Metres, Kc., Call Sign, Station, Tuning Positions, Metres, Kc., Call Sign, Station, Tuning Positions. Lists principal short-wave stations with call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

MAY THE SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "Council of the Infernal Peers," a play by John Milton.
- LONDON and MIDLAND REGIONAL** Service from St. Martin's Parish Church, Birmingham.
- NORTH REGIONAL** Service from Trinity Presbyterian Church, Cloughton, Birkenhead.
- WEST REGIONAL** Choral programme.
- SCOTTISH REGIONAL** Service from St. Cuthbert's Church, Edinburgh.
- BELFAST** Service from Great James' Presbyterian Church, Londonderry.

ABROAD

- BERLIN (Witzleben)** 8.20 p.m. Brahms concert, conducted by E. Jochem, from the Philharmonie.
- BUDAPEST** 6.50 p.m. Brahms centenary concert, conducted by E. Dohányi, from the Opera House.
- HEILSBERG** 12.20 p.m. and 9.20 p.m. Relay of Brahms Festival from the Staatshalle, Königsberg.
- LEIPZIG** 5.45 p.m. Brahms clarinet quintet in B minor.
- MUNICH** 8 p.m. Brahms symphony concert.
- PRAGUE** 6 p.m. Brahms concert.
- ROME** 5 p.m. Concert, conducted by Clemens Kraus, from the Augusto.
- STOCKHOLM** 8 p.m. Brahms concert.
- WARSAW** 12.15 p.m. Brahms concert.
- VIENNA** 7.35 p.m. Memorial concert at the grave of Johannes Brahms, from the Central Cemetery (relayed by German stations).

BRATISLAVA

1,076 kc s, 279 metres; 11 kW. 12.5 p.m., Concert by the Bratislava Sokol Band, conducted by A. Votycka. 1.30, Agricultural Talk. 2.0, See Prague. 2.15, Hydrographical Report. 2.20 to 4.0, Interval. 4.0, See Moravská-Ostrava. 5.30, See Prague. 5.45, Concert of Light Music by the Station Orchestra. 7.0, See Prague. 8.0, See Moravská-Ostrava. 8.50 to 11.0, See Prague. 11.0 (approx.), Close Down.

BREMEN—See Hamburg.

BRESLAU

923 kc s, 325 metres; 60 kW. and Gleiwitz, 1,184 kc s, 253 metres—11.15 a.m., See Hamburg. 12.15 p.m., Concert of Operetta Music by the Station Orchestra, conducted by Franz Marszalek. 2.0, Announcements. 2.10, Poetry Reading (Frauhold) Conrad. 2.25, Talk on the Forest of Bohemia. 2.40, Talk: Characters in German Folklore. 3.0, Programme for Children. 3.30 (from Gleiwitz), The Old Fortified Town of Cosel Radio Report from the War Heroes' Memorial Celebrations. 4.30, Running Commentary on the Second Day of the German Motor Cycle Road Races, relayed from the Gross Wartenberger. 5.15, Concert by the Karl Hübner Orchestra, relayed from the Drei Berge Hotel, Hirschberg. 6.40, Songs to the late by Elsa Laura von Wolzogen. 7.5, Sports Results. 7.15, Weather for Farmers. 7.20 (approx.), Reading. 7.35, See Vienna. 8.0, Brahms Memorial Concert: Quintet in F Minor, Op. 31, for Piano-forte, Two Violins, Viola, and Cello; Quintet in B Minor for Clarinet, Two Violins, Viola, and Cello. 9.20, Announcements. 9.30, Reading of Brahms' Anecdotes. 10.0, Time, Weather, News, Sports Notes, and Programme Announcements. 10.20, Concert from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc s, 342 metres; 35 kW.—10.30 a.m., Literary Talk. 11.0, Concert by the Station Orchestra, conducted by Bratislav Bakala; Soloist, Jana Baumsova (Soprano). 12 Noon, See Prague. 12.5 p.m., See Bratislava. 1.30, See Prague. 2.0 to 2.15, Agricultural Report. 4.0, See Moravská-Ostrava. 5.30, Variety Programme. 6.0 to 6.45, German Transmission: Brahms Centenary Concert. 7.0, See Prague. 8.0, See Moravská-Ostrava. 8.50, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

1.N.R., 590 kc/s, 509 metres; 15 kW.—9.45 a.m., Agricultural Hints. 10.0, Concert by the Small Station Orchestra, conducted by

Loemans. 12 Noon, Concert by Mickey's Club Jazz Attraction. 1.0 p.m., Le Journal Parlé. 1.10, Light Music on Gramophone Records. 1.30, The Proposal Sketch (Lacaille). 1.40, Gramophone Records (cont'd.). 2.0, Running Commentary on the Holland v. Belgium Football Match, relayed from Amsterdam. 5.0, Concert of Dance Music by the Station Orchestra, conducted by Franz André. 5.30, Football Results. 6.0, Reading of Love Poems. 6.30, Poetry Reading by the Station Orchestra. 6.45, Concert by the Small Station Orchestra, conducted by Loemans: Overture, Zampa (Herold); Waltzes from Eva (Lohr); Little Grey Home in the West (Lohr); Selection from La Bohème (Puccini); Slav Rhapsody No. 2 (Friedmann). 7.15, Religious Address. 7.30, Wireless Notes and Music Review. 8.0, Gala Concert by the Station Orchestra; Conductor: Franz Rühmann; Soloist: Mlle. Elsa Rühmann (Songs); Symphony in E Flat (Mozart); Songs: (a) Arias from Figaro (Mozart), (b) Wogedien (Mozart); Overture, Figaro (Mozart). 8.45, The Belgian Author, Henri Conscience—Talk and Readings. 9.5, Concert (cont'd.): Escapes (Debussy); Song from Scheherazade (Ravel); The Camp of Wallenstein (Göndy). 10.0, Le Journal Parlé. 10.10, Gramophone Records of Light Music. 10.30, Concert by the Max Moxys Orchestra, relayed from the Ancienne Belgique.

BRUSSELS (No. 2)

N.I.R., 887 kc s, 338.2 metres; 15 kW. Programme in Flemish. 10.0 a.m., Concert by the Royal Conservatoire Orchestra, relayed from Gand; Conductor: Martin Luusens; Soloist: Simone Vannueldeghem (Piano-forte). 12 Noon, Gramophone Concert of Variety Music. 1.0 p.m., Journal Parlé. 1.10, Concert by the Mickey's Club Jazz Attraction, conducted by Ludo Langlois. 2.0, Running Commentary on the Holland v. Belgium Football Match, relayed from Amsterdam. 5.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 5.30, Sports Results. 6.0, Gramophone Records: Overture, Faust (Wagner); Ballet Music from El amor buño (Fallas). 6.30, Brahms Song and Piano-forte Recital by Paula and M. de Backer; Songs: (a) Die Mannheit, (b) Auf dem Kirchhofe, (c) Der schweigend; Piano-forte Solo: Rhapsody, Op. 79, in C Minor; Songs: (a) Ständchen, (b) Sapphic Ode, (c) Sonntag, (d) Von ewiger Liebe. 7.3, Quartet in F (Haydn), on Gramophone Records. 7.15, Religious Address. 8.0, Concert by the Radio Orchestra and Soloists; Conductor: Franz André. In an interval at 8.45, Recital of Mediaeval Poems. 10.0, Journal Parlé. 10.10, Gramophone Concert of Light Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Jean Mares Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, Talk on Brahms. 8.0, Brahms Centenary Concert by the Station Orchestra, conducted by Michel Joraj; Soloists: Mme. Ghilias (Songs) and Mme. A. Chona-Pipos (Piano-forte); Songs; Concerto for Piano-forte and Orchestra; Serenade. In the interval at 9.0, Talk. 10.0, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 6.40 p.m. to 12 Midnight.—8.45 a.m., News Bulletin. 9.10, Relay from the Budapest International Fair. 10.0, Divine Service. 11.0, Relay of Sacred Music and Address. 12.15 p.m., News Bulletin. 12.30, Relay from Budapest International Fair. 2.0, Classical Music on Gramophone Records. 3.0, Agricultural Report. 3.30, Relay from the Budapest International Fair. 4.50, News Bulletin. 5.0 (approx.), Concert by Bela Venczell (Songs), Stefan Lugossy (Targato) and the Eugen Pertis Gygany Band. 6.10, Reading. 6.40, Introductory Talk to the following Transmission. 6.50 (approx.), Brahms Centenary Concert, conducted by Ernst Dohányi, relayed from the Opera House. Soloist: Erna Rubinstein (Violin); Tragic Overture; Violin Concerto in D Minor; Symphony, No. 1, in C Minor. 8.30, News Bulletin. 8.45, Bunter Abend, followed by Music by the Julius Borvath Gygany Band, with Paul Kalmar (Songs), relayed from the Cafe Ostende. 12 Midnight (approx.), Close Down.

CASSEL—See Frankfurt.

COPENHAGEN

1,067 kc s, 281 metres; 0.75 kW. and Kalundborg, 220 kc s, 1,153 metres; 7.5 kW.—10.0 a.m., Divine Service, relayed from Ribe Cathedral. 11.30, Weather Forecast. 11.40, News. 12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Concert by the Radio Orchestra, conducted by Fritz Mähler. 1.0, Talk in English: A Grand Tour of England. 1.20, Talk in German: Swabian and Germanic Art. 1.40, Talk in French: Literature and History. 2.0, Popular Music on Gramophone Records. 2.30, Programme for Children. 3.0, Concert by the Radio Orchestra, conducted by Lanny Gründahl; Soloist: Leonie Watt Boelsen (Songs). 5.0 (also relayed by Skamlabæk on 31.51 metres), Divine Service, relayed from Christiansborg Castle Church. 6.20, Talk on Divorce. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.17, Sports Notes. 7.30, Talk: The Danish Red Cross. 8.0, Chimes from the Town Hall. 8.5, Modern Music by Louis Preis's Instrumental Ensemble. 8.30, The Hansen Family—Sketch (Jens Lohrer). 8.45, Modern Music (cont'd.). 9.15, Danish Song Recital by Immanuel Franksen; Willemoes (Weyse); Solen sank bag gronne Lund (Weyse); Langt høiere Børge (Zinck); Som en reiselysten (Nielsen). 9.30, Modern Music (cont'd.). 10.0, Humorous Programme by Einar Juhl. 10.10, News. 10.20, A Humorous Radio Dialogue (Albrecht Schmidt). 10.35, Concert by Louis Preis's Instrumental Ensemble. 11.0, Dance Music from the Wives Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Monday), Close Down.

CORK—See Athlone.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP

1,328 kc s, 225.9 metres; in kW.—12 Noon, Variety Concert. In the interval at 12.30 p.m., News Bulletin. 4.0 to 8.0, Programme in English by the I.B.C. C. Danvers-Walker and B. McNabb announcing. 4.0, Programme for Children. 4.30, Children's Club Concert. 5.0, Light Music: Butterflies in the Rain (Myers); Danse Bagatelle (Bourdon); The Song of the Nightingale (Albion); Ginger Snaps (Bourdon); Hawaiian Memories (Armaubula); Jolly Fellows (Voisset); Moonlight at Sans-Souci; Amour-euse (Berger). 5.20, International Broadcasting Club Concert for St. Yves Listeners: Overture, Poet and Peasant (Suppé); The Floral Dance (Moss); Talk by the Mayor of St. Yves; Woodland Peace (Favilla); Drake goes West (Sanderson); Selection from The Pirates of Penzance (Sullivan); One fine Day, from Madame Butterfly (Puccini); Violin Solo: Sicilienne and Rigaudon (Francour); Largo (Handel); The Yeomen of England, from Merrie England (German); Waltz Song from La Bohème (Puccini); Hallelujah Chorus (Handel); A'oving (arranged Terry); The Sea Road (Haydn Wood); Regimental March of the Duke of Cornwall's Light Infantry. 6.30, Concert of Light Music by the I.B.C. (Ireland), Ltd.: A Good Old Irish Stew; The Meeting of the Waters (arranged Hughes); Trio; Draming (Planagan); There was a poor Musician

ATHLONE

725 kc/s, 413 metres; 60 kW. and Cork, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Mai Vizes Instrumental Trio. 8.50, Progress A Radio Drama, by Dorothy Day and Company. 9.50, Instrumental Trio. 10.10, Mezzo-Soprano Solos by Elizabeth Downey. 10.25, Lillieann Pipe Solos by Leo Rowsome. 10.40, Light Music on Gramophone Records. 11.0, Time Signal, News, Weather Report, and Close Down.

BARCELONA

(EAJ1), 860 kc/s, 348.8 metres; 8 kW.—12 Noon, Chimes from the Cathedral and Weather Forecast. 12.15 p.m., Concert by the Barcelona Municipal Band, relayed from the Palcio de Bellas Artes. 2.0, Light Music on Gramophone Records. 2.30 (in an interval), Theatre Notes. 3.0, Film Review and Concert by the Station Sextet. 4.0, Programme for Hospitals and other Benevolent Institutions. 5.0 to 6.30, Interval. 6.30, Agricultural Talk, followed by Popular Music on Gramophone Records. 7.0, Concert by the Station Orchestra. 7.40, Guitar Recital by Rosa Rodés. 8.0, Concert by the Station Orchestra and Mercedes Casas (Soprano). 9.0, Dance Music, relayed from the Hollywood Bar. 10.0, An Opera on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.), Close Down.

BARI

1,112 kc s, 269.8 metres; 20 kW.—11.5, Sacred Music, relayed from the Church of San Domenico. 11.50, Bible Reading. 1.0 p.m., Giornale Radio. 1.10, Popular Music on Gramophone Records. 1.55, Weather. 2.0, Time and Announcements. 3.0, See Turin. 5.30 to 6.30, Light Music on Gramophone Records. In an interval, Sports Notes. 8.20, Sports Notes. 8.20, Giornale Radio. 8.25, Weather. 8.30, Time and Announcements. 8.35, Concert of Songs and Operetta Music. 10.30, Popular Music on Gramophone Records. 10.55, News.

BASLE—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—11.15 a.m., Transmission for all German Stations, relayed from Hamburg. 12.55, Time Signal. 1.0, Concert from Breslau. 2.0, Talk for Parents. 2.30, Spring Songs by Children. 3.0, Talk: The German Sagas and their Importance for German Youth. 4.0, Programme from Frankfurt. 4.20, Report of the Final of the German Rugby Football Match. 5.0, Talk by Dr. Fellinger: Brahms in my Parental Home. 5.20, Concert from Frankfurt (cont'd.). 6.0, Talk: Great German Mystics. 6.30, Recital of Richard Strauss Songs by Maria Peschken; Naecht; Georgine; Ruhe, meine Seele, Meinen Kinder; All mein Gedanken; Heimkehr; Geduld; Schlechtes Wetter; Heimliche Aufferderung. 7.0, See Stuttgart. 7.35, See Vienna. 8.0, See Frankfurt. 10.15, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Water Polo Report, Dance Music and Light Music from Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc s, 419.5 metres; 1.5 kW.—11.15 a.m., Transmission for all German Stations, relayed from Hamburg. 12.15 p.m., See Breslau. 2.0 to 2.30, Talk for Parents. 3.0, Sports Notes. 3.20, Talk for Young People: German Colonies. 4.0, Concert of Light Music from the Krollgarten. 4.40, Report of the Final of the German Rugby Football Match. 4.55, Concert (cont'd.). 5.40, Music by the Berlin Wireless Chorus. 6.0, A Gramophone Report of the Cycling Endurance Test from the Wannsee Stadium. 6.15, Mental Exercises. 6.40, Concert by the Bernard Derksen Band, with Franz Baumann (Tenor). 7.30, Announcements. 7.35, See Vienna. 8.0, See Frankfurt. 8.20, Brahms Concert by the Berlin Wireless Orchestra, conducted by Eugen Jochem, relayed from the Philharmonie; Concerto in D for Violin and Orchestra, Op. 77; Symphony No. 4 in E Minor, Op. 98. 10.10, Weather, News, and Sports Notes, followed by Programme of Light Music and Dance Music. In an interval at 11.0, Radio Report from the Lunapark of the Second Hall of the Match between the Hungarian and German Water-polo Teams (on Gramophone Records). 12 Midnight (approx.), Close Down.

BERNE—See Schweizerischer Landessender.

BEROMUNSTER—See Schweizerischer Landessender.

BODEN—See Stockholm.

BODO—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.45, Sports Notes. 8.0, Talk for Ex-Service Men. 8.15, Lottery Results. 8.30, Light Music on Gramophone Records. 9.0, Italian Song Recital.

MAY 7th

SUNDAY

continued

(Schwartz); Silent, Oh, Moyle (arranged Hughes); Trio: To-night (Kennedy); Crazy Pirouette (Frisk); Irish Medley, 7.0, Organ Recital: The White Dove (Grey); On Wings of Song (Mendelssohn); There's nothing new in Love (Maclean); Roses of Picardy (Haydn-Wood); The Butterfly (Raiton); Drowsy Waters (Ailan); Waltz Potpourri (arranged Stoddon). 7.30, Orchestral Music and Songs: Mon Reve (Waldteufel); Songs: (a) I'll stay with you (Grey), (b) Try a little Tenderness (Woods); Pan and the Wood Goblins (Rathke); Good-bye (Tosti); So ashamed (Davis); Me, minus you (Webster); The Dwarf's Patrol (Rathke). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Military Band Concert: Post Horn Gallop (Koening); Amorettenanz (Gungl); The Bullfighter's March (Kotoun); Valse des Alouettes (Drigo); Parade of the Tin Soldiers (Jessel); Old Panama (Alford); Wood Nymphs (Coates); The Standard of St. George (Alford). 9.30, Concert of Light Music: Selection from New Moon (Romberg); Baritone Solo: The Sun God (James); Song: Deep Water (Brian); Aria from La Boheme (Puccini); Baritone Solo: I am Fate (Hamblen); Soprano Solo: Ave Maria from Cavalleria rusticana (Mascagni); Les Sirenes (Waldteufel). 10.0, Music by a Russian Orchestra: Mazurka (Wieniawsky); Fannu (Andreff); Song of the Volga Boatmen (Traditional); Troika and a Lady (Traditional); Shining Moon (Traditional); Moment musical (Schubert); Air de Ballet (Andreff); Russian Folk Song and Dance (Traditional). 10.30, Concert of Popular Music: Zigeuner you have stolen my Heart; Play, Fiddle, Play; Pale Volga Moon; The Moon Song; Twenty Million People; Farewell to Arms; Hyde Park Corner; Selection from The Duharry (Milficker-Mackeben). 11.0, Fulford Concert of Light Music: Wedgwood Blue (Ketelbey); Songs: (a) The Driver of the 8.15 (Longstaffe), (b) I travel the Road (Thayer); Waldteufel Memories (arranged Finck); Songs: (a) Drink, drink, Brothers, drink (Bendix), (b) Good Friends (Heymann); Waltz, Beautiful Spring (Lincke). 11.30, Concert of Light Music by the I.B.C. (Ireland), Ltd.: At the end of an Irish Lane; It is only a Step to Killarney; My Irish Song of Songs; Shamrockland; Biddy Mulligan; Mother Ireland; Down by the Liffeside; A Paradise for Two, from The Maid of the Mountains (Fraser-Simpson). 12 Midnight, International Broadcasting Club Concert for St. Ives Listeners: Overture, Poet and Peasant (Suppe); The Floral Dance (Moss); Talk by the Mayor of St. Ives; Woodland Peace (Favilla); Drake goes West (Sanderson); Selection from The Pirates of Penzance (Sullivan); One Fine Day from Madame Butterfly (Puccini); Violin Solo: Sicilienne and Rigaudon (Francoeur); Largo (Handel); The Yeoman of England, from Merrie England (German); Bird Song from La Boheme (Puccini); Hallelujah Chorus (Handel); A Rowing (arr. Terry); The Sea Road (Haydn-Wood); Regimental March of the Duke of Cornwall's Light Infantry. 1.0 a.m. (Monday), Xylophone Solos: Selection from Carmen (Bizet); Carnival of Venice (Gaston); The Huntsman (Nelson); Tarantella (Byng); Handsome Gigolo (Cramer); The Skater's Waltz (Waldteufel); Parade of the Minutes; Xylophonia (Green). 1.30, Songs and Orchestral Music. Songs: (a) Little Green Heaven, (b) Considering, (c) A Mother's Kiss; Musical Switch; Songs: (a) If I'm dreaming, (b) Happy Days and Lonely Nights, (c) I give my Heart. 2.0, Dance Music by the Theolians. This is no Dream; If I even get a Job again; It's no use; I'm in love; Old Yazoo; The Village Band; Rhythm Spasm; Mad Moments; Sloppy Joe; Hot and anxious; Hot Feet; Let me explain; Let me give my happiness to you; The Japanese Sandman; Lover of my Dreams. 2.57, I.B.C. Good-night Melody. 3.0 (approx.) Close Down.

FLensburg.—See Hamburg.

FLOrence.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres, 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—11.15 a.m., Transmission for all German Stations, relayed from Hamburg. 12.20 to 2.30 p.m., See Langenberg. 2.30, Agricultural Notes. 2.40, Agricultural Talks. 3.30, Programme for Young People. 4.30, Orchestral Concert. 6.0, Reading. 6.25, Humorous Extracts. 6.50, Gerhard Menzel speaks on his book Flichtlinge. 7.5, Petry Heit—Radio Report (Oppen-hofen). 7.25, Sports Notes. 7.35, Programme relayed from Vienna. 8.0, Germany v. Egypt—Report on the Davis Cup Match. 8.20, Concert of Light Music. 10.15, Time, News, Weather, and Sports Notes. 10.45, Concert relayed from Langenburg. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s; 269.8 metres; Flensburg, 1,116 kc/s, 227.5 metres; Hanover, 530 kc/s, 556 metres; and Kiel, 1,292 kc/s, 232.2 metres.—11.15 a.m., Transmission for all German Stations. Brahms Centenary Concert, relayed from Brahms' House. The Children's Choir of St. Jacob's Church, conducted by Kantor Bertram, and Gerhard Gregor and Gerhard Maarz (Pianists). Recitations by Käti Wittenberg and Ferdinand Krantz. After the Concert, Brahms Festival, relayed from the Musikhalle, with Address by Bürgermeister Carl Vincent Krogmann. 12.15 p.m., Orchestral Concert. In the interval at 12.55, Time and Weather. 1.50, Young Hitlerites' Programme, relayed from the Harbour—Music and Addresses. 2.50, Hans Friedrich Blunk reads from his own Works. 3.10 (from Hanover), Concert of Wind Instrument Music. 4.15, Lübeck—Play (Otto Anthes). 5.20 (from Hanover), From Corelli to Mozart—a Suite for Pianoforte, played by Gisela Sott. 5.40, Reading (Fritz Dörries). 6.0, Organ Recital of Music by Brahms, relayed from St. Stephen's Church, Bremen. Organist: Wilhelm Evers. 6.30, Sports Talk: Collapsible Boats in North Germany. 6.40, Sports Report. 6.55, Weather Report. 7.0, Reading. 7.35, Transmission for all German Stations, relayed from Vienna. 8.0, Brahms Concert. The Hamburg Philharmonic Orchestra, conducted by Prof. Ernst Wendel. Soloist: Prof. Georg Kulenkampf (Violin). Introductory Talk by Prof. Dr. Moser; Variations on a Theme of Haydn, Op. 56a; Concerto in D, Op. 77, for Violin and Orchestra; Second Symphony in D, Op. 73. 10.0, Time, Weather, News, Sports Notes and Police Notes. 10.20, The Hansaatic Towns—Political, Cultural and Art Review. 10.45, Concert from Berlin (Witzleben). In the interval at 11.15 (approx.), Radio Report on the Davis Cup Match, Germany v. Egypt.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 662 kc/s, 453.2 metres.—11.15 a.m., Transmission for all German Stations, relayed from Hamburg. 12.20 p.m., Part Relay of the Brahms Festival from the Stadthalle, Königsberg. Chamber Music. 1.30 (from Danzig), Programme for Young People: Journeymen's and Soldiers' Songs. 2.0, Talk on Chess. 2.30 (from Danzig), A Report on the Works submitted by unknown Danzig Writers, with Reading from the chosen Manuscripts. 3.0, Talk: The Bird Sanctuary at Garmisch-Partenkirchen. 3.30 (from Danzig), Police Band Concert conducted by Ernst Stiebritz. Sports Notes in the interval. 5.30 (from Danzig), Talk. 6.0, Chamber Music. Part I: Old Chamber Music. Part II: Danish Chamber Music. 7.0, Talk: Techniques in the service of Modern Germany. 7.35, See Vienna. 8.0, Sports Notes. 8.10, Concert of Saxophone and Pianoforte Music, with Recitations. 9.15, News. 9.20, Part Relay of the Brahms Festival from the Stadthalle, Königsberg. Concert by the Königsberg Opera House Orchestra, conducted by Erich Seidler, the Teachers' Choral Society and the Wireless Church. Variations on a Theme of Haydn, Op. 56a; Triumphant for Light Voices and Orchestra, Op. 55. 10.0 (approx.), News and Sports Notes, followed by Dance Music and Light Music from Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 5.30 p.m.). 12.40 to 5.40 p.m., Programme of the Alcemece Vereeniging Radio Omroep (A.V.R.O.). 12.40, Time Signal. 12.41, Variety Music on Gramophone Records. 1.10, Concert by the Wireless Orchestra, conducted by Nico Gerhartz; Soloist, Grethe Weijnschenk-Hogenbirk (Soprano). In the Interval, Gramophone Records. 2.40, Running Commentary on the International Football Match, Holland v. Belgium, relayed from the Olympic Stadium, Amsterdam. 4.40, Variety Music on Gramophone Records and Sports Notes. 5.40, Programme of the Workers' Radio Society (V.A.R.A.); Programme for Children. 6.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). Review of New Books. 7.25, V.A.R.A. Programme. Divine Service from a Church at Weesp. 8.40 till Close Down, A.V.R.O. Programme. 8.40, Time Signal. 8.41, News Bulletin. 8.55, Concert of Light Music by Kovacs Lajos and his Orchestra; Soloist, Bob Scholte (Songs). 9.40, Songs by Layton and Johnstone. 10.0, Concert by the Wireless Orchestra; Soloist, Theo van der Pas (Pianoforte); Overture, Fingal's Cave (Mendelssohn); Pianoforte Concerto in C Minor, Op. 37 (Beethoven). 10.40, Songs by Layton and Johnstone. 11.0, Dances of Many Lands—Concert by the Wireless Orchestra, conducted by Albert van Raalte: Old Dutch Dance (Röntgen); German Dance (Schubert); Ecossaise (Beethoven); Norwegian Dance (Grieg); Polonaise (Scharwenka); Russian

Dance, Trepak (Tchaikovsky); French Dance, Rigaudon (Rameau); Tarantella napolitana (Rossini); Spanish Dance (Granados); Romanian Dance (Bartok); Hungarian Dance (Brahms); Slav Dance (Dvorák). 11.40, Light Music on Gramophone Records. 12.40 a.m. (Monday), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—12.55 to 5.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 12.55, Concert by the K.R.O. Orchestra, conducted by Woud. In an interval at 1.40, Literary Talk. 2.40, Religious Address. 3.10, Concert by the Amsterdam Bel Canto Choir, conducted by A. Vranken. 3.40, Recitations. 3.50, Orchestral Concert (contd.), followed by Gramophone Records. 4.40, Programme for Invalids. 5.30 to 8.25, Programme of the Christian Radio Society (N.C.R.V.). 5.40, Concert of Sacred Music. 6.30, Divine Service Relay. After the Service, Sacred Music. 8.25 till Close Down, K.R.O. Programme. 8.25, Talk. 8.45, Football Results. 8.50, High Mass in F Minor Op. 111 (Bruckner), by the Maastricht Municipal Orchestra, a Mixed Choir, and Soloists. 10.10, News. 10.25, Popular Music on Gramophone Records. 10.40, Concert by the Maastricht Municipal Orchestra, conducted by H. Hermans. Soloist, J. Lammen (Bass). Funeral March (Caro). Air from Ariana a Saxos (Haydn). Menuet te lascio (Mozart). 11.15, News. 11.20, Concert by the Small Station Choir, conducted by Pickkers. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide and Radio Concert. 8.45, News Bulletin. 9.0, Radio Concert. 10.30 to 11.30, Programme in English by the I.B.C. H. K. Hitchcock announcing. 10.30, Concert of Light Music by the I.B.C. (Ireland), Ltd.: Sweet Genevieve (Tucker); As your Hair grows whiter (Shapiro); Mother Maelree (Oleott); Popular Irish Medley (arr. O'Henry); For the Sake of the Days gone by (Wallace); Love's old sweet Song (Molloy); Who am I? (Newman); The End of a Perfect Day (Jarvis-Bond). 11.0, Dance Music: Dip your Brush in the Sunshine; The Minor Drag; Songs: (a) Goodnight Vienna (Po-ford), (b) I'll always be true; Dick Turpin's Ride; Let a little Pleasure interfere with Business; Harlem Fiss. 11.27, I.B.C. Goodnight Melody. 11.30 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 40 kW.—11.15 a.m., Transmission for all German Stations, relayed from Hamburg. 12.20 p.m., East German Demonstration, relayed from Dortmund. The Bochum Police Band and the Rhenish-Westphalian Male Voice Choir. Entry of the Ghosts into the Wartburg, from Tannhäuser (Wagner). Address by the President of the Association. The Male Voice Choir; Ostmarkenlied. Two Addresses. Choir and Orchestra: Niederländisches Dankgebet. 1.20, Concert conducted by Eysoldt. 2.30, Talk on Chess. 3.0, Talk on Music. 3.20, Meeting of the West German Gliding Association, relayed from the Borkenberge Gliding Ground. 4.5, Reading (Karl Moller). 4.30, Programme to be announced. 5.35, Round Cologne—A Radio Report of the Twenty-Fifth Anniversary of the Cyclists' Club. 6.0, Talk: Towns of the Rhineland and Westphalia—Zülpich. 6.35, Variety Programme. 7.20, Sports Notes. 7.35, See Vienna. 8.5, Brahms Centenary Concert: The Station Choir and Orchestra, conducted by Buschhöfner. Soloists: Eva Liebenberg (Contralto), Alice Brandt-Rau (Soprano), and Hans Wocke (Baritone). Four Songs for Contralto; (a) Immer leiser wird mein Schlummer, (b) Auf dem Kirchhof, (c) Sapphische Ode, (d) Vom ewiger Liebe; Rhapsody for Contralto, Male Voice Choir and Orchestra; A German Requiem for Soloists, Choir and Orchestra. 10.5, News and Sports Notes. 10.30, Serenade and Dance Music. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—11.15 a.m., Transmission for all German Stations, relayed from Hamburg. 12.15 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Hanns Rössert. 2.0, Weather and Time. 2.5, Programme Announcements. 2.25, Agricultural Notes. 2.35, Concert of Spring Music for Children's Choir and Recorders. 3.10, Kurt Arnold Findeisen reads from his Novel, Lied des Schicksals. 3.40, Herman Kögler in a Pianoforte Recital of his own Music.

Fantasia and Fugue, Op. 33; Variations on a Theme by Grieg, Op. 50. 4.20, The Pastry-cook—A Radio Play (Lope de Vega, arr. A. Hamik), with Incidental Music by Hans Stadler. 5.10, Report from the Dresden Race Course. 5.45, Clarinet Quintet in B Minor, Op. 115 (Brahms), played by the Dresden String Quartet and Karl Schulte (Clarinet). 6.25 to 7.25, Topical Report on (a) The German Rugby Championship, (b) The German Motor-Cycle Road Trials, and (c) The Davis Cup Match, Germany v. Egypt. 7.35, Programme relayed from Vienna. 8.0, Topical Talk. 8.10, Military Band Concert. In the interval from 9.0 to 9.10 (approx.), Report from the Nazi Air Pageant at Langenbach. 10.15, News. 10.20 (approx.), Dance Music, relayed from Berlin (Witzleben). 12 Midnight, Close Down.

LINZ.—See Vienna.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 124.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Review. 12.30 p.m., Concert by the Municipal Band, conducted by M. Villa. 3.0, Chimes, Time Signal, Theatre Notes, and Concert of Popular Music. 8.0, Chimes and Radio Journal, followed by Dance Music relayed from the Ritz Hotel. 9.30 to 10.30, Interval. 10.30, Chimes and Time Signal. 10.35 (approx.), Brahms Centenary Concert on Gramophone Records; Symphony No. 2 in D; Concerto in B Flat, Op. 83, for Pianoforte and Orchestra. After the Concert, Dance Music. 1.0 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—4.0 p.m., Concert of Light Music by the Station Orchestra, conducted by J. Plichta. 5.30 to 6.45, See Prague. 7.0, See Prague. 8.0, Military Band Concert, conducted by E. Ryfka. 8.50 to 11.0, See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—11.15 a.m., Transmission for all German Stations, relayed from Hamburg. 12.15 p.m., A Springtime Journey in the Palatinate. Concert by the Nazi Military Band, relayed from Pirmasens. 1.5, Time, Weather, and Programme Announcements. 1.55, Variety Music on Gramophone Records. 2.30, Chess Lesson. 3.15, Literary and Musical Programme, relayed from the Turmhalle, Pirmasens. 4.20, Report on the Gliding Display, relayed from Oberammergau. 4.35, Zither Concert, conducted by Franz Heuriger. 5.10, Palatinate Programme—Anecdotes and Jokes. 5.35, Orchestral Concert, conducted by Erich Kloss. In an interval, Songs and Stories in Bavarian Dialect. 7.0, Weather and Sports Notes. 7.10, Reading. 7.35, See Vienna. 8.0, Brahms Symphony Concert by the Station Orchestra, conducted by H. A. Winter. Soloist: Elyl Fey (Pianoforte). Concerto in B Flat for Pianoforte and Orchestra; Symphony No. 2 in D. 9.10 (from Nürnberg). Concert by the Nürnberg Concert Society: Overture, Hans Heiling (Marschner); Waltz, The Wedding of the Winds (Hall); Selection from La Traviata (Verdi); Egyptian Serenade, Anina (Lincke); Oriental Suite (Poppy); Potpourri of Marching Songs (Blumenberg). 10.20, Time, Weather, News, and Sports Notes. 10.45, Serenade from Langenberg. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 40 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 469.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—10.15 a.m., Announcements, Weather, and Road Report. 10.20, Divine Service, relayed from Bodo, 662 kc/s (453.2 metres). 1.0, Orchestral Concert, relayed from Trondheim, 605 kc/s (495.8 metres). 6.0, Talk: Southern Arabia. 6.30, Mme. Normann reads from her own Works. 7.0, Parliamentary Notes. 7.25, Weather and News. 7.30, Concert. 8.0, Time Signal. 8.1, Talk: The Life and Works of Brahms. 8.30, Brahms Centenary Concert by the Station Orchestra, conducted by Iligo Kraum; Soloists: Ernst Glaser (Violin) and Karl Andersen (Cello); Academic Festival Overture; Concerto in A Minor, Op. 162, for Violin, Cello, and Orchestra; Andante sostenuto from the First Symphony; Two Hungarian Dances; Rhapsody No. 1 in B Minor. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert of Popular Music by a Wind Instrument Ensemble. 10.45, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Religious Address. 10.40, Sacred Music. 11.5, Agricultural Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music.

MAY 7th

SUNDAY

continued

1.30 (in an interval), Time Signal, Announcements, and Weather Forecast. 2.0 to 3.0, Interval. 5.30 to 6.30, Light Music on Gramophone Records. 6.30 to 8.0, Interval. 8.0, Dopolavoro Announcements and Giornale Radio and Sports Notes. 8.20, Popular Music on Gramophone Records. 8.25 (approx.), Light Music on Gramophone Records. 8.30 (in an interval), Time Signal and Announcements. 8.45, Symphony Concert, conducted by A. La Rosa Parodi; Symphony in B Flat (Schubert); Dances (Nino Rota); Potes (Debussy); Overture, The Master-singers (Wagner). In the interval; Talk. After the concert, Light Music on Gramophone Records. 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and final signals). 1.0 p.m., News Bulletin. 1.15, Weather Report. 1.30, Concert by Jean Haas and his Orchestra; Soloist: M. Delcrose (Clarinet). 6.45, News. 7.15, Weather Report. 7.25, Le Journal Parle. 7.45, Programme for Children. 8.20, Le Journal Parle (contd.). 8.30, Gramophone Concert: Part I, Music by Lehar; Part II, Popular Melodies. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW. 9.15 a.m., Music for Tambourines and Bubles. 9.35, Press Review. 9.45, Bible Reading. 10.0, News. 10.5, Sponsored Concerts. 11.40, Popular Music on Gramophone Records. 12 Noon, Interval. 12.15 p.m., Sponsored Concert of Music from Sound Films. 12.45, Sponsored Programme. 12.50, Half an Hour of Fantasy, by Paul Weill. 1.20, Interval. 1.30, Sponsored Programme. 2.0 to 3.0, Interval. 3.0 (approx.), Radio Report on the Final for the French Cup. 6.45, Journal Parle. 7.0, Sports Notes. 7.15, Vocal Duets: Coliflette (Weberlin); Song of the Thrush, from Xavier (Dubois); Air from The Land of Smiles (Lehar); Vingt et vingt (Mireille); Presque oui (Mireille). 7.30, Catholic Review. 8.0, Popular Music on Gramophone Records. 8.15, Interval. 8.30, Light Music on Gramophone Records. 9.0, Interval. 9.15, Gringoire Sketch (de Banville). 9.45, Songs by the Marvel Trio. 10.0, Popular Music on Gramophone Records. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW. 7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20,

Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 12 Noon, Religious Address by the Reverend Father Hamble; The Wise Virgins. 12.20 p.m., Sacred Music; Tocatta (Gigout); Benedictus from the Coronation Mass (Mozart); Ave Verum (Mozart). 12.30, Bilboquet. 12.45, Press Review, News and Weather. 1.0, Light Music on Gramophone Records. 2.30, Variety Concert. 3.0, Running Commentary on the French Football Cup Final at the Colombes Stadium. 5.0 to 7.0, Programme in English by the I.B.C. 5.0, Tea-Time Variety Hour. Mr. S. R. C. Williams announcing. 6.0, Clarke's Atlas Orchestral Concert. Mr. T. St. Ronald announcing: March, Crown of Chivalry (Fletcher); Selection from The Cat and the Fiddle (Kern); Cavalcade Potpourri (Howard); Waltz (Bucalossi); Selection from The Dubarry (Milföcker-Mackelen). 6.30, Kissproof Variety Half Hour: Old Father Thames (O'Hogan); What a Perfect Combination; Edward Cooper and Quenele Leonard; My wishing Song; Just so you'll remember (Newman); Edward Cooper and Quenele Leonard; Contented (Casson); A Little Café in Vienna (Leopold). 7.0, Concert of Light Music. 8.0, Radio Paris Music Hall. In the intervals at 8.30, News, Sports Notes and Weather, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.0 p.m., Monarch Mystery Tenor, from New York. 7.15, The Boys of Wynecastle. 7.30, The Northwestern Chronicle, from New York. 8.0, Programme to be announced. 9.0, Dick Daring, from New York. 9.15, Symphonette, from New York. 9.30, Vesper Services from Shady-side Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Programme to be announced. 11.15, Time and Weather. 11.17, Teaberry Sport Review. 11.22, Press News Reader. 11.29, Temperature Report. 11.30, Programme to be announced. 12 Midnight, Time and Jack Pettis and his Orchestra. 12.30 to 3.0 a.m. (Monday), New York Relay. 12.30, Great Moments in History. 1.0, The Land where the Good Songs go. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, Pieken Sisters. 3.0, Popular Melodies by Will Rysbanek.

PORSGRUND.—See Oslo.

614 kc/s, 488.6 metres; 120 kW.—10.0 a.m., Schumann Music. 10.30, See Brno. 12 Noon, Chimes. 12.5 p.m., See Bratislava. 1.30, Agricultural Programme. 2.15 to 2.25, Social Report. 4.0, See Moravská-Ostrava. 5.30, Talk; New Tendencies in American Life. 5.45, Variety Music on Gramophone Records. 6.0, German Transmission; Brahms Centenary Concert by the German Choral Society, the German Male Chorus, and the Station Orchestra, conducted by Heinrich Svolobda; Tragic Overture; The Song of Destiny; Gesang der Parzen. In the interval, News in German. 7.0, A Radio Play. 8.0, See Moravská-Ostrava. 8.50, Talk; Johannes Brahms. 9.0, Time Signal. 9.1, Brahms Centenary Concert; The Station Orchestra, conducted by O. Jeremias; Soloist: F. Maxian (Pianoforte); Pianoforte Concerto in D Minor, Op. 15; Liederlied; Waltzes, Op. 39, Nos. 1 and 2; Hungarian Dances; (a) No. 7 in D Minor, (b) No. 5 in D, and (c) No. 6 in G Minor. In the interval at 10.0, Time Signal. 10.10, News, Sports Notes. 10.30, Czech Dance Music on Two Pianofortes. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 750 metres.—7.0 p.m. (from Lausanne), Pianoforte Recital by Germaine Schmidt. 7.40 (from Geneva), Sports Notes and News. 8.0 (from Geneva), Sacred Concert by the Schola grégorienne of Ste-Croix, conducted by Pierre Carraz. 8.30 (from Geneva), Quartet in A (Brahms) for the Centenary of his Death. The Geneva Quartet, Soloist: Lily Fischer (Pianoforte). 9.5, Concert by the Radio-Suisse Romande Orchestra. 10.0, News and Weather. 10.15 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—10.10 a.m., News, Sports Notes and Amusement Guide. 10.30, Agricultural Notes. 10.45, Bible Reading. 11.0 to 12 Noon and 12.30 to 1.30 p.m., See Turin. 1.30 to 2.30, Orchestral Concert. 3.0, See Turin. 5.0, Concert conducted by Clemens Kraus, relayed from the Augusto. Sports Notes in the interval. 7.30, Sports Report, Dopolavoro Notes and News. 8.0, Time and Announcements. 8.30, Sports Re-

port. 8.45, Variety Concert. In the interval at 9.45, Un homo ed una donna—One Act Comedy (Carpeneto). After the Concert, Variety Music on Gramophone Records. 10.55, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.0 to 8.45 p.m. (approx.), New York Relay. 7.0, Wayne King's Orchestra. 7.30, Musical Programme. 8.0, Singing, the Well-spring of Music. 8.15, Wildroot Institute. 8.30 to 8.45 (approx.), Temple of Song. 11.45 to 2.45 a.m. (Monday), New York Relay. 11.45, Twenty Fingers of Harmony. 12.0 Midnight, Chase and Sanborn Hour. 1.0, Manhattan Merry-go-Round. 1.30, American Album of Familiar Music. 2.0, Current Government, by David Lawrence. 2.15, Musical Programme. 2.30, Donald Novis (Tenor). 2.45, Sunday at Seth Parker's, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—12 Noon (from Zürich), Concert by the Station Orchestra. 12.28 p.m., Time and Weather. 12.30, News. 12.40 (from Zürich), Concert by the Station Orchestra (contd.). 1.30 (from Basle), Talk for Farmers. 2.0 (from Basle), Light Music on Gramophone Records. 2.30 to 3.30, Interval. 3.30 (from Basle), Programme to be Announced. 4.30 (from Basle), Popular Music on Gramophone Records. 5.30 to 6.30, Interval. 6.30 (from Basle), Reading. 7.0 (from Basle), Time and Sports Notes. 7.15 (from Basle), Talk: Old Frankfurt. 7.45 (from Basle), Vocal and Instrumental Concert. 8.30, Das Rosenband. 9.40, News. 9.50 (approx.), Concert by the Station Orchestra. 10.15 (from Basle), Sports Notes.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

669 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—11.0 a.m., Divine Service. 12.45 p.m., Weather and Ice Report. 3.0, Talk in Danish, relayed from Uppsala. 6.62 kc/s (453.2 metres). 3.20, Light Music on Gramophone Records. 4.20 (from Sunda-

ROLA

the World's Finest Reproducers

Always in Line with Latest Design

CLASS B AMPLIFICATION

The following Rola Speakers for valves as under are now ready:

MULLARD PM2B VALVE	LIST PRICES
Rola F5-PM-12-Class B	32/6
or Rola F6-PM-08-Class B	49/3
or Rola F7-PM-08-Class B	60/-

COSSOR 240B VALVE	LIST PRICES
Rola F5-PM-14-Class B	32/6
or Rola F6-PM-01-Class B	49/3
or Rola F7-PM-01-Class B	60/-

B.T.H. PD220 VALVE	LIST PRICES
Rola F5-PM-12-Class B	32/6
or Rola F6-PM-08-Class B	49/3
or Rola F7-PM-08-Class B	60/-

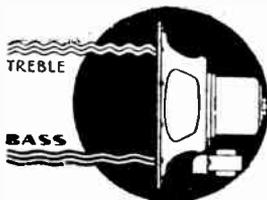
IMMEDIATE DELIVERY

Write to-day for the Rola Folder.

EXTENSION SPEAKERS

There is a correct Rola Extension Speaker for practically all British radio receivers. Write for List.

ROLA SPEAKERS for better Radio Reception



THE BRITISH ROLA CO., LTD., Minerva Rd., Park Royal, N.W.10. Phone: Willesden 4322-3-4-5.

THE GREATEST AID TO BETTER RADIO EVER INVENTED

A NOTE FOR EVERY LISTENER



The selectivity of your set can be improved by fixing a PIX in the aerial lead-in. Even if a pre-set aerial condenser is fitted inside your set, a PIX will give better and sharper tuning. With a PIX in your aerial you can cut out the local station and get foreign concerts. Even in America with its super selective sets thousands of PIX are being sold.



NO MORE DUAL PROGRAMMES

Why suffer the inconvenience of dual and mixed programmes? Fix a PIX and separate them and enjoy pure reception. A PIX can be fitted to any set, crystal, hattery or all mains, and will improve reception of any set. No skill is required to fix a PIX. For 2/- any set can get super-hot selectivity. From your local dealer or send postal order to manufacturers.

PIX CLIP 6d.

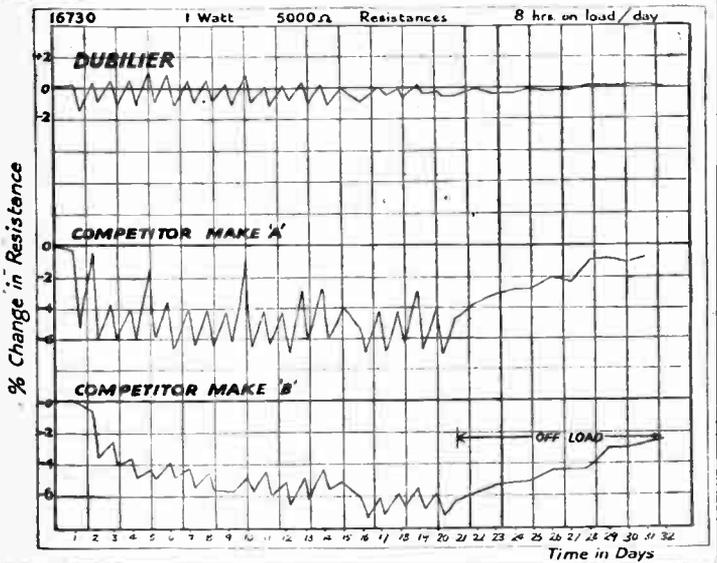
Holds the PIX securely in position fitted to set, wall, or window ledge. Insulated base drilled with screws.

The BRITISH PIX COMPANY, Ltd.

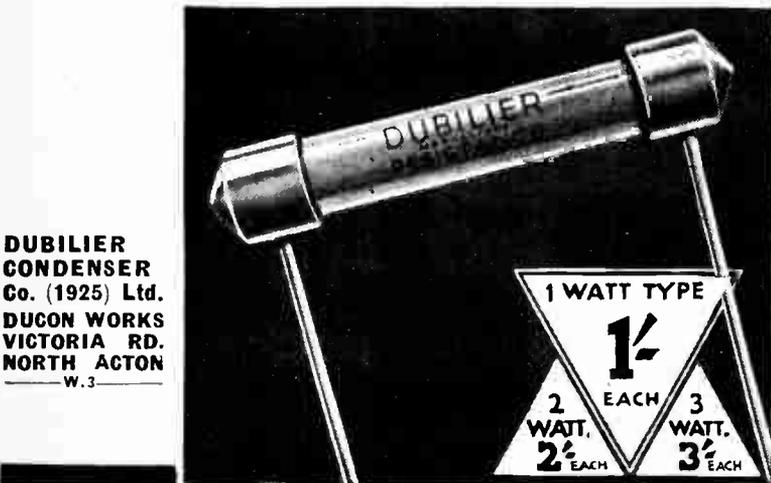
Dept. 511, 118, Southwark Street, London, S.E.1.

1,500,000 USERS IN ENGLAND, AMERICA, FRANCE, GERMANY, ETC.

Prolonged Load Test proves Superiority of DUBILIER RESISTANCES



During a recent series of extended comparative load tests, carried out on Dubilier resistance and others of well-known makes of the same order, the performance of the Dubilier resistances was outstanding and proved without doubt their superiority. The series of tests were made to determine any changes in resistance value over a prolonged cycle of loading. In all cases the resistances were under load for a period of eight hours per day and were off load for the remaining sixteen hours. The results, given in the above chart, show a downward drift in the resistance value of resistances A and B under these conditions, but the curve relating to Dubilier resistances, however, indicates that the change is very small and of a negligible character. The right-hand portion of the curves represent the recovery of the resistances as they were maintained off load for the period marked. Tests carried out by large users of Dubilier resistances over periods exceeding 5,000 hours continual heavy load have proved extremely satisfactory, a very creditable performance of which Dubilier can be justly proud. Therefore, specify Dubilier resistances when ordering and be certain of complete satisfaction.



MAY 7th

SUNDAY

continued

vall), Programme for Children. 5.5, Song Recital by Ego Branner, relayed from **Malmö, 1,301 kc/s (231 metres)**. 5.30, Talk: Johannes Brahms. 6.0 (from **Sundsvall**), Evensong. 7.15, Weather and Ice Report. 7.30, Town and Country Radio Play (Ivar Lo Johansson). 8.0, Brahms Centenary Concert, by the Augmented Station Orchestra and Choir; Conductor, Adolf Wiklund; Variations on a Theme of Haydn; Choir and Orchestra: Song of Destiny. Symphony No. 2 in D. 9.25 (from **Goteborg**), Reading. 9.45, Weather and News. 10.0, Concert of Light Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW. 9.30 a.m., Orchestral Concert of Tchaikovsky Music, conducted by Maurice de Villers. 10.45, Protestant Service in German. 11.30, Catholic Service in French. 12 Noon, Gramophone Concert of Classical Music. 12.45 p.m., News. 1.0, Time. 1.1, Light Music on Gramophone Records. 2.0, A Meeting of the Upper Rhine National Union of Ex-Servicemen, relayed from **Cotmar**. 3.0 to 4.0, Interval. 4.0, Variety Music on Gramophone Records. 5.0, Concert of Jazz Music, conducted by Roskam. 6.0, Medical Talk in German. 6.15, Sports Notes in French. 6.30, Orchestral Concert, conducted by M. de Villers: Marche lorraine (Ganne); Waltz, Tout Paris (Waldteufel); Orchestral Suite, Fête Nipponne (Monton); Overture, Maritana (Wallace); Selection from Le Chemineau (Leroux); Basque Rhapsody (Piercé). 7.30, Time and News. 7.45, Gramophone Concert: Selection from: (a) La Traviata (Verdi), (b) Miss Demea (Audran); Le cor (Flegier); Arioso from Benvenuto Cellini (Diaz); Petite reine (Boyer); Princesse Java (Moro-Zurfluh); Selection from La Mascotte (Audran). 8.15, Press Review in German, Lottery Results and Announcements. 8.30, Victor Nessler Programme, Paul Flesch and Jeanne Wild (Song), and E. Payen (Trumpet). Talk on the Composer: Three Songs and Duet from The Piper of Hamelin; Anecdotes about Victor Nessler; Pianoforte Solo: Röslein rot, Röslein weiss; Song, La femme du pêcheur; Huet; Talk on The Trumpeter of Säckingen; Two Arias from The Trumpeter of Säckingen. After the Concert, Press Review in French. 10.30, Dance Music, relayed from The Savoy Dance Hall. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER; 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—11.15 a.m., See **Hamburg**. 12.15 p.m., Relay of the Ceremony at the Schellid Memorial, Karlsruhe. 1.0, Topical Talk. 1.15, Popular Music on Gramophone Records. 2.0 (from **Karlsruhe**), Agricultural Talk. 2.30, Accordion Trio Concert. 3.0, Soprano Song Recital by Martha Schulz-Körner, with accompaniment by Artur Haagen (Pianoforte) and Fritz Wolf (Flute); Aria from Die sieben Schwaben (Müllacker); Warning (Mozart); La Capriccia (Benedict); Wenn der Vogel nachsehen will (Meyer-Beilmann); Postillon d'amour (Abt); Aquarien-Walzer (Joh. Strauss). 3.30 to 6.0, See **Frankfurt**. 6.0, Sports Report. 6.20, Springtime in Song—Concert for Children's Voices, Violin and Flute. 7.0, Talk: The German Gymnastic Display in Stuttgart. 7.35, See **Vienna**. 8.0, Gustaf Gründgens reads Poems by Rückert, Herder, Gellert, and Geibel. 8.30, Concert from **Frankfurt**. 10.15, Time, News, Weather, Programme Announcements, and Sports Report. 10.35, Programme from **Langenberg**. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire. 6.30 to 7.0 p.m., Programme in English by the I.B.C. W. Brown Constable announcing. Concert of Popular Music: A Waltz, a Night, a Tune; In Santa Lucia; The Girl in the Little Green Hat; Try a Little Tenderness; I'll never have to Dream Again; A Letter to my Mother; Roll along Kentucky Moon; My Darling; Jolly old Ma, Jolly old Pa. 7.0, Popular Songs. 7.15, News, Racing Results and Market Prices. 7.30, Orchestral Music. 7.45, Military Music. 8.0, Arias from Operas. 8.15, Songs from Operettas. 8.30, Sound Film Music. 8.45, Accordion Solos. 9.0, Extracts from La Fille de Madame Angot—Operetta (Lecoq). 9.45, Instrumental Solos. 10.0, Recitations. 10.15, North African News. 10.30 to 12 Midnight, Programme in English by the I.B.C. 10.30, Variety Half Hour. Jolly Good Company; My Old Dutch; Down the Lane to Home Sweet Home; Berceuse de Jocelyn; Meilley, Memories by the Fireside; Danny Boy; Around the Corner; Mezzo Soprano Solo: Goodbye. 11.0, Concert of Light Music by the I.B.C. (Ireland), Ltd. Waltz, Tales from the Vienna Woods (Joh. Strauss); Song, Mother Maehree; The Soldiers' Chorus from Faust (Gounod); Hungarian Dances (Brahms); Anvil Chorus from Il Trovatore (Verdi); Song, Danny Boy (Weatherley); Selection from Waltzes from Vienna (Joh. Strauss). 11.30, Dance Music: Marching along together; Lawd, you made

the Night too Long; She was only Somebody's Daughter; Good-night Vienna; You; I love a Parade; I believe in You. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Monday), Instrumental Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 a.m., See **Turin**. 9.55, Mass from the Cathedral of San Giusto. 11.0, Religious Address. 11.20 to 11.40, Agricultural Report. 12.30 p.m. (approx.) to 8.45, See **Turin**. 8.45 till Close Down, See **Rome**.

TRONDHEIM.—See Oslo.

TURIN

Milan, 905 kc/s, 331.5 metres; **Genoa**, 950 kc/s, 312.8 metres; and **Florence**, 559 kc/s, 500.8 metres.—9.40 to 9.55 a.m., Giornale Radio. 10.40, Agricultural Talk. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon to 12.15 p.m., Bible Reading. 12.30, Orchestral Concert. In the interval at 1.0, Time and Announcements. 1.30 to 2.30, Concert (Programme to be announced). 3.0, Running Commentary on the International Football Match, Hail v. Czechoslovakia, from the Berta Stadium, Florence. 4.0, Orchestral Concert, Sports Notes in the interval. 5.0, See **Rome**. 5.15 to 6.20, Giornale Radio, Sports Report. 7.0, Time and Dopplerson Notes. 7.10, Gramophone Records of Light Music. 8.0, Announcements, Giornale Radio and Sports Notes. 8.20, Talk on the following Transmission. 8.30, Germania—Opera in four Acts (Franchetti). In the intervals: Talk, Theatre Notes and Giornale Radio.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by **Graz**, 852 kc/s, 352.1 metres; **Innsbruck**, 1,058 kc/s, 283 metres; **Klagenfurt**, 662 kc/s, 453.2 metres; **Linz**, 1,220 kc/s, 245.9 metres; and **Salzburg**, 1,373 kc/s, 218.5 metres.—11.15 a.m., Brahms Centenary Programme from **Hamburg**. 12.15 p.m., Brahms Song Recital: Liebeslieder-Walzer, Op. 52; Coda from Neue Liebeslieder, Op. 65. 12.45 to 2.0, Orchestral Concert. 2.30, Time and Programme Announcements. 2.35, Popular Music on Gramophone Records. 3.5, Book Review. 3.30, Concert of Brahms Chamber Music: Quintet in B Minor, Op. 115, for Clarinet, Two Violins, Viola, and Cello; Quartet in A, Op. 26, for Pianoforte, Violin, Viola, and Cello. 4.45, Talk: Swabian Folk Customs. 5.15, Concert of Wind Instrument Music. 6.15, Reading. 6.45, Brahms Song Recital by Hans Dühann: Nicht mehr mit dir zu gehen; Feldreisensamkeit; Dein blaues Auge; Maimacht; Ich sah als Knabe Blumen blühen; Wie bist du, meine Königin; Auf dem Kirchhofe; Sapphische Ode; Von ewiger Liebe; Vergöbliches Ständchen. 7.25, Time, Sports Notes, and Programme Announcements. 7.35, At the Grave of Johannes Brahms—Memorial Concert, relayed from the Central Cemetery. The Vienna Opera House Small Choir, with Dr. Werner Riemerschmid at the Microphone. 8.0, Brahms Concert. Soloist: Walter Rehberg (Pianoforte). Concerto in B Flat, Op. 83, for Pianoforte and Orchestra; Second Symphony in D, Op. 73. 9.30, Ruzter Abend, by the Josef Holzer Orchestra, the Vienna Male Voice Choral Society, Eva Beyer (Soprano), and Arthur Fleischer (Baritone). In the interval at 10.15 (approx.), News Bulletin.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Weather Report. 12.15, Johannes Brahms Centenary Concert, relayed from the Philharmonic. The Warsaw Philharmonic Orchestra, conducted by Fitelberg, Soloist: Mme. St. Korwin-Szymanowska (Soprano). 2.0, Talk: State Aid for Farmers. 2.20, Light Music. 2.40, Talk for Farmers. 3.0, Agricultural Notes. 3.5, Light Music. 4.0, Programme for Children. 4.25, Light Music on Gramophone Records. 4.45, Talk from **Cracow**, 559 kc/s, (312.8 metres). 5.0, Song Recital by Olga Szumska (Soprano) and S. Mussoezy (Bass). In the interval, News. 5.55, Programme Announcements. 6.0, Light Music from the Ziemiński's Café. In the interval, News. 7.0, Miscellaneous Announcements. 7.25, Crois-moi Nautique!—Sketch, after Ballard. 8.0, Humorous Programme. 9.0, Sports Notes. 9.10, Orchestral Concert, conducted by J. Oziminski, Soloist: A. Golebiowski (Tenor). Overture, Oberon (Weber); Selection from Lohengrin (Wagner); Waltz from the Ballet Dan Twardowski (Rozycki); Songs: Air from La Juive (Halévy); Air from The Girl of the Golden West (Puccini); Air from Aida (Verdi); Spanish Suite La Feria (Lécouq); Songs: Air from Lohengrin (Wagner); Air from Janké (Zelenka); Air from Cavalleria rusticana (Mascagni); Spanish Dance (Sarasate); Berceuse (Järnefeld); Rhapsodie espagnole (Chabrier). 10.25, Dance Music from the Café Italia. 10.55, News, Weather Report and Police Notes. 11.0, Dance Music from the Bodega Café.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres. 1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Talk in Gaelic. 7.15, Talk by R. J. MacHugh: The Future of the Irish Theatre. 7.30, The Station Orchestra. 7.50, Soprano Solos by Kitty Fagan. 8.0, Whistling and Bird Calls by Michael Quinn. 8.10, The Station Orchestra. 8.20, Soprano Solos by Kitty Fagan. 8.40, Lecture by Padraic Gregory on the Poetry of Pease, Plunkett, and MacDonagh. 9.5, Baritone Solos by J. N. Barry. 9.15, The Station Orchestra. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

(EAJ1), 860 kc/s, 348.8 metres; 8 kW. 7.0 p.m., Trio Concert. 7.30, Quintet Concert, relayed from the Café de la Rambla. 8.20, Sports Notes. 8.30, Exchange Quotations, followed by Talk in Catalan. 9.0, Light Music on Gramophone Records and News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Humorous Review of the Week in Verse. 10.15, Programme of Sardanas. 11.0, Amadeu Vives Programme: Canciones Epigramáticas, by Concepcion Badia de Agusti (Songs) and Alejandro Vialta (Piano forte). 11.30, Radio Gazette in Catalan. 12.0 Midnight, News, followed by Concert of Operetta Music by the Station Orchestra: Selection from (a) The Count of Luxembourg, (b) Dedé (Christine), (c) The Dollar Princess (Fall), (d) Faschingstee (Kálmán). 1.0 a.m. (Tuesday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW. 5.30 p.m., Pianoforte Recital by Adolforata Sardelli. 6.0, Popular Music on Gramophone Records. 6.30 to 8.0, Interval. 8.0, Agricultural Notes, Tourist Report, and Dopplavori Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 9.0, Concert. 10.0, Popular Music on Gramophone Records. 10.55, News and Art Notes.

BASEL—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Brahms Concert on Gramophone Records, relayed from Berlin (Witzleben). 3.0, Talk for Women: New Summer Caps. 3.30, Weather and Exchange. 3.45, Review of Books. 4.30 (approx.), Concert from Berlin (Witzleben). 5.0, Talk: The German Christian Movement and its attitude towards National Education. 5.25, Topical Talk. 5.35, String Quartet in E Minor (Max von Schillings). 6.0, Poetry Reading. 6.5, Talk: The Training of Young People under the State Employment Schemes. 6.30, A Radio Report from an Arsenal. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, See Stuttgart. 9.30, See Frankfurt. 10.15, Weather, News and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Concert from Leipzig. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW. 4.30, Orchestral Concert, conducted by Hans Klingner Pöhlman. Overture, Der Opernprobe (Lortzing); Ballet Music from Undine (Lortzing); Four Pieces from the Peasant Suite (Ailboud); Waltz, Deutsche Grüsse (Jos. Strauss); Selection from The Bird Fancier (Zeller); Waltz, Die Hydropathen (Gund). 5.30, Talk: Student Exchange Schemes. 5.50, Reading (Richard Fiedler). 6.5, Topical Programme. 6.30, Talk on Music. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Breslau. 8.5, Announcements. 8.10, Concert of Light Music from the Traube Weinstaurant. 9.0, Topical Talk. 9.20, Concert by the Berlin Wireless Orchestra, conducted by Eugen Jochem: Symphony in E Flat for Double Orchestra (J. C. Bach); Variations on a Scottish Folk Melody (Günther Raphael). 10.0, Weather, News, and Sports Notes, followed by Dance Music. 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW. 6.15 p.m., Radio Journal. 7.30, News, Exchange and Market Prices. 7.40, Talk: Bordeaux a Hundred Years Ago. 7.55, Lottery Results. 8.0, Medical Talk. 8.15, Charades. 8.20, News Bulletin. 8.30, Instrumental Concert of Classical and Modern Music.

MONDAY

MAY THE EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL London music festival: Brahms Centenary Concert from Queen's Hall. LONDON REGIONAL Act 3 of "Götterdämmerung" (Wagner), from the Royal Opera House, Covent Garden. MIDLAND REGIONAL Tzigane orchestral programme from Bingley Hall, Birmingham. NORTH REGIONAL "Happy the Man." Sir Edward C. Bairstow expresses his point of view. WEST REGIONAL Orchestral concert from the National Museum of Wales. SCOTTISH REGIONAL Orchestral concert. BELFAST Light orchestral concert.

ABROAD

BRUSSELS (No. 1) 8 p.m. Eugène Ysaÿe Commemoration concert. 10 p.m. Brahms centenary concert. COPENHAGEN 8 p.m. Brahms concert, conducted by F. Mahler. EIFFEL 8.30 p.m. Yvain operetta music. TOWER HUIZEN 8.40 p.m. The Utrecht Municipal Orchestra, conducted by H. van Gondeker. MUNICH 8.5 p.m. "Opéra-comique: "The Barber of Seville," by Rossini. ROME 9 p.m. Concert of light music. STRASBOURG 8.30 p.m. Sacred concert relayed from Nancy. WARSAW 8 p.m. Orchestral concert, conducted by J. Ozminski.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by Fr. Dyk. Soloist: Liza Fuchsová (Pianoforte). Suite from Peasant Jack (Osc. Nedbal); Concerto Op. 11 for Pianoforte and Orchestra (Papandopulo-Petehitel). 5.10, See Prague. 5.50, Chamber Music on Gramophone Records. 6.55, Report. 7.0, See Prague. 7.10, Talk for Women. 7.25, See Brno. 8.20, Popular Music on Gramophone Records. 8.40, Esperanto Programme. 9.10 to 10.15, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—1.10 p.m., Gramophone Concert. Selection from Tannhäuser (Wagner, Clairville); Nocturne in E Flat Op. 9 No. 2 (Chopin); Paraphrase on Grün ist die Heide (Blüme); The Russian Pedlar (Ferraris); In the Bird Shop (Lake); Potpourri of Czigany Music; Aria from Der Rosenkavalier (R. Strauss); Foxtrot, Ein anderes Wort für Liebe (Gideon-Pola); Foxtrot, (Johnson-Coslow). 1.45, Time, Weather, News, Exchange and Shipping Notes. 2.5, Concert of Light Gramophone Music. 2.45, Programme arranged by the Post office with Gramophone Records. 3.10, Agricultural Prices. 3.40, Book Review. 4.0, Talk: German East Africa. 4.20, Concert of Opera Music by the Station Orchestra, conducted by Bruno Janz. Soloist: Berta Ebner-Oswald (Soprano). Selection from The Barber of Seville (Carnellini); Overture, Russian and Ludmilla (Glinka); Maria's Aria from The Bartered Bride (Smetana); Selection from I Medici (Leoncavallo); Bird Song from I Pagliacci (Leoncavallo); Entr'acte from Notre-Dame (Schmoll); Carl Song from Carmen (Bizet); Entr'acte from Intrapuzza (R. Strauss); Aria from Rusalka (Dvorak); Selection from Mona Lisa (Max von Schillings). 5.30, Agricultural Prices. 5.35 (approx), Talk on the Reform of the Calendar and Observations on the Heavens in May. 5.55, Talk on Popular Education. 6.15, Programme to be announced. 6.35, Caprice station (Tchaikovsky), on Gramophone Records. 6.50, Weather for Farmers, News and Market Report. 7.0, Transmission for all German Stations: Recital of Silesian Folk Songs by the Station Choir and Orchestra, conducted by Ernst Prade and Soloists. 8.0, Germany needs Colonies. Propaganda Radio Play (Karl Peters). 9.10, Announcements. 9.20, Variety Programme. 10.10, Time, Weather, News, Sports Notes, Market Report and Programme Announcements. 10.30, Technical Talk on Wireless. 10.40, Talk: Munich and Breslau. 11.0 (approx.), Close Down.

BRNO

873 kc/s, 342 metres; 35 kW.—5.25 p.m., German Transmission, News, Elementary French Lesson, and a Talk on Science. 7.0, See Prague. 7.25, Recital of Popular Songs. 8.20, Reading. 8.40, Radio Report from an Old Monastery. 9.10, See Prague. 10.15 (approx.), Close Down.

BRUSSELS (No. 1)

1.N.R.; 590 kc/s, 509 metres; 15 kW. 12 Noon, Walloon Concert by the Small Station Orchestra, conducted by Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Popular Music on Gramophone Records. 2.0, Educational Programme. 5.0, Gramophone Concert. Part I: José Beckman's Programme. Part II: Nocturnes Nos. 1 and 2 (Chopin); Chèvaneche à Paube (Brenta); Violin Concerto (Brahms). 6.0, Announcements. 6.15, Light Music on Gramophone Records. 6.30, Concert of Light Music by the Small Station Orchestra, conducted by Leemans. 7.15, Walloon Report. 7.30, Theatre and Film Review. 8.0, Eugène Ysaÿe Commemoration Concert. The Symphony Orchestra, conducted by J. Kumps. Soloist, Alfred Dubois (Violin). Overture, Pierre le Houxoux (E. Ysaÿe); Divertimento for Violin and Pianoforte (E. Ysaÿe); Poem for Strings, L'Exil (E. Ysaÿe); Concerto No. 7 for Violin and Orchestra (Vieuxtemps); Fantasia on Walloon Airs (T. Ysaÿe); Symphonic Poem, Reve plastique (Droeghans); Fantasia on Two Walloon Christmas Carols (Jongen); Entr'acte No. 2 from Jean Michel (Dupuis). In the interval at 9.0, Dislogue; Eugène Ysaÿe. 10.0, Le Journal Parlé. 10.10, Variety Music on Gramophone Records.

BRUSSELS (No. 2)

1.N.R.; 887 kc/s, 338.2 metres; 15 kW.— Programme in Flemish. 12 Noon, Report on the Procession of the Holy Blood in Bruges. 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Oberon (Weber); First Peer Gynt Suite (Grieg); Russian Songs; Second Peer Gynt Suite (Grieg); Waltz, Pades Beurs (Delibes). 2.0, Broadcast for Schools. 5.0, Concert by the Radio Orchestra, conducted by C. Walpot. 5.45, Programme for Children. 6.30, Programme by the V.L.V.K.A. 7.15, Catholic Address. 7.30, Programme by Pireks from the South (Joh. Strauss); Waltz, Roses from the South (Joh. Strauss); Dance of the Hours, from La Gioconda (Ponchielli); Six Flemish Songs; Entry of the Gladiators (Frick); Potpourri, Bitte, recit freundlich (Ralph); Melody (Ibanez).

In an interval at 9.15, Religious Address for Young People. 9.55, Evening Prayer. 10.0, Journal Parlé. 10.10, Selection from Lucia di Lammermoor (Donizetti), on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Slav March (Tchaikovsky); Waltz (Stolz); Selection from The Tales of Hoffmann (Offenbach); Suite, In a Fairy Realm (Kotzebey); Mandolin (Saint-Saens); Potpourri of Romanian Music (Dron); Violin Solo, Legend (Wiensawsky); Waltz (Repper). In the interval at 6.0, Radio Journal. 7.0, Educational Programme. 7.40, Light Music on Gramophone Records. 8.0, Quartet in A (John B. McEwen) for Two Violins, Viola, and Cello. 8.30, Review. 8.45, Recital on Two Pianofortes, by Mmes. Nitzescu-Philippide and Clemence Cemelzki; Les Eolides (Franck); Rhapsody in Blue (Gershwin). 9.15, Light Music and Romanian Music, relayed from a Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.45 p.m. to 12 Midnight—5.0 p.m., Concert by the Stefan Bertha Orchestra: Overture (Hinszka); Märcchen (Lányi); Hungarian Song, Legend (Garami); Marchiere (Fayon); Selection from Das Fürstentum (Lohr). 6.0, German Lesson. 6.30, Gramophone Records: Overture, Egmont (Beethoven); Violin Concerto in D (Beethoven). 7.15, Talk. 7.45, Concert by the Arpad Toll Czigany Band. 8.45, Programme by Housa Tostady and Bela Rada. 9.45, News Bulletin. 10.0, Brahms Centenary Concert by the Melles String Quartet; Soloists: Ernst Dolmányi and Rosetta Marschalko; Pianoforte Quartet in G Minor; Songs; String Quartet in B Flat. 11.30, Dance Music by the Patria Dance Band, from the Café Patria; Soloist: Julius Szánthó (Songs). 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 291 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.1 p.m., Concert by Max Skalka and his String Orchestra, from the Hotel d'Angleterre. 2.0 to 3.20, Interval. 3.20, Talk for Housewives. 3.30, Concert by the Radio Orchestra, conducted by Launy Grondahl. Soloist, Charles Larsen (Songs). Overture, Othello (Rossini); Suite, Wedding Scenes (Smetana); Selection from La Jolie Parfumeuse (Offenbach); Spanish Serenade (Bizet); Molly on the Shore (Grainger); Five Songs; Concert Overture (Gade); Serenade (Halvorsen); Ballet Music from Sylvia (Delibes); Contradance Suite (Dupuy-Nielsen); Overture, Zampa (Herold). 5.40, Exchange and Fish Market Prices. 5.50, Talk in German: The Austrian Poet, Karl Schönberr. 6.20, English Lesson. 6.50, Weather Report. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk: Johannes Brahms. 8.0, Time Signal. 8.1, Brahms Centenary Concert by the Radio Orchestra, conducted by Fritz Mahler, and the Lilly Eriksen Vocal Quartet. Soloists: Helga Weeke (Songs), Gerhard Rath (Violin), Paulus Balch (Cello), and Folmer Jensen, Walter Meyer-Radon, and Ove Peters (Pianoforte); Tragic Overture, Liebeslieder for Vocal Quartet, and Pianoforte Duet; Variations on a Theme from Haydn's Choral, St. Anthony; Songs: (a) Sapphische Ode; (b) Sonntag, (c) Von ewiger Liebe; (d) Liebeschaft; (e) Vergebliches Ständchen; Trio in B Flat for Pianoforte, Violin, and Cello. 9.30, A Microphone Visit to an Oil Cake Factory. 10.0, News Bulletin. 10.15, Gala Programme of Literature and Music in Aid of the Children's Welfare Committee. 2.0 a.m. (Tuesday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News. 12.45, Songs from Sound Films. 5.30 to 7.0, Programme in English by the I.R.C. C. Danvers-Walker, T. St. A. Ronald and B. McNabb announcing. 5.30, Concert of Special Request Items for Hastings and Eastbourne Listeners: Sussex by the Sea (Ward Higgs); Song, Danny Boy (Weatherley); Colonial Bogy (Alford); The London-derry Air (arr. Grainger); Blaze Away (Holman); Song: Sally in our Alley (Traditional); Moonlight on the River; Ça c'est Paris (Pachia); Selection from The Desert Song (Romberg); Selection from The Country Girl (Mouctekton). 6.15, Concert of Light Music for Chichester and Bognor Listeners: Waltz, Frühlingsstimmen (Strauss); Morgenblätter (Strauss); Songs: (a) Beneath my Window, (b) Ullan Løve Song, (c) Honest, really, truly; Liebestrend (Kreisler); Feuilles d'Automne (Popper); Songs: (a) To Mary in

MAY 8th

MONDAY

continued

Heaven, (b) Falling in love again, (c) Swinging in a Hammock; Molly Bawn (Lower); Souvenir de Capri (Bece). 7.0, Radio Gazette, 7.20, Local News, 7.30, The Listeners' Hour and News, 8.50, Concert, relayed from Gen. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Deolians: I'm all dressed up with a Broken Heart; A Little less of the Moonlight; Let a little pleasure interfere with business; I'll putcha pitcha in the Paper; At your command; Blues in my Heart; My Baby said Yes! Yes!; Dance Hall Doll; Oh, it looks like Rain; I'm getting superstitious about you; Little Girl; Guilty; You can't stop me from loving you; Time alone will tell; Look in the Looking Glass, 11.0, Orchestral Music: Les trésors de Columbe (Drigo); Pêche and Mazurka from Coppelia (Delibes); Liebestraum (Liszt); Classica (arr. Ewing); Old Spanish Dance (Aubert); Dances from Henry VIII (German); Les Millions d'Arlequin (Drigo), 11.30, Duets: Air de Ballet (Herbert); The Keys of Heaven (Traditional); Give me thy Hand, from Don Giovanni (Mozart); Selection from Merric England (German); Lightly, Lightly, from Monsieur Beaucaire (Messager); In the Sudan (Solek); The Moon and I (Sullivan), 12 Midnight, Club Concert for Truro and Redruth Listeners: Under Heaven's Blue (Payan); Song: A Brown Bird Singing; Xylophone Solo; Snappy Sticks; Song: I love the Moon; Wiener Blut (Strauss); Song: Dance away the Night; Xylophone Solo; Liebestreud (Kreisler); Song: Let me dream in your Arms again; Barcarolle (Waldteufel); Song: Forget me not; Xylophone Solo; Jovial Jasper (Green); Song: Lay my head beneath a Rose; By the Sticky Lagoon (Coates), 1.0 a.m. (Tuesday), Programme of Waltzes by an Orchestra and Organ: Around the Volga (Borheit); The Skaters' Waltz (Waldteufel); Gold and Silver (Lohr); Potpourri of Waltzes (arr. Stodgon); Tales from the Vienna Woods (Strauss); Waltz from The Gipsy Princess (Kálmán), 1.30, Songs: I'm in the Seventh Heaven (Henderson); Wishing and waiting for Love (Akst); Just plain Folk (Gilbert); When the Lilac blooms again (Botter); Little Pal (Henderson); Am I blue? (Akst); The Heart of the Sunset (Nichols); Happy Days and Lonely Nights (Fisher), 2.0, Dance Music by the Deolians: Mimi; I'll follow you; Isn't it romantic?; A Million Dreams; Here's hoping; I don't want to go to bed; Always in my heart; What would happen to me?; Dreaming; Wheezy Anna; Wanderer; Night after Night; Just an Echo in the Valley; A Little Street where Old Friends meet, 2.57, I.B.C. Good-night Melody, 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres, 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., See Stuttgart. 5.50, Economic Notes, 6.0, Topical Talk, 6.15, German Almanac, 6.25, English Lesson, 6.50, Time, Programme Announcements, Weather, and Economic Notes, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, See Stuttgart, 9.30, Concert by the Radio Orchestra; Waltz, Gnss an Wien (Bausnern); Danse diabolique (Hellmesberger); Pesther Walzer (Lanner); Three Bavarian Dances (Pacher-negg); Overture to a Revue (Lincke); March, Frisch drauf los (Blon), 10.15, Time, News, Weather, and Sports Notes, 10.40, Concert of Light Music on Gramophone Records, 11.5, See Munich, 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme, 6.40, Frankfurt Exchange and Hamburg Market Prices, 6.50, Weather Report, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, The German Rhine—A Cycle for a Male Voice Choir, Double Trio, Duets, Contralto, Baritone, and Pianoforte (Hugo Kamm), with Introductory Talk by John Julia Scheffer, 8.50, News, 9.0, The Steding Crusade—A Radio Play (Wilhelm Heydrieh), 10.10, Time and News, 10.20, Topical Talk, 10.30 (from Kiel), Orchestral Concert, conducted by Hans Döring; Overture, Czar and Carpenter (Lortzing); Selection from La Traviata (Verdi); Waltz, Amorettenklänge (Gungl); Selection from Die Fledermaus

(Joh. Strauss); Dance of the Butterflies (Kockert); Potpourri, Keler-Bela-Perlen (Rhode); Parade der Maikäfer (Siede); Ballet Suite from Esmeralda (Drigo).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert, Potpourri, Sie hören jetzt (Dostal); Potpourri, Fortissimo (Kálmán); Vindobona (Leopold); Extravaganzen (Morena); Auf der Wunderselait (Manfred); Potpourri of Strauss Waltzes, Medley Allerlei (Gross-Winter); Goldene Burschenzeit (Manfred); Rheinischer Sang (Hannemann); Bei Lied und Wein (Armandola). In the interval at 1.20, News, 2.30, Programme arranged by the Post Office, with Gramophone Records, 3.0, Market Prices, 3.30, Guessing Competition, for Young People, 4.0, Concert of German Folk Music by the Young Hitlerites of the East Mark, 4.35 (approx.), Concert from Breslau, 5.30, Review of Books, 5.50, Wireless Technical Talk, 6.15, Agricultural Market Prices, 6.20 (from Danzig), Talk: Danzig and East Pomerania, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Robinson must not die—Play in Three Acts (Friedrich Forster), 9.5, News, 9.10, Chamber Music, Italian Serenade for String Quartet (Hugo Wolf); Assai agitato from the String Quartet in A, Op. 4, No. 3 (Schumann); Minuet from the String Quartet in D Minor, Op. 421 (Mozart); Two Minuets for String Quartet (Puccini); Scherzo from the String Quartet in D, Op. 11 (Tchaikovsky), 9.50, Elementary English Lesson, 10.15, Weather, News and Sports Notes.

HILVERSUM

1,013 kc/s, 298.1 metres; 20 kW. (7 kW. up to 5.40 p.m.), 11.55 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.), 11.55, Concert by De Notenkrakers, conducted by D. Wins, 12.40 p.m., Variety Music on Gramophone Records, 1.10, Organ Recital by Johan Jong, 1.40, Popular Music on Gramophone Records, 1.55, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot, 2.40 to 3.10, Interval, 3.10, Brahms Recital by Mlle. C. Lamkout (Pianoforte) and J. v. Hell (Clarinete); Sonata, Op. 120, No. 1; Pianoforte Solos: (a) Intermezzo in E Flat, Op. 117, (b) Caprice in B Minor, Op. 76, No. 3 (c) Ballad in G Minor, Op. 118, (d) Waltzes, Op. 39; Sonata in E Flat, Op. 120, No. 2, 4.10, Extracts from La Bohème—Opera (Puccini), on Gramophone Records, 5.55, Programme for Children, 6.25, Concert by De Notenkrakers, conducted by D. Wins; Cadiz (Valverde); Waltz, Etincelles (Waldteufel); Frühlingsweise (Siede); Song (Ricomini); Selection from Casanova (Lincke); Gramophone Records; Piece for Children (de Micheli); Butterflies' Dance (Kockert); Italia bella (Cortopassi); Stesky Czardas (Lebert); Holdrio (Pöll), 7.20, Music Talk, 7.40, Brahms Concert, conducted by P. v. Anrooy; Academic Festival Overture in C, Op. 80; Third Symphony in F, Op. 90, 8.39, S.O.S. Messages, 8.40, Recitations, 8.55, Brahms Concert (contd.), Soloist, Yelli d'Aranyi (Violin), Violin Concerto, Op. 77, 9.40, News Bulletin, 9.55, Concert by De Filoerfluiters, conducted by J. v. d. Horst, Soloist, A. de Booy (Songs), 10.25, Recitations, 10.40, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot; Overture, Martha (Flotow); Wiegengied (Brahms); Du bist die Ruh' (Schubert); Two Pieces (Gilbert); The Thistle (Myddleton); Orientale (Flament); Betseune tendre (Daniderff); Kol Kidrei (Bruch); Berliner Luft (Lincke), 11.25, Organ Recital by Johan Jong, 11.55, Popular Music on Gramophone Records, 12.40 a.m. (Tuesday), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—12.10 p.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.), 12.10, Light Music on Gramophone Records, 12.40, Police Notes, 12.55, Gramophone Records; Morgenruss (Schubert); Das Wandern (Schubert); Frühlingsglaube (Schubert); Wiegengied (Brahms), 1.10, Time Signal, 1.11, Organ Recital by Felike Asma, relayed from the Lutheran Church in Amsterdam; Choral Prelude, Wacht auf, ruft uns die Stimme (Bach); Symphony No. 6 (Widor); Songs for Organ (Zwart); Symphonic Fantasia (Peeters); Variations (Bonnet); Variations on an Old Carol (Dupré); Fantasia and Fugue on Psalm 72 (Zwart), 2.40, Time Signal, 2.41, Broadcast for Schools, 3.15, Songs with Harmonium, Viola, and 'Cello Accompaniment, 3.25, Talk on Cooking, 3.55, Time Signal, 3.56, Dressmaking Lesson, 4.10, Millinery Lesson, 4.25, Programme to be announced, 4.40, Time Signal, 4.41, Bible Reading and Sacred Songs, 5.40, Time Signal, 5.41, Light Music on Gramophone Records, 6.10, Organ Recital, 7.10, Answers to Correspondence, 7.40, Police Notes, 7.55,

Time Signal, 7.56, News Bulletin, 8.10 to 8.40, Interval, 8.40, Time Signal, 8.41, Concert by the Utrecht Municipal Orchestra, conducted by Henri van Goudeover, and a Male Voice Choir, Soloist: Annie Woud (Contralto); Concerto in A for Strings (Vivaldi); Ariana a Naxos—Cantata for Contralto and Orchestra (Haydn); Symphony in E Flat (Mozart), 9.40, Talk on Java, 10.10, Concert (contd.), Brahms Programme; Tragic Overture, Op. 81; Rhapsody for Contralto, Male Voice Choir, and Orchestra; Academic Festival Overture, Op. 80, 11.10, News Bulletin, 11.20, Popular Music on Gramophone Records, 12.10 a.m. (Tuesday), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News and Financial Report, 8.15, Sports Notes, 8.30, Radio Concert, 9.0, Weather and News, 9.15, Dramatic Programme, 12 Midnight to 1.0 a.m. (Tuesday), Programme in English by the I.B.C., H. K. Hitchcock announcing, 12 Midnight, Pianoforte Recital: The King's Horses (Gradnau); I got a Home in dat Rock (Brown); When you wore a Gingham Gown (Gilbert); The Vicar of Bray (arr. Tait); I know de Lord's laid His hand on me (Brown); If you were the only Girl in the World (Ayer); The Lincolnshire Poacher (Borheit); You're gonna be young (Nichols), 12.30 a.m., Dance Music: Love will find a Way; Fin one of the Lads of Valencia; Butterflies in the Rain; Put a little Springtime in the Winter of their Lives; What a Perfect Combination; A Letter to my Mother; Look what you've done; Standing in the Corner, 12.57, I.B.C. Good-night Melody, 1.0 a.m. (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 10 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15, Agricultural Talk, 6.25, Talk, 6.45, Duets from the Operetta by Tuovi Ilviseino and Martti Seilo, relayed from Viipuri, 1,031 kc/s, 291 metres, 7.5, Talk, 7.30, Concert by the Station Orchestra, conducted by Toivo Haapanen, Soloist: Kai Kajanus (Violin), Overture, The Magic Flute (Mozart); Herzwunden (Grieg); An den Frühling (Grieg); Violin Concerto in E minor (Mendelssohn); Czardas (Sibelius); Two Finnish Dances (Haapalainen); March (Lindblad), 8.45, News in Finnish, 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf; Königs Marsch (Strauss); Festival Overture (Lortzing); Waltz, Seid uns selungen Millionen (Strauss); Two Pieces from the Suite, Old China (Niemann); Song (Hill); Selection from Der Freischütz (Weber); Overture, Die Landstreichler (Zichner); Selection from Frühlingsluft (Jos. Strauss-Reiterer); Gallop, Auf der Rembrandt (Lincke). In the interval at 2.0 p.m., News, 2.30, Meat Market Prices, 3.30, Exchange and Time Signal, 3.50, Talk for Young People: Adolf Hitler, 4.30, Concert, conducted by Eysoldt; Overture, Alphonse and Estrella (Schubert); Aufschwung (Schumann); Two Pieces (Brahms); (a) Liebeslieder Walzer; Selection from Little Ida's Flowers (Klenau); Lyric Intermezzo, In the Temple of Beauty (Hummel); Suite, Wedding Scenes (Smetana), 5.50, Reading of Poems (Hans Rehberg), 6.0, Talk: Woman and the Family, 6.25, Talk for Parents; Gymnastics, 6.45, Weather, Time, Exchange, and Sports Notes, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, First General News, 8.5, Programme from Stuttgart, 10.15, News and Sports Notes, 10.35, Serenade, conducted by Wolf, 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.0 p.m., News, Weather and Time, 1.15, Richard Strauss Concert on Gramophone Records, Suite from Le Bourgeois Gentilhomme; Two Songs: (a) Morgen, (b) Freundliche Vision; Prelude to Act I of Der Rosenkavalier, Exchange Quotations after the Concert, 2.0, Art and Film Review, 2.30, Talk: Gymnastics for the Housewife, 3.0, Pianoforte Recital by Hildegard Timmermann, 3.35, Economic Notes, 4.0, Concert by the Emdé Orchestra, Overture, Prinzess Goldschulch (W. Ruhl); Martin-Walzer (Zeller); Suite, On the Banks of the Nile (von Platen); Waltz Intermezzo, Prima Ballerina (Weigl);

Andante from the Concerto in A Minor, for 'Cello (Goltermann); Selection from Frühlingsluft (Jos. Strauss); Fest der Zwänge (Noack); Der Lenz (Hildach); Czardas; Der Eremit (Schmalstich); Trambüller (Lambert); Selection from Les Millions d'Arlequin (Drigo); Ballerun-Marsch (Kämpfer). In the intervals, Talk: Pictures of Thuringia and Recitation, 5.50, Weather and Time, 6.0, Educational Talk: The Teaching of Music in High Schools, 6.25, Discussion: Suitable Weather for Flying, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Schiller Programme—his Letters and Poems, 8.40, Monologues by Kolbenheyer, 9.5, News, 9.15, See Vienna, 10.5, News, 10.15 (approx.), Concert by the Station Orchestra, conducted by Johannes Ertl, Overture, Die Grossfürstin (Flotow); Selection from Bocaccio (Suppé); Czardas No. 9 (Michiels); Waldmärchen (Mellé); Am Neekarstrand (Müllcker); Loosenköpfehen (Eilenberg); Die Glocken von Notre Dame (Eilenberg); Potpourri, Wieser Spaziergänge (Konczak), 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

622 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert, 7.0, Esperanto Lesson, 7.30, Serbo-Croatian Lesson, 8.0, Programme not yet announced, relayed from Zagreb, 9.77 kc/s, 307 metres, 9.0, Time and News, 10.30 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—11.30 p.m., Concert: Two Stup, Currito de Triana (Alora and Urmeute); Overture, Il Seraglio (Mozart); Selection from La Meiga (Guridi), 11.45, Radio Chronicle, 12 Midnight, Concert (contd.); Waltz, The Blue Danube (Joh. Straus); Song, Aurora del Peregrino; Potpourri; Brisas españolas (Hernández); Selection from La verbena de la Paloma (Bretón), 12.35 a.m. (Tuesday), Sports and Bullfighting Notes, 12.40, Light Music, 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 423.3 metres; 2 kW.—8.0 p.m., Chinese, Exchange Quotations, and Radio Journal, 9.15, News Bulletin, 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.30 p.m., German Transmission; Talk with Gramophone Records on Brahms Centenary, 7.0, See Prague, 7.25, See Brno, 8.20, See Prague, 8.40, Brahms Centenary Concert, Soloists: G. Halmová ('Cello), V. Repková (Pianoforte), M. Zlabaková (Contralto), Alois Schneider (Violin), Sonata in E Minor, Op. 38, No. 1 for 'Cello and Pianoforte; Two Songs for Contralto with Violin obbligato, 9.10 to 10.15, See Prague, 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 540 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m. (from Nürnberg), Concert by Josef Schwarz and his Orchestra; Overture, Frau Meisterin (Suppé); Waltz, Leuchtende Sterne (Robrecht); Verdi Potpourri (Morena); Serenade (Faraghi); Potpourri, Heimatklänge (Kroner); March, Der alte Fritz (Blon), 5.45, Talk: The Bavarian State Touring Theatre, 6.5, Organ Recital by Frieda Herbel (Soprano) and Hermann Neumann (Baritone), 6.20, Time, Weather, and Agricultural Notes, 6.35, Talk: The Palatine and the Foundation of the German Empire, 7.0, Transmission for all German Stations, relayed from Breslau, 8.5, The Barber of Seville—Opera in Two Acts (Rossini), relayed from the National Theatre, 10.20, Time, Weather, News and Sports Notes, 10.45, Serenade by the Bavarian Schrammel Quartet, 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 452.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Chamber Music by the Radio Ensemble, 6.0, German Lesson, 6.30, Talk, 7.0, Announcements, Weather and News, 8.0, Time Signal, 8.1, Variety Programme, relayed from Trondheim, Introductory Talk by M. Sven Møren, Cornet Solos by Jan Heien, Dance Music, Songs by the Trysil Choir, Talk on Forestry and Songs by Dag Sandvik, 9.40, Weather and News, 10.0, Topical Talk, 10.15, Humorous Talk, 10.30 (approx.), Close Down.

OSTERSUND.—See Stockholm.

MAY 8th

MONDAY

continued

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m., till Close Down: See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Gunoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 p.m., Concert of Variety Music. 6.35, Giornale Radio, and Agricultural and Dopplavoro Notes. 7.0, Time, Tourist Report and Gramophone Records of Variety Music. 7.20, Giornale Radio. 7.45, Gramophone Records (cont'd.). 8.0, Announcements and Giornale Radio. Weather and Popular Music on Gramophone Records. 8.45, Talk. 9.0, Chamber Music. 10.0, A Comedy in One Act, followed by Light Music on Gramophone Records. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,959 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres.—4.5 p.m., Concert of Folk Music: Wedding March; Old Franconian Minuet; Tyrolian Kodaly. 6.5, Talk. 6.25, Talk: Books in connection with the Week's Talks. 6.30, Talk: A Flight from the Alps to the Sahara. 7.0, Concert by the Vienna Symphony Orchestra, conducted by Anton Konrat. Soloist: Friedrich Wührer (Pianoforte); Overture. A Midsummer Night's Dream (Mendelssohn); Nocturne (Dvorak); Concerto in C Minor for Pianoforte and Orchestra (Mozart). 7.50, Time, Weather, and Programme Announcements. 8.0, Styrian Programme relayed from Graz. 9.15, News and weather. 9.30, Concert of Styrian Music, relayed from Graz. The String Orchestra, conducted by Fritz Voglar. Soloists: Eugen Gorriller (Sings), Arthur Mielh (Violin), and Franz Brugger (Cornet); March, Steirer voran (Hans Stimp); Overture, Der Opernball (Heuberger); Waltz from Der Obersteiger (Zeller); Waltz Songs from Traum einer Nacht (Hans May); Bilder aus der Steiermark (Viktor Zuck); Two Pieces for Violin: (a) Nocturne in D (Chopin), (b) Czardas (Montj), Overture, Der Karneval (Giedlik); Ballet Music (Marcell Frank); Cornet Solo, Nachklänge aus dem Zillertal (Th. Hoell); First Petite Suite (de Micheli); Selection from Ball im Savoy (Abraham); Rosegermarch (Abseger).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fantare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Popular Music on Gramophone Records. 1.20, Weather Report. 1.25 to 3.10, Interval. 3.10, News. 3.15, Economic Notes. 3.25, Traffic Report. 3.35, Answers to Correspondence. 3.50, Popular Music on Gramophone Records. 4.25, Elementary French Lesson. 4.40, Talk: Salaries in Poland. 5.0, Song and Pianoforte Recital by Polish Candidates for the Second International Competition at Vienna. 5.55, Programme Announcements. 6.0, Light Music from the Cristal-Restaurant. In the interval, News. 7.0, Miscellaneous Announcements. 7.20, Answers to Agricultural Correspondence. 7.30, Topical Talk. 7.45, Radio Journal. 8.0, Orchestral Concert, conducted by J. Oziminski; Soloist: Mme. M. de Carmariv (Soprano); Overture, The Barber of Seville (Rossini); Spanish Serenade (Bizet); Invitation to the Waltz (Weber-Berlioz); Polish Dance (Scharwenka); Songs: (a) Air from the Barber of Seville (Rossini), (b) Chanson espagnole (Debussy), (c) Melody (Proct); Japanese Suite (Yoshitomo); Ballet Music from Ode à Phrynie (de Taaey); Arietta in old style (Brog); Valse-Caprice (Rubinstein); Songs: (a) Majka (Hlatze), (b) Ne voli me (Stahuljak), (c) Aman Dewojko (Konjowie); Scandinavian Suite (Frederiksen). 9.30, Sports News. 9.35, Radio Journal. 9.40, Pianoforte Recital by Tamara Bey. 10.10, Answers to Technical Correspondence. 10.25, Dance Music from the Café Adria. 10.55, News, Weather and Police Notes. 11.0, Dance Music (cont'd.).

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.25 p.m., Review of Books. 7.40, Announcements. 8.0, Concert by the St. Mark's Boys' Choir. 9.0, Concert by the Chamber Trio. 10.0, News and Weather. 10.10, Dance Music relayed from a Restaurant. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Popular Music on Gramophone Records. In the interval at 8.30, Time Signal and Announcements. 9.0, Concert of Chamber Music. After the Concert, Light Music on Gramophone Records.

PARIS

1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Review. 7.0, News Bulletin. 7.15, Weather Report. 7.25, Le Journal Parlé. 8.30, Concert of Yvain's Operetta Music: Extracts from (a) Ta bouche, (b) La Dame au dévotlet, (c) Gousse de fêche, (d) Pas sur la bouche, (e) Li-haut. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 914 kc/s, 328.2 metres; 10 kW.—6.45 a.m., Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Sponsored Concert. 8.0, Scientific Talk. 8.5, Talk on the Motor Car. 8.15, Interval. 8.30, Vocal Concert. 9.0, Interval. 9.15, Sponsored Concert. 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Concert by the Radio Paris Orchestra; Part I, Opera Music: Overture, Oedipe à Colone (Sacchini); Overture and Entr'actes, Struense (Meyerbeer); Gramophone Records: Two Arias from La Juive (Halévy); selection from Le roi de Lahore (Massenet); Part II, Ballet Music: Ballet Suite from Les Indes galantes (Rameau); Gramophone Record, Pavane pour une infante défunte (Bavé); Ballet Music from L'Arlequin (Pelloni); Ballet Music from Rameuteho (Pierné); Ballet Music from La Fête chez Thérèse (Halévy). In the intervals, at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange, 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Film Review. 7.5, Review of New Books. 7.20, Concert by the Radio Paris Orchestra: Chant d'amour (Paderewsky); Piece (Nerini); La Vosgienne (Daletov). 7.45, Commercial Prices and Music. 8.0, Two Plays: (a) Le Châtiment (Bourget-Trullier), (b) L'ami de jeunesse (Sé). In the intervals, at 8.30, News and Weather, at 8.40, Review by Roboux, and at 9.15, Press Review and News. 10.0, Light Music on Gramophone Records.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.45, Human Values. 9.0, Teaberry Baseball Scores. 9.5, Business News. 9.15, Ballroom Promenade. 9.30, Weather and Market Report. 9.45, Folk Songs by Lois Miller. 10.0, Teaberry Baseball Scores. 10.5, Programme to be announced. 10.15, Dick Darinz, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Programme to be announced. 11.15, Time and Weather. 11.17, Teaberry Sport Review. 11.22, Press News-Reader. 11.29, Temperature Report. 11.30, Rings and Make. 11.45 to 3.0 a.m. (Tuesday), New York Relay. 11.45, Today's News, by Lowell Thomas. 12 Midnight, Peppercorn Amos n' Andy. 12.15 a.m., Townsend Murder Mystery. 12.30, Five Star Theatre—Marx Brothers. 1.0, Cluquet Club Eskimos. 1.30, Time Signal and Don Corney—Talk for Dog Lovers. 1.45, Phil Cook and the Ingram Shavers. 2.0, Sinclair Minstrel. 2.30, Jack Frost Melody Moments. 3.0, Dr. Curtis Howe Springer.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.0 p.m., See Warsaw. 6.0, Natural History Talk. 6.5, Talk for Boy Scouts. 6.20, Miscellaneous Items. 6.35, Talk: Curious Facts. 6.50, Light Music on Gramophone Records. 7.0, Theatre Notes and Programme Announcements. 7.28, Time Signal. 7.30, See Warsaw. 8.0, Concert of Light Music. 9.0, Song Recital by M. Kalinowski (Baritone). 9.25, 'Cello Recital by M. Sprzyszewski; sonata in D (Rubinstein); Tarantella (Popp); Song without Words (Davidov). In the interval, News from Warsaw. 10.0, Time Signal, Sports Notes, and Police Announcements.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava. 5.10, Talk on Photography. 5.20, Reading. 5.30, Programme for Children. 5.50, Light Music on Gramophone Records. 6.5, Agricultural Talk. 6.15, Talk for Workers: Mining. 6.25, News in German. 6.30, German Transmission: Talk: The Prague Festival. 7.0, Chimes. 7.1, News. 7.10, Elementary English Lesson.

7.25, See Brno. 8.20, Talk. 8.40, Pianoforte Recital of Music by Emil Axmen, by Antonin Resler. In the interval at 9.0, Time Signal. 9.10, Ideals Fulfilled—Radio Play from the Life of Brahms and Dvorak (Vrabzky), with Incidental Music by the Station Orchestra. 10.0, Time Signal. 10.1, News Bulletin. 10.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Geneva, 395 kc/s, 760 metres.—6.30 p.m. (from Lausanne), German Lesson. 7.0 (from Lausanne), Weather and News. 7.30 (from Lausanne), Talk. 8.0 (from Lausanne), 'Cello Recital by M. Delray. 8.30 (from Lausanne), All about Women—Programme of Talks and Dialogues. 9.0 (from Porrentruy), Programme of Music from the Jura District, with a Prologue by Alfred Ribeault, relayed from the Town Hall. The Choral Society, a Women's Choir, and the Philharmonic Orchestra. Conductors: James Jullierat and Mare Robert. Chorus and Orchestra: Fantasia on Old Airs (Béguelin); Songs (arr. Jullierat) for Women's Choir: (a) Le pinson fait mon bonheur, (b) C'est à Bontol, (c) Pendant qu'en Avril, (d) Elles étaient trois donzelles; Duet, Le bonjour Sylvie; Chorus and Orchestra: Toi qui ne m'aimes pas; Men's Choir: Si par hasard nos coeurs s'enflamment; Women's Choir: Ce sont les filles de Montignez; Chorus and Orchestra: (a) Les Balchattes des Banges-Tiers; Ma fortune est faite; Nous étions trois sœurs; L'âme jurassienne (arr. Jullierat). 10.0, News and Weather. 10.15 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.30 p.m., Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.30, Reading. 11.0, Popular Concert by the Station Quartet, with Songs.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Gramophone Concert of Variety Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Concert by the Roman Mandoline Quartet; Sobist, Maria Senes (Soprano). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 7.20, Giornale Radio. 8.0, Time and Announcements. 8.5, Gramophone Records of Popular Music, with Talks. 8.30, Giornale Radio and Sports Notes. 9.0, Concert of Light Music. 10.0, Two Talks. 10.15, Concert of Light Music (cont'd.). 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 p.m., Book News by Levere Fuller. 8.15 to 9.0 (approx.), New York Relay. 8.15, Salon Concert Ensemble. 8.30, Three Scamps. 8.45 to 9.0 (approx.), Lady Next Door. 11.45, Stock Reports. 12.0 Midnight to 1.30 a.m. (Tuesday), New York Relay. 12.0 Midnight, Socoyland Sketch. 12.30 a.m., National Opera Concert. 12.45, Band of Famous Brands. 1.0, A & P Gipsies. 1.30, One Man's Family—Sketch. 2.0, Contended Programme, from New York. 2.30, National Radio Forum, from New York, followed by Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory, Weather and News. 12.40 (from Basle), Folk Music on Gramophone Records. 1.35 (from Basle), Weather and Exchange Quotations. 3.30 (from Zurich), Concert of Popular Music by the Small Orchestra. 4.0 (from Berne), Popular Music on Gramophone Records. 5.30, Weather. 5.35 (approx.) to 6.30, Interval. 6.30 (from Zurich), Talk on Professional Ethics. 7.0 (from Zurich), Time Signal and Weather Report. 7.15 (from Zurich), English Lesson. 7.45 (from Zurich), Selcherazade-Rimsky-Korsakov). 9.30, Weather and News. 9.40 (approx.), Old Dance Music by the Station Orchestra and Jazz Music on Gramophone Records. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg,

932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m. (from Göteborg), Accordion Music. 5.30, Reading. 5.55, Light Music on Gramophone Records. 6.55, Parliamentary Report. 7.15, Weather and News. 7.30 (from Göteborg), Variety Programme. 8.0, Relay from the Church Congress in the Town Hall. Address by Archbishop Erling Eidem and Songs by Harry Sanger. 8.45, Sonata in D Minor, Op. 108, for Violin and Pianoforte (Brahms). 9.15, Talk. 9.45, Weather and News. 10.0, Military Band Concert. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Popular Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0 to 5.0, Interval. 5.0, Orchestral Concert, conducted by Roskam: Slav Rhapsody (Friedemann); Waltz, Eternelle Ivresse (Ganne); Overture. Le postillon de Longjumeau (Adam); Potpourri, Offenbachiana (Comrad); Gretchen am Spinnrade (Schubert); Ständchen (Schubert); Echoes of Russia (Léopold); March, Attila (Fueik). 6.0, Film Review. 6.15, Review of the Week in German. 6.30, Orchestral Concert, conducted by M. de Villers; Soloist: Roskam ('Cello); Overture, Coriolanus (Beethoven); Selection from Lucia di Lammermoor (Donizetti); Ballet Music from Romeo and Juliet (Gounod); 'Cello Solo: Romance (Dumas); Divertissement (Lalo). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Sacred Concert, relayed from Nancy: Fonds d'orgue (Marchand); Joseph est bien marié (Balbastre); Carol in D Minor (Daquin); O Magnum Mysterium (Vittoria); Sixteenth Century Carol, Je me suis levé par un matin; Il est né le divin enfant (Noyon); Piece in G (Purcell); Vere langoures nostros (Vittoria); Final Chorus, L'inc, solist. Jésus-Christ, from the St. Matthew Passion (Schutz); Organ Solos: (a) Piece héroïque (Franck), (b) Passacaglia and Fugue in C Minor (Bach); Chorus, Répose en paix, o doux Sauveur des hommes, from the St. John Passion (Bach); Improvisation on a Gregorian Chant; Salve Regina; De Profundis (Bretagne); Intermezzo pastoral (Lataze); Prelude and Fugue in B Minor (Dupré); Hymne à la nuit (Rameau-Noyon); Cantata to Joan of Arc (de Raunse). In the interval, Press Review in French and Talk on the Churches of Nancy. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.15 p.m., Time, News, Weather, and Programme Announcements. 1.30, Concert from Langenberg. 2.0 to 2.15, Musical Programme arranged by the Post Office. 2.30, Spanish Lesson. 3.0 to 3.30, English Lesson for Beginners. 4.30, Concert by the Station Orchestra, conducted by Gustav Görlich, soloists: Fritz Gühring (Soprano), and Otto Seyter (Pianoforte); Overture, Nebuchadnezzar (Verdi); Gilda's Aria from Rigoletto (Verdi); Tarantella for Pianoforte and Small Orchestra (Schulz-Beuthen); Song, Frühlingsstimmen (Joh. Strauss); Selection from Die Afrikareise (Suppé); Song, Czardas from Die Fledermaus (Joh. Strauss); Martin-Walzer from Der Obersteiger (Zeller). 5.45, Time, Weather and Agricultural Notes. 6.0, Talk: Germany's Leaders in 1870-71. 6.25, Talk: The Peasant and his World. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, The Robbers—Play (Schiller). 9.30, See Frankfurt. 10.15, Time, News, Weather, and Programme Announcements. 10.35, Chess Lesson. 11.5, Serenade from Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—7.30 p.m., Accordion Solos. 7.45, Orchestral Music. 8.0, Songs from Opéra-Comique. 8.15, Viennese Music. 8.45, Popular Songs. 9.0, Music Hall Programme. 9.30, Argentine Music. 9.45, Instrumental Solos. 10.0, Military Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Russian Songs. 11.15, Orchestral Music. 11.30 to 12.0 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Orchestral and Vocal Concert: Selection from Congress Dances (Heymann); Just because I lost my Heart (Abraham); Come to me (de Sylva); Gavotte, Stéphanie (Czibulka); Serenade (Heykens); Guilty (Kahu); Blues in my Heart (Mills); Old Vienna Moon (Lebert). 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Dance Music. 12.30 (approx.), Close Down.

TUESDAY

MAY THE NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "The Castle on the Hill," a romantic drama with music by C. Dennis Freeman.
- LONDON REGIONAL** Act I of "Der Rosenkavalier" (Strauss), from the Royal Opera House, Covent Garden.
- MIDLAND REGIONAL** Thanksgiving service for the jubilee of the foundation of King Edward's School, Birmingham.
- NORTH REGIONAL** Memories of Childhood, orchestral concert.
- WEST REGIONAL** May songs and dances, a Welsh programme.
- SCOTTISH REGIONAL** Choral concert.
- BELFAST** Choral and instrumental concert.
- BUDAPEST** 7.30 p.m. Opera: "A Masked Ball" (Verdi), from the Royal Hungarian Opera House.
- COPENHAGEN** 8 p.m. Operetta: "The Gipsy Princess" (Kálmán), from the Royal Theatre.
- HAMBURG** 8 p.m. Opera: "I quattro Rusteghi," by Wolf-Ferrari.
- HEILSBURG LEIPZIG** 8.5 p.m. Forgotten operetta music.
- POSTE PARISIEN VIENNA** 8 p.m. Oratorio: "The Seasons," by Haydn.
- WARSAW** 9 p.m. Concert from the Gaveau Hall.
- 8.55 p.m. Wilhelm Kienzl concert with the collaboration of the composer.
- 7.30 p.m. Opera: "Quo Vadis," by Nougues, from the Grand Theatre.

ABROAD

- phone Records: Toccata and Fugue (Bach); Toccata from Symphony No. 5 (Widors). 1.0, Le Journal Parlé. 1.10, Tchaikovsky Concert by the Small Station Orchestra, conducted by Leemans; Jubilee March; Extracts from The Xtratracker; Character Dance; Romance in F Minor; Waltz from The Sleeping Beauty. 1.45, Suite pour mes amis and Bouton d'or (Pierne). 5.0, Glazunov Concert by the Symphony Orchestra, conducted by Mendelsohn; Carnival Overture; Spanish Serenade; Extracts from a Ballet Suite. 5.20, Programme for Children. 6.5, Literary Review. 6.15, Belgian Music on Gramophone Records. 6.30, Fifteenth Century Sacred Music by the Pro Musica Antiqua Society, an Instrumental Ensemble and Soloists; Alma Redemptoris (Dufay); Ave Maria (Ferezatti); Veni Sancte Spiritus (Dufay); Hosanna from the Mass, Se la Face ay Pale (Dufay); In tua memoria (de Lantino); Vozzine Bella (Dufay); Toti pulchra (de Lantino). 7.15, Weekly Report on the Catholic Radio Society and Film Review. 7.30, Review for Women. 8.0, Concert by the Symphony Orchestra, conducted by Mendelsohn. Soloist: M. Piette (Clarinet). Pictures from an Exhibition (Musorgsky); Rhapsody for Clarinet and Orchestra (Debussy); Suite, Mother Goose (Ravel). 8.45, Talk: The Youth of Germany. 9.0, Strauss Concert by the Radio Orchestra, conducted by Franz Andre; Waltz, Wine, Woman and Song; Overture, Die Flegelmaus; Waltz, Wiener Blut. 9.20, Gipsy Music: Potpourri of Hungarian Airs (Mantred); Two Czardas (Michiels); Czardas (Monti); Hungarian Potpourri (Padonck). 9.45, Piano-forte Improvisations. 10.0, Le Journal Parlé. 10.10, Request Gramophone Records. 10.40, Gramophone Records: Overture, Fidelio (Beethoven); Prix anglais, Last Movement to Schubert's Unfinished Symphony (Franck-Merrick). 10.55, Christus Vincit (Liszt).
- BRUSSELS (No. 2)**
N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, Morning, Noon and Night (Suppé); Waltz, Märchen aus All-Wien (Zielner); Selection from Il Trovatore (Verdi); Minuet for Piano-forte (de Boeck); Bohemian Dance from The Fair Maid of Perth (Bizet); Selection from The Vagabond King (Friml); Elan (Doulzic); Waltz, Why Dance? (Furk-Albert); Ribera del Taria (Luchesi). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert: March, Salut Thalia (Engelmann); Selection from Le fille de Madame Angot (Lecocq); Song, A. bi. ci (Cesentino); Scarf Dance (Chaminade); Pierre-tte (Chaminade); Two Steps, Naranjos (Grant); Intermezzo from The Acrobat (Robrecht); Variations (Wittmann); Selection from The Rose of Stam-
- 923 kc/s, 325 metres; 10 kW.; and 1.01, 1.184 kc/s, 253 metres.—1.10 p.m., Gramophone Concert of Alpine Folk Music. 1.45, Time, Weather, News, and Exchange. 2.5, Gramophone Concert of Variety Music. 2.45, Programme arranged by the Post Office with Gramophone Records. 3.10, Agricultural Prices. 3.50, Programme for Children. 4.10, Hermann Buchel Song Recital by Claire Frühlind (Suppan), with the Composer at the Piano-forte; Erste Frucht; Hände; Haus im Schnee; Melodie; Der schone Strand; Schwaben; Licht; Schmales Glück; Ollmüchtige Weisheit; Füsse meines Knaben; Träumung. 4.40, Book Review. 5.0, Mandoline and Guitar Recital by Walter Fabig and Alfons Anhalt; Polka brillante, Pappale-granti (Finoni); Russian Gipsy Melody (Traditional); Intermezzo, Cinnamon Silva (Kellmann); Waltz, Wiegen und wagen (May); Duell for Mandolines (Ritter); Two Styrian Volks- for Two Mandolines (Krug); Mazurka Concerto (Munier); Abendliuten (Fink). 5.25, Agricultural Prices. 5.30 (approx.), Georg Britting reads from his own works. 5.50, Programme to be announced. 6.25, Talk by Dr. Carl Byssens: What Jean Paul means to us Today. 6.50, Weather for Farmers, News, and Cattle Market Report. 7.0, Transmission for all German Stations. Leipzig-Berlin (Deutschlandsender) Exchange Programme. 7.5, See Heilsberg. 9.20, Reading. 9.50, Political Press Review. 10.15, Time, Weather, News, Sports Notes, and Program Weather, News, Sports Notes, and Program Announcements. 10.50, Talk: The New Breslau Theatre Regulations. 11.0, Concert from Hamburg. 12 Midnight (approx.). Close Down.
- BRNO**
878 kc/s, 342 metres; 35 kW.—6.15 p.m., Talk for Workers: Gynastics. 6.25, German Transmission, News and Agricultural Talk. 7.0, See Prague. 7.10, Talk on Psychology. 7.25, Amusing Jests—Programme of Songs and Recitations. 8.30, See Prague. 11.0 (approx.), Close Down.
- BRUSSELS (No. 1)**
I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, English Music on Gramophone Records: Brigg Fair (Delius); Suite, Summer Days (Coates); Valse-tte, Wood Nymphs (Coates). 12.30 p.m., Songs by M. Jours. 12.45, Organ Solos on Gramophone Records: Toccata and Fugue (Bach); Toccata from Symphony No. 5 (Widors). 1.0, Le Journal Parlé. 1.10, Tchaikovsky Concert by the Small Station Orchestra, conducted by Leemans; Jubilee March; Extracts from The Xtratracker; Character Dance; Romance in F Minor; Waltz from The Sleeping Beauty. 1.45, Suite pour mes amis and Bouton d'or (Pierne). 5.0, Glazunov Concert by the Symphony Orchestra, conducted by Mendelsohn; Carnival Overture; Spanish Serenade; Extracts from a Ballet Suite. 5.20, Programme for Children. 6.5, Literary Review. 6.15, Belgian Music on Gramophone Records. 6.30, Fifteenth Century Sacred Music by the Pro Musica Antiqua Society, an Instrumental Ensemble and Soloists; Alma Redemptoris (Dufay); Ave Maria (Ferezatti); Veni Sancte Spiritus (Dufay); Hosanna from the Mass, Se la Face ay Pale (Dufay); In tua memoria (de Lantino); Vozzine Bella (Dufay); Toti pulchra (de Lantino). 7.15, Weekly Report on the Catholic Radio Society and Film Review. 7.30, Review for Women. 8.0, Concert by the Symphony Orchestra, conducted by Mendelsohn. Soloist: M. Piette (Clarinet). Pictures from an Exhibition (Musorgsky); Rhapsody for Clarinet and Orchestra (Debussy); Suite, Mother Goose (Ravel). 8.45, Talk: The Youth of Germany. 9.0, Strauss Concert by the Radio Orchestra, conducted by Franz Andre; Waltz, Wine, Woman and Song; Overture, Die Flegelmaus; Waltz, Wiener Blut. 9.20, Gipsy Music: Potpourri of Hungarian Airs (Mantred); Two Czardas (Michiels); Czardas (Monti); Hungarian Potpourri (Padonck). 9.45, Piano-forte Improvisations. 10.0, Le Journal Parlé. 10.10, Request Gramophone Records. 10.40, Gramophone Records: Overture, Fidelio (Beethoven); Prix anglais, Last Movement to Schubert's Unfinished Symphony (Franck-Merrick). 10.55, Christus Vincit (Liszt).

ATHLONE
725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Programme for Children. 6.40, News and British Market Report. 7.0, Gache Talk. 7.15, Talk by Philip Ryan: The Manufacture of Cement. 7.30, Time Signal. 7.31, The Station Orchestra. 8.0, Tenor Solos by Victor Cole. 8.15, Revue by Eva Brennan and Company. 8.55, The Station Orchestra. 9.10, Mezzo Soprano Solos by Mary Maguire. 9.30, Violin Solos by Edith Kelly Lange. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA
E.A.J.I., 860 kc/s, 348.8 metres; 5 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. 10.5, Sponsored Programme. 10.30, Triangles—Musical Play in Two Acts (Vives). 12 Midnight (in an interval), News. 1.0 a.m. (Wednesday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—5.30 to 6.30 p.m., Popular Music on Gramophone Records. 8.0, Agricultural Notes, Tourist Report and Dopplavoto Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Concert. Overture, Otero conte di S. Bonifacio (Verdi); Nostalgia del passato (Sanfiori); Selection from Carmen (Bizet); Chanson sans paroles (Tchaikovsky). 9.15, The Three Graces—One-Act Comedy (Nicodemus). 10.5 (approx.), Mandoline Quartet. Overture, Il tratore del sepolcro (De Giovanni); Fiore audace (Borghese); Selection from Baccarolo Suppé; Carrillon d'amore (Puccini). 10.30, Popular Music on Gramophone Records. 10.55, News.

BASLE—See Schweizerischer Landessender.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 10 kW.—2.0 p.m., Gramophone Concert of Popular Music, relayed from Berlin (Witzleben). 3.0, Talk for Young People: Building a Boat. 3.30, Weather and Exchange. 3.45, Reading: Letters between Schiller and Goethe. 4.0, See Leipzig. 5.0, Talk for Women. 5.25, Topical Talk. 5.35, Song Recital by Greta Kleinert: Four Songs (Schubert): (a) Heimlich, (b) An eine Quelle, (c) Nacht und Träume, (d) Bei dir; Four Songs (Cornelius): (a) Vögelin fliegt dem Nestchen zu, (b) Mein Lied ist klein, (c) Zu dem Dutt, (d) Hirschlein ging an Wald spazieren. 6.0, Poetry Reading. 6.5, Piano-forte Recital by Winfried Wolf: The Twelfth Rhapsody (Liszt); Liebestraum (Liszt); Waltz (Volkmann); Moment musical (Schubert); Military March (Schubert-Tansig). 6.30, Political Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations. Part I.—See Leipzig. Part II.—Choral Music from Die Braut von Messina; Poems by Goethe and Schiller; Commemorative Programme from Schiller's House in Weimar. Part III. See Leipzig. 8.0, Orchestral Concert: Gavotte from Idomeneo (Mozart); The Praelud Suite (arranged Fingert); Turkish March (Mozart); Military March in D (Schubert); Turkish March (Beethoven); Serenade for Strings, Op. 48 (Tchaikovsky). 9.0, Talk: The Listener's Point of View. 9.30, See Stuttgart. 10.15, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Concert from Hamburg. 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 410.5 metres; 1.5 kW.—6.10 p.m., Review of Books. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmissions for all German Stations; Leipzig-Berlin (Deutschlandsender), Exchange Programme. 8.5, Announcement. 8.10, Reading (Müller-Parthenkirchen). 8.25, Topical Talk. 8.40, Dance Music from the Cafe Moka Elbe. 9.15, Recital by the Ely Ney Trio: Trio in B Flat, Op. 30 (Schubert); Trio in C Minor, Op. 101 (Brahms). 10.10, Weather, News and Sports Notes. 10.30 (approx.), See Hamburg. 12 Midnight (approx.), Close Down.

BERNE—See Schweizerischer Landessender.

BEROMUNSTER—See Schweizerischer Landessender.

BODEN—See Stockholm.

BODO—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—6.0 p.m., Educational Talk. 7.30, News and Exchange. 7.40, Programme for Women. 7.55, Lottery Results. 8.0, Topical Talk. 8.15, News. 8.30, Programme to be announced.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—5.20 p.m., Cello Recital by Greta Hahnová: Adagio and Toccata in C (Bach); Sonata, Op. 38, for Cello and Piano-forte (Brahms); Andante religioso, Op. 2 (Becker); Allegretto grazioso

boul (Fall); Aria from Figaro (Mozart); Liebestraum (Liszt-Somers); Chanson Villagoise (Popper); Capric vicinois (Kriesler-Tiersch); Selection from Victoria and her Hussar (Abraham). 8.0, Concert by the Radio Orchestra, conducted by Franz Andre; Bei der Zimmerkapelle (Meyer-Helmund); Four Viennese Pieces (Krieger); Suit orientales (Frémolby); Italian March (Rousseau); Waltz Potpourri (Robrecht); Les airs de Branon (Salabert); Selection from Nell Gwyn (Germann). 6.0, Light Music on Gramophone Records. 6.15, Talk: The Attempts to assassinate William the Silent. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans. 7.15, Talk on British Broadcasting. 7.30, Tourist Report. 8.0, Concert by the Radio Orchestra, conducted by Franz Andre; Overture, Banditenstreich (Suppé); Selection from Les cent vierges (Lecocq); Potpourri (Morano). 8.30, Reading. 9.0, Concert by a Symphony Orchestra, conducted by M. Mendelsohn; Napoli, from Impressions d'Italie (Cherpuin); Norwegian Dances (Grieg); Rondo capriccioso (Saint-Saens); The Duke of Alva (de Grieg); Ballet Music from Faust (Gounod). 10.0, Journal Parlé. 10.10, Dance Music on Gramophone Records.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Radio Orchestra. In the interval at 6.0, Radio Journal. 7.0, An Opera on Gramophone Records. 10.3, Radio Journal. 10.15, Talk: Romania.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 8.40 metres from 7.25 p.m. to 12 Midnight.—5.0 p.m., Viennese Song Recital, by Rados Hilda Beck with Schrammel Accompaniment. Drum in der Lobau (Stricker-Erkhardt); Song (Eysler-Budafsky); Es war einmal (Lancker); Das Lied der Frühling in Wien (Stolz); Das Lied vom schönen Mädel (Reinhardt-Landsberg-Stein); Das Lärcherl von Hemals (Ascher-Brauner-Grünwald); Mit dem Sch-Sch-Sch-Uberschätzung (Leopold-Peter and Orszalkpeter); Wiener Weisen and Riesen (Rektenwald). 5.45, Talk. 6.20, Piano-forte Recital by Andreas Petri, Pathetic Sonata (Beethoven); Nocturne in A Flat, Op. 32 (Chopin); Rhapsody in G Minor (Dohnanyi). 6.55, French Talk. 7.30, A Masked Ball—Opera (Verdi) from the Royal Hungarian Opera House. News in the interval. 12 Midnight (approx.), Close Down.

CASSEL—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Harald Andersen String Ensemble. 2.0 to 3.0, Interval. 3.0, Concert by the Margus Hansen Instrumental Ensemble; Overture, Der schatzspiel-direktor (Mozart); Suite No. 2 from L'Arlesienne (Bizet); Selection from Bellshazzar's Feast (Sibelius); Piedrotesse Dance (Sinigaglia); Selection from La elle Helene (Offenbach); Air from The Countess Mariza (Kálmán); Sketches from Russia (Fetras); Intermezzo from Suor Angelica (Puccini); Dance of the Hours from La Gioconda (Ponchielli). In an interval at 3.45 (approx.), Reading. 5.0, Programme for Children. 5.40, Exchange Quotations and Fish Market Prices. 5.50, Talk. 6.20, German Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk on Soviet Russia's Prison Laws. 8.0, Time Signal from the Town Hall. 8.1, The Gipsy Princess—Operetta in Three Acts (Kálmán), relayed from the Royal Theatre. 11.0 (approx.), News. 11.15 (approx.), Concert by the Jens Wany Dance Band, relayed from the Limb Restaurant. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK—See Athlone.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—12 Noon, Military Music on Gramophone Records. 12.30 p.m., News. 12.45, Chansonnettes. 5.30 to 7.0, Programme in English by the I.B.C. C. Danvers-Walker, T. St. A. Rowald and B. McNaught announcing. 6.30, Concert for Tenor and Euter Listeners. Overture, Die Fledermaus (Strauss); Slav Dance, No. 10 (Dvorak); Violin Solos: (a) Spanish Dance (Fald), (b) Tambourin Chinois (Krieger); Hungarian Dance, No. 2 (Brahms); Serenade (Muszkowsky); Waltz from The Sleeping Beauty (Tchaikovsky); Selection from I Pagliacci (Leoncavallo); Violin Solos: (a) Hungarian Dance, No. 5 in G Minor (Brahms), (b) La Capricieuse (Elgar); Scari Dance (Chaminade); March from Tambourin (Wagner). 6.15, Military Band concert for Plymouth and Devonport Listeners: Brabazon; By the Blue Hawaiian Waters; Bravest of the Brave; Coronation March; Entry of the Gladiators (Fueik); Concert Solos: (a) Carnival of Venice, (b) I Bacio; Bonnie Briar Bush; Father of Victory; Gavotte in B Flat

MAY 9th

TUESDAY

continued

News, Weather and Time. 1.15, Concert of Chamber Music on Gramophone Records. After the Concert, Exchange Quotations. 3.0, Programme for Children. 3.35, Economic Notes. 4.0, Concert by the Station Orchestra, conducted by Theodor Blumer; Overture, Die Zwillingbrüder (Schubert); Andante religioso, Op. 9 (Kloss); Symphonie Suite, Op. 1 (Niedel); Waltz from the Scherade, Op. 18 for Strings (Tchaikovsky); Bilder aus dem Osten, Op. 66 (Schumann); Three Rustic Dances (Schorlich); Wedding March, Als der Grossvater die Grossmutter nahm (Spohr). In the interval, 5.0 to 5.15, Savon Legends. 5.50, Weather, Time and Economic Notes. 6.0, A Thousand Years of German Literature: Seventeenth Century Drama. 6.20, Talk: The New German University Laws. 6.45, Programme to be announced. 7.0, Transmission for all German Stations. Schiller Memorial Programme. Part I—Overture, Coriolanus (Beethoven). Part II—See Berlin (Deutschlandsender). Part III—Last Movement from the Ninth Symphony (Beethoven) with Chorus. 8.0, The Seasons—Oratorio (Haydn) by the Leipzig Symphony Orchestra and the Singakademie Choir, conducted by Prof. Gustav Woldemuth. Soloists: Lotte Mäder-Wohlgemuth (Soprano), Anton Maria Röpitz (Tenor) and Rudolf Bockelmann (Bass). 10.5, News. 10.15 (approx.), Concert by the Dresden Ensemble. Soloist: Leo Wurmer (Pianoforte). Overture, Tancredi (Rossini); Italian Suite, Op. 49 (Kostal); Wanderer-Suite, Op. 16 (Kneemann); Die wunderlichen Geschichten des Kapellmeisters Kreiser (Reznicek); Waltz from Ritter Pasman (J. Strauss); Fourth Movement from the Divertimento, Op. 67 (Graener); Wiegenlied (Fidd); Waltz in Old Style (Burmeister); Liebesserenade (Zerunik); Amoreto (Bullerian). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LYONS

LA DOUA, 644 kc s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Programme to be announced. After the Programme, News Bulletin.

MADRID

ARANJUEZ, EAQ, 9,860 kc s, 30.43 metres; 29 kW.—11.30 p.m., Programme (not yet announced) arranged by the Spanish-American Radio Club.

MADRID

UNION RADIO, Call EAJ7, 707 kc s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, and Radio Journal, followed by Request Gramophone Records. In an interval at 8.30, Talk by Joaquin Espana Cantos. 9.15, News and Political Review. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes, Time Signal, and Political Review. 10.40 (approx.), Opera Music on Gramophone Records. Extracts from (a) Mignon (Thomas), (b) L'Heure espagnole (Ravel). 12.45 a.m. (Wednesday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc s, 263.8 metres; 11 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by J. Plichta. Part I—Selection from Eugene Onegin (Tchaikovsky); Dance Suite (Mracek). Part II—Dance Music. 5.10, See Prague. 5.50, Light Music on Gramophone Records. 6.0, Talk: Water Transport. 6.15, See Brno. 7.0, See Prague. 7.10, Talk: Steel Construction of Buildings. 7.25, See Brno. 8.30 to 11.0, See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 229 metres.—4.30 p.m., Concert, conducted by Erich Kloss. 5.35, Dialogue: The Bavarian Oriental Carpet Industry. 5.55, Talk: Aerial Defence in England. 6.15, Time, Weather, and Agricultural Notes. 6.30, Recital on Two Pianofortes by Ludwig Kusche and Ludwig Schmidmeier: Bilder aus dem Osten, Op. 66 (Schumann); Impromptu on a Theme from Schumann's Manfred, Op. 66 (Reinecke); Variations on a Theme of Schumann, Op. 23 (Brahms). 7.0, Transmission for all German Stations: Leipzig-Berlin (Deutschlandsender) Exchange Programme. 8.5, Military Band Concert, conducted by Georg Fürst; Festival Overture (Fürst); Themes from The Book of the Gods (Wagner); Fantasia, Aus Schuberts Skizzenbuch (Urbach); Overture, Der Regimentstambour (Rupprecht); Fanfare March, Der Gott, der Eisen wachsen liess (Brosse); March Potpourri, Alto Deutsche Trompe (Fraunzen); March, Ehre Wehr (Fürst). 9.0, Talk by Richard Kolb, Director of the Munich Station. 9.20, Symphony Concert by the Radio Orchestra, conducted by Ludwig Carl Mayer; Soloist, Lud-

ture (Götz); Romance and Polacca from the Clarinet Concerto (Weber); Spring Song (Sibelius); Selection from A Ballet Suite (Rager); Festival Day from the Suite, Spring (Strassner); A Spring Dream from the Suite, The Seasons (Palmgren); Waltz, Künstlerblut (Engelke); Selection from Light Cavalry (Suppe); Eidgenössischer Bundesfestmarsch (Kempfer).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres. 11.30 a.m., Concert by the Little Station Orchestra, conducted by Eugen Wilcken. Wedding-Marsch (Buettnier); Overture, Der Waldmeister (Joh. Strauss); Waltz, Faschingskrapfen (Schraummel); Trumpet Solo, Polka (Waldteufel); Burlesque for Clarinet and Harmonium, Die Gärtnerepredigt (Fueki); Selection from Boceocio (Suppe); Overture, Der Bittelstudent (Mil. Böcker); Waltz, Die ersten Gedanken (Lambert); The Lost Chord (Sullivan); Ich hab' a mal a Käuscherl g'habt (Kapeller); Selection from The Bird (Zeller). 1.5 p.m., Gramophone concert of Opera and Operetta Music. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Exchange quotations. 3.30, Programme for Children. 4.0 (from Danzig), Springtime and Love—concert by the Libertas Male Voice Choir and the St. Berthz Wind Instrument Orchestra. 4.30, Concert by the Little Station Orchestra, conducted by Eugen Wilcken. Jubel-Overtüre (Flotow); A Festival in Aranjuez (Demersseman); Waltz, Wiener Extrablätter (Translatour); Selection from André Chénier (Giordano); Zigeunerfest (Heykeus); Der tanzende Mond (Aubry); Suite, Reminiscences of Cairo (Arundola); Waltz, Hoch lebe der Tanz (Waldteufel); Selection from Paganini (Lehár). 5.45, Review of Books. 6.15, Market Prices. 6.25, Talk on Handicrafts. 6.50, Weather Forecast. 7.0, Transmission for all German Stations. Leipzig-Berlin (Deutschlandsender) Exchange Programme. 8.0, News. 8.5, Concert of Forgotten Operetta Music by the Little Station Orchestra, conducted by Eugen Wilcken, with Soloists. 9.40, News. 9.45, Siegfried von der Trenck reads from his own novel, Der Steir und die Krone. 10.15, Weather, News and Sports Notes.

HILVERSUM

296.1 metres; 20 kW. (7 kW up to 5.40 p.m.)—Programme of the Algemeen Vereeniging Radio Omroep (A.V.R.O.). 11.10 a.m., Organ and Soprano Song Recital. In the interval at 11.40, Talk on Cookery. 12.40 p.m., Time Signal. 12.41, Concert of Light Music by the Rentmeester Orchestra, with Gramophone Interludes. 2.55 to 3.10, Interval. 3.10, Light Music on Gramophone Records. 3.40, Talk for Women. 4.40, Cello and Pianoforte Recital by Harry Son and Egbert Veen. Sonata in G (Brevad). Après un Réve (Fauré). Sicilienne (Fauré). Mazurka in G (Popper). Village Song (Popper). 5.10, Concert by a Children's Choir. 5.40, Programme for Children. 6.10, Talk arranged by the Liberal Protestant Radio Society (V.P.R.O.). 6.40, Light Concert by Kovacs Lajos and his orchestra with Bob Scholte (Songs). 8.10, Talk: The Harz Mountains. 8.40, Time Signal. 8.41, News Bulletin. 8.45, Recital by Pierre Palla (Organ) and Henk Viskil (Songs). 9.40, Recitation. 10.0, Concert by the Station Orchestra, conducted by Nico Treep. Overture, Ruy Blas (Mendelssohn). Rondo for Violin and Orchestra (Schubert). Selection from Samson and Delilah (Saint-Saens). 10.40, Concert by a Male Voice Choir, conducted by P. Kallenbach. 11.0, Orchestral Concert (cont'd.). Radetzky March (Joh. Strauss). Selection from The Gelsia (Jones). Waltz (Morena). Algerian Scene (Ketelbey). March, Jahrmärkt-rummel (Lincke). Overture, Raymond (Thomas). March (Holzmann). In an interval at 11.40, News. 12.10 a.m., (Wednesday), Light Music on Gramophone Records. 12.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 3.5 kW.—12.55 p.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 12.55, Concert by the K.R.O. Sextet; En garde (Grüter); Pax in terra (Kenes); Waltz, Flattergeist (Jos. Strauss); Dance of the Dervishes (Benedli); Selection from La Gioconda (Ponchielli); Waltz (Dvorak); Gramophone Records; Russian Fantasia (Lustenhouwer); Song (Mendelssohn); Waltz, Dorfkind (Kalman); Air (Beese); March, Freiheitsmühl (Blankenburg). 2.25, Interval. 2.40, Programme for Women. 3.40, Popular Music on Gramophone Records. 4.10, Concert. R. Dijk-Debel (Songs); H. Cremers (Cello), and F. Boshart (Pianoforte). Sonata in G (Sammartini); Twelve Variations on a Theme of Handel (Beethoven); Songs (R. Strauss): (a) All mein Gedanken, (b) Traum durch die Dämmerung, (c) Die Nacht; Songs (Grieg): (a) Im Kahne, (b) Beim Sonnenuntergang, (c) Der Jäger; Elegy (Fauré); Allegro appassionato (Saint-Saens); Spanish Serenade (Grazzino); Andalusia (Grandos); Tarantella (Popper); Ave Maria (Kalno); Melody (Sigtenthorst-Meyer); Le garçon (Sigtenthorst-Meyer); Ninna-Nanna (Castlemore-Tedesco); Pavane; Clair de lune. 5.30, Popular Music on Gramophone Records. 5.50, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. 7.40, Police Report. 7.55, Popular Music on Gramophone Records. 8.5, Talk. 8.25, Talk. 8.40, Concert by the K.R.O. Orchestra, conducted by Woud. Overture, Russian and Lintilla (Glinka); Caprice Italien (Tchaikovsky); Danse macabre (Saint-Saens). 9.10, News. 9.15, One Act Radio Play. 9.55, Concert by the Zang en Vriendeschap Choir, conducted by K. Böhae. 10.25, Song Recital by A. F. Smoorsburg. Aria from I Pagliacci (Leoncavallo); Aria from A Masked Ball (Verdi); Petrus Klage (Boys). 10.40, Choral Concert (cont'd.). 11.15, Concert by the K.R.O. Orchestra, conducted by Woud. Overture, Carnaval romain (Berlioz); Gondola Song (Strauss); Waltz, Tales from the Vienna Woods (Joh. Strauss); Perpetuum mobile (Joh. Strauss). 11.40, Popular Music on Gramophone Records. 12.40 a.m. (Wednesday), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Report and Racing Notes. 8.10, Agricultural Talk. 8.20, Programme arranged by the Association des Amis de Radio Côte d'Azur. 8.35 to 12 Midnight, Radio Concert. In the interval at 9.0, Weather and News. 12 Midnight to 1.0 a.m. (Wednesday), Programme in English by the I.B.C. H. K. Hitecock announcing. 12 Midnight, Concert of Light Music: Trees (Rasbach); Shall my soul pass through Ireland (Molloy); Farewell my native Irish home (Biggs); Just once for all time, from Congress Dances (Heymann); Live, laugh, and love, from Congress Dances (Heymann); Sleep on (Offenbach); My Man (Adams); Stardust (Carmichael). 12.30 a.m. (Wednesday), Dance Music: Leave a little for me; How are you? How do you do, Mr. Brown? Let's all dance the Polka; I called to say Good-night; Till to-morrow; Street of Dreams; I may never pass your Way again. 12.57, I.B.C. Good-night Melody. 1.0 a.m. (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc s, 1,796 metres; 40 kW.; and Helsinki, 815 kc s, 368.1 metres.—6.15 p.m., Song Recital by Einar Keinänen. 6.40, Talk. 7.5, Cello Recital by Erkki Kihl. 7.30, Talk. 7.55, Military Band Concert, conducted by Lauri Näre. March, Mit Standarten (Blon); Waltz, Frühlingsstimmen (Joh. Strauss); Selection from The Gipsy Baron (Joh. Strauss); Kaiser-Walzer (Joh. Strauss); Kaiser Friedrich Marsch (Friedmann). 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Military Band Concert. Soloist: Sepp Summer (Songs to the Lute). Unsere Reichswehr (Blankenburg); Army March; Army March No. 126; March, Old Comrades (Teike); Unsere Garde (Förster); Potpourri of Soldiers' Songs (Heinemann); Badenwiller Marsch (Fürst); Songs to the Lute: (a) Wach auf, du deutsches Land, (b) Das Lied vom Helden, (c) Deutscher, bleib deutsch, (d) Feierliches Gelübde, (e) Wir gehn im Schritte (Sepp Summer); Bavarian Advance March (Secherzer); Army March No. 7; Potpourri of German Marches (Blankenburg); Vereinte Fahnen (Gabriel); Zum Städtel hinaus (Meisner); Stahhhelm-Lied. In the interval at 2.0, Announcements. 2.30, Sponsored Programme with Gramophone Records. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Educational Talk. 4.20, Notes on the Broadcasts for Schools. 4.30, Violin and Pianoforte Recital: Sonata in G, Op. 96 (Beethoven); Sonata in F (Mozart); Sonatina in G Minor (Schubert). 5.50, Reading from the Works of Johann Peter Hebel. 6.0, Talk: German Savings-Banks. 6.20, Italian Lesson. 6.45, Weather, Time, Exchange, and Sports Notes. 7.0, Transmission for all German Stations—Berlin-Leipzig Exchange Programme. 8.0, News Bulletin. 8.5, Concert by the Small Station Orchestra conducted by Eysoldt. 8.50, Die Jugendluft-Musical Radio Sequence (Heinz Vollmer). 10.5, News and Sports Notes.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.0 p.m.,

(Handel); Sambre et Meuse. 7.0, Radio Gazette. 7.20, Local News. 7.30, The Listeners' Half Hour and News. 8.15, Talk. 8.30, Concert relayed from Le Havre. 10. till Close Down Programme in English by the I.B.C. 10.0 Dance Music by the Ibcians. It's great to be in love; I idolise my Baby's Eyes; Flame of desire; You call it madness, but I call it love; Mona Lisa; You try somebody else; By the Fireside; Ecstasy; I'm sorry, dear; Falling in love again; One little quarrel; Life is just a Bowl of Cherries; The Song of the Islands; Bend down, Sister; Save the last Dance for me. 11.0, Music by a Tango Band; Mariette; La Comparsita; Little Lady; Corazon; Plegaria; Todavia; Madrid; Adios Juventud. 11.30, Songs: Asleep in the deep (Lamb); In Cellar Cool (Traditional); Orchestra: The Phantom Brigade (Myddleton); The Dye ken John Peel (Traditional); The Maxwell Hunt (Cotton); Xylophone Solo, Goby Fishes (Kroeger); The Storm-flood (Weatherley); The Mighty Deep (Ande). 12 Midnight, Club Concert for Padstow and Newport Listeners. Ma Only-Loved Baby; (Chissam); Two Indian Love-Lyrics (Woodford-Finden): (a) Temple Bells, (b) Less than the Dust; On Wings of Song (Mendelssohn); Melody in F (Rubinstein); Two Indian Love Lyrics (Woodford-Finden): (a) Kashmiri Love Song (b) Till I Wake; Gavotte from Mignon (Thomas); Orientale (Cini); I pitch my Lonely Caravan at Night; Somebody, Somewhere, Someday; Molly on the shore (Grainger); Cherry Ripe (Traditional); My Dreams; At Dawning (Cadmian); Evensong (Easthope Martin). 1.0 a.m. (Wednesday), Hawaiian Duets: Alma Mia (Whidden); Bone Festa (Traditional); Good-night Sweetheart (Noble); O Solo Mio (Traditional); Hawaiian Twilight (Traditional); Sing Something Simple (Hupfeld); Kamehameha (Traditional); Hawaiian Medley (Traditional). 1.30, Songs and Orchestral Music. Songs: (a) Just an Old Refrain, (b) Just you, Just Me, (c) In the Still of the Night; Great Day; Songs: (a) Waiting by the Silvery Rio Grande, (b) Love Me; (c) The Kiss Waltz. 2.0, Dance Music by the Ibcians; Somebody Stole my Gal; So Ashamed; Here's Hoping; Southern Serenade; The Wise old Owl said I too; What more can I Ask; Love Tales; Brighter than the Sun; Strange Interlude; Me Minns You; I guess I'll have to Change my Plan; Same Old Moon; Brother can you spare a Dime; I'll never have to Dream Again. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc s, 259.3 metres; 17 kW.; Cassel, 1,220 kc s, 246.9 metres; and Trier, 1,157 kc s, 259.3 metres.—4.30 p.m., See Munich. 5.50, Economic Notes. 6.0, Talk: Men and Women Land Workers. 6.15, Talk: May Anxieties in the Rhinish Wine District. 6.30, Talk: The Spirit of the Past and Present. 6.55, Time, Programme Announcements, Weather, and Economic Notes. 7.0, Transmission for all German Stations: Leipzig and Berlin (Deutschlandsender) Exchange Programme. 8.0, Duets: Concert by the Frankfurt Teachers' Choral Society, conducted by Fritz Gamble. Folk Songs for Women's Choir and Pianoforte, Op. 44: (a) Minnelied, (b) Die Müllerin, (c) Der Bräutigam, (d) Fragen; Folk Songs for Male Voice n-ensemble Choir: (a) In stiller Nacht, (b) Barcarolle, (c) Wach auf, Mein! Herzensschöne, (d) Schöner Augen schöne Strahlen, (e) Dort in den Weiden, (f) Marschieren; Song for Women's Choir, Op. 17, with Harp and Horn Accompaniment: (a) Es tönt ein voller Harfenklang, (b) Der Gärtner, (c) Gesang auf Pingsal. 8.45, E.T.A. Hoffmann in Bamberg—Radio Play (Walter Best). 9.30, See Stuttgart. 10.15, Time, News, Weather, and Sports Notes. 10.45, See Stuttgart. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

CLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse). 806 kc s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc s, 227.4 metres; Hanover, 530 kc s, 566 metres; and Kiel, 1,292 kc s, 232.2 metres.—5.55 p.m., Song Recital by Bruno Ecko. 6.25, A Mid-night Scherzo—A Musical Radio Scene (Ernst Johansen and Walter Girnatis). 6.45, Frankfurt Exchange and Hamburg Egg Prices. 6.50, Weather Report. 7.0, Transmission for all German Stations: Berlin (Deutschlandsender) and Leipzig Exchange Programme. 8.0, I quattro Rusteghi Opera in Three Acts (Wolf-Ferrari), relayed from the Municipal Theatre, Lübeck. In the interval at 8.50, News; and at 9.30, Time and News. 10.15, Topical Talk. 10.30, Concert by the Hamburg Philharmonic Orchestra, conducted by José Eibenschütz; Soloist: Valentin Grimm (Clarinet); Spring Over-

MAY 9th

TUESDAY

continued

wig Schmidmeier (Pianoforte); Variations on a Theme of Haydn (Brahms); Burlesque for Pianoforte and Orchestra (R. Strauss); Symphony in D (Mozart). 10.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,063 metres; 60 kW. Relayed by Fredrikstad, 820 kc s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc s, 447.1 metres; Porsgrund, 652 kc s, 453.2 metres; and Rjukan, 671 kc s, 447.1 metres.—5.0 p.m., Popular Music on Gramophone Records. 6.0, Two Talks for Housewives: (a) Playgrounds for Children, (b) Spring Cleaning. 6.45, Popular Melodies by Jørgen Strömstad (Accordion). 7.0, Announcements, Weather, and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Talk: The Second Internationale, 1889-1914. 8.30, Concert by the Station Orchestra, conducted by Hugo Kramm; March (Borç); Overture, Les Dragons de Villars (Mallart); Polpourri (Vingar); A Tear (Mussorgsky); Spinning Song (Mendelssohn); Two Melodies (Kjerulf); Selection from La Vie Parisienne (Offenbach); Waltz, Donaugen (Fück); Festtog kommer (Reiderson). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Song Recital.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW. 8.0, Dipolavoro Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Popular Music on Gramophone Records. In the interval at 8.30, Time Signal and Announcements. 8.45, Concert of Opera Music. Conductor, F. Russo. In the intervals, Sports Talk and News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 21.26 p.m. (Preliminary and Call Signals). 6.45 p.m., Theatre Review. 7.0, News. 7.15, Weather Report. 7.25, Le Journal Parlé. 8.50, Programme to be announced.

PARIS

POSTE PARISIEN, 911 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Sponsored Concert with Gramophone Records. 8.0, Film Review. 8.5, Talk on the Circus. 8.15, Interval. 8.30, Popular Music on Gramophone Records. 8.45, Interval. 9.0, Concert of Romanian, Czech, and Yugo-Slav Music by the Yadrin String Quartet and the Station Orchestra, relayed from the Gayvan Hall, Conductor: Theodore Mathien. Soloist: Pia Vgy (Songs). 10.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd). 7.45, Gramophone Records; Chanson Louis XIII (Cuiperin-Kreischer); Tambourin (Rameau); Gavotte (Popper); Passetepied (Destouches-Dandolot). 8.0, Press Review and Weather. 12 Noon, Concert by the Kretzly Orchestra; Overture, Tutti in maschera (Poderici); Ballet Music from The Seasons (Massé); Mignette (Missa); Selection from Le Roi d'Yves (Lalo); Ballet Music from La Source (Debussy); Selection from Le roi m'aideré lui (Chabrier); Ballet Music from Cinderella (Massenet). 1.0, Exchange, News, and Weather. 1.5, Pianoforte Recital by Simone Lamé; Prelude from the Suite for Pianoforte (Debussy); Scherzo in B Minor (Chopin); Jardins sous la pluie (Debussy); La Campanella (Paganini-Liszt). 1.30, Exchange. 1.35, Concert by the Kretzly Orchestra (cont'd); Finale from The Queen's Symphony (Haydn); Overture, Euryanthe (Weber); First Movement from a Trio (Frank); Entr'acte from Manfred (Schumann); Hungarian Dances (Brahms). 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Elementary English Lesson. 6.10, Agricultural Talk. 6.30, Advanced English Lesson. 6.50, Theatre Review. 7.5, Talk on Art. 7.20, Concert by the Kretzly Orchestra; Four Old Dances (Vidal); Venetian Serenade (Pierne); Elogue (Rahaud); French March (Saint-Saëns). 7.45, Commercial Prices and News. 8.0, Variety Programme arranged by Paul Weill. 8.30, News and Weather. 8.40, Review by Pierre Seize. 8.45, Gramophone Records; Tu n'es qu'un souvenir (Lemoir-Sarvil); Folie (Cazes); La Chanson des Bies d'Or (Doria-Soubise); Piece. 9.0, Old Papa-Operetta in Three Acts (Yvain), relayed from the Théâtre des Nouveautés.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 980 kc/s, 306 metres; 25 kW. Relayed by W9XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Programme to be Announced. 8.45, Congress of Clubs Period. 9.0, Teaberry Baseball Scores. 9.5, Business News. 9.15, Selma Brandt (Pianist). 9.30, Weather and Market Reports. 9.45, Programme to be Announced.

10.0, Teaberry Baseball Scores. 10.5, Programme to be Announced. 10.15, Dick Dating, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Programme to be Announced. 11.15, Time and Weather. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Vick's Songs Weavers. 11.35, Riggs and Moke. 11.45 to 12.45 a.m. (Wednesday), New York Relay. 11.45, Today's News, by Lowell Thomas. 12 Midnight, Popsolent Amos 'n' Andy. 12.15 a.m., National Advisory Council on Radio in Education. 12.45, Programme to be Announced. 1.0 to 3.15, New York Relay. 1.0, Eric Crime Clues. 1.30, Time, Talk on Stratospheric Research. 8.15 (from Berne), Musical Programme. 8.45, Concert of Light Music by the Station Orchestra. 9.20, A Visit with the Microphone. 9.30, Weather and News. 9.40 (from Berne), Folk Songs of Western Switzerland. 10.15 (approx.), Close Down.

PORSGRUND.—See Oslo.

POZNAN

896 kc s, 335 metres; 1.9 kW.—6.0 p.m., Talk: Customs, Rites and Proverbs. 6.15, Light Music on Gramophone Records. 6.40, Agricultural Talk. 6.45, Theatre Notes and Programme Announcements. 6.50, Miscellaneous Announcements and News. 7.10, Book Review. 7.28, Time Signal. 7.29 till Close Down. See Warsaw. In the interval, Time Signal, Sports Notes, and Police Announcements.

PRAGUE

614 kc s, 488.6 metres; 120 kW. 4.10 p.m., See Moravská-Ostrava. 5.10, Talk on Economics. 5.20, Czech Lesson for Germans and German Lesson for Czechs. 5.50, Variety Music on Gramophone Records. 6.5, Agricultural Market Prices. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: An Opera (Kvasal). 7.0, Chimes. 7.1, News Bulletin. 7.10, Talk: Economic Problems. 7.25, See Brno. 8.50, The King of Slaves Play in Three Acts (Kubka). In the interval at 9.0, Time Signal. 10.0, Time Signal. 10.1, News Bulletin. 10.15, Concert of Contemporary Music by the Station Orchestra, conducted by O. Jeremias; Soloist, Karel Reiner (Pianoforte); Symphony (Vutěškovitch); Concerto, Op. 13, for Pianoforte and Orchestra (Reiner). 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Geneva, 395 kc s, 760 metres. 6.30 p.m. (from Geneva), English Lesson. 7.0, Weather and News. 7.20 (from Geneva), Answers to Correspondence. 7.30 (from Geneva), Concert of newly released Gramophone Records. 9.0, Concert by the Radio-Suisse Romande String Orchestra. 10.0, News and Weather. 10.10 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc s, 441 metres; 50 kW. Relayed by Naples, 941 kc s, 319 metres; and 2RO, 11,180 kc s, 25.4 metres. 1.2 to 2.15 p.m., Concert of Variety Music. In the interval from 1.30 to 1.45, Exchange and Giornale Radio. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Orchestral Concert; Happy Jazz (Borgato); Bianda svedese (Cortopassi); Mattina borentina (Cubotta); Chiaro di luna (Barzizza); Selection from Manon Lescaut (Puccini); Annunace Duce (Hamud); Pattuglia in ronda (De Furo); Piano piano (Simi). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural Report and Dopplavoro Notes. 7.10, Lesson in Morse. 7.20, Giornale Radio. 8.0, Time and Announcements. 8.2, Talk on Astronomy. 8.15, Song Recital by Nadia Paggioli (Soprano) and Maria Meloni (Mezzo-soprano). 8.30, Giornale Radio and Sports Notes. 8.45, Extract from L'Amica Fritz (Mascagni). 10.0, Il cavallino rosso. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports. 12 Midnight to 2.0 a.m. (Wednesday), New York Relay. 12 Midnight, Black-bone Plantation. 12.20 a.m., Wayne King's Orchestra. 1.0, Ben Bernie's Orchestra. 1.30, Ed Wynn and the Fire-Chief Band. 2.0, Symphony Orchestra, from New York, followed by Programme Re-um.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc s, 459 metres; 60 kW; Basle, 1,229 kc/s, 244.1 metres; and

Berne, 1,220 kc s, 245.0 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. Weather and News. 12.40 (from Zurich), Concert of Light Music by the Station Orchestra. 1.35 (from Zurich), Weather and Exchange. 1.40 (approx.) to 3.30, Interval. 3.30 (from Berne), Popular Music on Gramophone Records. 4.30 (from Zurich), Concert by the Small Orchestra. 5.0 (from Zurich), Popular Music on Gramophone Records. 5.30, Weather. 5.35 (approx.) to 6.20, Interval. 6.30 (from Berne), Programme to be announced. 7.0 (from Berne), Time, Weather and Notes on the Broadcasts for Schools. 7.15 (from Berne), Concert of Old Music. 7.45 (from Berne), Talk on Stratospheric Research. 8.15 (from Berne), Musical Programme. 8.45, Concert of Light Music by the Station Orchestra. 9.20, A Visit with the Microphone. 9.30, Weather and News. 9.40 (from Berne), Folk Songs of Western Switzerland. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

639 kc s, 436 metres; 55 kW. Relayed by Boden, 244 kc s, 1,229.5 metres; Göteborg, 932 kc s, 322 metres; Hörby, 1,160 kc s, 257 metres; Motala, 221.5 kc s, 1,354.4 metres; Östersund, 389 kc s, 770 metres; and Sundsvall, 554 kc s, 542 metres.—5.5 p.m., Programme for Children, relayed from Malmö, 1,501 kc s, 231 metres. 5.30, Concert of Light Music. 6.30, Talk on Riding. 6.45, Elementary French Lesson, from Malmö. 7.15, Weather and News. 7.30, Talk. 8.0 (from Göteborg), Concert of Chamber Music, conducted by Tor Mann; Soloist, Carl Tillius (Pianoforte); Concerto for Strings, Oboes, Bassoon, and Horn (Händel); Pianoforte Concerto, No. 2 in C (Haydn); Five Legends (Sjögren); Serenade for Strings, Op. 55 (Trunk). 9.0, Literary Review, from Malmö. 9.30, Andante with Variations, Op. 46, for Two Pianofortes (Schumann). 9.45, Weather and News. 10.0, Gramophone Records of Popular Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc s, 345 metres; 11.5 kW.—11.30 a.m., Light Music on Gramophone Records. 12 Noon, Orchestral Concert, conducted by Maurice de Villers. Part I: Grieg Music. Part II: Viennese Music. In the interval at 12.45 p.m., News, and at 1.0, Time and Exchange. 2.0 to 4.45, Interval. 4.45, Talk on Avignon. 5.0, Concert of Jazz Music, conducted by Roskam. 6.0, History Talk in French. 6.15, Topical Talk in French. 6.30, Orchestral Concert, conducted by Roskam; Marche sportive (Popy); Puppenwalzer (Bayer); Hymn to the Sun (Rimsky-Korsakov); Hindu Song (Rimsky-Korsakov); Overture, Miss Cravache (Ponzet); Selection from La Traviata (Verdi); Italian Serenade (Montred); Spanish Serenade (Chaminade); Love's Dream after the Ball (Czibulka); Selection from Elle est à vous (Vvain). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, and Lottery Results. 8.30, Programme relayed from Paris (Eiffel Tower). After the Programme, Press Review in French. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc s, 360.5 metres; 60 kW; and Freiburg, 527 kc s, 570 metres.—12 Noon, Popular Music on Gramophone Records. 1.15 p.m., Time, News, Weather, and Programme Announcements. 1.30, Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0, Talk on Flowers. 3.30, Talk for Women. 4.0 to 4.30, Interval. 4.30, Concert from Munich. 5.45, Time, Weather and Agricultural Notes. 6.0 (from Freiburg), Talk: The Methods of Swindlers. 6.25, Talk for Workers; Business References. 6.50, Time and News. 7.0, Transmission for all German Stations. Berlin (Deutschlandsender) and Leipzig Exchange Programme. 8.0, Johann Strauss Concert, conducted by Gustav Gürlich; Waltz, Ich bin dir gut; Amnen-Polka; Waltz, Trau, schau, wem; Polka, Unter Donner und Blitz. 8.45, See Frankfurt. 9.30, Concert of Swabian Folk Music, by the Station Choir and Orchestra, conducted by Gustav Gürlich; Soloists, Heinz Mönch (Zither) and Fritz Mühlentz (Accordion); Commentary in German and English by Martin Lang. 10.15, Time, News, Weather and Programme Announcements. 10.45, Serenade, conducted by Harry Risch; Soloist, Hans Hams (Tenor). 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire. 7.30 p.m., Military Music. 7.45, Songs from Operas. 8.0, Viennese Music. 8.30, Popular Music. 8.45, Cello Solos. 9.0, Concert by the Toulouse

Symphony Orchestra, conducted by M. Tartanac. In the interval, Light Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Instrumental Solos. 11.15, Popular Songs. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.20, Song and Dance Programme; Underneath the Archos (Plaganini); I'll always be true (Benatzky); Life's Desire (Evans); Sweet Sixteen (Gilbert); We just couldn't say Goodbye (Woods); If you should ever need me (Barke); Goodnight Sweetheart (Noble); The Clouds will soon roll by (Brown). 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.15 a.m. (Wednesday), Orchestral Music. 12.15, Instrumental Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc s, 247.7 metres; 10 kW. 5.15 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc s, 331.5 metres; Genoa, 605 kc s, 312.3 metres; and Florence, 599 kc s, 500.8 metres.—5.15 to 6.10 p.m., Dance Music from the Savoy, Milan. 6.35, Giornale Radio and Agricultural and Dopplavoro Notes. 7.0, Time, Report of the Royal Geographical Society, and Gramophone Records of Light Music. 7.20, Giornale Radio. 7.45, Gramophone Records (cont'd). 8.0, Announcements, Giornale Radio, Weather, and Popular Music on Gramophone Records. 9.0, Variety Programme. 10.0, Talk. 10.15, Dance Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc s, 19.81 metres (Morning) and 5,959 kc s, 50.26 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Information in English. 3.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc s, 352.1 metres; Innsbruck, 1,058 kc s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc s, 245.9 metres; and Salzburg, 1,373 kc s, 218.5 metres.—5.25 p.m., Gramophone Concert of Opera Music. 6.5, Agricultural Talk. 6.30, French Lesson. 7.0, Or. the Blue Danube—Concert by the Josef Holzner Orchestra. Soloist: Hans Skriwanek (Tenor); Waltz, The Blue Danube (Joh. Strauss); Song, Da draussen in der Wachau (Ernst Arnold); March, Dinstigter Weinlaub (Kronegger); Song from Der Fremdenführer (Zielner); Gavotte (Hollmüller); Pestiherzogin (Lanner). 7.30, Time, Weather and Programme Announcements. 7.35, Concert (cont'd). 8.0, Polpourri, Wiener Spaziergänge (Kronke); Song from Das Spitzentüchel der Königin (Strauss); Song, Im Prater blühen wieder die Bäume (Gst. J.); March, Linzerische Rnatura (Drescher); Waltz, Donauweibchen (J. Strauss); March from Der heile See (Reinhardt). 8.15, Topical Talk. 8.30, Talk: The Austrian Landscape. 8.55, Vilhelm Kienzl Concert by the Vienna Symphony Orchestra, conducted by the Composer and Karl Auerbach; Soloist, Erise Brax (Contralto) and Margarethe Kolbe-Jüllig (Violin). Don Quixote, phantastischer Ausritt und seine Irrzüge (Kunze); from Don Quixote; Contralto Solo: An der Schiff; Symphonie Variations of a Song from Der Kohlegrube; Finale from Sauti-ssimmo, Op. 102; Three Songs; (a) Die Einsamkeit in Herbst; (b) Sandmännchen; (c) Alai, Suite in Dance Form, Op. 21, No. 1. 10.10, News and Weather. 10.25, Concert of Variety Music from the Oasis Dance Hall.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Light Music on Gramophone Records. 1.20, Weather Report. 1.25 to 3.10, Interval. 3.10, Miscellaneous Announcements, Economic Report, Aviation Report and Anti-Gas Drill. 3.35, Book Review. 3.50, Popular Music on Gramophone Records. 4.25, Talk for Teachers. 4.40, Talk: Patriotism in our Times. 5.0, Symphony Concert by the Philharmonic Orchestra, conducted by Dr. Wolfstal; Soloist, Mme. Umińska (Violin); Overture, Kalmora (Kurpiński); Violin Concerto (Mozart); Scenes pittoresques (Massenet). 5.55, Programme Announcements. 6.0, Light Music from the Gastronomie Café. 6.45, News. 6.50, Miscellaneous Announcements. 7.10, News for Farmers. 7.20, Radio Journal. 7.30, Quo Vadis?—Opera (Jean Nougues), relayed from the Grand Theatre. In the first interval, Music, Talk from Lwów, 788 kc s, 381 metres. In the second interval, Sports News, Radio Journal, Aviation Weather Report, and Police Notes. In the third interval, Reading (Kader-Bandrowsky).

ZURICH.—See Schweizerischer Landessender.

THE
**WIRELESS
ENGINEER**

AND
EXPERIMENTAL WIRELESS
*The Journal of Wireless Research
and Progress*

"THE WIRELESS ENGINEER" is published in the interests of professional wireless engineers, experimenters, and all keen radio enthusiasts, and is widely read by those who are intimately associated with wireless development.

A valuable monthly feature consists of a summary, under the title of Abstracts and References, of important articles appearing in technical wireless publications throughout the world.

Principal Contents in MAY Issue

THE SIMPLIFICATION OF ACCURATE MEASUREMENT OF RADIO-FREQUENCY. *By W. H. F. Griffiths, F.Inst.P., A.M.I.E.E.*

AUTOMATIC VOLUME CONTROL FOR RADIO RECEIVERS. *By C. B. Fisher.*

A WAVEMETER WITH ALTERNATIVE CLOSE AND OPEN SCALES.

THE BALANCING AND STABILISING OF HIGH-FREQUENCY AMPLIFIERS. *Abstract of a Paper read before the Wireless Section I.E.E. by W. Cree, B.Sc., E. J. Grainger, M.Sc., A.M.I.E.E., and H. R. Cantelo, M.Sc.*

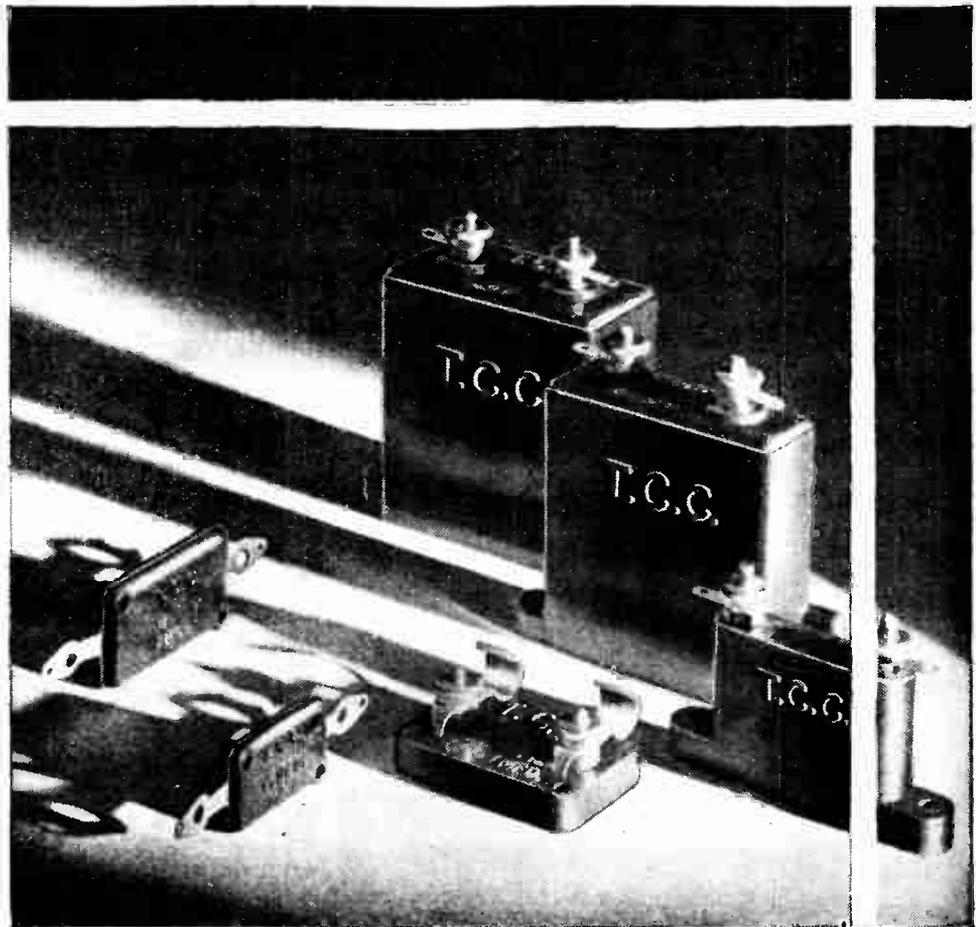
Abstracts & References and Some Recent Patents

MONTHLY 2s. 6d. NET

Subscription: 32s. per annum, post free

ILIFFE AND SONS LTD

DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1



T.C.C. means
SAFETY
ALWAYS



Research — intensive concentrated research — Creating the means to solve the ever present problems of Radio — Rejecting all but what experience has found 100% right. That is the job of the vast T.C.C. organisation—that is why none but the perfect product finds its way to the storeroom. But even more, that is why T.C.C. spells SAFETY at all times. Throughout the world the "condenser in the green case" is synonymous with condenser efficiency—whatever the need there is a T.C.C. to fulfil it—adequately—the reason for the choice of T.C.C. by all the leading set designers.

THE SPECIFIED
CONDENSERS FOR THE
"A.C. SHORT WAVE
CONVERTOR"

2-001-mfd.	Price each 3/-
(1,000 v. D.C. Test Type)	
3-001-mfd. type 34	Price each 1/6
2-00005-mfd. "	31 " " 1/3
4-01-mfd. "	34 " " 3/-
2-4-mfd. "	61 " " 5/6
1-4-mfd. "	80 " " 7/-

T.C.C.
ALL-BRITISH
CONDENSERS

The Telegraph Condenser Co. Ltd.
Wales Farm Road, N. Acton, London, W.3

FOURTH EDITION
HANDBOOK
of
**TECHNICAL
INSTRUCTION**
for

Wireless Telegraphists
By

H. M. DOWSETT, M.I.E.E., F.Inst.P., M.Inst.R.E.E.
Author of "Wireless Telegraphy and Telephony," etc.

THIS work constitutes a complete text-book for the use of wireless telegraphists and provides a full theoretical course for the P.M.G. certificate.

Twenty-six Spark and Valve Transmitters are described, and thirty-three Receivers and Direction Finders.

A leaflet giving synopsis of chapters and other particulars will be sent on request.

PRICE

25/- net. By post 25/9

From all leading Booksellers
or direct from the publishers:

ILIFFE & SONS LTD.

Dorset House, Stamford St., London, S.E.1
W.W.96.

THE NEW "3 IN 1" INSTRUMENT

1 SUPERHET RADIO 7 VALVES



2 ELECTRICALLY REPRODUCING GRAMOPHONE

3 IMPROVED AUTOMATIC RECORD-CHANGE

THIS complete "3 in 1" home entertainer gives you:

FIRSTLY, seven-valve radio employing a superheterodyne circuit and variable mu valves, with the extended range, complete freedom from overlap and "background," and that extraordinarily high degree of selectivity this means.

SECONDLY, an electrical gramophone, as simple to turn on as electric light, and which reproduces your own records electrically.

THIRDLY, the latest improved type of automatic mechanism to play eight records without any attention, or to repeat one record indefinitely.

Reproduction on both radio and gramophone is through an electromagnetic moving coil speaker giving a tone absolutely "true-to-life." There is nothing experimental about this model. Its thorough reliability has been proved over a period of many months before introduction.

The cabinet work is particularly noteworthy. It definitely acknowledges that radio is a new thing, and must be treated newly. In basic principles the design recognises the soundness of past craftsmanship, but new thought is apparent in the clean lines, the contrasting of exquisite grainings, and the absence of dust-catching mouldings. And because sound is influenced by cabinet design, this Autoradiogram has combined much thought, scientific skill and art in achieving "true-to-life" tone quality—for after all, the sole object of the instrument is to please the ears.

This is but a brief description of "His Master's Voice" newest radio-gramophone. You will find below the illustration a more detailed specification. But to appreciate this model fully, you must see, examine, and hear it for yourself at any "His Master's Voice" dealers.

IN ONE SIMPLE
INSTRUMENT

all for **55** GNS.

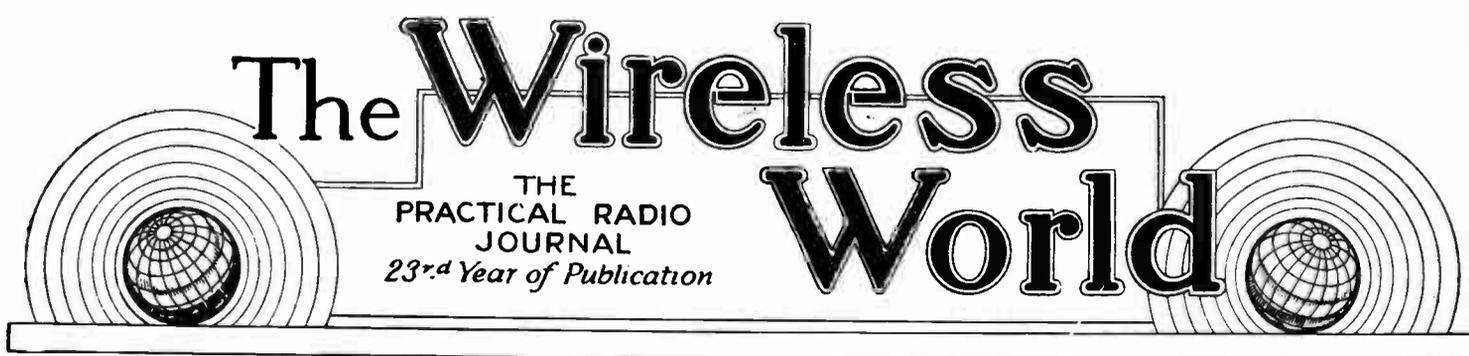


SPECIFICATION

"His Master's Voice" Superhet Autoradiogram Seven, Model 524:

Circuit. Seven-valve superheterodyne; all mains. Three band-pass circuits employed. Variable mu valves. **Tuning** by specially compensated 4-gang condenser. **Brilliance control** to adjust tone. **Three control knobs only:** tuning, volume and master switch. **Calibrated wavelength scale**, illuminated and giving the names of principal stations opposite their wavelengths. **Automatic record-changing mechanism**, giving continuous record programme of half-an-hour or more, with eight ten or twelve inch records, or repeat one record indefinitely. No pre-selling necessary. Push button rejects any record at will. For A.C. or D.C.

"HIS MASTER'S VOICE"



No. 714.

FRIDAY, MAY 5TH, 1933.

VOL. XXXII. No. 18.

Proprietors: ILIFFE & SONS LTD.

Editor:
HUGH S. POCOCK.

Editorial,
Advertising and Publishing Offices:
DORSET HOUSE, STAMFORD STREET,
LONDON, S.E.1.

Telephone: Hop 3333 (50 lines).
Telegrams: "Ethaworld, Watloo, London."

COVENTRY: Hertford Street.

Telegrams: "Cyclist, Coventry."
Telephone: 5210 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.

Telegrams: "Autopress, Birmingham."
Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester."
Telephone: Blackfriars 4412 (4 lines).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 rs. 8d.; Canada, £1 rs. 8d.; other countries abroad, £1 3s. 10d. per annum.

As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp. 1—XXIV	
Editorial Comment	315
Practical Short-wave Reception ..	316
Unbiased	320
Tone Control Output Unit	321
News of the Week	323
The Pentode Output Valves	321
Practical Hints and Tips	326
Broadcast Brevities	327
R.G.D. Supersonic Radio Gramophone	328
Letters to the Editor	330
Laboratory Tests on New Apparatus	331
Readers' Problems	332

EDITORIAL COMMENT

Keep Politics Out of Lucerne

THE Lucerne Conference has before it a difficult task—that goes without saying—but whether or not the task which the Conference has set itself is an impossible one, remains to be seen. More than any of its predecessors, this Conference will find itself confronted not with a purely technical problem, but with questions of international politics so involved that the technical considerations may seem subsidiary by comparison.

The nations of Europe tend to become more national in character and to attach greater importance than ever before to broadcasting as a means of national, and perhaps extra-national, propaganda.

The Madrid Conference had broadcast interests represented, although Madrid was concerned with communications as a whole, broadcasting forming only a part of the deliberations. At the Madrid Conference, however, the question of power and range of broadcasting stations was discussed, and provision was made for limitations of power and the choice of the sites remote from frontiers for high power stations, with the object of restricting broadcasting within the limits of a national service, and so meeting the objections which have been put forward against the trespass of high-power transmitting stations over the frontiers and into the service areas of the transmitters of neighbouring nations.

But surely the delegates at Madrid cannot, even at the best, have left the Conference with more than a pious hope that their deliberations on this subject might tend to delay increases of power and trespass over frontiers. It is inevitable that if stations in

Europe are put up with the intention that they should give a service area in their own countries for reception with simple sets, then those same transmissions will be receivable at much greater distances with sets of a more sensitive character.

The task at Lucerne should be, we believe, to take whatever steps are possible to prevent interference with the reception of national stations by the transmitters of other nations, but beyond this we do not consider the Lucerne Conference should venture to dictate.

A Clearly Defined Task

It should not be the concern of a technical broadcasting conference to try to contrive, by technical adjustment of power and location of transmitters, to overcome a menace which some nations see in propaganda transmitted by their neighbours. If this problem has to be tackled it should not be left to technical or administrative representatives of broadcasting organisations to deal with it. Their task should be confined to giving us the best possible plan for distribution of broadcasting stations in Europe, so that transmissions can take place with the minimum of mutual interference and provide the widest choice of stations from which listeners can select programmes.

Interest in wireless reception is bound to grow in proportion as the variety of programmes increases. Broadcasting is dependent for its popularity upon music, and music is international, so that an increase in the number of transmitters of high power can have no other effect than to increase the popularity of listening.

The delegates to Lucerne should devote their energies solely to devising the best means of increasing the efficiency of the broadcasting services of Europe.

Practical Short-wave Reception

Receiving Circuits for Wavelengths Down to 2 Metres

By C. C. WHITEHEAD

*I*N last week's issue the author discussed the various circuits which had been evolved for transmitting at a wavelength as short as 5 centimetres, and in this article practical data are given for reception on ultra-short waves. Although many complicated circuits have been tried, it is interesting to note that some of the simple arrangements such as the reacting detector and the Hartley circuit prove to be among the most efficient.

THERE has been for a few years now a growing interest in work with short and ultra-short wavelengths. The characteristics of waves of the order of 15 metres and upwards are by now well known, and these waves are in extensive use commercially, and fairly popular in amateur circles.

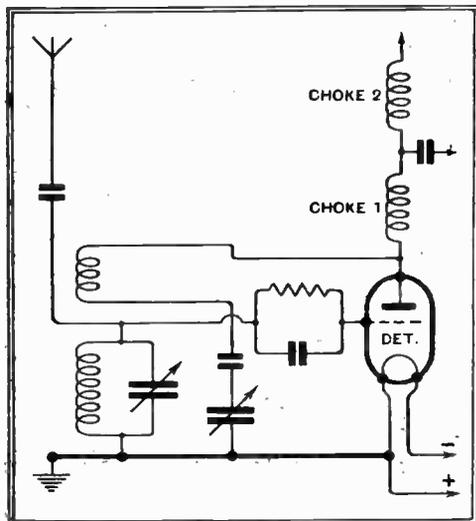


Fig. 1.—For the reception of short waves the simple reacting detector is a satisfactory arrangement.

A firm favourite for many years for reception on these wavelengths was the simple reacting detector circuit shown in Fig. 1 (the choke CH2 being replaced in this case by the primary winding of an L.F. transformer).

If well designed, this circuit was quite sensitive, the great point being the attainment of very smooth reaction. In this latter connection trouble was very often experienced with "blind spots." If the coils and reaction couplings had been set to give smooth reaction at one part of the tuning scale, it would be found impossible to obtain oscillation over some other part of the tuning condenser scale (the "blind spot"), whilst reaction would become fierce and uncontrollable at some other point again (which one might with equal propriety term a "sensitive spot").

This trouble is due to the changing position of current and voltage nodes in the aerial system at different wavelengths. The reaction coupling is normally *via* the interlinked magnetic fields of the aerial and reaction coils, the amount of H.F.

current in the latter coil being regulated by the reaction condenser. Now the magnetic field in each coil is necessarily associated with the *current* in that coil. In the short length of wire contained in the reaction coil, owing to the fact that it is a closed or "lumped" circuit, nodes are not likely to occur, or if they do they do not give rise to trouble. It is otherwise in the aerial circuit. The aerial coil forms part of the (usually) extensive aerial system, and a node in this may involve the whole of the coil.

Nodes and Antinodes

Consider Fig. 2 (a), (b) and (c). The aerial system, including the coil, is in this case approximately three-eighths of a wavelength long, with the tuning condenser set at the middle of its scale. This condition is represented at (a), the reaction coupling being set for smooth reaction; note that the amount of current in the aerial coil (assuming normal aerial current distribution) is a mean value. Diagram (b) represents the conditions at the lower end of the tuning scale. Now the aerial system is something over half a wavelength in length (since the working wavelength has been decreased) and a node appears at the position of the tuning coil. Since the reaction is dependent upon the current in the coil, and owing to the new distribution of current in the

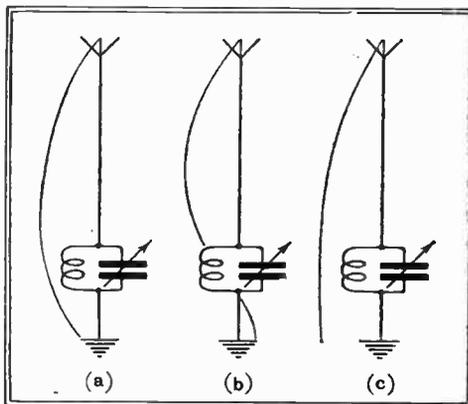


Fig. 2.—An aerial system three-eighths of a wavelength long. Diagram (a) represents the conditions when the tuning condenser is set at the middle of its scale; (b) represents the lower end of the tuning scale; whilst (c) constitutes a blind spot at the top of the tuning scale.

aerial circuit the current in the coil is almost zero, a great increase in the reaction condenser setting is necessary in order to compensate and produce sufficient reaction. This constitutes a "blind spot"; (c) represents the conditions at the top of

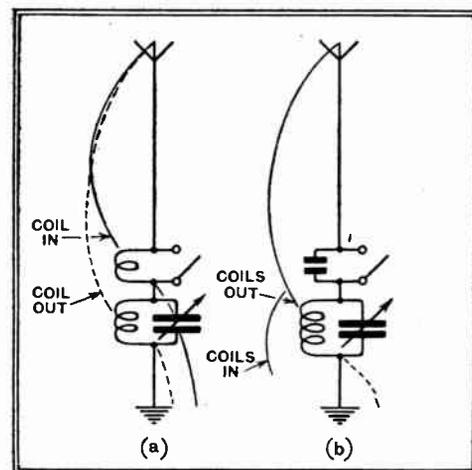


Fig. 3.—By including a series aerial inductance (a) or a condenser (b) the current node may be shifted and blind spots avoided.

the tuning scale. Now, owing to the increased working wavelength, the length of the aerial system is about quarter wavelength, producing an antinode (position of maximum current) at the position of the aerial coil. Here the setting of the reaction condenser will have to be reduced. This may constitute a "sensitive spot."

Avoiding Blind Spots

There are two cures in vogue for this trouble. The first is the provision of a series aerial inductance or condenser as shown in Fig. 3 (a) and (b). By switching these in or out of circuit the position of the current node may be shifted, since these devices have the effect of altering the electrical length of the aerial circuit by their inclusion. A single small (0.0001 mfd.) series variable condenser will perform the same function. The second is the use of H.F. stage.

The latter brings us to the discussion of another type of receiving circuit. The screen-grid valve, now almost universally used for H.F. amplification, has made feasible the attainment of a certain degree of amplification on very short wavelengths. Even so, the "stage gain" available on these short waves becomes very small as the wavelength is reduced. At the shorter wavelengths (round about 15 metres) a stage gain of very little if anything may be expected, even with an efficient tuned circuit on each side of the valve. But the arrangement (Fig. 4) by separating the aerial and detector grid circuits does away to a great extent with the "blind spot" trouble. So useful has this feature been found that this arrangement

Practical Short-wave Reception—

has been used with an aperiodic aerial circuit consisting merely of an H.F. choke between grid and filament of the S.G. valve. This arrangement, of course, simplifies tuning at the sacrifice of some efficiency in amplification on the longer waves (above 60 m.).

Lately there has been a tendency to use the supersonic-heterodyne type of circuit, especially in connection with broadcast receivers using powerful H.F. amplifiers, on the long-wave side, the latter being used for intermediate-frequency amplification, it merely being necessary to "tack on" a frequency-changer circuit.

First attempts at application of the superhet principle to the reception of very short waves involved the use of the low intermediate frequencies (below 100 kc.) then in common use. These attempts were not successful owing to the relatively small difference between the signal and oscillator frequencies necessary in order to produce "beats" at the intermediate frequency. The tendency was for the oscillator to pull the signal into synchronism with it before the frequencies had ap-

proached sufficiently closely in value to allow the formation of beats of the correct intermediate frequency. The use of higher intermediate frequencies (above 150 kc.) practised in this connection now

does away with the trouble (admittedly at some sacrifice of gain) and the combined autodyne oscillator-detector is usually employed.

The simplest form is that shown in Fig. 1. In this case CH2 is an I.F. choke

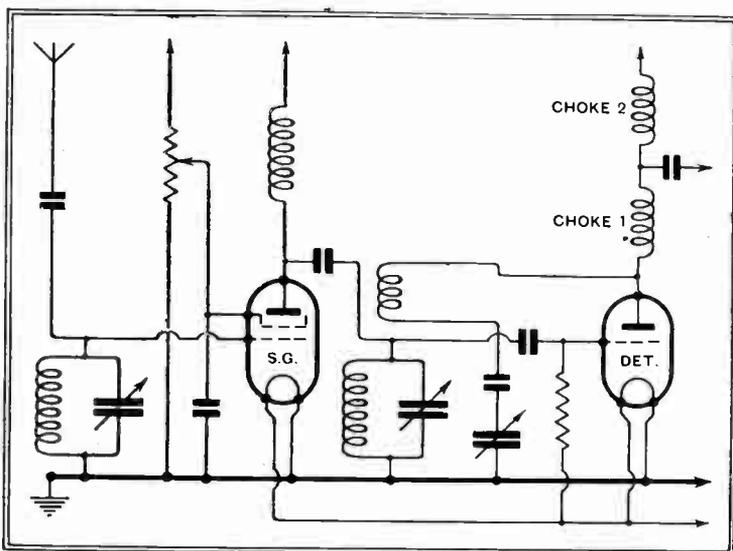


Fig. 4.—Trouble with blind spots can be avoided by separating the aerial and detector grid circuits.

and CH1 a short-wave choke, the condenser coupling the detector-oscillator to the I.F. amplifier. The operation of this circuit, except for the fact that it is used in an oscillating condition, does not differ much from that of the plain detector. There is, of course, the "second-

or, to avoid reacting into the aerial, be preceded by a H.F. stage (Fig. 6). A complete receiver, with I.F. and L.F. amplifying stages (but without an H.F. stage), is depicted in Fig. 7. The I.F. suggested is 150 kc., with band-pass couplings.

So much for current practice on wavelengths of about 10 metres and upwards. Recently, the use of waves shorter than 10 metres in length has received considerable attention. Round about wavelengths of 8-10 metres the propagation characteristics of radio waves change greatly. The frequency is too high to permit of refraction back from the ionosphere, so there is no "skip distance" and return zone. Also, owing to the fact that the length of the waves is comparable with the dimensions of natural ground features and buildings, these obstacles cause pronounced "shadows." The "ground wave," which is alone effective, is subject to rapid attenuation under these conditions.

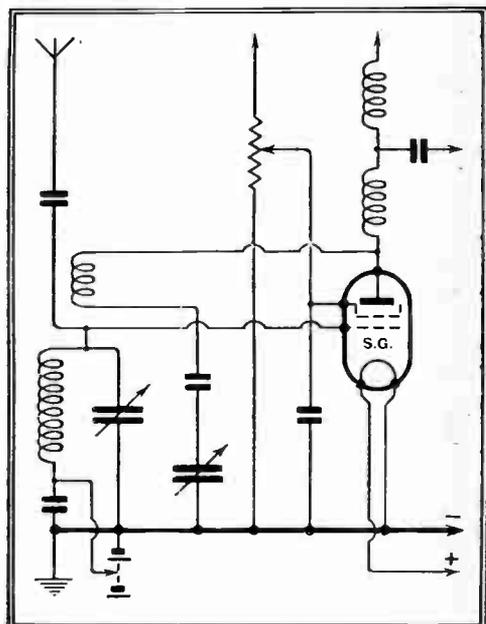
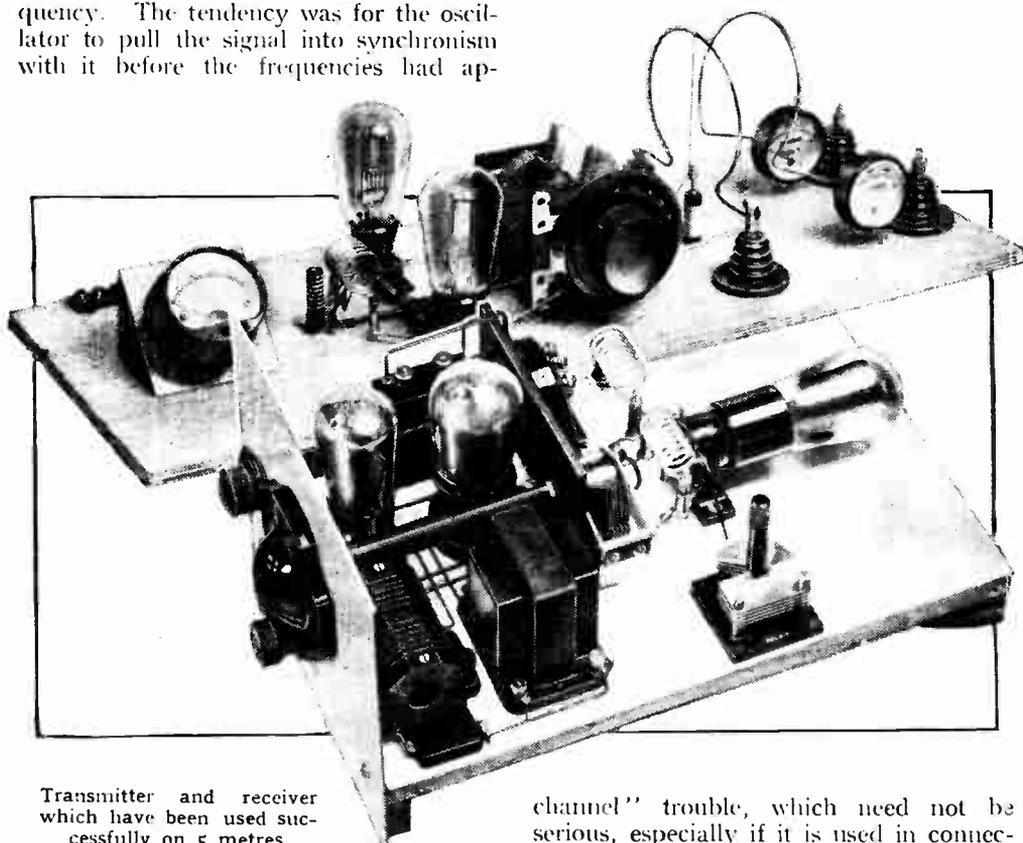


Fig. 5. The circuit of a screen-grid valve used as a detector-oscillator.

But their employment seems, under proper conditions, to offer some marked advantages. Owing to the enormously high frequencies involved, a very great number of stations could be accommodated in the same "service area," without danger of mutual interference. For the same reason, the side bands could be extended to accommodate frequencies up to, say, 100 kc., for television purposes. The use of multiple modulation has been suggested, and tried with some success. Furthermore, by suitable choice of site, power, and aerial system, such a station can be designed to cover a definite area with sharply defined limits. This still further helps in the problem of providing additional services, making these waves ideal for local work. If the aerial system is elevated considerably, very long ranges can be obtained with extremely low power, and the shortness of the waves renders the design of sharply directive aerial ("beam") systems easy and convenient.

The methods of reception used for the



Transmitter and receiver which have been used successfully on 5 metres.

channel" trouble, which need not be serious, especially if it is used in connection with a broadcast H.F. amplifier, since the I.F. can be changed at will should second-channel interference make its appearance.

A screen-grid valve may be used with advantage as a detector-oscillator (Fig. 5).

Practical Short-wave Reception— ordinary short waves may, with care, be extended for wavelengths down to about 7 metres. For shorter wavelengths than

where quality reception is not of paramount importance, the super-regenerative receiver more than holds its own.

The essential part of each of these systems is, of course, the reacting detector or detector - oscillator. There is not space in this contribution to discuss fully the principles of design and construction of these circuits; it must be sufficient to say that all parts must be kept to the smallest convenient mechanical dimensions, as much stray capacity as possible avoided, and all parts not forming an essential part of the oscillatory circuits must be connected to the latter at points of low or

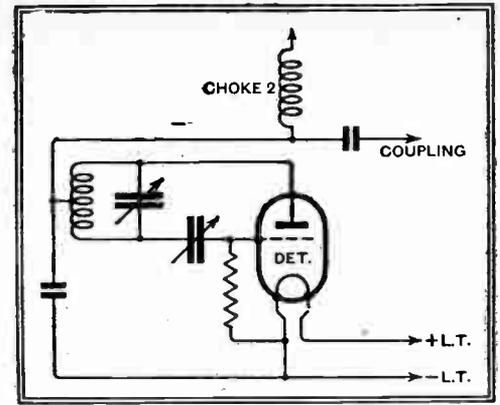


Fig. 8.—Wavelengths as short as 3 metres can be received with the Hartley circuit.

special advantages, but has the disadvantage of inconvenience of reaction control. Any attempt to control reaction by means of variable capacities leads to detuning difficulties. One arrangement in which this kind of reaction control is used is shown by the dotted capacity C₂ in Fig. 9. It is successful, but has the peculiarity that either of the two condensers may be used for tuning or reaction indiscrimin-

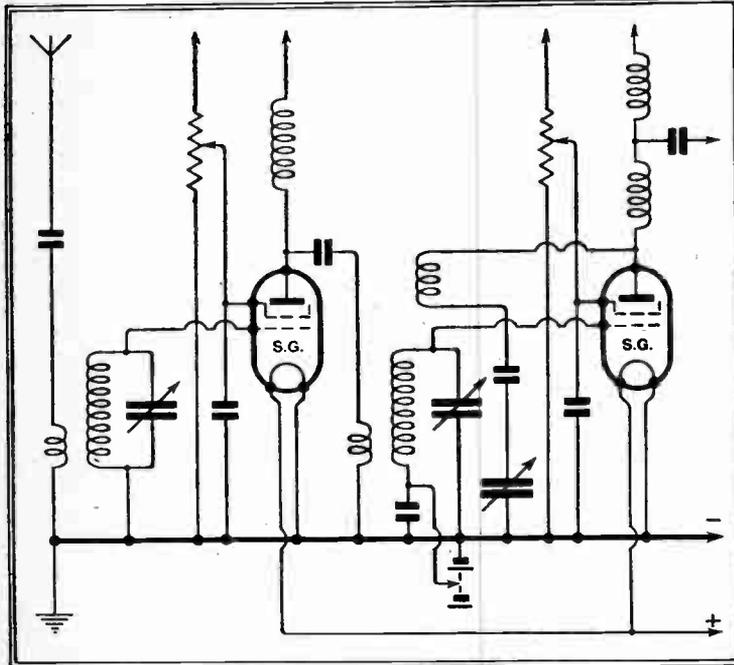


Fig. 6.—To avoid reacting into the aerial circuit the detector should be preceded by an H.F. stage.

this special circuits are desirable, and, for wavelengths shorter than 4 metres, necessary.

For wavelengths shorter than 4 metres circuits of the "Hartley" type, and push-pull circuits, have been advocated, but the writer's experience has led him to the opinion that they are of doubtful value, equally good, or even better, results being attainable with single-valve circuits.

On these wavelengths direct H.F. amplification is, of course, quite out of the question, the choice in receiving equipment lying between the reacting detector and the superheterodyne principle, whilst, for a simple and highly efficient equipment

zero H.F. potential.

It is possible to work on wavelengths down to about 3 metres with circuits of the type shown in Fig. 8 (of the Hartley and "Ultraudion" type).

For wavelengths between 1½ and 3 metres the type of circuit shown in Fig. 9 seems to be best. It has several

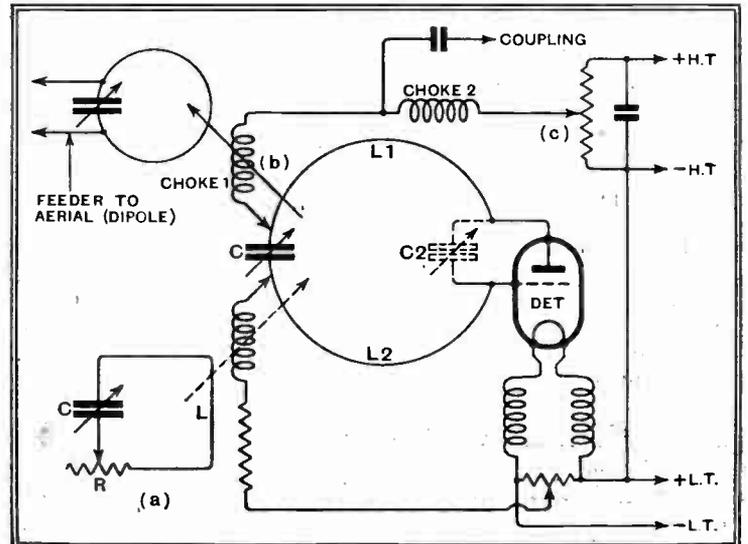


Fig. 9.—This circuit has been successfully used for wavelengths between 1½ and 3 metres.

ately, since both act in the capacity of both tuning and coupling condensers. In a circuit of this type tried by the writer (wavelength about 2.5 metres) a low-capacity valve—the D.E.V.—was used. C was 0.0001 mfd. max., and C₂ about 5 mmfd. max. The best method, however, seems to be that shown in the figure (without C₂).

In practically all the circuits for use on these wavelengths it will be found advisable to use anode, grid, and filament chokes. For anode and grid the chokes may consist of about fifty turns of fine wire on a former ¼ in. to ½ in. diameter. To avoid the possibility of these chokes resonating and causing the circuit to act as a tuned plate-tuned grid circuit at their natural wavelength, it is advisable to wind them with resistance wire, and to arrange that they shall either have a different number of turns or be wound on formers of different diameters (e.g., the anode

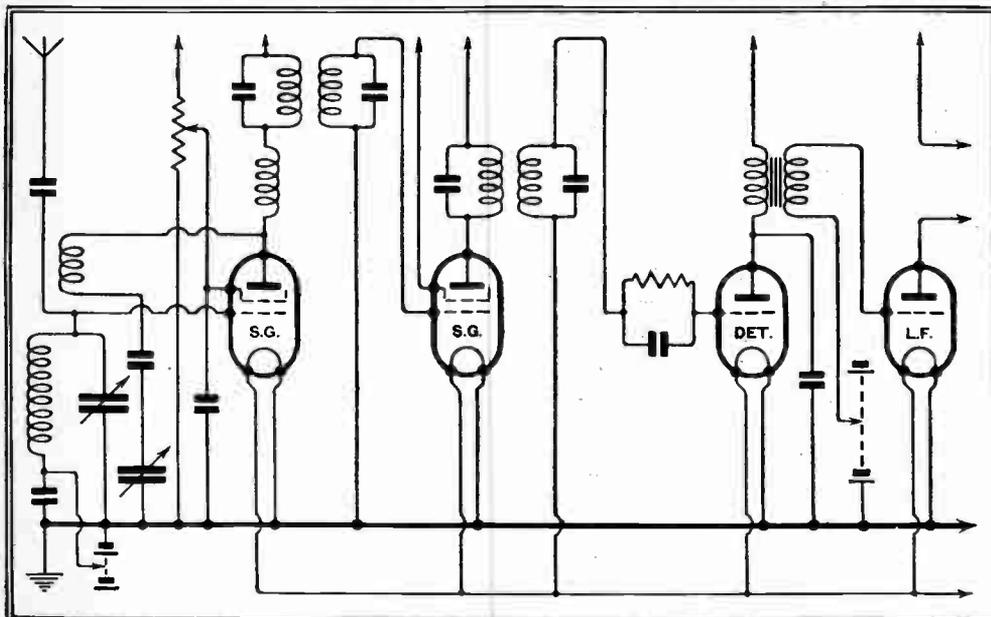


Fig. 7.—Circuit diagram of a complete receiver with I.F. and L.F. amplifying stages. The suggested intermediate frequency is 150 kc.

Practical Short-wave Reception—

choke may have, say, 40 turns, the grid choke 50 turns). The filament chokes are most conveniently wound together on one former, 1/2 in. to 1 in. diameter, in "bifilar" fashion.

Another successful method of controlling reaction is by means of a separate absorbing circuit L. C. R., Fig. 9 (a), variably coupled to the detector circuit. Reaction may be controlled (after suitable adjustment of the detector anode voltage) either by varying the coupling between the circuits, the tuning of the absorbing circuit (varying C), or the resistance R. The most convenient method appears to be to set the tuning and resistance of the absorbing circuit to optimum values and vary the coupling. Usually the absorbing circuit may consist of a simple ring or closed loop of wire. On these wavelengths (below 3 metres) it is usual to employ a half-wave dipole aerial coupled to the detector by means of a two-wire feeder. The coupling coil of the feeder may be used as the reaction control quite conveniently (Fig 9 (b)).

It will be generally found best to employ metallised valves for the detector, and it will in general not be found necessary with this type of circuit to decap the valve unless the absolute minimum wavelength possible is required. There is no difficulty in getting below two metres without decapping. It may be found necessary to break the connection between the metallised coating on the valve and the filament pin to which it is connected before the

valve will oscillate satisfactorily. In this latter case nothing must be allowed to touch or approach the coating whilst the valve is in operation, or the potential of this coating, which is "floating," so to speak, will in all probability be disturbed.

This type of detector-oscillator circuit may be used either in conjunction with a plain I.F. amplifier, a super-regenerative circuit either with separate quenching valve or superhet. If the superheterodyne type of circuit is employed it is desirable to have either a band-pass I.F. amplifier with a wide band or one that is flatly tuned, with a high intermediate frequency in either case (300 kc., at least), because

the intermediate frequency is not likely to be too stable on account of the very high signal frequencies involved. Use has been made of the double superheterodyne in this connection, with a first I.F. of about 6,000 kc. When using the super-regenerative type of circuit it is advisable to use a fairly high quenching frequency to avoid the audio-frequency spectrum.

It is advisable to screen all the circuits carefully. A very compact and efficient set for portable work is shown in Fig. 10. It consists of a self-quenching detector coupled to a pentode.

The wavelength range covered by these circuits is very small, e.g., 2.6 to 2.9 metres, but the frequency range comprised is very great (in the case just quoted 10,000 kc.), so there is plenty of room for stations. A tuning range of less than ten per cent. is ample (e.g., 2.5-2.75, 1.9-2.0 m.).

For wavelengths below 1.5 metres reaction types of circuits cannot be used. Use must then be made of the "electron-oscillation" principle, involving circuits which are not so easy to control.

Amateur Call Book

THE Spring issue of the "Radio Amateur Call Book" is now available and contains 165 closely printed pages giving the call-signs, names and addresses of all known amateur transmitting stations in the world, 140 pages being devoted to the United States, and over eight pages to Great Britain. There is also a convenient list, occupying seven pages, of short-wave commercial stations, and another of the principal short-wave broadcasting stations of the world.

Copies may be obtained in Great Britain from Mr. F. T. Carter, Flat A, Glencleugh Mansions, Streatham, S.W.16, for 6s. post free, or the four quarterly issues for 21s.

Amateur transmitters who have been granted new call-signs or who have changed their addresses are urgently requested to communicate either with Mr. Carter or the Q.R.A. Manager of the R.S.G.B., at 53, Victoria Street, London, S.W.1, or *The Wireless World*, in order that their names and correct addresses may appear in future lists.

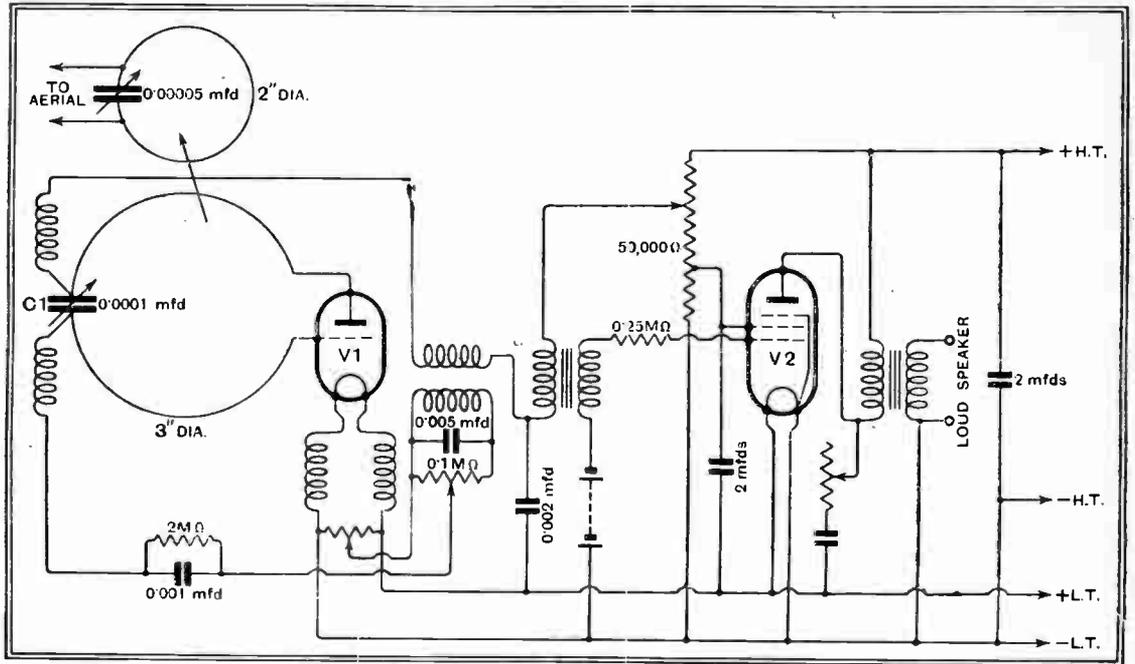
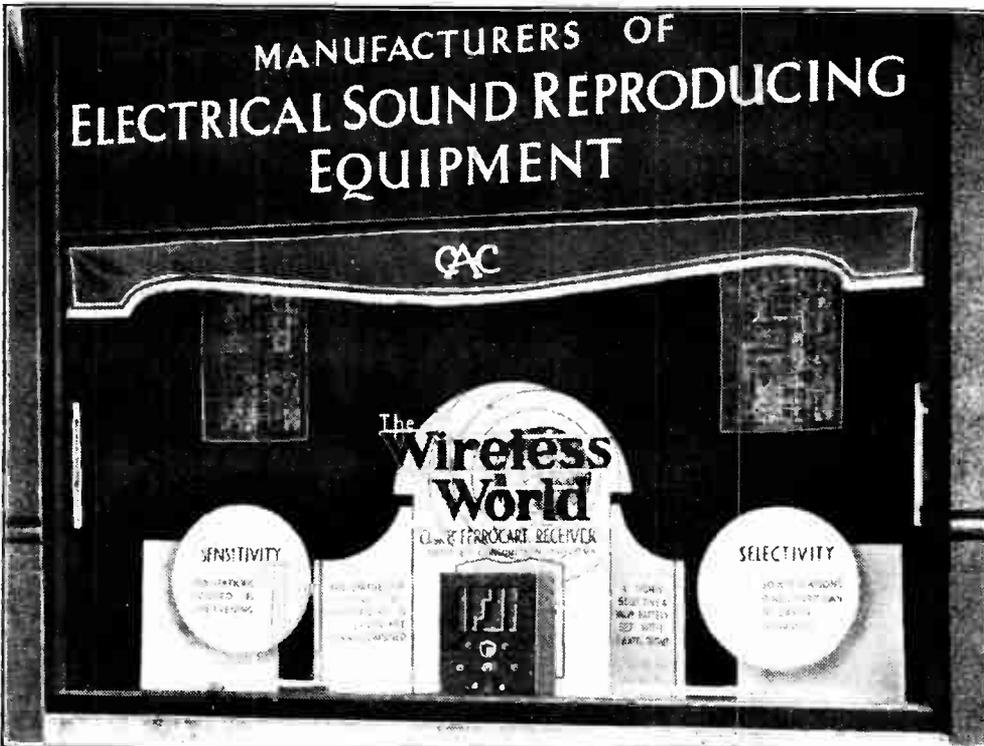


Fig. 10. Suggested circuit for an efficient portable set embodying a self-quenching detector (Micromesh PBI) coupled to a pentode (Pen. 220). This set is suitable for a wavelength of about 2 1/2 metres.



A MODERN SET IN A MODERN SETTING. Here is the attractive window display arranged by C.A.C. Cabinets, Ltd., at their showrooms in Surrey Street, Strand, London, W.C.2, where *The Wireless World* "Class 'B' Ferrocart" Receiver is demonstrated daily.

UNBIASED

By
FREE GRID

Not Wanted on the 'Phone

ACCORDING to a Press report of an after-dinner speech, a well-known radio publicist has been sparing a little time from giving advice to the long-suffering public in order to tell wireless retailers how to swell the number of their customers.

Briefly, he suggests that at times when broadcasts of universal appeal are being made, such, for instance, as the forthcoming running commentary on the



No greater music.

Derby, they should ring up some householder whom they know to be a non-listener and place a loud speaker close to the microphone of the P.O. telephone.

Such a method of propaganda would, I think, be of very doubtful value. Apart from the fact that the microphone of the ordinary P.O. telephone is noted for its music-mangling properties—and what greater music is there than the sound of the human voice?—there remains the drawback that only one customer could be reached at a time. I am well aware, of course, that, from a technical point of view, there is no difficulty whatever in getting connected up to a couple of dozen people simultaneously as the P.O. telephone service so ably demonstrates each day to many of its subscribers.

In addition to the foregoing objections, it must not be forgotten that a broadcast of universal appeal, like the Derby, is indeed a *rara avis*, and, in the case of most broadcasts, dealers are more likely to offend than to please a potential customer. Can one imagine, for instance, a chamber music addict being won over to radio by a piece of hot jazz, or an undertaker being similarly persuaded if his first introduction to the art happened to be a broadcast appeal by the Royal Life Saving Society?



Sophisticated blacks and —

Grave Dance Danger

FOR some time now I have viewed with misgivings the ever-increasing power of broadcasting stations because of the selectivity-cum-quality question, for, after all, even Mr. Stenode will be of no avail if tuning has to be made so sharp that even the carrier wave is cut off.

The recent proposal of a well-known American broadcasting authority has, however, put a far graver complexion on the whole matter, and I think that a word of warning is necessary.

Briefly, he suggests that the power of all stations in the world should be increased, and the simultaneous broadcasting networks so developed that one super-dance band playing in London, Paris or New York could supply music to every broadcasting station in the world. The idea is being taken up with enthusiasm in America, and representations are, I learn, shortly to be made to the B.B.C.

I suppose that it never occurred to this foolish fellow and his fanatical followers that the fact of millions of people—sophisticated blacks and unsophisticated whites—all dancing in step throughout the world will result in such severe vibrations being set up on the earth's crust that earthquakes and volcanic eruptions of unparalleled magnitude are bound to follow.

To appreciate the truth of my prediction one has only to remember that when a body of troops is crossing a bridge it is compelled to break step in order to prevent the evil effects of sympathetic vibration.

If this jazz maniac and his fellow music manglers are allowed to carry out their ideas I trust that science will rise to the occasion and prevent the world-wide catastrophe which must inevitably follow unless due precautions are taken.

To ward off disaster I suggest to the powers that be that participators in this terpsichorean orgy should be led to break step. This could be achieved by equip-

ping every relay station in the dance chain with suitable delay circuits, each having a slightly different time period.

If any reader can suggest something better in order to avert this grave menace to our lives and property I do urge him strongly to take up his pen and write without delay.

Horrible Din

NOT very long ago I was inveigled into Olympia in an unguarded moment by a man who has a passion for visiting every exhibition held there, irrespective of whether it has anything to do with radio or not.

What struck me most was the excellent manner in which music was distributed throughout the exhibition by means of loud speakers. These latter devices were suspended from the roof at a suitable height, and the result was a pleasant background of music sufficient to tone down the shuffling of feet and other offensive noises which people are in the habit of making when going round an exhibition. At the same time the music was subdued enough to permit of easy conversation with people on the various stands.

This in marked contrast to the state of affairs existing in the radio exhibition, where music belches forth with a hideous blare from every stand, so that the asking of technical questions is well-nigh impossible; indeed, in the case of many stands this state of affairs is intended.

I cannot for the life of me say what good purpose is served by having music (?) pumped through the loud speakers on the stands. Many people fondly



—unsophisticated whites.

imagine that it assists them to choose a loud speaker, and it is certainly an entertaining sight to see them rushing from one instrument to another. All I can say, however, is that anyone who chooses a loud speaker because of its performance on the stand has either no ear for music or has lost all sense of self-respect.

If anyone can lay his hand on his heart and honestly assure me that he enjoys the horrible din which we are compelled to put up with at Olympia, I will gladly eat both my hat and my umbrella.

Tone Control Output Unit

Constructional Details of an Inexpensive Unit for Attachment to Loud Speaker

By A. VAUGHAN

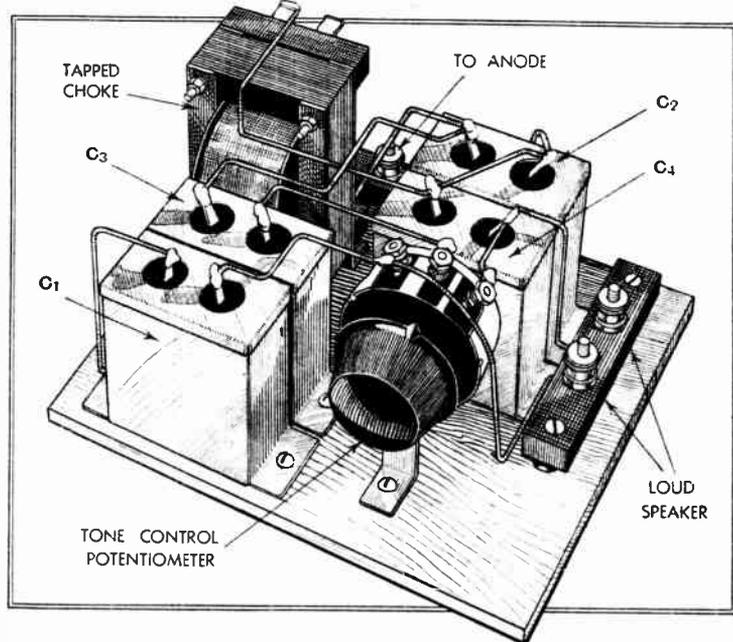
THE addition of tone control to every receiver is rapidly becoming a necessity, owing to the general desire for perfectly natural reproduction. The loud speaker is expected to reproduce a human voice faithfully at its original strength, and equally faithfully reproduce large orchestras at considerably reduced strength. It is a well-known fact that low notes do not carry as well as high notes, so the orchestral reproduction, to be true, must be from a loud speaker emphasising the lower frequencies. Consequently, on speech, the same receiver and loud speaker, without adjustment, will reduce the pitch of the voice due to the low note emphasis. Similarly, if adjusted to give true speech, the orchestra will be minus a considerable amount of bass. Many listeners strike a compromise, while others fit a tone control in the receiver.

Greater Range of Variation

The method of tone control about to be described can be fitted in the loud speaker, and in consequence is a great advantage to listeners using a loud speaker remotely from the receiver. Also, while most forms of tone control simply reduce the high or low note response, leaving the other constant, this method increases one and reduces the other simultaneously, thereby

The theoretical circuit arrangement is shown in Fig. 1 from which it will be seen that the output choke is split up into two sections L1 and L2 which can be either one tapped choke or two separate components. C1 is the usual coupling condenser to the loud speaker, C3 a condenser of the same value, C2 a condenser of 0.2 mfd capacity to tune L2 to 130 cycles. The potentiometer R is connected in parallel with the loud speaker and the chokes in series.

The choke L2 and condenser C2 being tuned to 130 cycles will offer a high impedance to frequencies round this value (owing to its naturally flat tuning) but the higher frequencies will be passed through condenser C2 to which it will offer a very low impedance. Again, choke L1 will offer a high impedance to the higher frequencies, but will not offer much impedance to the lower frequencies. It will be seen from the diagram that the lower frequency voltages developed across L2 C2 are applied to the Z Y portion via C4 and the decoupling condenser C1.



The practical layout of components and wiring details can be easily followed in this illustration.

giving a considerably greater range and flexibility of control.

from which it will be seen that the values have been chosen for an output valve of medium impedance. If the device follows a very low impedance output valve, the resistance of R and the inductance of L1 and L2 must be reduced accordingly, but C2 is increased to tune L2 still to 130 cycles. Similarly, after the high impedance valve R, L1 and L2 must be increased and C2 reduced.

In the case where control is desired remotely from the receiver, the potentiometer is fitted in the loud speaker, and three leads must be used for the extension from the receiver, which are con-

It is seldom that a receiver without tone control gives equally realistic reproduction on both speech and music, and the majority of modern sets are equipped with this device. To those possessing earlier types of receiver, the tone control unit described in this article will undoubtedly appeal, as it can be fitted to the loud speaker with very little difficulty.

nected to the points X Y and Z on the potentiometer. The condensers should be

fitted in the receiver, not in the loud speaker, so that H.T. supply is isolated from the extension leads. This method of tone control can be similarly used with a low impedance speaker, but in this case the potentiometer is connected across the primary of the step-down transformer.

Table A gives the impedance of the two chokes at various frequencies, from which it will be seen that the values have been chosen for an output valve of medium impedance. If the device follows a very low impedance output valve, the resistance of R and the inductance of L1 and L2 must be reduced accordingly, but C2 is increased to tune L2 still to 130

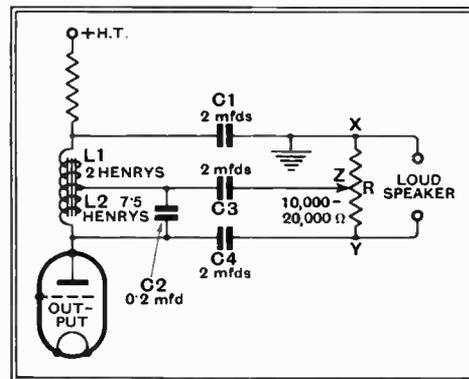


Fig. 1.—Circuit diagram of the tone control unit which is interposed between the last valve and the loud speaker. The potentiometer R should have a value between 10,000 and 20,000 ohms.

TABLE A

Frequency in cycles per sec.	Impedance of L1 in ohms.	Impedance of L2 C2 in ohms.
50	640	2,400
100	1,260	6,000
120	1,500	11,400
130	1,640	30,000
140	1,760	10,600
200	2,500	1,350
300	3,800	2,700
400	5,000	2,000
600	7,500	1,330
800	10,000	1,000
1,000	12,500	800
2,000	25,000	400
3,000	37,500	260
5,000	62,000	160

The high impedances shown for L1 at the high frequencies will be reduced somewhat in practice owing to the self-capacity of L1 which has not been taken into account in the table.

cycles. Similarly, after the high impedance valve R, L1 and L2 must be increased and C2 reduced.

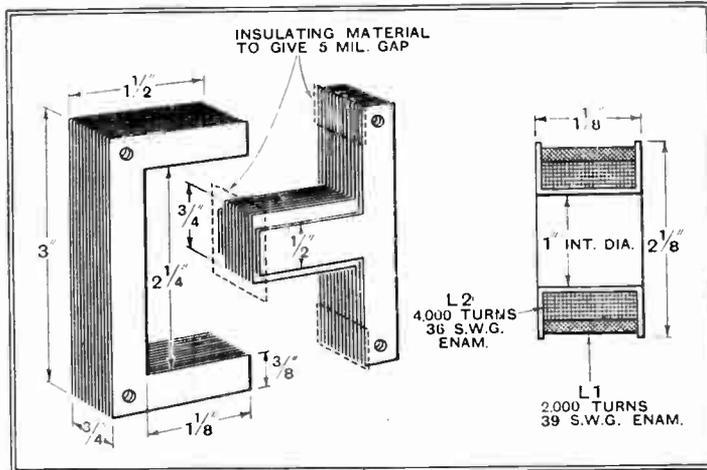
Tone Control Output Unit -

The frequency of 130 cycles chosen as the low note resonance calls for some comment. The resonant frequency should be as low as possible, but among the easily audible notes, 25 cycles would be far too low. A frequency of 50 and 100 cycles also must be definitely avoided; otherwise the hum from half- and full-wave rectifiers on all main receivers will predominate, and will in some cases come up to such a level that all smoothing after the rectifier will be nullified. The third consideration is the medium frequencies which must be obtained partly from impedance L2C2 and partly from impedance L1. Otherwise, if the design is such that the medium frequencies are obtained from choke L1 only, they will be eliminated with the higher frequencies as the position of Z is moved nearer X. Similarly, if obtained from L2C2 only, they will be eliminated with the lower frequencies.

To comply with the first consideration that the frequency of resonance of L2C2 should be as low as possible, L2 or C2 must be very large. A choke L2 having a very large inductance would be cumbersome and costly, or have a high D.C. resistance, neither of which is desirable. A very large capacity C2 would by-pass the medium frequencies as well as the high, and all the medium fre-

quencies would be obtained from L1, which has already been seen to be bad design. Therefore, for the medium frequency consideration, neither L2 nor C2 can be very large, so the resonant frequency of L2C2 cannot be as low as the first consideration requires. Hence the compromise of 130 cycles was chosen, in order to satisfy as much as possible the various considerations which have been already referred to.

A point to be remembered if the two chokes are on one core is that the inductance varies as the square of the number of turns. So a choke having a total inductance of 17 henrys would be required



Details of the iron circuit and winding of the tapped choke.

to give two chokes L1 and L2 of 2 and 7.5 henrys respectively. The tap position would then be determined by dividing the total number of turns by three and allowing one-third for L1 and two-thirds for L2.

The New Output Circuits

THE Output Stage of a Wireless Receiver" was the title of a recent lecture by Mr. G. Parr, of the Edison Swan Electric Co., Ltd., before the Smethwick Wireless Society. The lecturer discussed the differences between triodes and pentodes, second and third harmonic distortion, push-pull (including Q.P.P.) and Class "B" amplification.

Prospective members are welcome at the Society's meetings.

Hon. Secretary: Mr. E. Fisher, 33, Freeth Street, Oldbury, Nr. Birmingham.

Television Explained

TELEVISION apparatus was demonstrated before the Radio and Television Section of the Southport Society of Natural Science at a recent meeting. Mr. T. Frazierley showed a recent type of Baird television. The Section staged a radio and television exhibit at the annual scientific exhibition of the Parent Society on April 13th.

Hon. Secretary: Mr. John Clegg, 34, Scarisbrick New Road, Southport.

A Friend in Need

POINTS which puzzle the novice in regard to valve characteristics were recently elucidated by Mr. Deal, of the Mullard Wireless Service Co., Ltd., for the benefit of the members of the Catford and District Radio and Television Society. The Chairman, Dr. Bannounah, set the ball of discussion rolling, and all the members were seen busy telling Mr. Deal their valve troubles.

Hon. Secretary: Mr. H. W. Floyd, 38, Como Road, Forest Hill, London, S.E.23.

A Visit to Brentwood

ON a recent Saturday members of the Ilford and District Radio Society visited the Brentwood receiving station of Imperial and International Communications, Ltd. Mr. Keen, who conducted the visitors over the station, had rigged up a special amplifier to enable everyone to hear signals from EAM, Madrid, which were being received on one of the fourteen-valve superheterodynes.

Hon. Secretary: Mr. C. E. Largent, 16, Clements Road, Ilford.

Short Wave Champion

AN informal debate entitled "Are Short Waves Worth While?" was recently enjoyed by members of the Croydon Radio

CLUB NEWS

Dual Speakers

"DUAL-SPEAKER Equipment" was the subject of Mr. G. T. Peck's lecture at Skade Radio, Birmingham, recently. Excellent reproduction was given on a demonstration set with both gramophone records and radio.

Hon. Secretary: 110, Hillaries Road, Gravelly Hill, Birmingham.

New Club at Clacton

THE inaugural meeting of the Clacton and District Radio Club was recently held at Dixon's Café, Station Road, Mr. A. J. Dixon presiding.

Full particulars may be obtained from the Hon. Secretary: Mr. Rodney Loader, 49, Southcliff Park, Clacton-on-Sea.

How Valves are Made

THE intricate processes of valve manufacture were recently described to members of the Battersea and District Radio Society by Mr. Parr, of the Edison Swan Electric Co., Ltd. The lecture was illustrated by lantern slides.

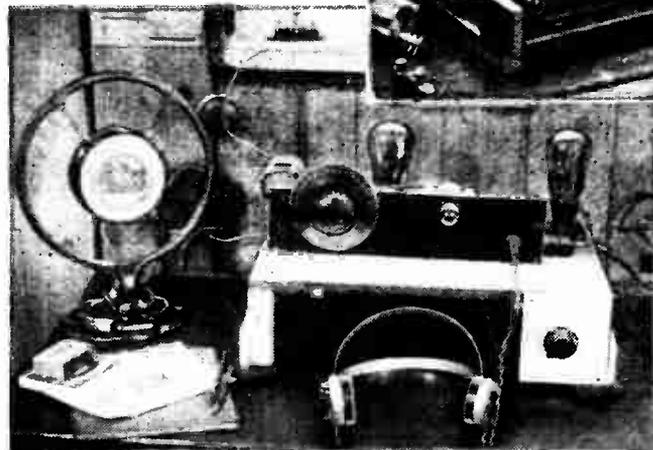
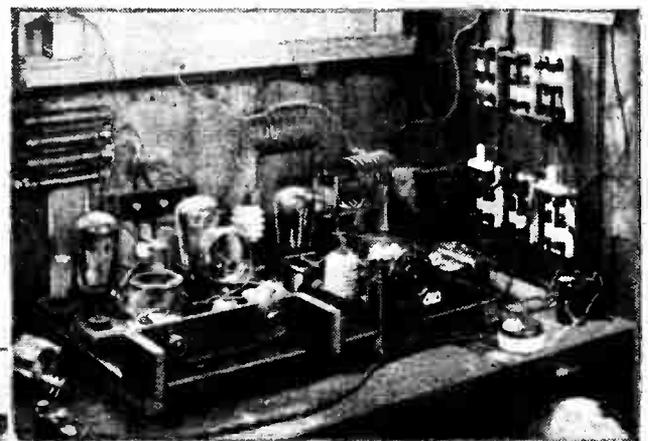
Hon. Secretary: Mr. S. F. Harris, 93, Salcott Road, Battersea, London, S.W.11.

Comparing Pick-ups

COMPARATIVE tests of a number of pick-ups kindly lent by several representative firms were carried out at a recent meeting of the Croydon Wireless and Physical Society. The audience acted as jury, filling up voting papers as they listened to the various pick-ups demonstrated behind the screen. The results were surprisingly uniform.

Hon. Secretary: Mr. H. T. P. Gee, 51-52, Chancery Lane, London, W.C.2.

G 6FM. A compact station owned and operated by Mr. F. D. Milner, at Lower Edmonton. The photo on the left shows the microphone and 2-valve receiver with which several Australian and New Zealand stations have been heard at good strength. Above is shown the 3-valve transmitter and frequency doubler for 40 and 20 metres.



Society. It soon became evident that the Society's youthful members were ready to champion short waves at all costs, and some of the "old hands" had to use all their skill in presenting arguments against short waves. As a result of the debate the Society is forming a short wave section under the direction of Mr. D. Deacon.

Hon. Secretary: Mr. E. L. Cumbers, 14, Campden Road, South Croydon.

NEWS of the WEEK

Current Events in Brief Review

Vienna Testing

WE learn that the 120 kW. station at Bisamberg, near Vienna, has begun testing. The wavelength of Vienna is 507.2 metres.

A New One

THE latest excuse for non-possession of a wireless licence was put forward by a Birmingham defendant last week, who said he thought that he was covered by the royalties for a year.

2RN Returns

THE many protests by crystal listeners in the Dublin area have resulted in the decision of the authorities to reopen the old 1½ kW. station 2RN, which will now work on a wavelength between 200 and 230 metres.

Damped Oscillations

A SENTENCE of one month's imprisonment has just been passed on a German listener who was caught in the act of deliberately oscillating with intent to interrupt reception of broadcast political speeches.

Another "Broadcasting House"

THE celebration of the tenth anniversary of the foundation of Czechoslovakian broadcasting is to be deferred from this month until next autumn so as to coincide with the inauguration of the great new "Broadcasting House" in Prague.

Radio v. Flies

WIRELESS is to be enlisted in the campaign against the common house fly. It is announced by the French "Office National d'Hygiene Social" that all scientific processes are to be employed in making war on flies. Radio will be employed by speakers all over the world to preach a crusade of extermination.

Forty Crowns a Head

THE Czechoslovakian postal authorities offer a prize of forty crowns for information leading to the detection of each wireless "pirate." To make the award more inviting the authorities guarantee that "anonymity will be respected." This is a wise move, for, to parody Congreve, "Hell has no fury like a pirate caught."

Retailers and Interference

APPARENTLY it is not sufficient that French wireless retailers should supply their customers' sets "in apple pie order." According to a recent legal decision at Cherbourg, the seller who installs a receiver must satisfy himself that the set will not be seriously interfered with in its new locality. The trouble arose when a private customer sued a radio firm for 6,000 francs in respect of a set which, although in perfect condition, picked up violent disturbances from a neighbouring H.T. line, no anti-interference device having been fixed. The Court awarded 1,000 francs.

A Distinguished Reader

MARCHESE MARCONI'S experimental cabin on board the "Elettra" was an irresistible attraction in the "Rooms of the Scientists" at the Ideal Home Exhibition. On the day of our visit the last touch of verisimilitude was given by the fact that the gentleman impersonating the great inventor was reading *The Wireless World!*

Nazi Interval Call

NEW interval signals are characteristic of the majority of German broadcasting stations since the National political crisis. The new call at Witzleben, Berlin, consists of the last notes of the well-known Nazi song "Volk an's Gewehr."

Youth at the Key

BRAVO, Master Russell Stedinger, 2816, Delaware Street, Oakland, California! According to the American Radio Relay

Short Waves from America

MOST large metropolitan centres in the United States went on to daylight saving time on Saturday last, April 29th, and short-wave listeners will be interested to know that new schedules have been prepared for those popular stations W2XAD and W2XAF. W2XAD transmits on Mondays Wednesdays and Friday from 8 p.m. to 9 p.m. (B.S.T.), and on Sundays from 7 to 9 p.m. (B.S.T.). W2XAF transmits daily from 11.45 p.m. to 3 a.m. (B.S.T.).

Complete for £3-15-0

HERR HITLER has turned his attention to the wireless trade. We understand that the Chancellor, after meeting representatives of the leading manufacturing firms, has decreed that 20,000 receivers with built-in moving-coil loud speakers, shall be constructed and placed on the German market within a limited period, the cost of each receiver not to exceed seventy-five marks. The quality of reproduction must reach an

Designing Television Apparatus

THE Design of Television Transmission Equipment is the title of a lecture to be delivered by Mr. J. C. Wilson (of the Baird Laboratories) at a meeting of the Television Society to be held at 7 p.m. on Wednesday next, May 10th, at University College, Gower Street, London, W.C.1.

Cards of invitation may be had on written application to the Hon. Secretary, Mr. J. J. Denton, 25, Lisburne Road, Hampstead, London, N.W.3.

Man-made Static: International Conference

THE first world-wide effort to tackle artificial interference with wireless transmission is timed for June 22nd and 23rd when, under the auspices of the International Electro-Technical Commission, an international conference will be held in Paris. Although most of the preliminary work has been carried out by the Radio Electrical Committee of the International Union of Telegraphy, it is felt that the work should proceed on broader lines, and the conference will, therefore, aim at bringing about arrangements between manufacturers of electrical machinery and apparatus as well as the producers and distributors of electrical energy.

Although the good effects which are bound to follow such a conference may not declare themselves immediately, listeners may safely assume that the ether will be much less noisy a year or two hence.

Are Cars Complete Without Radio?

WIRELESS enthusiasts who are seriously considering the possibilities of car radio this summer will be interested in an article based on practical experience, published in the current number of our sister journal, *The Autocar*, in which the writer describes journeys between London and the Midlands in a radio-equipped car. It is important to note that reception, when well toned down, was not disconcerting or calculated to divert the driver's attention from the road.

There are still a few technical problems which must be cleared up, perhaps, before wireless can be said to be a perfect concomitant to the modern car, and we endorse a suggestion of *The Autocar* that a sub-committee of the Society of Motor Manufacturers and Traders, Ltd., should meet a sub-committee of the Radio Manufacturers' Association to discuss various knotty points as they arise.

A Lewcos Event

THE Lewcos Staff Dramatic Society presented an admirable performance of Ian Hay's comedy "The Sport of Kings" to a full house at the Guildhall School of Music on April 25th. Lack of space precludes mention of excellent individual performances and Mr. Frank Lockett, the able producer, must accept the praise due to each and all of his well-selected cast.



THE WORLD'S YOUNGEST? On the right is eight-year-old Jean Hudson, daughter of Mr. Edgar L. Hudson (W3BAK), of Laurel, Delaware. Although not eligible for licence, this little lady can read and type Morse signals at fifteen words per minute. Her fourteen-year-old brother Roland (on left) is, of course, a veteran at the game. He is seated on his portable transmitter.

League, you can claim to be America's youngest licensed radio transmitter, for you are only nine years old and you hold the call signal W6HRZ. What is more, you have already communicated with voice as far as Hawthorne, Nevada.

Keep it up, Russell.

Thanks to Static

WIRELESS retailers in the Larkhill (Liverpool) district have been surprised by the recent mysterious increase in the demand for receiving valves. The Post Office experts have partially solved the problem, for they have discovered that a particularly virulent form of interference has arisen in the district, causing an intermittent crackling in wireless sets in Queen's-drive. The source of the noise has not been traced.

There seems no doubt that many listeners imagined that the trouble was due to faulty valves, hence the increase in the retailers' profits.

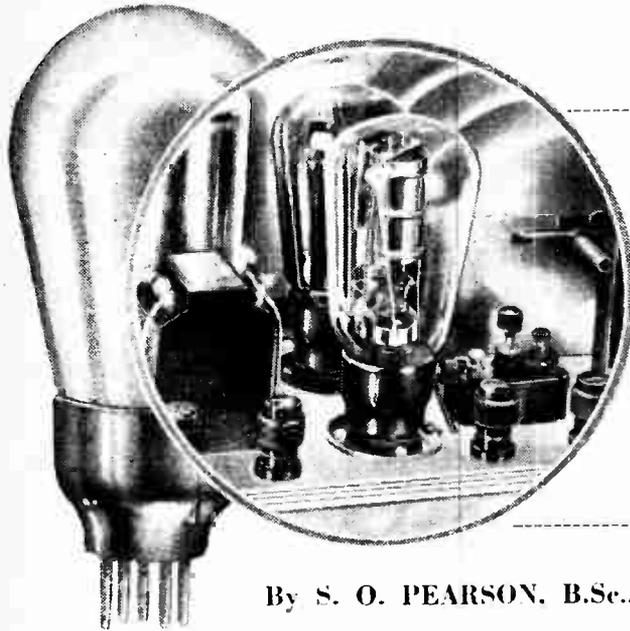
approved standard, so that users shall be certain of good reception of political broadcasts.

The "Magic Bottle"

TO the general public the cathode ray oscillograph is not a familiar object, but undoubtedly it will shortly achieve a much wider fame as a result of the publication of a very important volume entitled "The Applications of the Cathode Ray Oscillograph in Radio Research," by R. A. Watson Watt, J. F. Herd, and L. H. Bainbridge Bell, of the Radio Research Station at Slough. This book will tell how this "magic bottle" can capture and record signals lasting only 1/2000th of a second, make an atmospheric of only 1/500th of a second in duration photograph itself, and indicate the route by which it arrived. These and many other applications will be described in this fascinating volume, which is to be published by H.M. Stationery Office, price 10s. net.

The Pentode Output Valve

Why the Efficiency is So High



By S. O. PEARSON, B.Sc., A.M.I.E.E.

THE pentode is a constant current device and thus differs considerably in its behaviour when compared with a triode. It is shown in this article that if certain compensating circuits are used with the loud speaker the quality of reproduction can be superior to that from any other output valve.

THE pentode is an output valve whose electrical characteristics differ very widely from those of any triode, and for this reason the problem of matching the loud speaker impedance to the valve calls for special consideration. The pentode has two outstanding advantages over the triode; first, it is capable of giving a greater output in milliwatts per signal volt input at the grid, and, secondly, the maximum undistorted output is relatively large for the amount of anode current consumed. There is a further advantage that, with certain types of loud speakers which are weak in the upper register, very effective

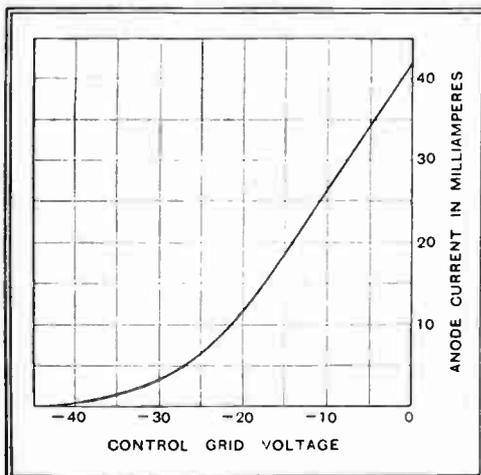


Fig. 1.—Anode current/grid voltage curves for a typical mains pentode taken at an anode voltage of 250 and screen voltage 200.

tone correction is automatically brought into play and this can be adjusted or varied at will.

As in the case of a triode, the pentode possesses the usual anode, cathode (or filament) and control grid. Besides these electrodes there are two auxiliary grids between the control grid and the anode.

One of these is "earthed" to the cathode inside the bulb and is the one nearest to the anode, consisting of an open spiral of wire. The next in order is the "priming grid," also a wire spiral, but rather more closely wound than the earthed grid. This is connected to a terminal at the side of the valve base and, under working conditions, is maintained at a constant positive potential somewhat less than that of the anode itself.

A.C. Resistance Values

For a pentode, the curve showing the relationship between anode current and control grid voltage, with the anode and priming grid kept at normal potentials, is very similar in form to that of a triode, as will be seen from Fig. 1. But, unlike a triode, the curve is hardly affected by a change of anode volts, and it is in this respect that a pentode differs so widely from a triode in its operation. Other things being constant, if the anode voltage is increased or decreased, say, 25 per cent. above or below the normal value, practically no change occurs in the anode current.

Now, in a triode, the change of anode current is very nearly proportional to the change of anode voltage, signifying that the A.C. resistance of the valve is more or less constant. But where a change of voltage results in no change of current, as in a pentode, it follows that the internal impedance of the valve must vary in direct proportion to the voltage. The effective A.C. resistance of a pentode cannot, therefore, be stated in the same way as it can for a triode. For instance, a pentode whose apparent A.C. resistance is, say, 60,000 ohms, expressed as the ratio of change of anode volts to change of current, behaves in actual operation as though it has an A.C. resistance of only four or five thousand ohms.

The anode current/grid volts curve of Fig. 1 is not of such practical use as curves showing the relationship between anode volts and anode current for different fixed values of grid voltage. A series of such curves for a representative pentode is given in Fig. 2, and these show clearly that, above a certain value of anode voltage, the current with any one value of grid voltage varies very little with change of anode volts. The dotted line curve is the corresponding one for an ordinary triode output valve and is included to show, at a glance, the great difference in the nature of the characteristics for the two classes of valve.

The most suitable load impedance for the pentode is determined by considerations of the degree of harmonic distortion that may be permitted. In a triode the

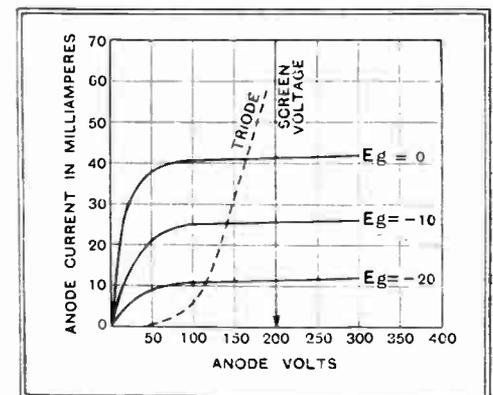


Fig. 2.—Anode current/anode voltage curves for pentode and triode, showing the difference in shape of characteristics.

curvature of the dynamic characteristic curves results in the introduction of a second harmonic, but in the case of a pentode the double curvature results in the addition of not only a second harmonic but a third harmonic also, and the latter usually preponderates. The optimum load impedance is usually chosen so that the harmonic distortion, either 2nd or 3rd, does not exceed 5 per cent. The optimum load is very much more critical for a pentode than for a triode, and for this reason an output choke or transformer with a number of tappings is used to enable the particular loud speaker used to be matched to give the best results. The usual connection with a tapped output choke is shown in Fig. 3.

Speaker Resonance

It has been pointed out that a change of anode volts does not, to all intents and purposes, affect the value of the anode current. So, also, any change in load impedance will not affect the anode current, as it does for a triode. Now the impedance of any loud speaker varies with

The Pentode Output Valve—

frequency, being usually very high at the upper end of the musical frequency scale. Consequently, when such a loud speaker is used in conjunction with an ordinary three electrode output valve, the alternating current delivered to the speaker, with a given signal voltage applied to the grid, falls off as the frequency rises. For this reason most types of loud speaker have been developed in such a way as to compensate for the falling off of current at the higher frequencies, usually by the introduction of some form of resonance.

Constant Current Device

When used with a pentode, the alternating current delivered to the speaker is the same at all frequencies, however the impedance may vary, and so, where an artificial boosting of the upper frequencies is already incorporated in the speaker design, the pentode will result in the reproduction of the upper frequencies being far too pronounced in comparison with those of the middle register, unless some means of partial suppression is provided in the electrical circuit. This correction is effected by connecting a high resistance R across the speaker terminals as in Fig. 3. Although the current supplied by the valve is constant, it divides between the speaker coil and the resistance R in the inverse ratio of the respective impedances. Since R is constant and the speaker impedance rises with frequency, it follows that as the frequency rises a larger proportion of the current will go through R and a smaller proportion through the speaker, as desired. A condenser C of suitable value is connected in series with R to prevent the latter from by-passing any of the current at the very lowest frequencies. Practically all moving iron speakers require compensation of this nature to prevent over shrill reproduction.

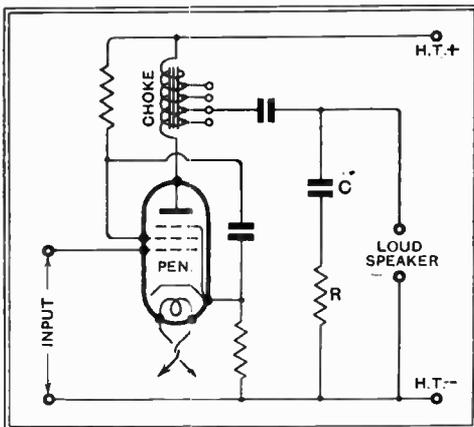


Fig. 3.—Complete pentode output circuit with tapped choke for matching loud speaker and impedance limiting device CR.

Moving-coil speakers are in a class by themselves and require, from the theoretical point of view, constant current at all frequencies, and so it would appear that the pentode would be ideal for operating this type of speaker. But the theoretical conditions are not fully borne out in practice on account of diaphragm or cone resonances. As a matter of fact paper

resonance at high frequencies is usually introduced purposely to compensate for loss of high notes when used in conjunction with a triode. So a speaker with a stiff-paper cone must be compensated in the same manner as for a moving iron speaker when used with a pentode. When the cone of the moving coil speaker is made of a very soft material, no compensation is required, but in practice it is

unsafe to operate a pentode without a resistance across the speaker or primary winding of the output transformer because the wide variation of valve impedance may cause dangerously high voltages to be developed during the passage of any powerful transients.

With careful matching and compensation the pentode can be made to render more realistic reproduction than a triode.

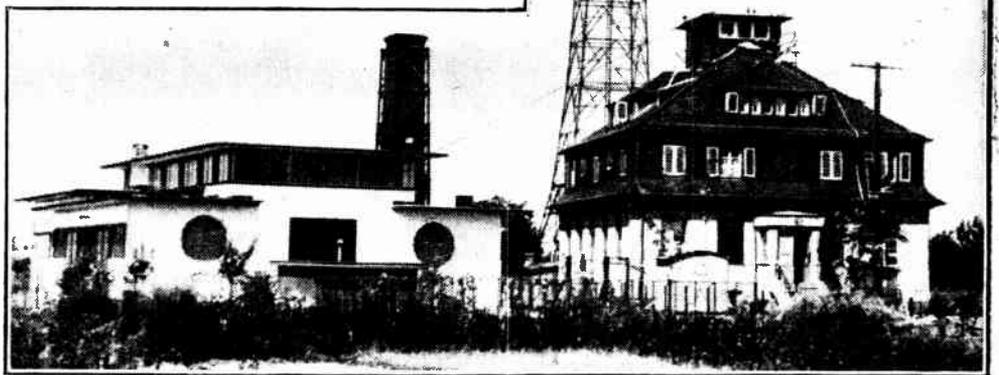
DISTANT RECEPTION NOTES**Shared Wavelengths : Results That Astonish**

SO Portugal is to join the ranks of the high-powered transmitters. The new Lisbon station, which will be able to use up to 100 kilowatts when required, is nearing completion, and tests are likely to start early in the autumn. The wavelength is to be 283.6 metres, which is at present occupied by three German relays, Berlin, Magdeburg, and Stettin, and the half-kilowatt Austrian relay station at Innsbrück. One imagines that this will necessitate a certain amount of reshuffling at Lucerne.

Strangely enough, though, it is not always found completely unsatisfactory to mix a station using moderately high power in with a number of smaller ones on a common

four-valve set containing two screen-grids, detector, and a power output stage still brings in a round dozen Continental stations at full loud-speaker strength with the reaction control knob right over at its minimum setting.

Amongst these stations, which are received so strongly that one is to all intents



A POPULAR DEUTSCHLANDSENDER. The transmitter buildings at Frankfurt, one of the best known of German broadcasting stations. The wavelength is 259.3 metres and the power 17 kilowatts. Frankfurt serves two relay stations, Cassel and Trier.

wavelength. The most astonishing example is to be found on 453.2 metres. This is occupied by no fewer than nine stations with outputs ranging from 150 watts to 1 kilowatt, and a tenth has recently been added in the shape of the 7-kilowatt Milan Experimental station, which relays Rome. Despite the multiplicity of its wavelength partners, I hear that reception within the service area of Milan is very good, and I have not heard of many complaints from those served by the other relays on the same wavelength. It will be still more interesting to see what happens when common-wavelength working of two super-power stations is attempted—the West National and London National on 261.5 metres.

Good Signals from Ireland

Athlone must be classed as one of the most successful of the new high-powered stations. In most parts of England and Wales its transmissions are received at almost local-station strength and the quality is remarkably good. One only hopes that the programmes will not eventually be spoilt by too much advertising.

As an indication of how good conditions still are, despite the nearness of the summer season, I may say that a straightforward

and purposes within their service areas, are Nürnberg (on certain evenings), Trieste, Turin, Heilsberg, Hilversum, Breslau, the Poste Parisien, Brussels No. 2 (now much stronger than No. 1), Leipzig, Rome, Langenberg, and Prague on the medium waves; and on the long waves, Zeesen, Warsaw, and Radio-Paris.

By making the set a little more sensitive numbers of other stations can be brought up to full loud-speaker strength and thoroughly well received. Barcelona, for instance, is better heard now than it has been for some weeks, and Hamburg is often very good indeed. Mühlacker's is a wonderful transmission at times when the London Regional is not working, and there has been little trouble recently from the Algiers heterodyne. Brno is well worth attention, and Göteborg is often to be found coming in well on 321.9 metres. Fécamp still suffers rather badly from spark signal interference. Bratislava on 278.8 metres is often receivable with real entertainment value. There is a slight tailing off at the very top of the medium-wave band, though Vienna and Florence are almost, if not quite, as good as ever. Stockholm and Katowice are nearly always to be relied upon for good quality and good programmes. D. EXER.

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

ADAPTORS, by means of which the working currents and voltages of valves may be measured *in situ*, are produced by a number of manufacturers, and are extremely useful as an aid to checking operating conditions with a minimum of trouble.

Misleading Measurements

The adaptor is inserted between the valve under suspicion and its holder, and so the meter may be joined to the appropriate points without disturbing the wiring.

Unfortunately, the leads between adaptor and meter must inevitably introduce some risk of stray inter-circuit coupling, and thus self-oscillation may be provoked. The anode current taken by a valve in a state of oscillation will be different from that consumed under normal working conditions, and so, before relying implicitly on a measurement made in this way, one should satisfy one's self that the set is completely stable.

Self-oscillation may occur when dealing with H.F., I.F., or sometimes with detector valves. The most certain and usually the easiest way of ensuring immunity is to short-circuit the grid coil of the valve concerned; this course will not prejudice the accuracy of the readings in any way.

ONE of the simplest and cheapest methods of rectifying A.C. current for supplying the field of a moving-coil loud speaker is that shown in Fig. 1. The diagram is almost self-explanatory, but it should be emphasised that it is virtually essential that the principle of hum neutralising (hum bucking) should be embodied in the loud speaker.

Energising Field Magnets

It will usually be convenient to wire the rectifier circuit across the "dead" side of the on-off switch of the receiver, so that the current may be supplied automatically when needed. If this plan be adopted, it should not be forgotten that heavier main fuses will be required.

The arrangement shown is applicable to the field windings having the almost standardised resistance of 2,500 ohms; where it is desired to feed the field winding of the older type, which was origin-

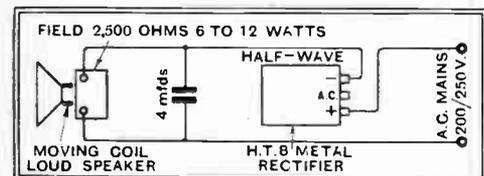


Fig. 1.—Feeding a high-resistance field winding from A.C. mains at normal voltage through a metal rectifier.

ally designed for connection to a 6-volt accumulator, the method suggested in Fig. 2 will be found satisfactory. Due to the fact that the voltage required is low, it will be necessary in this case to interpose

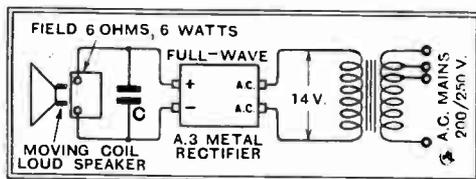


Fig. 2.—Supplying rectified current for an older type of field winding with a low-resistance winding.

a step-down transformer between the mains and the metal rectifier.

One of the advantages of working with a low rectified voltage is that a high-capacity dry electrolytic condenser may be used in the position marked C for purposes of smoothing.

In the "Class B" Eliminator described in *The Wireless World* of April 14th, a resistance of 1,800 ohms was inserted in series with the rectifier in order to limit the output to 60 milliamps. As this resistance is inserted in the negative lead, it may be regarded as a source of "free" grid bias; by converting it into a potentiometer in the manner shown

The "Class B" Eliminator

in Fig. 3, any desired proportion of the total voltage developed across it may be employed for this purpose.

As the current flowing through the resistance in question will be maintained at a sensibly constant value, irrespective of load, by the action of the neon stabiliser, bias might be derived in this way even for a receiver in which anode current varies with modulation—as, for instance, when "Class B" or quiescent push-pull is employed. Without a stabiliser anode supply from the mains is normally ruled out for such sets.

As a potentiometer of 1,800 ohms is not a standard commercial product, it might be found more convenient to use a standard 300 ohm wire-wound potentiometer in series with a fixed resistor of 1,500 ohms; this would enable bias voltages varying from zero to about 18 to be taken off the variable section.

AS has already been stated in these columns, there is no easier or more certain way of improving the selectivity of an existing set than by adding an extra tuned aerial circuit. Of course, this addition is only applicable to sets in which the existing input circuit is of the single-tuned variety.

Two-circuit Tuner Coupling

It would appear that the great majority of failures to obtain satisfactory results from this addition are due to the fact that provision is not made for sufficiently loose coupling between the added circuit and the existing input circuit of the set. It is sometimes rather difficult to determine exactly whether the coupling is loose enough or not; in cases of uncertainty it is wise not to be satisfied unless it is possible to loosen coupling to such an extent that an easily perceptible reduction in signal strength can be brought about by setting the coupling at minimum.

OCCASIONALLY a failure in insulation between the cathode and the heating element of an indirectly heated valve still gives rise to trouble. A test for insulation between the heater and cathode pins is almost valueless when the valve is cold, as the fault will probably only manifest itself when the heater is working at its normal temperature.

Heater-Cathode Insulation

This is a case where an indirect test may often be made much more easily than a direct one. If the valve under suspicion is biased by means of a resistance in its cathode circuit the fault in question will

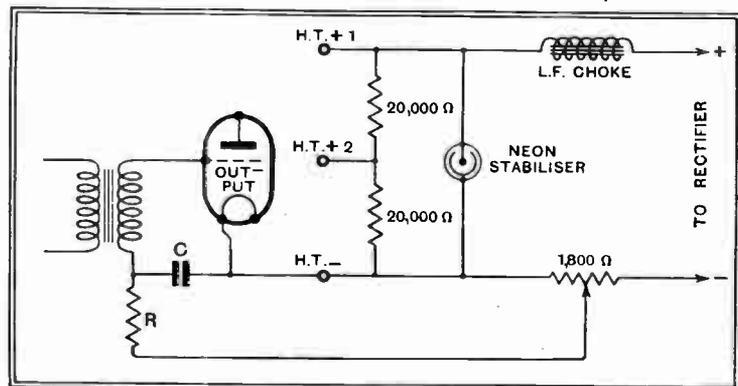


Fig. 3.—Free bias from the "Class 'B' Eliminator"; the decoupling components R and C may have values of respectively 100,000 ohms and 1 mfd.

introduce a short-circuit across this resistance, and so any change made experimentally in its value will not be followed by the usual changes in anode current. An indirect test is made by temporarily replacing the fixed resistor by a variable one, and at the same time inserting a milliammeter in series with the anode.

BROADCAST BREVITIES

By Our Special Correspondent

"Bowdlerised" Broadcasting

NOBODY these days seems to love the B.B.C. Balance and Control section. These hard-working and conscientious engineers have always had to submit to a kind of cold indulgence from artistes and listeners alike, but in the last week or two this "necessary evil" attitude seems to have developed into open hostility.

They are accused of "sub-editing" the great conductors ("editing" would be bad enough!), and one critic has gone so far as to accuse them of providing the public with bowdlerised versions of the classics.

Cruel Accusations

These are cruel accusations, and the accused engineers need all the balance and control they can muster to preserve at least an outward calm, for I know that these shafts run deep.

The truth, which is self-evident to every reader of *The Wireless World*, is that broadcast programmes would hardly flatter the artistes and conductors if they were left to the tender mercies of even the best of microphones and amplifiers.

Tricks of the Microphone

To some degree, of course, a broadcast soloist can control and balance his performance by various little microphone tricks. These include throwing back the head when a high note is tackled and lowering the voice to a confidential whisper when approaching near to the microphone. But microphone dodges are beyond the scope of, say, a symphony orchestra, and it would certainly distract the Queen's Hall audience to see the instrumentalists rushing to and fro in order to preserve a correct ratio between volume, pitch, and distance from the microphone.

They Would Change Their Tune!

I suggest that the Balance and Control section wastes no time in denying the allegations and defying the allegators; failing which they might take a night off and let the critics hear what an uncontrolled concert really sounds like.

Personally, I should prefer a chorus of cornercrakes.

A Satisfied Empire

IT says something for the popularity of Empire broadcasting that over 5,000 people have actually put pen to paper in order to tell the B.B.C. what they think of the service. Of these practically 700 troubled to complete the very comprehensive questionnaire and another 340-odd actually went to the expense of sending cables.

Who can now say the Empire is indifferent?

Would the Money Flow?

In the light of these figures I think that the B.B.C. "ambassadors" like Mr. Malcolm Frost and his chief, Mr. Cecil Graves, will not find it very difficult to persuade the Dominions and Colonies to pay their just share towards the upkeep and improvement of the service.

What About it, B.B.C.?

HERE is an idea from New Zealand which might well be copied by the B.B.C. I hear that 2YA, Wellington, now has a small auxiliary station working on a shorter wavelength, which is specially used for broadcasting gramophone records while the parent station is sending out the news bulletins, the music being for the benefit of those who have already seen the news in the papers.

Yet listeners at the heart of the Empire have no alternative to the First News Bulletin, most of which is available at length in the evening papers, and, possibly, in some of the more alert morning journals.

Bravo, West Regional!

CONSIDERING the success which the B.B.C. engineers experienced with the first unannounced modulated transmissions from West Regional, it is not surprising that people in the West are applauding the excellence of the test transmissions which go out daily (Sundays excepted) on 309.9 metres between 11.10 and 11.50 a.m. and between 10.45 p.m. and midnight.

Transatlantic Report

Glowing reports are not confined to Wales and the West of England. I hear that after the early morning test on April 13th, reports came from a ship off the coast of Norway and a listener in St. John's Newfoundland. Splendid reception has also been reported from Berlin.

Wanted: A Sedative

It is in no spirit of vindictiveness that I utter the wish that West Regional will act as a real bromide to Radio Vitus, that little Parisian pest (as D. Exer put it last week) which performs a regular St. Vitus dance between 306 and 312 metres, upsetting Cardiff in the process.

Let Radio Vitus see what fifty kilowatts taste like.

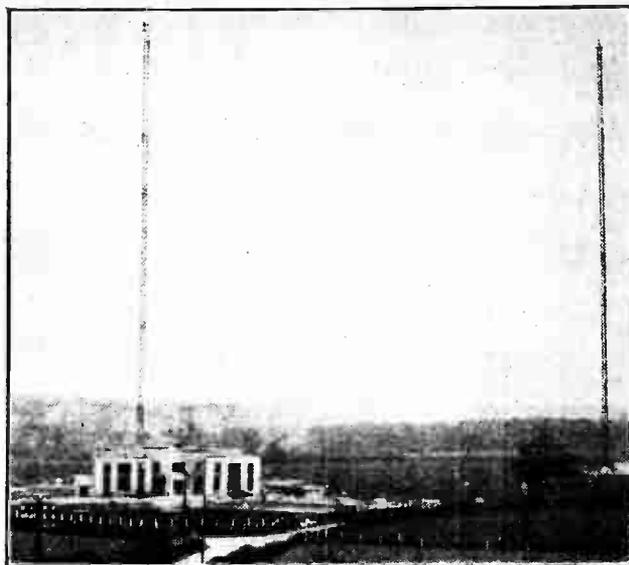
B.B.C. versus Man-made Static

IF you should hear Daventry National working overtime it would be a reasonably safe bet that the B.B.C. is engaged in an experiment to combat man-made static.

Trolley Buses on Test

The trolley bus question was tackled on April 12th with the cordial co-operation of the Hastings Corporation. As all the buses were in service during the day it was necessary to carry out the test after midnight, and for this purpose several buses were run empty through the streets (what the late revellers thought is not recorded!) while Daventry National sent out a special transmission from midnight to 1 a.m.

I understand that some useful data were obtained.



CALLING THE WEST. A striking view of the new West Regional B.B.C. station near Watchet, Somerset, which has begun daily tests on 309.9 metres. In general plan the station resembles its companion transmitters of the Regional scheme.

National Grid Troubles

The B.B.C. fear that electrical interference may increase slightly with the gradual completion of the National Grid electricity scheme, though the static is not so noticeable as might be expected. Most of the trouble seems to be caused in wet weather by surface leakage across insulators; even so, it is only observed by listeners who are very near to the power lines.

By the way, can you tell me why the amount of interference is not affected by the voltage? Apparently a 30,000-volt cable causes no more interference than one of comparatively low voltage.

On Empire Day

EMPIRE DAY (May 24th) will be notable for broadcast speeches by Mr. J. H. Thomas and the Archbishop of Canterbury from the Empire Day Luncheon at the Junior Carlton Club.

A special Empire Day Programme will be heard in the evening.

Nightingales Again

THE B.B.C. impresarios are off to Pangbourne to arrange contracts with the nightingales. During the period May 22nd to the 27th it is hoped to relay the song of the nightingale at intervals in the late dance music.

The nightingale is one of the few artistes who are sought for by the B.B.C. His lot is not that of the majority of performers, who, it would seem, can never be quite sure that they will not suddenly receive notice to quit.

Stick to the Helm, Sir Charles

I AM glad that there is a strong feeling in favour of Vice-Admiral Sir Charles Crespigny's retention of his post as President of the International Broadcasting Union. Much as Sir Charles's services are valued at Broadcasting House, I believe that it is the general view that if he decides to relinquish one or other of his two big tasks he should continue to exert his powerful influence on international broadcasting.

There are not many people with his experience as a pilot in the turbulent wavelength channels.



R.G.D. Supersonic Radio

MODEL 701 D.C. Gramophone

Seven-valve D.C. Superheterodyne
Embodying Dual Loud Speakers
and Automatic Record Changer

Features: Seven-valve D.C. superheterodyne radio gramophone. Dual moving-coil loud speakers, automatic record changer, wavelength calibrated scale. Variable-mu H.F. amplifier, separate oscillator and S.G. first detector. Variable-mu I.F. amplifier, anode bend second detector and push-pull output. The controls include: (1) Tuning. (2) Combined wave-change and radio-gramophone switch. (3) Volume control effective on radio and gramophone, also mains switch. (4) Tone control. On motor board (1) Gramophone motor switch. (2) Reject and repeat control. **Price:** 67 guineas. **Makers:** Radio Gramophone Development Co., Ltd., 18/20, Frederick Street, Birmingham, 1.

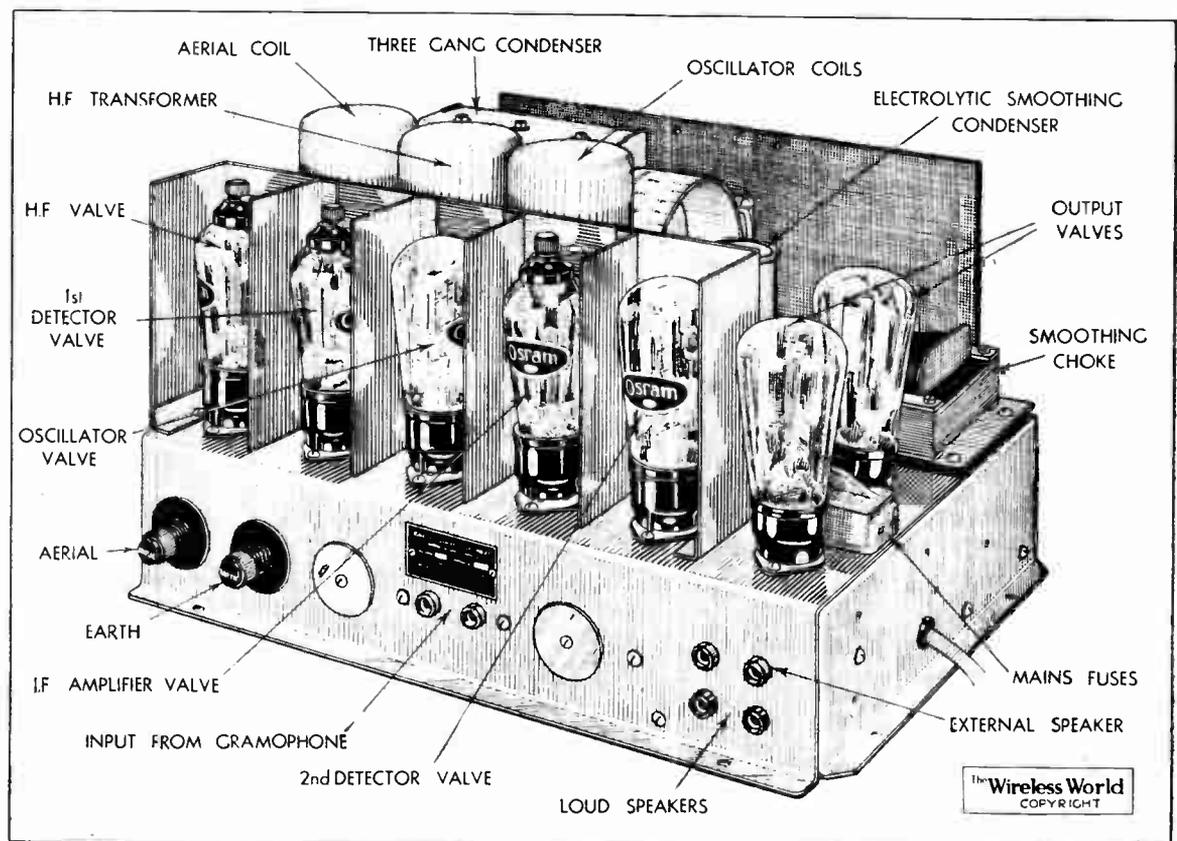
OF the many problems that beset the designer of a D.C. receiver that of obtaining an adequate power output under all conditions is possibly the most important of them all. For there is no simple means of increasing the voltage, as in the case of an alternating current supply, and when deductions have been made for grid bias and the requirements of smoothing about eighty per cent. only of the supply voltage will be available for operating the power stage. Yet, despite the many difficulties, D.C. operated receivers have attained a very high degree of efficiency, as instance the model 701 D.C. radio-gramophone, made by the Radio Gramophone Development Co., Ltd. This instrument is basically the same as their A.C. model, and comprises a seven-valve superheterodyne receiver, an automatic record changer, and dual-compensated loud speakers, and, in common with all R.G.D. products, the workmanship is of the very best.

The circuit employed is comparatively straightforward for a superheterodyne, and consists of one H.F. stage, preceded by a single-tuned circuit loosely coupled to the aerial. This is joined to a screen-grid

first detector by an H.F. transformer, the secondary circuit of which is tuned. There is a separate oscillator embodying a triode valve and one intermediate frequency amplifier; band pass I.F. transformers precede and follow this valve. The high and intermediate frequency stages both contain variable-mu screen-grid valves.

Thus there are two pre-selector tuned circuits and four in the I.F. amplifier, the degree of selectivity afforded by this chain of six tuned circuits being adequate for all normal requirements. An anode bend second detector, for which a triode valve is used, follows, and finally there is a pair of output valves working in push-pull. Incidentally, both first and second

detectors are of the anode bend type, and, being self-biased, will handle a comparatively large input. The customary split-secondary L.F. intervalve transformer usually preceding a push-pull amplifier is not employed in the present receiver, but in its place is a centre-tapped choke resistance capacity coupled to the detector valve. This may seem on first acquaintance somewhat unusual, but closer examination will reveal that it is but an auto-transformer with a centre-tapped secondary and a parallel-feed input circuit. It does not, of course, provide a voltage step-up, but actually there is no need to enhance the low frequency amplification, as ample power is available even on distant stations. Power is fed to the two moving-coil loud



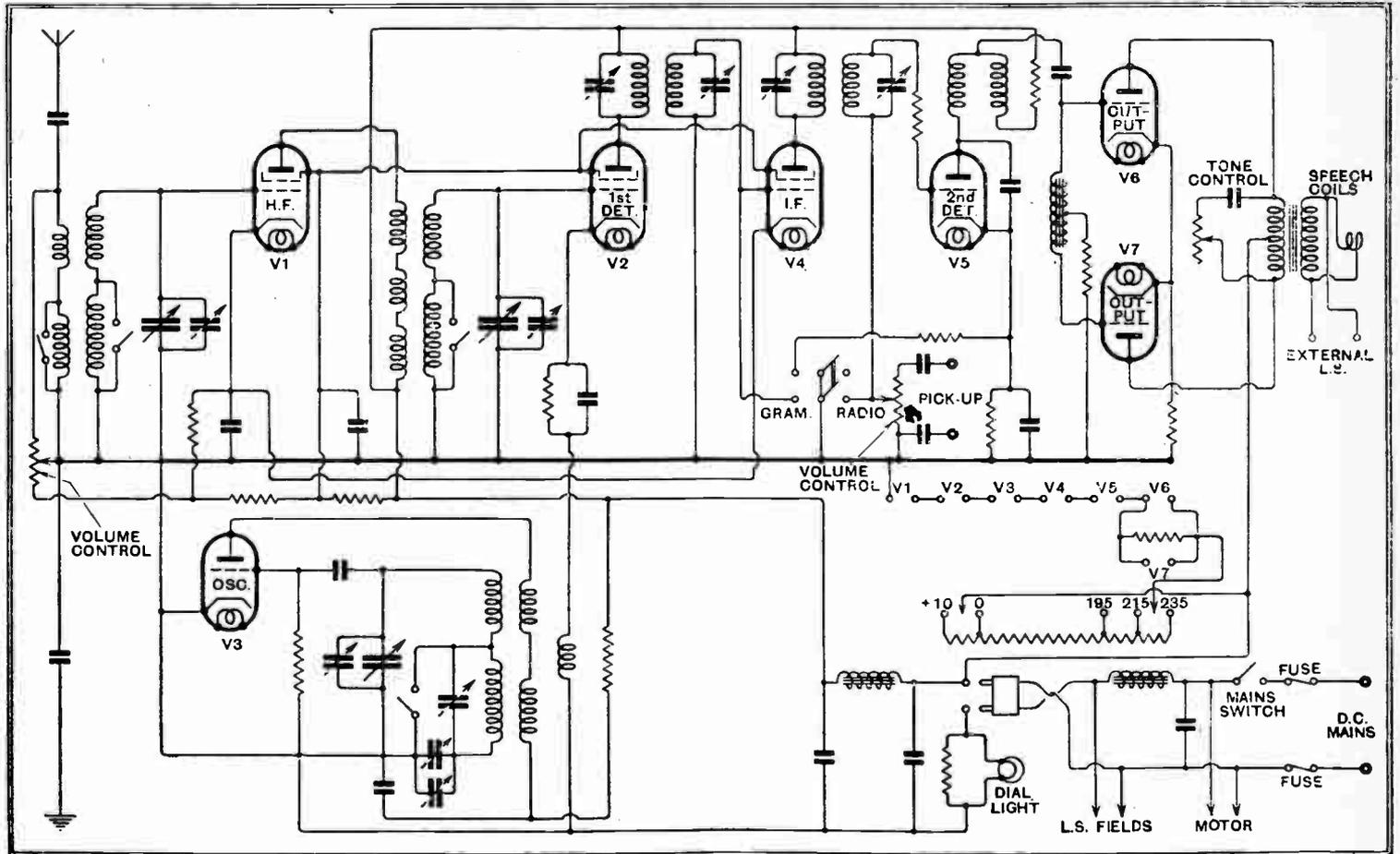
Rear view of the chassis showing the comprehensive valve screening.

R.G.D. Supersonic Radio Gramophone— speakers by an orthodox push-pull output transformer, across the primary winding of which is connected a tone control consisting of a variable resistance and a con-

found when playing partially worn records, as it materially helps in reducing surface noises.

The reproduction of the higher frequencies is, perhaps, slightly better on gram-

as a polarity indicator. A useful feature is the inclusion of a two-pin plug joined to the mains input leads after the first smoothing choke, which enables this choke to be inserted either in the positive or the



Complete circuit diagram. Provision is made for positive or negative smoothing.

denser. The loud speakers are of the energised type with their field windings joined in parallel and connected to the mains through a smoothing choke.

Volume is controlled by varying the grid bias of the first H.F. valve simultaneously with that of the I.F. amplifier, and also by reducing the signal input. These three functions are combined in a single control and linked with it is a second potentiometer, which serves as the volume control for the gramophone. This control, in addition to answering for both radio and gramophone, embodies also the mains on-off switch.

Effective Tone Control

The wave-change switch is made to serve a dual rôle also, for combined with it is the radio-to-gramophone switch. A tone control is not an essential adjunct, for the acoustic output is particularly well balanced; the bass is well in evidence, but does not obtrude or overshadow the upper and middle registers, both of which are well reproduced. Actually, the main usefulness of the tone control would seem to be as a whistle or heterodyne suppressor should interference of this nature be encountered and be sufficiently high in pitch to come within the range of the tone control. A further use for it might be

phone, which does not imply that broadcast reproduction lacks brilliance, since the difference is only just discernible to a trained ear. Selectivity has its price, but in the R.G.D. receiver the cost is surprisingly low.

Tuning is facilitated by the provision of a wavelength-calibrated scale, marked in bold figures and illuminated from the back, the dial light, incidentally, serving

negative lead. The plug is a little inaccessible, being located between the output valves and the panel, but it is an initial adjustment, and will probably be dealt with by the installing engineer.

All controls are mounted on an inclined panel placed at a convenient height for easy access when sitting in an armchair. There are two additional controls mounted on the motor-board, and these relate to the operation of the Garrard automatic record changer. They consist of a start and stop, reject and repeat switches. The record changer holds eight 12in. or 10in. records.

As a wireless receiver the performance is fully in keeping with that expected from a well-designed superheterodyne; sensitivity and selectivity are more than adequate to cope with present-day conditions. Quite a short aerial suffices for the reception of all the principal broadcast stations, whilst in many cases the volume control must be adjusted to avoid overloading. Best results, so far as volume and quality of reproduction are concerned, are not necessarily obtained with the volume control at maximum; and the optimum position must be found by trial. With the output stage working well within its power-handling capabilities, the volume is ample for a living room of more than average size.

BLUE PRINTS

For the convenience of constructors full sized blue prints are available of the following popular *Wireless World* sets that have been recently described. price 1s. 6d., post free:

- Monodial A.C. Super.** (Booklet, price 1s. 6d. post free.)
- Short Wave Two.** (November 4th and December 24th, 1932.)
- Straight Three.** (December 16th, 1932.)
- Modern D.C. Three.** (December 30th, 1932, and January 6th, 1933.)
- All-wave Monodial Super.** (January 27th and 1 February 13th, 1933.)
- Modern A.C. Quality Amplifier.** (February 17th, 1933.)
- Ferrocarril III.** (February 24th and March 3rd, 1933.)
- A.V.C. Monodial Super.** (March 17th and 24th, 1933.) With 2.5 watt or 5 watt amplifier. State which is required when ordering.
- The Glass "B" Ferrocarril Receiver.** (April 17th, 1933.)
- Universal A.C. Short-wave Converter.** (April 28th, 1933.)

* Price of this blue print is 2'.

These can be obtained from the Publishers, Hiff & Sons Ltd., Dorset House, Stamford Street, London, S.E.1.

as the first requirements of any receivers described in its columns, and if it continues to believe in that policy it will not be deterred for one moment from using the very best apparatus it can get for use in its sets, irrespective of its cost; for there is very little room for doubt that, in the past at any rate—and, the writer believes, at the present time and in the future—those constructors who build *Wireless World* sets, or the sets of good design put out by certain manufacturers, do so not for any possible saving in cost as compared with the completely manufactured article, but for the joy of the building and the fairly well founded belief that they can employ in their sets better apparatus than the majority of present-day manufacturers can afford to use.

J. BAGGS.

New Moston, Manchester.

IN your remarks on the price of components you omit to mention the valve.

We have recently seen American multi-valve sets offered for sale here which include valves such as are making a belated bow in this country.

The English price of the valves contained would in some cases account for a very large part of the selling price of the complete set, loud speaker included, although these sets and valves come from the land of high wages, high prices, and trusts.

In spite of the high price of English valves, the life of heaters is still very much *x*; some will run to the end of their useful emission, and then one may have three or four wasters before chancing upon another long-lifer.

Despite mergers, rationalisation, organisation, research, and so forth, almost every advance of major importance in valve construction has originated abroad.

A comparison of American with English valve prices, or comparison of the prices at which English valves are being sold abroad (after surmounting high tariff barriers) with the prices asked in this country, would be interesting.

WM. A. RICHARDSON.

Ashford, Kent.

Schools Wireless

INFORMED you as long ago as last October that we were thinking of constructing the Monodial A.C. Super or the Modern Straight 5 to use as a school set.

You strongly deprecated the former and even seemed doubtful about the latter.*

However, as the result of some experience and enquiries I meant having a reserve of power and constructed your Modern Straight 5.

Believe me, it is almost ideal. I have the set permanently installed in my room, and loud-speaker extension wires have been run to six of the classrooms. Reception of music in each of these leaves nothing to be desired, though speech suffers somewhat from classroom resonance. In purely speech lessons we place the speaker an inch or so from the baffle board, and so weaken the bass frequencies. In any case, no child has to strain in the least to hear all that is said.

I thought you would be interested to hear of the successful use of one of your sets in a school, and am sure you can recommend it with every confidence to any other enquirer.

I should like to express my gratitude to you and *The Wireless World* staff for a very efficient addition to our facilities here.

H. CHAMBERS, Headmaster,
City of Nottingham Education Committee.

* We hesitated to recommend sets which seemed likely to be rather too ambitious for local reception work.—Ed.

LABORATORY TESTS

NEW RADIO PRODUCTS REVIEWED

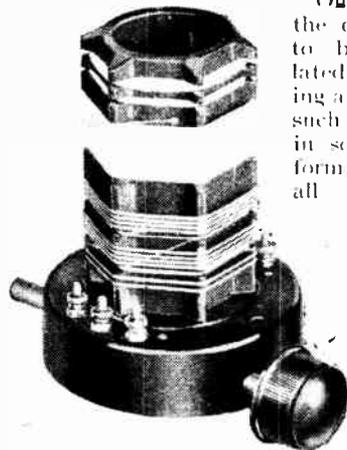
LISSEN UNIVERSAL COIL

THE Lissen Universal Four Wave-Range Coil, to give its correct description, is designed to cover all the broadcast wavebands at present in use when tuned by a 0.0005 mfd. condenser. A four-position switch mounted in the base enables the following wavebands to be selected: 12-34 metres, 27-84 metres, 200-555 metres, and 900-2,100 metres. Particular care is necessary in the layout of the components, and especially in the choice of the tuning condenser, to extend the wave-range down to 12 metres, for we found that although no difficulty was experienced in tuning down to 15 metres with quite normal components and an orthodox layout, more attention to small details was necessary to so reduce the stray capacities that the lowest wavelength could be reached.

Reaction is perfectly satisfactory on all four ranges, and if the reaction condenser, for which a 0.0003 mfd. suffices, is connected in the "earthy" end of the reaction winding no trouble will be experienced from hand capacity. The tuning condenser must be fitted with a good slow-motion drive, and it is essential that it should have a very low minimum capacity.

The presence of the medium- and long-wave windings does not seem to affect the performance of the short-wave section, and on these wavebands the efficiency is as good as can reasonably be expected with a coil of such versatile application.

On the whole the designers are to be congratulated on producing a single coil of such wide range in so compact a form, for its overall height is



Lissen
Universal
four-range
coil.

4½ in., and the diameter of the base 3 in. The various coils are wound on a six-ribbed ebonite former measuring 2 in. in diameter. The base is a neat bakelite moulding.

The makers are Lissen, Ltd., Lissenium Works, Worpole Road, Isleworth, Middlesex, and the price, complete with extension rods, is 15s.

BLOCK L.T. ACCUMULATOR

AN unconventional storage cell in which the customary lead grill filled with oxide paste has been replaced by a special type of compressed electrodes consisting of the active material only has been introduced by Block Batteries, Ltd., Abbey Road, Barking, Essex. Known as the Block Accumulator, it is made in an 80-

Block plateless two-volt accumulator rated at 80 amp-hours.

amp-hour size, nominal rating, and takes the form of a cylindrical bakelite container in which is a seamless lead cylinder having pasted on to its inside surface the active paste forming the negative electrode. The positive element is a light lead core heavily pasted with a lead oxide. This is adequately insulated and is immersed in the usual solution of sulphuric acid.

This method of construction leads to a considerable saving in weight and space, for it is claimed that in the Block cell double the amp-hour capacity is obtained for a given size.

The new accumulator is an improved version of the original Fuller block-type cell, but is far more convenient for radio use than its prototype, since the charging rate is commensurate with that of any normal battery of equivalent capacity. It is, however, suitable for slow discharge only, and the normal rate is of the order of 0.5 amp. Owing to the particular nature of its construction, the cell may be left in a fully charged state without attention for long periods. Very little leakage of the charge takes place and, furthermore, internal sulphation is so slow that the cell does not suffer harm from this cause.

A specimen cell has been subjected to a test consisting of continuous discharge at 0.5 amp. and after the first charge 77 hours elapsed before the voltage dropped to 1.8. Subsequent discharges gave 80 hours and 78 hours work respectively under similar conditions, so that it would seem that on continuous work an actual capacity of about 40 amp-hours may be expected. On intermittent discharge we fully expect the battery will give a considerably longer working time.

The battery is fitted with non-interchangeable terminals clearly marked and a large filler cap with a gas vent. It is available in a variety of coloured containers, and the price is 11s. 6d. for a two-volt cell.

BUSCO SWITCHES

A READJUSTMENT in the prices of Busco Switches, samples of which we reviewed in our issue dated March 31st last, brings the two-point model down to 1s., whilst the three-point type is obtainable for 1s. 3d.

Change of Address

The Public Address Department and the Special Products Branch of the Marconiophone Co., Ltd., hitherto occupying premises at 21, City Road, London, E.C.1, are now accommodated in Radio House, 210-212, Tottenham Court Road, London, W.1. The telephone number is Museum 4144.



READERS' PROBLEMS

Ferrocart and Q.P.P.

A READER who has already purchased the essential components for Q.P.P. amplification asks whether this system is applicable to the Ferrocart Class B receiver. We gather that he intends to use low-power output valves of the LP2 type, and so presumably an intermediate stage of L.F. amplification between the detector and the push-pull output valves will not be needed.

There is no basic reason why the Ferrocart set should not be modified in this manner; it is suggested that the receiver up to and including the detector valve should be built exactly as described, and that the output stage should be rearranged as shown in Fig. 1. It will be noticed that slight

should be remembered that all mains sets are earthed to a greater or lesser extent through the mains themselves.

It would nevertheless be well worth while to go to the trouble of trying to improve the earth connection.

L.F. Reaction

IT is a matter of some importance that interaction between pick-up and loud-speaker should be avoided, and accordingly connections and components associated with the output circuit should not be placed in close proximity to the pick-up and its leads.

From a description of the effects noticed by a querist, we are inclined to think that attention to this matter should remove his

difficulties. The set works satisfactorily as a broadcast receiver, but when the pick-up is in operation L.F. instability and whistling occur when the volume control is set towards maximum. If the leads associated with the input and output ends of the amplifier are in any way mixed together it would be advisable to separate them, and if it is not possible to give greater spacing than at present the expedient of shielding these wires should be tried. It is worth while pointing out that flexible screened wire specially made for pick-up connections is available commercially.

less noisy background, unless a fairly extensive smoothing system is included.

In spite of the fact that the usual smoothing equipment is fitted to his receiver, a correspondent finds that reception suffers while charging is in progress, and asks us to suggest how this interference may be prevented.

We suggest that in the first place the brushes of the charging dynamo should be attended to, and that sparking should be reduced as much as possible. At the same time, it would probably be wise to fit an "interference suppressor" to the dynamo; the simplest arrangement, consisting of a pair of large condensers shunted across the output, with an earth connection to their junction point, will probably improve matters. There is also the possibility that interference is being caused by the electrical ignition system of the engine which drives the dynamo, and it may be necessary to fit the usual preventive devices.

A.C. Practice with Battery Valves

ONE of the advantages of indirectly heated valves is that their cathodes need not be connected together. In practice, and particularly in certain A.V.C. circuits, matters are so arranged that a considerable difference of potential may exist between the cathode of one valve and that of the others in the receiver.

A querist, who is trying several rather unconventional systems of A.V.C., bemoans the fact that he is forced to use battery valves, and so is barred from employing

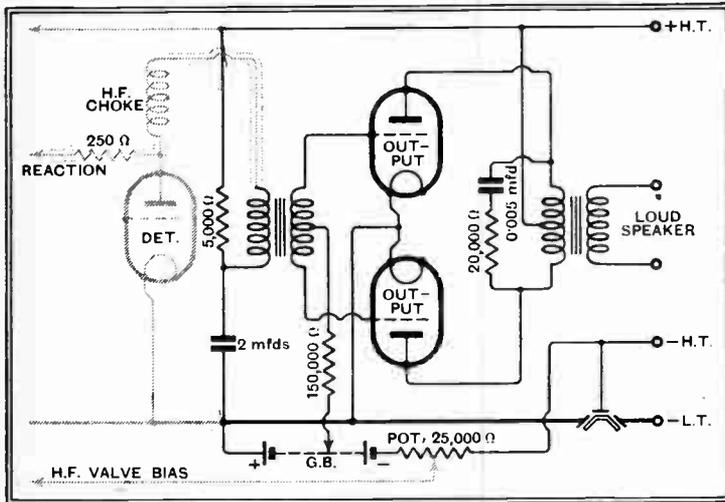


Fig. 1.—The Ferrocart "Class B" receiver, modified by the substitution of a Q.P.P. output stage. Alterations to the original circuit are shown in full lines.

modifications will become necessary in the grid bias system; in order to simplify matters the arrangement illustrated provides for adjustment of output valve bias by means of battery tapplings, the potentiometer being used solely as a volume control by variation of H.F. valve bias. There are advantages in using a potentiometer for critical adjustment of output valve bias as well, and if this refinement is desired it is suggested that two potentiometers might be connected in the manner described in the "Readers' Problems" section of the issue for March 17th.

It should be noted that, for the arrangement at present under discussion the push-pull intervalve transformer must be of the high-ratio type specially designed for Q.P.P.

A Bad Earth

WE are asked what can be deduced from the fact that the removal of the earth connection from an A.C. mains receiver makes no apparent difference to sensitivity or selectivity. Our correspondent, naturally enough, seems to think that a defect in his receiver is indicated.

We do not think that this is so; perhaps the most logical implication is that the earth connection is poor and ineffective, but it

tions is available commercially.

Smoothing Unnecessary

WHEN a receiver is to be fed from the accumulator battery of a house-lighting plant, it is usually quite unnecessary to fit any smoothing devices. This statement is made on the assumption that the set will not be used while the accumulator battery is being charged; while charging is actually in progress there is bound to be a more or

The Wireless World

INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Stamford Street, London, S.E.1, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

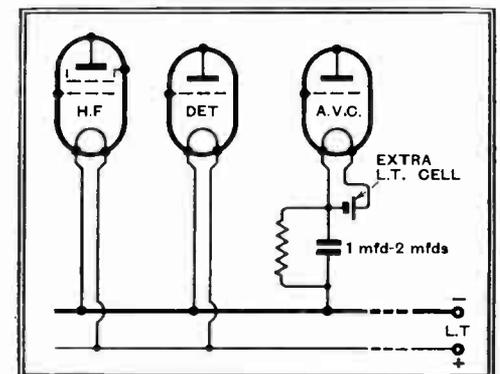


Fig. 2.—By heating a battery valve from a separate L.T. cell its cathode may be treated exactly like that of an A.C. valve, and, if necessary, isolated by a high resistance from the filament circuits of the remaining valves in the receiver.

any method in which the cathodes are at different potentials.

This correspondent loses sight of the fact that, as L.T. accumulators are now so inexpensive, it is quite a practical expedient to feed any valve of which the cathode must be isolated from the others by means of an extra cell. An arrangement of this sort works quite satisfactorily, and so none of the special schemes devised for indirectly heated valves are to be ruled out entirely for battery users. For instance, it is possible to isolate the cathode of a valve in the manner shown in Fig. 2.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

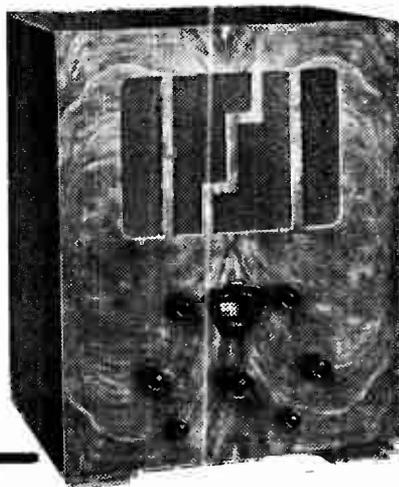


"THE WIRELESS WORLD" CLASS "B" FERROCART RECEIVER

By sending their orders direct to us *without delay*, all "W.W." readers can rest assured that delivery will be effected *by return*. Up to the time of going to press we have been able to supply any component on demand, owing to our having ensured adequate stocks in readiness. The demand, however, for this excellent Receiver is increasing daily and we advise the immediate placing of orders to obviate the possibility of disappointment.

Trade Enquiries Invited.

The fact that this handsome Cabinet, finished in beautifully figured Walnut, was chosen by "The Wireless World" for their latest Receiver, speaks for itself. Fashioned on modern lines, it is of extremely neat design, and its construction leaves nothing to be desired. Special care has been taken to ensure that Cabinet resonances are eliminated. Overall dimensions:— Height, 19½ in. Width, 15 in. Depth, 12½ in. Complete with Loudspeaker Baffleboard "Konductite" metal-lined baseboard and removable back. Front drilled ready to take the "Ferrocart" Receiver, if desired, without extra charge.



Cabinet with metal-lined baseboard - **32/6**

"This Receiver embodies the most advanced technique in Battery Receiver design. Selectivity approaching that of a Super-heterodyne is obtained" (vide "The Wireless World," March 31st, 1933). In view of the remarkable performance of the new Class "B" Battery Valve, both as regards quality of reproduction and power output, it can safely be predicted that this type of output will be included in the majority of future battery sets. In efficiency it is considerably greater than any other output stage, and, in combining this method of amplification with the undoubted superiority of the Ferrocart Coils, "The Wireless World" has to be congratulated on evolving a circuit which, at least as far as battery operated sets are concerned, has totally eclipsed all previous efforts.

KITS AS SPECIFIED (Designer's first Choice).

KIT 'A' Complete (less Valves, Batteries, Cabinet and Loud Speaker) **£8-3-6**

KIT 'B' Complete with Valves (less Batteries, Cabinet and Loud Speaker) **£10-9-9**

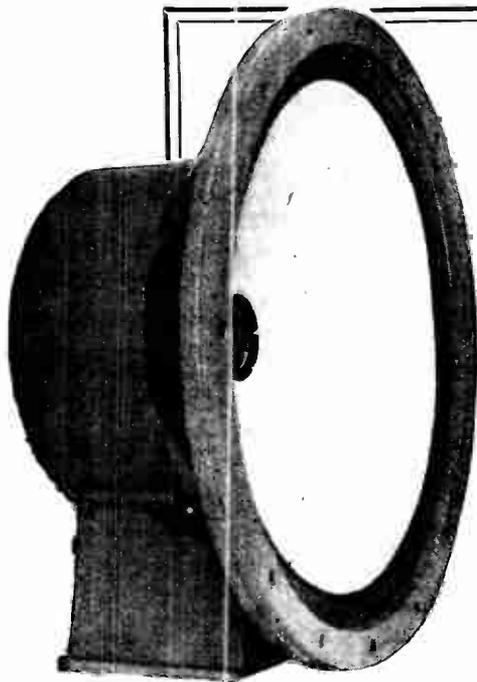
KIT 'C' Complete with Valves, Cabinet and Loud Speaker (less Batteries) **£14-1-9**

Detailed Lists, Post Free.

FREE DEMONSTRATION

All readers of "The Wireless World" are cordially invited to see and hear this wonderful Receiver at our Surrey Street Showrooms, where we are displaying a working model of the complete instrument. Hours of business: 9 a.m. to 6 p.m. Two doors from the Strand, facing Aldwych tube station.

The CITY ACCUMULATOR Co., Ltd.,
Showrooms: 4, Surrey St., Strand, London, W.C.2.
Office and Works: 7, Angel Court, 173, Strand, London, W.C.2.
Telephone: Temple Bar 8620. Telegrams: Cityacco, Estrand. London.



PARMEKO

NEW "SENIOR" MODEL LOUD SPEAKER

In order to meet the demand of those who prefer a Loud Speaker of the large cone type, we have recently introduced our "SENIOR" MODEL. This speaker will be found similar in all respects to our "STANDARD" MODEL, with the exception that it has a 12" diameter diaphragm with a cone angle of 120°.

CATALOGUE AND FULL PARTICULARS FREE ON REQUEST

PARTRIDGE & MEE LTD.,

"Parmeko" Works,
Aylestone Park, LEICESTER.

74, New Oxford Street,
LONDON, W.C.1.
Mus. 5070.

It is capable of handling a large input without distortion. Supplied complete with Unit, Base and Transformer, giving Ratios of 11:1 and 22:1.

PRICE **£7**

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST ON MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Stamford Street, London, S.E.1, or on **SATURDAY MORNING** at the Branch Offices, 19, Herford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 260, Deansdale, Manchester, 3; 96, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.** and crossed. Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

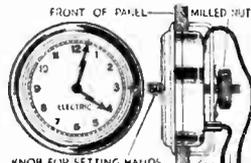
For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box no., c/o "The Wireless World." All replies should be addressed to the box number shown in the advertisement, c/o "The Wireless World," Dorset House, Stamford Street, London, S.E.1. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

DEPOSIT SYSTEM.

Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions over £10 and under £50, the fee is 2s.; over £50, 3s. All deposit matters are dealt with at Dorset House, Stamford Street, London, S.E.1, and cheques and money orders should be made payable to Iliffe & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.



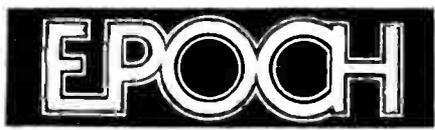
FIT THIS ELECTRIC CLOCK TO YOUR SET!

NO MAINS NEEDED!
KEEPS CORRECT TIME!
NO WINDING!

Works off small battery lasting 12 months or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/4" dia. in any panel up to 1/2" thick. Easy to fix—no screws required. Only 1/2" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.

RIVERSIDE MFG. CO., LTD.
Dept. 20, Crisp Rd., Hammersmith, W.6.
Telephone: Riverside 6392.

12/6
COMPLETE WITH BATTERY
POSTAGE 6D



MOVING COIL SPEAKERS
The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.50. It is free.
EPOCH RADIO MANUFACTURING CO. Ltd.
Exmouth House, Exmouth St., London, E.C.1
At the Junction of Rosebery Avenue and Torrington Road.
Phone: Clerkenwell 1506 (4 lines).

RECEIVERS FOR SALE.

W.W. Battery Single Dial Super; £5.—123, Peckham Rye, S.E.15. [2555]

BETTER Part Exchange at Appleby's, the originators of radio part exchange over 14 years ago.

APPLEBY'S, 109, Edgware Rd., Hyde Park, London. Factors and Valuers of Radio. [2465]

MAJESTIC Brentwood 9-valve Superhet; cost 33 guineas, month ago, accept 23 guineas.—Box 6902, c/o The Wireless World. [2556]

ZETAVOX Receivers and Radiograms, also public address amplifiers and equipment; write for quotations.—Sanders, 12, Eastbourne Rd., W.4. [2557]

Q.P.P. Two Chassis, Mazda Pen.220A.S. H.T. and G.B. batteries, output transformer, musical; bargain, £4.—Sanders, "Dunsley," Beaconsfield Rd., Tring. [2541]

KOLSTER BRANDES 321, S.G. Det. Pent. de, all electric, 100-250v. A.C. M.C. speaker, new, modern; guarantee; £7, or offer, 25, Sandle Rd., S.W.15. [2572]

CLIMAX Band Pass Three, £16 16 A.C. Receiver, complete with valves in sealed carton, £578, carriage paid; e.o.d.—Epton, 93, New Rd., Chingford, E.4. [2466]

"WIRELESS World" Receiver Design, any model assembled and tested free, when we supply the specified components.—Sanders, 12, Eastbourne Rd., W.4. [2569]

CLIMAX All electric 200-250 A.C. Band Pass Three, in walnut cabinet, complete with valves and moving coil speaker; list price £16 16, unopened, £3/8; e.o.d., carriage paid.

50/-—Ediswan D.C. all electric set, S.G. detector and Pentode, without valves, can be converted to A.C.; list price 21 guineas, unopened; e.o.d., carriage forward.

PHILIP KAY, Ltd., 167, City Rd., Finsbury, London, E.C.1. [2541]

1933 McMichael Super-range Portable Four, number 53599, new January 17th, calibration date, same type, re-run; £12, or offer; as new, B.S. 6302, c/o The Wireless World. [2545]

MONODIAL Super Radiogram, in handsome walnut cabinet, 5-watt amplifier, twin M.C. speakers, complete with all valves; cost £45, £30 for quick sale, or exchange for small car of equivalent value. Box 6310, c/o The Wireless World. [2571]

MAGNIFICENT Stenode Radiogram 7 valve, A.C. Super heterodyne Receiver, specially built in the Stenode laboratory, in beautiful walnut pedestal cabinet; cost over £100, accept £35. Apply Gardiner, 45, Cannon St., London, W.1. "Picnic Regent 4436" for appointment, or write for list. [2534]

ACCUMULATORS—BATTERIES.

ACCUMULATORS.—Fuller's 6,500 milliamper, high tension, 12 ten volt units supplied for 7/6 down; lists free.—Leslie's Radio, Catford, S.E.6. [2485]

CHARGERS AND ELIMINATORS.

SERADEX Class B Components; details for stamp.

SERADEX Filter Condensers, type B, 430v. D.C. variable, non-inductive; 1.0 mfd. 1/6, 2.0 mfd. 2/3, 4 mfd. 4/5; see lists.

SERADEX Glass-rod Resistors, type C, 125, 1/2 watt; 25 to 1,500 ohms 9s., 5,000 ohms 1/3, 10,000 ohms 1/3; intermediate sizes next highest price.

LISTS from Trevor Pepper, 48, Wake Green Rd., Birmingham 13. [2547]

Chargers and Eliminators.—Contd.

A.C. Battery Charger, 1 amp., 110-250 v. mains, two years' guarantee; 10/-; 1/2 amp., 7/6.

380-0-380, 250 m.a., two 2-0-2, 6 a., R. and B. transformer, 17/6; massive smoothing choke, 7/6.

WEARITE 300-0-300 v. 60 m.a., 4 v. 2.5 a., 4 v. 4a.; 10/-; many others.—Frost Radio, 21, Red Lion St., E.C.1. [2576]

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

TRICKLE Chargers, 2-6v., with Westinghouse rectifiers, complete, 1/2 amp. 11/9, 1 1/2 amp. 19/11; seven days' trial; postage 9d.

TRICKLE Chargers, L.T. and H.T., illustrated lists free; Autotransformers, mains transformers, etc.—Arden Agency, Wollaton, Wellingborough. [2457]

N.P. Battery Chargers for A.C. Mains, eliminators, 4 L.appings to 120 m.a., 57/6; with trickle charger, 76/6; photographs.

N.P. Trade Price Lists and Photographs of Battery Chargers; Senior Two will do 1 to 36 2v. cells, also H.T. 120v. at 1/2 amp.; 105/-; H.P. terms; Westinghouse rectifiers.

N.P. Valve Chargers, one, two or four circuits; from 65/-; state requirements.

N.P. Specialise in Battery Chargers and Eliminators of all sizes, for A.C. mains.

N.P. Have a Few Sold Instruments; bargains; lists.—Nash Products, Ltd., Stockport, Birmingham, 9. [2536]

A.C. or D.C. Chargers for 2 to 200 cells at Low Prices; state requirements; diagrams and a chart; in stock, all sizes. Brown's Genetometer, battery synchroniser for H.T. for 2v. or 6v. input, 37/6 and 62/6; television and sewing machine universal motors, 25/-; lists.—Electradix Radios, 218, Upper Thames St., E.C.4. [2533]

VORTEXION, Wimbledon, for the latest type transformers, all with screened primaries and 12 months' guarantee, absolute reliability, two supply talkie equipment; regulation guaranteed within 5d. all models except super, which are 2s.; you cannot buy more reliable or better looking transformers, not a pressed shrouding, but a substantial casting free from burrs.

VORTEXION.—Specified for A.C. quality amplifier, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T., terminals, 24/-; tagged knobs, 20/-; shr. mfd., 24/-.

VORTEXION.—Ferrocort III, 350 0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 15/6, shrouded 16/-; post 6d.

VORTEXION.—250 0-250, 4v. 1 to 2a., 4v. 2 to 4a.; open type 10/6, shrouded 12/6; e.o.d.

VORTEXION Model for Universal A.C. Short-wave Converter; open type 10/6, shrouded 11/6; post 6d.

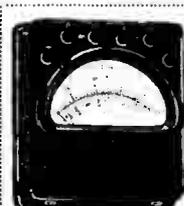
VORTEXION.—Open type H.T.S. model, 4v. 4a., 12/6; post 1s.

VORTEXION.—super model for H.T.S. or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 16/6; post 1s.

VORTEXION Kit for Output Transformer.—Sankey Eliminations Kit, wire, Empire cloth, cast aluminium frames and terminal strips, state secondary gauge required, 7/6; made to specification, 9/6.

(This advertisement continued on next page.)

ELECTRADIX to the FORE AGAIN! THE VEST POCKET TESTER DIX-MIPANTA



A wonderfully versatile Moving-Iron, Multi-range portable or panel meter for

A.C. or D.C.

Bakelite Case

Size: 2 1/2 in. x 3 in.

NO PROJECTING TERMINALS.

A 2 Guinea Tester for

19/6

The Junior companion of the famous D.C. Dix-on-meter.

THREE RANGES OF VOLTS:

0—7.5 v. 0—150 v.

0—300 v.

(3 Scales)

Used for Millamps reads:

0—12 1/2 m/a. and

0.75 m/a.

for transformer testing.

MICROPHONES—20 Models at prices from 1/- each.

Write for List "19/6."

ELECTRADIX RADIOS,
218, UPPER THAMES STREET, E.C.4.

Chargers and Eliminators.—Contd.

(This advertisement continued from previous page.)
VORTEXION.—2½-watt Monoidal A.V.C. model; open type 14/6, shrouded 16/6; post 1/-.
VORTEXION.—5-watt Monoidal A.V.C. model, 400-0-400, 120 m.a., 4v. 6a., 4v. 3½a., 4v. 2, 4v. 1a., super screened; 20/-, shrouded 24/-.
VORTEXION.—350-0-350, 1:0 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.
VORTEXION 400 or 450 or 500 v., 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type, 19/5, shrouded 23/-.
VORTEXION.—400 or 450 or 500, 150 m.a., 4v. 4a., 4v. 2.5, 4v. 2, 4v. 2, 4v. 3, core size 2½in. x 1½in., a super job, 2½ regulation; 35/-, shrouded, with terminals, less terminals, 30/5, open type 26/-; post 1/3.
VORTEXION. Autos to B.I.S.A. specification, 100 or 110 volts to 200 or 220 or 240 volt, 60 watts, 7/3, post 9d.; 120 watts, shrouded 12/6, open type 10/6, post 1/-; 200 watts, open 14/6, shrouded 16/6, post 1/3; 2,000 watt autos, £4, 10.
VORTEXION.—Chokes, 20 h. at 120 m.a., 8/6; 30 h. at 60 m.a., 5/6; 30 h. at 150 m.a., open type 10/6, shrouded 12/6; post 1/-.
VORTEXION.—1,000 volt 60 m.a. transformers, weight 34 lb., £4, 10, or similar wattage; carriage free.
VORTEXION.—4-4 ml. 500 peak electrolytics; 4/6.
VORTEXION.—Transformers made to your specification.
VORTEXION, 182, The Broadway, Wimbledn. Tel.: Liberty 2814. [2560]

CABINETS.

RADIOGRAM Cabinets: fully illustrated list free; remarkable values. Gilbert Cabinet Maker, Swindon. [1686]
WE Can Supply Brand New Complete Gramophones, London made cabinets, at less than the cost of cabinets; ideal for converting to radiograms; 28 models to choose from; 52/6 to £10; illustrated list free.—Radley's, Ltd., Canal Rd., Bradford. [1786]

DYNAMOS, ETC.

ROTARY Converter, 12in., 200-350 volts output, 50/-; wanted, M.L., 24 or 32 input, 400 out.—Jersey, Cannon Hill, Oxford. [2527]

LOUD-SPEAKERS.

COLUMBIA A.C. and D.C. Moving Coil Speakers, fitted variable ratio transformers in attractive figured oak cabinets; from 37/6 complete.
ALL Types of Moving Coil Speakers, pots and windings, etc.; going cheap.—R. Newman, 309, Roman Rd., Bow, E.3. [2418]
MOVING Coil Speakers, guaranteed, latest types at special prices to clear; write for full particulars.—Sanders, 12, Eastbourne Rd., W.4. [2568]
18/9.—W type P.M. moving coil speakers, originally 49/6, 8½in. cone, reputable manufacturers' 1933 surplus, class B 2/6 extra; also class B transformers, 7/9 (new); carriage paid; cash or cash; 3 days' approval.—Streets, 84, Riverdale Rd., Highbury, N.5. [2552]
30/-.—B.T.H. R.K. moving coil speakers, cin. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.
27/6.—11-6v. D.C. speaker, as above; £2, 7/6, speaker as above for 100-250 A.C.
SIMPSON'S Electric Turntables, 25/-, carriage paid; cash with order, or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2554]
B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30/-; also A.C. models £2 10; carriage paid, c.o.d., or cash with order; the best value in speakers obtainable to-day.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]
MAYFAIR RADIO Have for Disposal Set Manufacturers' New Surplus Moving Coil Speakers, Rola F.6, 90-130 volts (2,500 ohms), 200-250 volts (6,500 ohms), listed 35/-, at 18/- each; as above, F.7, listed 47/6, at 25/-; F.6 P.M., listed 49/6, at 28/-; F.7 P.M., listed 60/-, at 32/-; F.6 P.M., Class B, listed 49/6, at 29/-; power or pentode transformer; cash with order, or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2543]
CHAL-ELECTRIC Offers New Set Manufacturers' Surplus (last few) Rola Moving Coil Speakers: F.6, 7½in. cones, following voltages, 6 volts (8½ ohms), 110-175 volts (2,000 ohms), 90-130 volts (2,500 ohms), 150-200 volts (4,700 ohms), 200-250 volts (6,500 ohms), listed 35/-, at 18/-; F.7, 9in. cones, voltages as above, listed 46/6, at 25/-; F.6 P.M., listed 49/6, at 28/-; F.7 P.M., listed 60/-, at 32/-; state if power or pentode transformer required.—Chal-Electric, 6, Conduit St., London, W.1. [2545]

TRANSmitters.

RAYMART Short Wave Transmitting and Receiving Gear: we are specialists in colonial and tropical receivers our speciality: staff includes G.5.N.I., G.6.X.K., and Ex-S.I., B.R.S. Radio Mart, -4, Holloway Head, Birmingham. [2533]

VALVES.

P.P.5 400, 15/-; A.C./S.I.A.M., 10/-; Juffs, 17, Marshall Rd., Cowley, D.A. ord. [2529]
THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.
A.C. Pens., P.T.4s, G.F.1s, A.C.S.G./V.M.s, Pen.4V.s, P.P.625s, V.M.S.4s, D.C.2/Pens., D.P.T.s, M.P.T.4s, V.M.4V.s, A.C.S./V.M.s, P.M.2/Pens., D.C.28.G., V.M.s, 11/-; M.S.4s, M.S.4B.s, A.C.S.G.s, S.4V.A.s, S.4V.B.s, M.S.G./H.A.s, D.S.B.s, A.C.S.2s, P.X.4s, D.C.28.G.s, 9/6; U.14s, 10/-.
(This advertisement continued in third column.)



ORPHEUS, when he went to petition for the release from Hades of his bride Eurydice, well understood how to cast a spell over the Powers of Darkness by his music.

Of course, the trouble with Orpheus was that he would look back and so he lost all that his art had gained.

We made the first moving coil speaker just on twenty-three years ago, and we have never looked back.

The Magna speakers which we make to-day are, by common consent, the most faithful reproducers of speech and music known.

SPECIFICATION.

Magnavox Speakers are supplied with multi-ratio universal transformers, or with push-pull transformers to special order.

D.C.142 "Magna," 8½-inch cone, 2,500 ohms field coil - £3 5 0
Voltage, 100-200; current, 40-80 M.A.

D.C.142 "Magna," 8½-inch cone, 5,000 ohms field coil - £3 7 6
Voltage, 140-280; current, 28-56 M.A.

DUAL COMPENSATED.

D.C.142/144, 2,500 ohms field coils with either No. 20500 or No. 20503 transformer - per pair £5 0 0

Full details of the complete Magnavox range are found in Catalogue No. D636, a copy will be sent on request.



MAGNAVOX (GREAT BRITAIN) LTD., 89, KINGSWAY, LONDON, W.C.2.

Valves.—Contd.

(This advertisement continued from first column.)
M.L.4s, A.C./P.s, 41M.P.s, P.M.24s, 8/-; A.C./H.L.s, 164Vs, 354Vs, A.C.2 H.L.s, 41M.H.L.s, U.10s, U.U.60/250s, M.H.4s, M.H.L.4s, 7/6; V.S.2s, 215S.G.s, 220S.G.s, P.M.12s, P.M.12As, 9/-; 442 B.U.s, D.W.3s, 8/6.
ALL Types of Brand New American Valves in Stock, first class makes: 247s, 235s, 224s, 236s, 237s, 235s, 244s, 12/-; 227s, 226s, 280s, 9/6; 242s, 232s, 11/-; U.X.210s, 15/-.
U.X.250s, 7 watts output, 16/-; 281s, 14/6; for quickest delivery send telegraph money order.
OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2555]
ANOTHER New Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the makers' characteristic exchanged free.

210 H.L.s, 210H.F.s, 210L.F.s, P.M.111.F.s, P.M.11L.F.s, H.L.210s, H.210s, L.210s, 3/9; 215Ps, 220Ps, L.P.2s, P.215s, D.E.P.215s, P.M.2s, P.220s, P.M.2A., A.C./D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C./H.L.s, A.C./211.L.s, 354Vs, 904Vs, D.C.3/H.L., 7/-; 41M.P.s, M.L.4s, A.C./P.s, 7/6; P.T.4, P.T.41, P.E.N.4V., M.P./P.E.N.s, A.C./P.E.N.s, 12/-; latest metallised S.4V.B.s, M.S.4B.s, M.S.G./H.A., A.C./S.G.s, 9/-; Coso M.V.S.G., 12/-; 442-B.V., 1807s, 7/9; 1821s, 7/-; D.O.60s, 40/-.

4,000 Valves are Always in Stock for Immediate Despatch; prompt attention, for cash or c.o.d.
NEWMAN, 309, Roman Rd., E.3. [1659]

COMPONENTS, ETC., FOR SALE.

HOYNES' Transformers and Chokes.
250-0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T.; 10/-, post 9d.
250-0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T., 4v. 1a., C.T.; 12/6, post 1/-.
350-0-350v. 60-70 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., Ferrocort III model; 12/6, post 1/-.
350-0-350v. 70-80 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., 4v. 1-2a., C.T.; 13/6, post 1/-.
350-0-350v. 120 m.a., 4v. 2-3a., C.T., 4v. 4-6a., C.T., 4v. 1-2a., C.T.; 16/-, post 1/-.
400-0-400v. 90 m.a., 4v. 2-3a., C.T., 4v. 3-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/-.
500-0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v. 2a., C.T., 4v. 2a., C.T.; 27/6, post 1/3.

WESTINGHOUSE Model 0, 110, 135v. 90 m.a., 4v. 2-4a., C.T., suitable for H.T.F. 6 or 7; 10/-; post 9d.
WESTINGHOUSE Model 0, 200, 240v. 200 m.a., 4v. 2-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/-; suitable for H.T.F. 8 or 9.

LINE Transformers (auto-wound), 0-100, 110, 200, 220, 240v., 60 watt, 8/-, post 9d.; 100 watts, 11/-, post 1/-; 180 watts, 15/-, post 1/3.

HOYNES' Chokes, 20h. 70 m.a., 3/6, post 6d.; 30h. 60 m.a., 5/6, post 9d.; 30h. 120 m.a., 9/6, post 1/-; 40h. 150 m.a., 12/6, post 1/-.
CLASS B Transformer: ratio 1:1, inductance 60-25h. 0-15 m.a., secondary resistance 100 ohms each half, 11/6, post 9d.; output transformer: ratios 1:1, 1.5:1, 2:1, 11/6, post 9d.

PARALLEL Fed Niod Iron Audio Transformers: ratio 3:1 or 5:1, primary inductance 80h.; 3/6, post 4d.

HOYNES' Transformers are Used Exclusively by Well Known Set Manufacturers.

HOYNES' Transformers for Perfect Insulation, regulation and reliability: all components are clamped in solid cast aluminium clamps, and fitted with well marked terminal strips; power transformer primaries are tapped and screened; letter components are not available at any price; be sure and use Hoynes' guaranteed transformers.

HOYNES for the Quickest Service, all from stock.

HOYNES' Transformers Built to Your Specifications.
M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., W.1. Wimbledn, S.W.19. Tel.: Liberty 3303. [2537]

MAYFAIR RADIO Offer Set Manufacturers' New Surplus, all guaranteed.

MAINS Transformers. All tapped and screened primary, L.T. windings, C.T., 500-0-500 at 120 m.a., 21/-; 450-0-450 at 120 m.a., 20/-; 350-0-350 at 120 m.a., 19/-; above have following L.T. windings—4v. 2a., 4v. 5a., 4v. 2.5a.; 400-0-400 at 120 m.a., 4v. 6a., 4v. 3.5a., 4v. 2a., at 24/-.

SMOOTHING Chokes, 20 henry 30 m.a. (460 ohms), 6/-; 30 henry 60 m.a. (600 ohms), 7/3; 50 henry 60 m.a. (500 ohms), 8/6; 20 henry 120 m.a. (375 ohms), 9/6.

CONDENSERS.—C.E.C. non-inductive 750 test, 1 mfd., 1/1; 2 mfd., 1/9; 4 mfd., 2/6; 1,500 test, the following 500 A.C. working, 800 peak, 1 mfd., 1/3; 2 mfd., 2/4; 4 mfd., 4/-; multiple blocks, 20 mfd. (4 x 2-2-2+2+2+2-1-1), 11/-; 11 mfd. (4 x 2-2-2-1), 6/9; 4 mfd. (2-2), 4/-; 5 mfd. (2-2-1), 4/9.

VARIABLE Condensers, with screens, covers, trimmers, disc drive, eucalypton plates, knob, etc., sealed cartons, J.B. Nu-Gang, 3-gang, 15/-; 2-gang, as above, 10/-.

H.F. Chokes, H.M.V. 50-60 m.a., 100,000 microhenrys, 1/- each, or 9/- dozen.

CONSTRUCTORS' Kits, Radio for the Million, A.C.3, sealed cartons, with valves, 354v. M.S.4, Pen.4v. (det., S.G., and Pentode); listed £6 12, at 72/6.

RESISTANCES. Every value in stock: 1-watt type, list 1/-, at 8d.; 2-watt type, list 2/-, at 1s. 4d.; 3-watt type, list 3/-, at 2/-; state requirements.
L.F. Carriage Pair; cash with order, or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2544]

Components, etc., for Sale.—Contd.

R. SELECTED Parts for Sale, as new, any cond. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to customers; goods tested for callers and guaranteed.

POLAR STAR 3-gang Condensers, 16 6; with drive, 18 6.

R.L. Hypercure Chokes, second-hand, 10 6; R.L. Hypercure transformers, second-hand, 9; R.L. 7 1/4H choke, 10H at 100 ma., second-hand, 10 6; Colvern T.G.S.C. coils, 3 6; Burnlept needle armature pickups, 25; Ferrimo 6 ml. blocks, 3; Parmeco mains transformers for A3 rectifiers, tapped to 14v., 10 6.

RYALL'S Mains Transformers, new goods, 250v. 60 ma., 3v. 1 amp., 4v. 3 amp., 10 6; ditto super type, with 4v. 3.5 amp., tapped at 150 (50v.), 15 6; 350v. 60 ma., 4v. 2 amp., 4v. 4 amp., 12 9; step up or down transformers, 60 watt 110v. to 250v., tapped, 10; H.T. 6 or H.T. 7, with 4v. 4 amp., 10 9; filament, 4v. 3.5 amps., 8 9; H.T. 8, 12 9.

RYALL'S Chokes.—20h. 120 ma. resistance, 260 ohms, 8 9; 40 h. at (C.T.) 100 ma. resistance, 600 ohms, 10 6; 25 h. at 60 ma. resistance, 260 ohms, 6 9; constant inductance chokes; 200 h. at 5 ma., resistance 1,200 ohms, 3 9; 50 h. 60 ma., 2,500 ohms, 12 9.

T.C.C. Type 84, 1 mfd., 375v. working, 1 3; T.C.C., 2 mfd., 350 working, 1 6.

RYALL'S Mains Condensers, offered with confidence, all with terminals, 4 mfd. 250v. working, 400v. peak, 3 6; 4 mfd. 400v. working, 600v. peak, 4; 4 mfd. 750v. working, 1,000v. peak, 5 6; 2 mfd. 750v. working, 3 6; new goods, guaranteed one year; ditto, bakelite case, non-inductive, 350v. working, 1 mfd., 1 6; 2 mfd., 2; 4 mfd., 3; 0.1 mfd., 1/2.

RYALL'S Moving Iron Meters, first grade air damped, with zero adjustment, A.C. meters, 0.250v., 18; A.C. and D.C., 0.50 ma., 15; size as above.

MOVING Iron Meters, in cases, as above, A.C. meters, 0.12v., 10; 0.250v., 12; 0.3 amps., 10; A.C. and A.C., 0.50 ma., 10; 0.10 ma., 8 6; D.C.

RYALL'S Wire Wound Resistances, accuracy within 2 per cent. guaranteed, on vitreous tubes, wire ends, 250, 300, 350, 500 1-watt, 510 3-watt, 530 3-watt, 715 2-watt, 750 2-watt, 800 1-watt, 1,200 1-watt, 3,000 10-watt, 2; 6,000 3-watt, 4,000 2-watt, 5,000 5-watt, 25,000 3-watt, 50,000 5-watt, prices 1-watt 1, 2-watt 1 3, 3-watt 1 6, 5-watt 1 9.

MULLARD H.T. Unit, complete, 150v. 30 ma., 210v. input, 30; Regentone 860 eliminator, 200v. 30 ma., 4v. 6 amp., £2; Six Six 7 valve eliminator, 200v. 30 ma. and G.B., 32 6.

VALVES.—As new: M.S.4, 7 6; A.C. P., 8 6; Marconi P.T.2, 9 6; D.S.B., 10 6; A.C. S2, 11; 84V.A., 9; R.L., 8.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube, Chancery Lane; bus 67 passes door, or tram to Savoy St.) Holborn 3523. Open Saturday afternoon, Close 7 pm., Thursday 1 o'clock, Saturday 6 pm.

R. [2540]

MAINS RADIOS Exclusive Set Manufacturer's Surplus, as new; carriage paid or call.

T.C.C. Blocks, 250v. working, 4 2 2 2 mfd., 4 6; T.C.C. 0.1 mfd., 250v. working, 2 1; Ekco 5-pin chassis valve holders, 1 3; 1 1/2 dozen Poly met. 0.0002 mfd., 1 2; dozen; 10h. screened heater wire, 9d.; Marconi phone pickups, 24.

VALVES.—M.H.4, 6 3; M.S.4, 6 9; A.C.P., 4 6; A.C./S2, M.S.4B (metallised), 7 9; Mains Radio Development Co., 4 6, Manswell Hill Rd., London, N.6. [2552]

PEPPER Offers the Following, under the usual guarantee; cash or credit; carriage paid over £2.

L 0-1 Speakers, W.B., 105; type P.M., 35; Turner 75/- P.M., with output transformer, 37 6; Magnavox D.C. 144, boxed, 17 6; Baker's Elomag, 7,000 ohm field, 14 6; Baker's Power P.M., complete, 37 6; Epoch 66, 8 volt field, 19 11; Baker's ditto, 200v., 19 11; Permap Mirror, 15; ditto, in cabinet, 19 11; heavy duty P.A. speaker, 1,000 ohm field, 2,000 ohm speech coil, cost 6 6, £1/19 6; Tritron units, etc., 2 11; headphones, 2 11; Ampion Lion chassis, L.14, 22 6; Barwin permanent magnet, 30h., 5 6; Wufa unit, 10 6.

PICKUPS.—B.T.H. latest 42; type, with volume control, £1 5; ditto nickel, listed 45; £1 4 6; Marconi 63; type, £1 7 6; Igramm Phonovox, with arm, 9 11; Millgate heads, 3 6.

MICROPHONES, Harbig, listed 63; 15 6; Ekco 42/- type, 12 6; Stensberg, 7 6; Burnlept, hand type, 7 6.

VARIABLE Condensers.—Polar Lotus, J.B., Ormond, etc., 0.0003, 0.0005, 1.11 each; slow motion types, 2/9; differentials from 1 3.

A.C. Power Packs, output 300 v. 125 ma., smoothed, complete, 39 6; ditto, output 500 v. 120 ma., complete, 52 6; special eliminators, in cases, Westinghouse Rectified, output 200 v. 100 ma., 3 lower fully compensated taps, with 4 v. 6 amp., 49 6.

A.C. Eliminators, metal rectified unless stated otherwise.—Ekco 5160, output 60 ma., 150 v., cost £10, 39 6; Regentone Wla2, 150 v. 30 ma., with 4 v. 4 amp., cost £6, 39 6; Ekco 20 ma., £1, 3 6; G.F.P., 150 v. 50 ma., with valve rectifier, 32 6.

SUNDRIES.—Valve holders, Benjamin, etc., 41; Warrite utility low capacity switches, 61, each, 2 9 per dozen; Ferranti safety box, 8 6; Harlie 10 6 tone controls, some boxed, 2 11.

ACCUMULATORS, Exide, Fuller, 6 volt car batteries, 85 amp., good order, 12 6 each; Exide 5,000 ma. 10 v. H.T. units, good order, 2 6 each, Oldham info, 2,000 ma., 1 6 each; carriage extra.

METERS.—Ferranti 50 ma., portable, 15 6; Weston 150 v. 1,000 ohms volt, cost £4, 27 6; Hifonmeter, 5 6; Sifon 0-amp. moving coil, 7 6; ditto Parkmeter, 8 range, 3 11; 25-0.25 amp., 5 6; 0.30 v., 2 11; Thermometer, by Turner, 1.5 amp., 12 6; low 0.10 ma., also 0.15, 0.20, etc., 4 11.

(This advertisement continued in third column.)

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)
10% Reduction on Prices Advertised on page 7, column 3, last week.

WILL Customers who have Written Us during the Past Few Weeks, and received no reply, please write again, as owing to our recent fire a large amount of correspondence was destroyed.

ALL Goods Offered Above are Guaranteed in Perfect Order, and may be had on three days' approval against cash.

TREVOR PEPPER, 43, Wake Green Rd., Birmingham 15.

J.S.A.S. 8; each; mica condensers, 0.1 mfd., 800v. worst inc. T.C.C., 2 6 each; Mitchell, 12, Woodland S.W.20. [256]

EVERYTHING for Movies and Talkies. Phone, write or better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London W.1. Tel.: 6889 Gerrard. [162]

PUBLIC Address Gear, amplifiers, speakers; largest stocks in Midlands. Radio Mart, 44, Holloway Head Birmingham. [253]

A.F.5, 16 6; A.F.3(C), 10; unused 3-gang K.B.L.C. and oscillator, 17 6; Harlie pick-up, 13 6.—Hullbert 24, Pargeter Rd., Warley, Birmingham. [256]

UTILITY Screened 2-gang 0.0005 Condensers, complete with trimmers (disc, dial, escutcheon, knob, 7/11 (listed 19 6); ditto, with Uniknob, 8 6.

RADIOPHONE Radiopak 3-gang 0.0005, screened trimmers, 8 11; ditto, superhet, 4-gang 9 11; (listed 45/-).

VARLEY or Pye H.F. Chokes, 2 6 (listed 7 6).

MAGNAVOX A.C. Speakers, 2,500 ohms, with transformer, 16; ditto Lamplugh Silver Ghost, 4,000 ohms, 14 6.

MAZDA AC SCVM, 10 11; Cassor 41 MP, 7 6; as new.

EPTON, 93, New Rd., Chingford, E.4. Phone: Silver (area 1427). [2564]

RADIOGRAMM Cabinets, oak Queen Anne feet, 37-22 1/2; 17g, 38; pedestal set speaker cabinets, oak, turned legs, 36-21 1/2, 22 6; carriage forward.

ULTRA Air Chorus Double Linen Diaphragm Speaker Chassis for True Reproduction, 3; Columbia I.F.T. transformers, nickel case, bakelite case, ideal for parallel feed, all new, guaranteed, 3 9.

SPEAKERS Special Loudspeaker Units, 5; good job; Celestion ditto, 7 6.

MAGNAVOX Moving Coil, 2,500 ohms, 11in. cone, 28 6; Cin. 22 6, 7g 18; all new, guaranteed.

3-VALVE A.C. Chassis, with moving coil speaker, S.G.V.M., det. Pen., all new, guaranteed, £3.

MIDLAND RADIO MANUFACTURERS, Clearing House for Radio Bargains, 60, Hockley Hill, Birmingham. [2528]

CHAL. ELECTRIC Offers New Set Manufacturers' Surplus plus Coils (10 sets only; Colvern Ferrocart, (3), ganged and screened; listed £2 10, at 38/- per set.

VARIABLE Condensers, complete with screens, covers, trimmers, disc drive, escutcheon plate, knob, etc., 1933 Polar 3 30h., listed at 20 6, at 16 6; J.B. Nu-Gang 3-20g, listed as above, 15.

CONDENSERS, multiple blocks, 1,500 test 500 A.C. working, peak 800, 20 mfd., (4-4-2-2+2+2+1+1), at 11; 11 mfd., (4-2-2-2-2-1), at 6 9; 4 mfd., (2+2), at 4; 5 mfd., (2-2-1), at 4 6.

MAINS Transformers, all tapped and screened primary, I.T. windings, C.T. 500-0-500 at 120 ma., 4v. 2.5a., 4v. 5a., at 18 6; 350-0-350 at 120 ma., 4v. 2.5a., 4v. 2a., 4v. 5a., at 19; 250-0-250 at 60 ma., 4v. 1a., 4v. 1a., 4v. 5a., at 12; for Westinghouse H.T. 8, 200 volts at 200 ma., 4v. 3a., complete with Westinghouse H.T. 9 metal rectifier, 27; for H.T. 9, 240 volts at 200 ma., 4v. 4a., complete with Westinghouse H.T. 9 metal rectifier.

ROPARV Converter, new (shop-soiled), electro-dynamic, 90 watt model, complete with filter unit and silence cabinet; listed £14, at £7; cash with order, carriage paid, or post, Chal. Electric, 6, Conduit St., London, W.1. [2546]

LISSEN Skyscrapers—A.C. mains kit, guaranteed unopened, with valves, £6 2 8, cost £7 19 6; ditto battery kit, 65 v. Abbridge, 29, Chatterton Rd., London, N.4. [2550]

BRITISH Radiophone Radiopak Super Het 4-gang, 0.0005, fully screened with trimmers; Lst 37 6, (our price 31 11; coil, postage paid, Kay, 167, City Rd., London, E.C.1. [2542]

MOVING Coil Mill-Ammeters, 0.50, 10 6 each; 2 milliamms and 120v., 17 6 each; other ranges in stock; alterations, repairs of every description, The Volta Electrical Co., 47, High St., Battersea, S.W.11. [10355]

WIRELESS World O.P.P.2, W.B. speaker, P.M.4/Q.P.P., 30; Sound scales Q.P.P. transformer, 9; Sifon meter, 0-10 ma., 6 6; 2 Mazda Pen, 220A, 24; Colvern R.M.S., 4 3; R.M.3, 4 3; Kellaway, 41, Harley Terrace, Gorseath. [2526]

PREMIER SUPPLY STORES Offer the Following Manufacturers' Surplus Brand New Goods at a Fraction of the Original Cost; all goods guaranteed perfect; carriage paid over 5/-, under 5/- postage 6d. extra (Ireland carriage forward).

SPECIAL Offer of Shrouded Transformers, input 200-250 volts, output 500-0-500v. 120 ma., 4v. 1.2a., 4v. 2.5a., 4v. 2.5a., 4v. 5.5a.; 19 6, cost 50/-.

T.C.C. Electrolytic Condensers, 440v. D.C. working; 4 mfd. 3, 8 mfd. 3 6.

T.C.C. 1 mfd., 2,000v. Working Condensers, 3/-; 1x1x 0.1; 0.1-0.1; 0.1-0.1 mfd., 250v. working, 2/-.

ROIA 2,000 ohms and 6,500 ohms type P.6 Moving Coil Speakers, 17 6; A.C. model 200-250v., 27 6; type P.5 permanent magnet, 20; type P.6 permanent magnet, 31 6.

(This advertisement continued on next page.)

PILOT AUTHOR KITS

Exact to Specification

CLASS "B" FERROCART RECEIVER

KIT "A" Author's Kit of FIRST SPECIFIED Components including Peto-Scott PLYMAX Baseboard, Ready Assembled, but less Valves, Cabinet and Speaker. CASH or C.O.D. Carriage Paid. £8-10-0 or 12 monthly payments of 15/7.

1 Peto-Scott "Plymax" Baseboard 10" x 14" x 1/2" ready drilled with buttons and brass metal strips	£2 10 6
4 Cassor Valves as specified	£2 6 3
1 Polar "Star" 3-gang 2000 mfd. Var. Condenser with disc drive	£1 10 6
1 Set of 3 Colvern Ferrocart Coils	£2 10 0
2 Multitap Transformers as specified	£1 7 0
1 Ampion Loudspeaker with Class "B" transformer	£1 18 6

PETO-SCOTT CLASS "B" ELIMINATOR PERFORATED METAL BOX complete with Plymax baseboard 10" x 7" ready drilled, with buttons and bracket for plugsocket. Cash or C.O.D. Carriage paid 15/-

A.V.C. MONODIAL SUPER

KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled Polished Oak Panel, Ready Assembled and Drilled PLYMAX Set Chassis, screws, wire and desling but excluding Eliminator components, Valve and Cabinet. CASH or C.O.D. Carriage Paid. £11.10.6 or Deposit £1-10-6 and 11 monthly payments of £1

COMPLETE KITS

2.5 WATT MODEL	5 WATT MODEL
Includes all FIRST SPECIFIED Components for Set and 2.5 Watt Power Chassis with Valves, less Cabinet, Cash or C.O.D. Carriage Paid. £28-18-0 or deposit £4-18-0 and 11 monthly payments of £2-4-0.	Includes all FIRST SPECIFIED Components for Set and 5 Watt Power Chassis with Valves, less Cabinet, Cash or C.O.D. Carriage Paid. £31-8-0 or deposit £6-8-0 and 11 monthly payments of £3-10-0.

A.C. SHORT WAVE CONVERTER

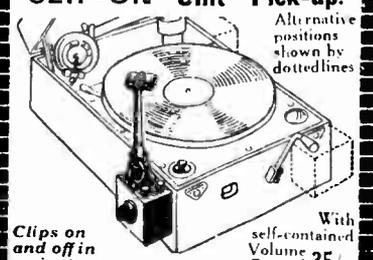
KIT "A" Author's Kit of FIRST SPECIFIED Components including Peto-Scott Ready Drilled Plywood Panel and PLYMAX Baseboard, Ready Assembled, but less Valves. CASH or C.O.D. Carriage Paid. £8.11.6 or 12 monthly payments of 15 9

1 Peto-Scott Ready Drilled PLYMAX Baseboard	10 0
1 Ekco 2000V Variable Condenser, Type S.W.15	11 6
1 Ekco S.M. Dial, Type 2299 25	8 6
1 R.L. Smoothing Choke 25 H., 850 ohms	8 9
1 Standard Sales Mains Transformer, Type S.S., as specified	21 5 0
1 Westinghouse Metal Rectifier, Type H.T.9	15 0

PETO-SCOTT CO. LTD.

77, CITY ROAD, LONDON, E.C.1. West End Showrooms: 62, High Holborn, London, W.C.1.

NEW BELLING-LEE CLIP-ON Unit Pick-up.



Alternative positions shown by dotted lines. With self-contained Volume Control 35/-

Clips on and off an instant. Electric Reproduction from your PORTABLE gramophone without loss of portability. Write for booklet.

BELLING-LEE FOR EVERY RADIO CONNECTION

Cambridge Arterial Road, Enfield, Mdx.

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists

CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

DOUBLE Reading, moving iron, volt meters, read A.C. and D.C., pocket watch type, 0-120v. and 0-12v.; 5/-.

AMPLION Moving Coil Speakers, type E.M.644, dual fields, 2,500 and 5,000 ohms (100-250v.), with output transformer, 12 6; ditto, 200-250v. A.C., 22/6.

WESTON Meters, projecting type ammeters, 0.4, 7 6; milliammeters, 0.5 and 0-100, 15/-.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors 100-250 volts, 30v. complete; double spring gramophone motors with 12in. turntable, 15/- complete.

KOLSTER-BRANDIES Electric Gramophone Motors, all complete with turntables and automatic stop, list price £5, Super Universal, 100-250v. A.C. and D.C.; £2.

EKCO Microphones, complete with transformer, a really fine job, 18 6; wire wound Charostat Potentiometer, 50,000 ohms, 2 6.

SPECIAL Offer of Wire Wound Resistances.—1-watt, any value up to 10,000 ohms, 6d.; 4-watt, any value up to 10,000 ohms, 1/-; 8-watts, any value up to 15,000 ohms, 1 6; 15-watts, any value up to 50,000 ohms, 2 -; 25-watts, any value up to 50,000 ohms, 2/6; 50-watts, any value up to 50,000 ohms, 3 6.

WIRE-WOUND Potentiometers, 15,000 ohms, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2 -.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms quarter amp. and 500 ohms half-amp., 5 - each.

FOR Callers Only.—The following valves, guaranteed as new: 84V.B., M.S.G.L.A., D.W.3, P.T.4, P.T.625, M.S.4, M.S.4B, 41M.H., M.L.4, 354V, 906V, U5, D.S.B., D.C.S.G., V.D.S., 442B.L., U.U.60 250, at half list price.

THE Last Few Western Electric 4211.D Valves, 10v. 3a. filament, 750v-1,000v plate, 50-65 ma., impedance 3,500 ohms, amplification factor 12; cost £5; to clear at 15/-.

500 Volt 125 milliamper Full Wave Rectifying Valves.—4v. 2a. filament, 7/6.

PHILIPS 328 Valves for L.T. Charging, 5 6; 329 Barretter lamp, 2/-.

SMOOTHING Chokes for Series Connected Filaments from D.C. Mains, carry 1 amp., 5 -.

PREMIER Eliminators, input 200-250 volts, 40-100 cycles A.C., incorporating Westinghouse metal rectifiers, output 250 volts at 30 milliamper, 80; and 120-volt taps, 42/6; with 4 volts 4 amps., e.t., L.T., 7/6 extra.

PREMIER Eliminators, output 150 volts at 30 milliamps, 80; and 100-volt taps, with 4 volts 3-4 amps., e.t., L.T., 37/6; or with trickle charger, 42 6.

PREMIER Eliminators, output 120 volts at 20 milliamper, 30; and 100-volt taps, 27 6; with L.T. trickle charger incorporated, 35 -.

D.C. Eliminators, output 120 volts at 20 milliamper, 80; and 100-volt taps, 15 -; larger model, output 200 volts at 50 milliamper, 80; and 120-volt taps, 25/-.

ACCUMULATOR Chargers.—200-250v. A.C., all incorporating Westinghouse rectifiers; 2v. at half-amp., 8 6; 2, 4 and 6 volts at half-amp., 17 6; 2, 4 and 6 volts at 1 amp., 22 6; 12v. at 1 amp., 27 6; 6 or 12 volts at 2a., 35/-; 12v. at 1.5a., 30 -; 6v. at 3a., 39 6; 12v. at 3a., 52 6; three separate 12v. filaments, 75 -.

HIGH Inductance Chokes, resistance 2,500 ohms, 80 henrys, 60 milliamper, 5 6.

WESTINGHOUSE Metal Rectifiers, 120 volts at 20 milliamper, 6 6; 180 volts at 30 milliamper, 8 6; 250 volts at 60 milliamper, 10 -; 200 volts at 100 milliamper, 11 -; 300 volts at 60 milliamper, 11/-; 8 volts at half-amp., 6 6; 6 volts at 1 amp., 9 6; 12 volts at 1 amp., 12 6; 6 volts at 2 amps., 20 -.

T.C.C. Condensers, 250 volts working, 4-4-1 mfd., 5/-; 300 volts working, 4-4-2-2-2 mfd., 7/-; 375 volts working, 6-4-2-2-2 mfd., 10 -; 300 volts working, 4-4-2-1 mfd., 6 -.

400 Volts Working, 3 separate 4 mfd. Condensers, 8 6; Western Electric, 400 volts working, 0.01+0.01 mfd., 1 -.

T.C.C. Condensers, 750 volts working, 2 mfd., 4/-; 750 volts working, 4 mfd., 6 -; 4 mfd., 400 volts D.C. working (500 volts A.C. working), 4 -.

WESTERN ELECTRIC Condensers, 250 volts working, 1 mfd., 6d.; 2 mfd., 1 -.

PREMIER Guaranteed Mains Transformers, engraved terminal strips with terminal connections, input 200-250 volts, 40-100 cycles, output 135 volts 50 milliamper, 17 voltage doubling, 8 6; 4 volts, 3-4 amps., e.t., L.T. 2/- extra; Westinghouse rectifier for above, giving 180 volts at 30 milliamper, 8 6.

PREMIER Mains Transformers, output 250-250 volts at 60 milliamper, 4 volts 1-2 amps., 4 volts 2-3 amps., and 4 volts 3-4 amps. (all centre tapped), with screened primary, 15 -.

PREMIER Mains Transformers, output 400-0-400 volts at 100 milliamper, 4 volts 4-5 amps., and 4 volts 2-5 amps.; 15 -.

H.T.8 Transformers, 250 volts 60 milliamper, rectified, with 4 volts 3-5 amps., e.t., L.T., with screened primary, 15/-; with Westinghouse rectifier, 25/-.

H.T.9 Transformers, 300 volts 60 milliamper, rectified, with 4 volts 3-4 amps., e.t., L.T., with screened primary, 15/-; with Westinghouse rectifier, 20/-.

H.T.10 Transformers, 200 volts 100 milliamper, rectified, with 4 volts 3-4 amps., e.t., L.T., with screened primary, 15 -; with Westinghouse rectifier, 26 -.

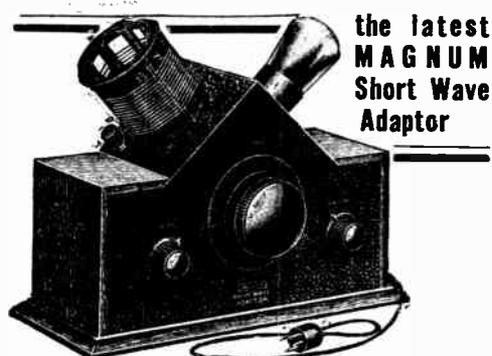
PREMIER Mains Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amps., and 4 volts 2 amps., 8 6; 4 volts 3 amps., 7 6; 4 volts 5 amps., 8 6; 6 volts 2 amps., 7/6; 14 volts 4 amps., 12/6; 22 volts 1 amp., 10 -.

MAINS Transformers, output 350-0-350 volts 50 milliamper, 4 volts 3 amps., e.t., and 4 volts 2 amps., e.t.; 12 6.

AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts 120 milliamper, 4 volts 5 amps., 4 volts 2 amps., and 6 volts 1 amp. (all centre tapped); 17 6.

(This advertisement continued in third column.)

ENJOY Short Wave RECEPTION—with



the latest MAGNUM Short Wave Adaptor

FOR A.C. MAINS AND BATTERY SETS.

Model T.A. For sets using British Valves. Model T.B. For sets using American Valves. Model T.S.G. For sets using British S.G. Valve as detector. Model T.A.S.G. For sets using American S.G. Valve as detector.

Price, including coil 40/30 metres, Corl and Plug..... 39/6 Extra if Coil required, 18/40 metres..... 3/-

SUPERHET ADAPTOR MODEL T.S.H.

For all British and American A.C. Mains and Battery sets employing a tuned high-frequency stage. Price: Adaptor only, including 2 coils 18/40 and 40/80 metres..... 45/- Complete with special valve, H.T. and L.T. Batteries..... 63/-

Send at once for full particulars with a list of Short Wave Stations and free trial offer.

BURNE-JONES & Co., Ltd., "Magnum" House, 296, Borough High Street, London, S.E.1.

Telephone: Hop. 6257 & 6258. Scottish Agent: Mr. Ross Wallace, 54, Gordon St., Glasgow, C.1

C & G

Announcing a NEW POSTAL SUPPLY SERVICE for the Radio Amateur and Experimenter.

Months have been spent in careful organisation and stock-buying before CITY & GENERAL decided to enter the Radio field with its POSTAL RADIO SERVICE.

We now invite you to make your purchases in the QUICKEST, SAFEST and MOST SATISFACTORY manner—the "C. & G." way.

We know we deserve your orders because—

- (a) WE CARRY LARGE STOCKS always kept up to date on account of PREFERENTIAL DELIVERIES of all new lines. (b) WE GIVE IMMEDIATE DESPATCH of orders, and careful attention to all correspondence. (c) WE ARE WILLING TO PROCURE unusual and out-of-the-way items as far as lies in our power.

Except upon decontrolled lines we do not CUT PRICES: to do so would not enable us to protect our customers' interests.

IN STOCK

FERROCART, CLASS B, O.P.P., MONODIAL, and other "Wireless World" circuit requirements; S.T.300, S.T.400, MELODY RANGER, all TELSEN lines, AIRSPRITE, etc., etc.

A trial order will convince you of the superiority of our service. Terms of business: CASH WITH ORDER or C.O.D. Free delivery of Home Orders value 5s. and over—safe and economical despatches. ABROAD (Special EXPORT Department).

Let C. & G. deliver the Goods!

CITY & GENERAL EQUIPMENT CO., Mail Order Department, 199, DEANSGATE, MANCHESTER.

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

AUTO Transformers, 100-200-250 volts or vice versa; 60 watt 7/9, 100 watt 10/-, 180 watt 15/-.

SPECIAL Offer of Mains Transformers, manufacturers' type, any input, output 250-0-250 volts 60 milliamper, 4 volts 1 amp. (e.t.) and 4 volts 3 amps. (e.t.), 8/6; 180-0-180 volts 40 milliamper, 4 volts 1 amp. and 4 volts 2 amps., 4 6; 175 volts 50 milliamper, 4 volts 4 amps., and 4 volts 1 amp., 5 6; H.T.8, with 4 volts 3-4 amps., 8 6, with rectifier 18/6.

PYE Chokes, 20 or 32 henrys, 4/-; Multi-ratio output transformers, 6 taps, giving 15 different ratios, 7/6.

PREMIER Chokes, 40 milliamper, 25 henrys, 4/-; 65 milliamper, 30 henrys 6/-; 150 milliamper, 30 henrys, 10/6.

AMSCO 3-gang 0.0005 Condenser, with trimmers (listed 30/-), our price 7/6; Polar 0.0005 and 0.00035 bakelite dielectric condensers, with knob, 1/-.

POLAR 3-gang Variable Condensers, tub type, fully screened, split end vanes and disc drive, 0.0005, 10/-; Ormond all-brass 2-gang condensers, semi-shielded, 0.0005, 3/6.

BRITISH Radiophone 4-gang Condensers, with trimmers, fully screened, 10/-; Cyberstats, logarithmically wound potentiometers, 6,000 ohms, 1/9.

All the Following Lins 6d. each or 5/- per dozen Assorted: Shielded S.G. or pentode leads, Polymet 0.01 condensers, 2ft. lengths of screened wire, 5-pin valve holders, Crabtree 5 amp. sunk switches, T.C.C. 0.1 mfd. condensers, 0.5 condensers.

AMPLION Six Receivers, listed £21, complete with valves, 200-250 volts A.C.; 9 guineas.

All Orders to The Premier Supply Stores, 20-22, High St., Clapham, S.W.4. Macaulay 2188. Closed 1 o'clock Wednesdays. Open to 9 o'clock Saturdays. Nearest Station Clapham North Underground. [2578]

CONDENSER Blocks 6d. per mfd., 650 volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. Phone: 3134. [0396]

COSMIC RADIO SERVICE, 23, Water St., Liverpool.—Ferranti A.F.3, A.F.4, H1, B7, 10—each: A.F.5C, 16/-; A.F.7, 15 -; Nichoke 2, 5 -; Nicore 1, 8/-; Wearite L.F. transformers, 6 -; Lewens No. 1 superhet. kit, £1 2; Ormond Major chassis, 37 -; Amplion M.L.6 P.M. unit, £1; Pifco valve tester, 17/6. [2530]

GILBERT INDUSTRIES Offer a Further 200 A Parcels, containing one each of the following high grade components: 1 cadmium plated chassis, 1 heavy mains transformer, 350-0-350 at 60 m.a., 4 v. 4 a., C.T., 4 v. 2 a. rect., one H.M.V. 2-gang, with trimmers and 2 coils, one electrolytic 8 mfd., 435 working, one H.M.V. screened H.F. choke, one volume control, one smoothing choke, 50 h., 50 m.a.; complete parcel, post paid, £1.

250 B Parcels, containing one each of the following high grade components, suitable for building Class B or straight 30 m.a., 150-180 v. A.C. eliminators: One Westinghouse rect., voltage doubler; one transformer; one condenser pack, 4+4+2+1-1; one choke, 50 h., 50 m.a., 4 resistances; complete parcel, post paid, £1, by return. Gilbert Industries, 519, London Rd., Westcliff-on-Sea, Essex. [2575]

18IN. Linen Cone (double) Loud Speaker, Blue Spot 66K unit, oak case, ornamental fret iron, 17/6; postage extra; R.L. Varley H.F. choke, never used, 4/-; Ormond 0.0005 variable condenser, fast-slow motion, real good job, complete dial, 4 6, cost 13 6; Regal differential condenser, 0.0001, 1 -; 2-way coil holder, 1 -; Mazda D.C. Pen. 6; D.C.H.L. 5 -; Marconi S.410, 5 -; Tungram S.210, 2 6. Advertiser, 52, Halket Rd., London, N.21. [2579]

FERRANTI A.F.3c, 14 6; A.F.5c, 17 6; O.P.1, 10 6; O.P.3C, 9 6; O.P.6c, 7 6; O.P.M.2, 13 6; O.P.M.2c, 15/-; O.P.M.1c, 13 6; B.1 choke, 12 -; A.F.4, 7 9; A.F.8, 5 6; V.F.5, 12 6; Marconi Hdrals, 6 6; Lewens triple L.F. unit, 16 6; D.R.A., L.B.P., L.B.G., 3 - each; Colvern H1 H2, H3, 15 - set; set Wearite superhet. coils 16/6; Westinghouse H.T.4, 12 6; G.B.I. 5 -; Colvern T.G.S.C., 2 -; T.G.S.R., 2 -; e.o.p., or against cash; we have many other bargains; please send list of your requirements.—Bostock, 1, Westbourne Terrace, S.E.23. [2574]

SOUTHERN RADIO Wireless Bargains: set manufacturers' guaranteed surplus. Ready Radio constructors' kits: 303 3-valve battery kit, less valves, 18/6, with three Mullard valves (P.M.11.L.F., P.M.21.X., P.M.2), each (list 70/-); Meteor screen grid 3-valve kit, less valves, 26/-, with three Mullard valves (P.M.12a, P.M.21.D.X., P.M.2), 49 - each (list 45 7 6); Meteor screen grid 3-valve kit, including cabinet, Celestion permanent magnet speaker, and kit of parts, less valves, £3 7 6, with three valves as above, £4 12 6 (list £8 17 6); Mullard Radio for Million 3-valve A.C. kits, complete, with three Mullard valves (P.F.N. 4v., 354v., 84v.), £3 12 6 (list £6 10); please note all kits advertised by us are brand new, and contained in original sealed cartons; the valves advertised with these kits are the manufacturers' specified valves.

CELESTION Permanent Magnet Soundex Speakers, brand new and boxed, 16 - each (list 27 6); Cylidon three-gang condensers, 0.0005, shrouded and trimmers, 8/9 each (list 32 -); genuine Amplion loud speaker units, 2/9 each (list 12 6); screened chokes (H.M.V.), 1/- each; condenser, 4 mfd., 2 6 each; 2 mfd., 1/9; 1 mfd., 1/- each, all 750 volt test; blocks, 12 mfd., (2+2+2+2+1+1), 6 9 each; 10 mfd., (2+2+2+2+1+1), 6 3 each; all 1,500 volt test; mains transformers, all capacities, in stock, and specials quoted for; all goods guaranteed in every way and carriage paid.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). Phone: Museum 6324. [2535]

MISCELLANEOUS.

MICROPHONES.—Write for full particulars of Wilson All-purpose adjustable microphones; 6 6, post free; and electric soldering irons, 7 6, post free. Sanders, 12, Eastbourne Rd., W.4. [2570]

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months. Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2. [0337]

AT YOUR SERVICE

OVER 7 YEARS' EXPERT EXPERIENCE

Whether your set needs Repairing or Modernising, if you want any "Wireless World" Receiver built to give the best possible results, you cannot place yourself in more expert or capable hands than the Technical Staff of Scott Sessions. During the past 7 years thousands of listeners have benefited by our experience and meticulous care in workmanship and choice of materials. Our prices are at all times reasonable, and we take a real pride in our work. Write, phone or call and we will tell you exactly how much our service and organisation can help you.



SCOTT SESSIONS

RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No. : Tudor 5326.

TRADE SUPPLIED

Contractors to H.M. Office of Works, etc.



Specified by the Leading Designers in the Finest Sets
CLASS B

TRANSFORMERS AND CHOKES

Have you seen the SOUND UNIT which will convert your set to "CLASS B" ?

Mains Transformer, Smoothing Chokes, specified for the MONODIAL and many other famous sets.

IN A CLASS BY THEMSELVES—SOUND SALES COMPONENTS
Write us for Catalogue W.5

SOUND SALES LTD.,

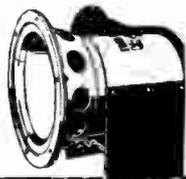
Tremlett Grove Works, Junction Road, N.19
Telephone : Archway 1651-2

FIRST CLASS REPRODUCTION

AN UNREPEATABLE OPPORTUNITY TO SECURE A REAL B.T.H. R. K. LOUDSPEAKER

GUARANTEED NEW AT BARGAIN PRICES

Specification—6 in. diameter cone Moving Coil Loudspeaker giving full bass response and handling the output from the heaviest power valve. Far superior to many small modern moving coil speakers. Weight 30 lbs. Field winding to suit 6, 100, or 200 volts D.C. Send cash with order or C.O.D.



R. K. SPEAKER Originally listed at £6. 0. 0 Now offered for **30/-** A.C. MODELS £2. 10. 0

A. H. SEEKAMP, 46, FARRINGTON ST., E.C.4

SAVAGE FOR MAINS TRANSFORMERS

56 58, CLERKENWELL ROAD, LONDON, E.C.1.

Phone: Clerkenwell 3083/9

Miscellaneous.—Contd.

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [0395]

AMBITIOUS Men.—Qualify for a well-paid post by studying at home with The T.I.G.B. Write to-day for "The Engineer's Guide to Success," 144 pages, free, which contains the widest selection of engineering and wireless courses in the world, and shows you how to become A.M.I.E.E., A.M.I.Mech.E., A.Rail.A., etc. State Branch, post or qualification that interests you. The Technological Institute of Great Britain, 82, Temple Bar House, London, E.C.4. (Founded 1917. 19,000 Successes) [2357]

EXCHANGE.

COSMIC RADIO SERVICE, 23, Water St., Liverpool. Accept high class components and receivers in part exchange; no small parts. [2551]

YOUR OLD Set or Apparatus Accepted in Part Payment for New Set of Apparatus; easy payments arranged if your original amount is £5 or over, taking your goods as deposit; send lists, Bostock and Stomill, 1, Westbourne Terrace, S.E.23. [2575]

PATENT AGENTS.

A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions. First Avenue House, High Holborn, London. [1832]

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0582. 47 years experience. Advice Handbook free. [0331]

PATENTS and Trade Marks, British and foreign.—Gard and Co. (H. T. P. Co.), Member R.S.C.B. and A.M.I.E.E., 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0301]

PATENTS.

It is desired to secure the Full Commercial Development in the United Kingdom of British Patent No. 332,308, which relates to "Variable Electrostatic Condensers," either by way of sale or the grant of licences on reasonable terms. For particulars apply Phillips, 70, Chancery Lane, London, W.C.2. [2533]

REPAIRS.

CONSULT Alexander Black about Set Repairs. 55, Ebury St., S.W.1. Sloane 1655. [0337]

TRANSFORMERS, phones, speakers, re-wound and over-hauled, 3 to 48 hours' service; your guarantee, mains transformers and eliminators quoted for.—Hatton 32, Mount St., Baithe, Sussex. [2551]

REPAIRS to Loudspeakers, transformers and headphones, 4/- each; Blue Spots or Wires, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loudspeaker Repair Works, 2, Shipka Rd., Balham, London. Streatham 6618. [0394]

GUARANTEED Repairs by Experts; specialists for repairs to S. G. Brown and Amplion radio apparatus also loudspeakers, headphones, pick-ups, Blue Spot-type re-wound, remagnetised and adjusted; 4/- post; mains transformer repairs; terms to trade.—Howell 91, Mordley Hill, Edinfield, Middlesex. [971]

TUITION.

RADIO Engineering—Day, evening, and postal courses. This school is fitted with most modern apparatus. Prospectus free. Valuable recommendations given to qualified students.—Northern Counties Wireless School, Preston. [0399]

WANTED.

SPOT Cash for Components, etc.—Economic Radio Co., 96-98, South Lambeth Rd., S.W.8. [2437]

WANTED, Westinghouse 4D12 or 4D16 charger. Price £20. 0. 0. Farnham St., Swansea. [2566]

ONE Copy of "Wireless World," dated 12 11 30, wanted; state price.—V. England-Richards, King's Lynn. [2532]

HIGH Class Radio Sets and Parts Wanted for Cash.—Mildmay Radio Exchange, 24, Mildmay Grove, London, N.1. [2474]

RYALL'S RADIO, 53, Chancery Lane, London, purchase modern radio parts for cash; send list for quotation; goods taken in part payment for brand new. [2405]

SITUATIONS VACANT.

AMBITIOUS Men Should Apply for Free Particulars of Training or Appointments in Radio or Talkie Engineering; valuable introductions.—Radio Training Institute, St. John St., Newcastle-on-Tyne. [1907]

If You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free. Wireless College, Colwyn Bay. [0388]

SITUATIONS WANTED.

YOUNG Man, 20, requires situation test, service, sound technical knowledge, P.M.C. certificate.—Box 6804, c/o The Wireless World. [2553]

AMATEUR Transmitter, 25, seeks situation service, testing or fault-finding, knowledge of short wave.—Box 5803, c/o The Wireless World. [2557]

EX-ARMY Engineer seeks situation, proficient in production, testing, service, etc., all types of receivers.—Box 6395, c/o The Wireless World. [2559]

SERVICE Engineer (27), thorough technical knowledge of modern receivers requires situation, experience with manufacturers and retailers, covering all the leading makes A.C., D.C., and battery sets; good salesman.—BM/MHPV, London, W.C.1. [2451]

IF YOUR RECEPTION IS GOOD



WILL MAKE IT PERFECT



The most selective and powerful aerial ever devised. Extra heavy rubber insulation abolishes masts, poles, insulators and separate leads-in. The first and only efficient indoor or invisible aerial. Don't be misled into buying inferior imitations. SUPERIAL is strong, cheap, efficient and lightning proof. £100 Free Lightning Insurance send in your Form to-day. From all Dealers.

100 ft 3/6 : 75 ft 2/6 : 50 ft 1/9 : 25 ft 1/4
THE NEW LONDON ELECTRON WORKS LTD EAST HAM LONDON E.6

BAKER

WRITE NOW FOR OUR NEW BOOKLET & LEAFLETS

75-77 SUSSEX ROAD, CROYDON SURREY
Phone: Croydon 3441-2
FOR QUALITY MOVING-COIL SPEAKERS.

TRANSFORMER AND CHOKE STAMPINGS, INSTRUMENT AND RESISTANCE WIRES.

Lists Free

LUMEN ELECTRIC CO.,
9, SCARISBRICK AVE., LITHERLAND, LIVERPOOL, 21

The ELEMENTARY PRINCIPLES of WIRELESS TELEGRAPHY and TELEPHONY

by R. D. BANGAY

Third Edition
Revised by O. F. Brown, B.Sc. (1930)

THE standard book of instruction for wireless beginners and students. This new and revised edition brings the whole subject into line with modern developments in wireless. The style is clear and simple and attention is given to the theoretical elements of electricity and magnetism: to the dynamo: and to the properties of waves. A leaflet which gives full particulars of the volume, including a synopsis of the chapters, will be sent on request.

PRICE

7/6 net By post 8/-

From all leading Booksellers or direct from the Publishers

ILIFFE & SONS LTD.

Dorset House

STAMFORD STREET, LONDON, S.E.1
W.997.

See for yourself what a difference these new features make—

Large non-interchangeable coloured terminals.

Grease cups to prevent corrosion.

Tell-tale Charging Device.

Ebonite Separators.

Frosted Panel for Name and Charge Dates.

SMITH'S ACCUMULATORS



Use "ANODEX" Dry Batteries for High Tension and Grid Bias. AGENTS THROUGHOUT THE COUNTRY



S. SMITH & SONS (Motor Accessories) Ltd., CRICKLEWOOD, LONDON, N.W.2



... must mean one thing only... that the reproduction from your Radio Gramophone is comparable to the original performance of the artists who made the record.

Everyone likes to think that their reproduction is beyond reproach, but be honest with yourself, and you will admit that there is a great deal lacking in the subtleties of tone and roundness and depth of bass—that is if you have no NOVOTONE fitted.

The NOVOTONE is the only device which supplies these lacking refinements of tone which give true Realism from Records, and the fitting of a NOVOTONE to your Radio Gramophone will make your records live as you had never before believed possible.

The following letter recently received shows why WE ARE PREPARED TO SEND A NOVOTONE FOR YOU TO TRY WITHOUT ANY OBLIGATION ON YOUR PART.

Gentlemen,
Your confidence in the performance of the "Novotone" being of such a nature as to justify its retention is entirely justified in the event, and I am not returning same.

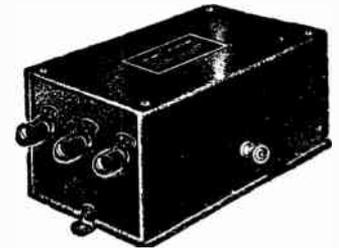
As the "Wireless World" says, after hearing it no one would be satisfied with the reproduction produced by the pick-up alone.

Reproduction in the bass register, also of percussion instruments, is much improved.

Yours faithfully,

(Signed) H.K.

Write now for a free descriptive booklet, "Realism from Records," which fully explains the application to your Radio Gramophone of this remarkable instrument.



THE 'NOVOTONE' COMPENSATOR

GAMBRELL BROS. LTD., MERTON ROAD SOUTHFIELDS, S.W.18. Telephone: Putney 3041.

PARIMA SELENIUM CELLS

FOR ALL PURPOSES.

Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months.

Prices from 5/-

PARIMA MANUFACTURING CO. 21, BROMLEY ROAD, S.E.5. *Hitler Green 5623.*

ERIE

Write for NEW Technical Brochure

THE RADIO RESISTOR CO
1, Golden Sq., Piccadilly Circus, London, W.1

COLLARO COMBINED PICK-UP AND MOTOR UNIT

A complete self-contained unit comprising "32" model Induction Motor, suitable for 100-130 Volts and 200-260 Volts, 40-60 Cycles. (Can also be supplied for 25-40 and 60-100 Cycles.)

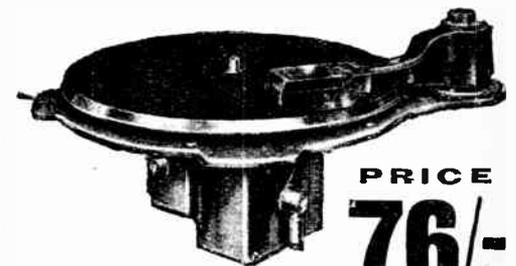
Automatic start and stop, combined with "Collaro" Pick-up; all that is required for the Gramophone side of a Radio-gram.

The "Collaro" Pick-up can be used in conjunction with all receiving sets and amplifiers. The built-in wire wound Volume Control will show no signs of deterioration or crackling in use.

The Pick-up base head and arm are Bakelite mouldings and the general outline is designed to harmonise with the clean lines of the modern Radio-Gramophone.

Obtainable from all Radio Factors and Dealers.

COLLARO LIMITED. Culmore Works, Culmore Rd., Peckham, London, S.E.15



PRICE 76/-

Starts automatically
Stops automatically

WITH BUILT-IN VOLUME CONTROL 80/-

INDEX TO ADVERTISEMENTS.

	PAGE
Accumulators Elite	8
Alton Battery Co., Ltd.	8
Apollo Gramophones Co., Ltd.	Inside Back Cover
Atwater-Kent (G. A. Brittain, Ltd.)	Inside Front Cover
Baker's Selhurst Radio	8
Barber & Colman, Ltd.	8
Belling & Lee, Ltd.	6
Benjamin Electric, Ltd.	6
Birmingham Sound Reproducers, Ltd.	8
British Blue Spot Co., Ltd.	Back Cover
British Ply Co., Ltd.	v.
British Radiophone, Ltd.	v.
British Rola Co., Ltd.	v.
British Thomson-Houston Co., Ltd.	v.
Bryce, W. Andrew, & Co.	7
Burne-Jones & Co., Ltd. (Magnum)	7
Burton, C. F. & H.	7
Celestion, Ltd.	7
City Accumulator Co., Ltd.	3
City & General Equipment Co.	7
Cole, E. K., Ltd.	Front Cover
Collaro, Ltd.	9
Cosser, A. C., Ltd.	6
Cressall Manfg. Co.	6
Dubilier Condenser Co. (1925), Ltd.	vi.
Edison Swan Electric Co., Ltd.	4
Electradix Radios	4

	PAGE
Epoch Radio Manfg. Co., Ltd.	4
Exide & Drydex	4
Ferranti, Ltd.	4
Gambrell Bros., Ltd.	9
Gilbert, J. C.	2
Gramophone Co., Ltd.	2
Haynes Radio	8
Heard, E. J., Ltd.	8
Heys, Leonard	8
Jacks n Bros.	8
Junot Manfg. Co., Ltd.	8
Lepto Link, Ltd.	8
Lover, Eric J. (Thy), Ltd.	8
Longley Radio Manfg. Co.	8
Lyon, E. H. Co., Ltd.	8
Lynns, Claude, Ltd.	Front Cover
Magnavox (Great Britain), Ltd.	5
Milnes Radio Co.	5
Multitone Electric Co., Ltd.	Inside Front Cover
New British Electric Works, Ltd.	3
Oldham & Son, Ltd.	3
Ground Engineering Co., Ltd.	3
Payma Manfg. Co.	9
Partridge & Mee, Ltd.	3

	PAGE
Partridge, Wilson & Co.	Inside Back Cover
Peter-Son Co., Ltd.	6
Polythionate Bros.	6
Radio Resistor Co.	9
Reproducers & Amplifiers, Ltd.	Front Cover
Riverside Manufacturing Co., Ltd.	4
Rohr Electric, Ltd.	4
Ryalis Radio	8
Saville, W. Bryan	8
Scott, Seaton & Co.	8
Seckman, V. H.	8
Solar Electrical Inst. Co.	8
Smith, S., & Sons (Motor Accessories), Ltd.	9
Soundable Reproducers, Ltd.	8
Standard Sales, Ltd.	8
Standard Battery Co.	8
Tannoy Products	1
Telegraph Condenser Co., Ltd.	1
Telson Electric Co., Ltd.	Front Cover
Tunnidge & Partners, Ltd.	1
V.G. Manufacturing Co., Ltd.	Inside Back Cover
West End Electrical Co.	1
Westinghouse Brake & Saxby Signal Co., Ltd.	Inside Back Cover
Wilburn & Co.	1
Wingrove & Rogers, Ltd. (Polar)	1



Complete Constructional Details of

The
Wireless
World
THE PRACTICAL RADIO JOURNAL

MONODIAL A.C. SUPER

A SEVEN-VALVE SUPERHETERODYNE RECEIVER OF OUTSTANDING PERFORMANCE

By W. T. COCKING

This booklet contains in a compact form the original articles which appeared in "The Wireless World" some months ago.

It describes at length, with full explanations and illustrations, a superheterodyne receiver for A.C. Mains which is still unchallenged for faithful reproduction and exclusive selectivity.

Since the Monodial A.C. Super was first described, many thousands have been built, and no single instance of failure or disappointment

with the performance due to difficulties of construction, has come to light. The Receiver is an ambitious one, but the design is straightforward, and a simplified method of construction has been adopted.

For quality, range and selectivity, the performance is unsurpassed by any known receiver.

Crown 4to. 24 pp. In attractive coloured cover

PRICE 1/6 net. By post 1/8

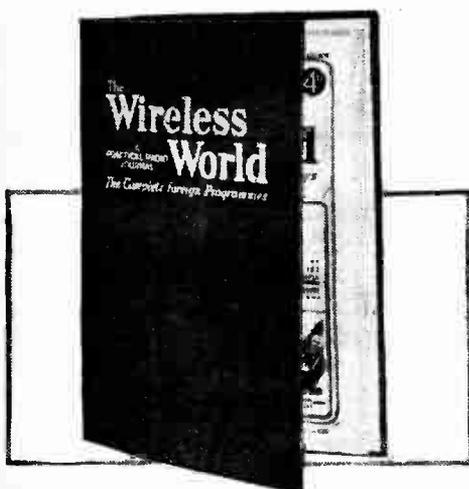
From all booksellers, or direct from the Publishers

ILIFFE & SONS LIMITED, DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1



W.W.38

Keep the Week's Foreign Programmes handy for constant use



**"The WIRELESS WORLD"
READING CASE**

Price 2/6 net. By post 2/10

Now obtainable from the publishers

ILIFFE & SONS LTD., DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1

The many Listeners who habitually use the Foreign Station Programmes in "The Wireless World" will appreciate the value of the useful **READING CASE** for the weekly issue which is now available.

It is an attractive cloth-board cover, gold lettered on front, and provided with silk holding cord for the current copy of "The Wireless World."

It has the merit of keeping the programmes immediately available for reference, and at the same time protecting them from damage by frequent use.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Workers' Union of Ireland Band. 8.30, Soprano Solos by Jean Nolan. 8.50, Australian Monologues by T. F. Rowley. 9.0, The Station Orchestra. 9.15, Monologues by T. F. Rowley. 9.25, Baritone Solos by M. J. Galaher. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

(EJAJ), 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.30, Request Gramophone Concert. 8.30, Exchange Quotations, Talk in Catalan and Relay from the Guildhall. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Concert by the Station Orchestra: Intermezzo (Humpermann); Waltz, Schatzwälder (Strauss); Selection from El salto del pasiego (Catalano); Gondola Song (Muskovsky); Romance (Davidov); Slav Dance (Glazunov). 11.0, Recitations. 11.15, Piano-forte Recital by Rosaura Coma. 11.40, Concert by the Station Orchestra (contd.): Adagio from Symphony No. 7 (Beethoven); Sérénade alsacienne (Massenet); Overture, King Stephen (Beethoven). 12.0 Midnight (in an interval), News. After the Concert, Light Music on Gramophone Records. 1.0 a.m. (Thursday), Close Down.

BARI

1,112 kc s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Report, and Popolavoro Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Concert of Chamber Music: Soloists, Mario Cedini (Piano-forte) and Anna Molteni (Soprano). In the interval, Talk. 10.30, Popular Music on Gramophone Records. 10.55, News.

Basle.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER; 183.5 kc/s, 1,635 metres; 60 kW. 2.45, Dramatic Programme for Young People. 3.30, Weather and Exchange. 4.30 (approx.), Concert from Hamburg. 5.0, Talk: Greek Tragedy—Euripides. 5.30, Leo Schrammholz Concert by the Augmented Chamber Orchestra, conducted by Hans Georg Görner; German Poems for Mixed a-Capella Choir; (a) Alle Stunden verwanen alles fest; Das Urlicht. 6.0, Poetry Reading. 6.5, Concert by the Sinner Brothers' Orchestra: Overture, Titus (Mozart); Dynamidenwälder (Jos. Strauss); Minnet und Scherzo (Schubert). 6.35, Wireless Technical Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, See Hamburg. 9.0, Reading (Edith Timmermans). 9.30, See Munich. 10.20, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0 (approx.), Concert from Heilsberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN; 715 kc s, 419.5 metres; 15 kW.—5.30 p.m., Reading by Friedrich Georg Jünger. 5.50, Topical Programme. 6.10, Recital of Folk Songs. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.5, Announcement. 8.10, Orchestral Concert, relayed from the Café Moka Etti. 9.0, Presenting the Colours—Comedy (Josef Rueder). 10.15, Weather, News, and Sports Notes. 10.30 (approx.), Dance Music. 12 Midnight, Close Down.

Berne.—See Schweizerischer Landessender.

BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

286 kc s, 304 metres; 13 kW. 6.15 p.m., Radio Journal. 7.30, News and Market Prices. 7.40, Tourist Talk. 7.55, Lottery Results. 8.0, Talk for Farmers. 8.15, News. 8.30, Brahms Centenary Concert.

BRATISLAVA

1,676 kc s, 279 metres; 11 kW. 5.55 p.m., Kodály Concert for his Fiftieth Birthday, by the Bela Bartok Vocal Union and the Station Orchestra. Soloists: Sigi Margit (Songs) and R. Maendzinski (Piano-forte). Introductory Talk by Dr. Jos. Sebastyán. 6.55, Report. 7.0, See Prague. 7.10, The May Ball—Play in Three Scenes (Karl Schönberr). Czech Translation by Vl. Gamza. 8.5 to 10.15, See Prague. 10.15 (approx.), Close Down.

Bremen.—See Hamburg.

BRESLAU

523 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—1.10 p.m., Gramophone Concert of Dance Music. 1.45, Time,

WEDNESDAY

MAY THE TENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL: Orchestral concert from Bournemouth. "A Musical Pilgrim's Progress," by J. D. M. Rolfe. LONDON REGIONAL: Non-stop light music. Brahms Centenary Concert from Queen's Hall. MIDLAND REGIONAL: Russian music, orchestral programme. NORTH REGIONAL: Relay from the Shakespeare Theatre, Liverpool. WEST REGIONAL: Dramatic reconstruction of the trial, in 1741, of Samuel Gootee and Matthew Mahony. SCOTTISH REGIONAL: Ballad concert. BELFAST: Military Band concert.

ABROAD

BRUSSELS (No. 1): 8 p.m. Operetta: "La Mascotte," by Audhan. BRUSSELS (No. 2): 9 p.m. Concert from the Grand Hotel, Antwerp. COPENHAGEN: 8 p.m. Oratorio: "Samson," by Handel. EIFFEL: 8.45 p.m. Concert in honour of the Romanian National Festival. TOWER HEILSBURG: 7 p.m. East Prussian composers, concert from Königsberg (relayed by other German stations). PRAGUE: 8.15 p.m. Dvorak concert. ROME: 8.45 p.m. Opera: "Germania," by Franchetti. STRASBOURG: 9 p.m. Symphony concert from Besançon. STUTTGART: 8.20 p.m. Brahms concert from the Mannheim Castle.

Weather, News and Exchange. 2.5, Gramophone Concert: Variations on a Theme of Mozart (Beethoven); Pastorale (Mozart); Potpourri of Old Operetta Music: Variation on the Impromptu in B Flat Minor (Schubert); Potpourri of Hungarian Melodius (Traditional). 2.45, Programme arranged by the Post Office with Gramophone Records. 3.10, Agricultural Prices. 3.35, Talk for Parents. 4.0, Broadcast for Schools. 4.30, Schumann Song Recital by Ruth Baid (Soprano): Seit ich ihn gesehen; Er, der Herrlichste von allen; Ich kann's nicht fassen, nicht glauben; Du Ring an meinem Finger; Helft mir, ihr Schwestern; Süsser Freund, du bleibst; An meinem Herzen; Nun hast du mir den ersten Schmerz getan. 5.0, Talk for Kindergarten Teachers. 5.20, Agricultural Prices. 5.25 (approx.), Talk: Literature and Nationality. 5.45, Violin Recital of old Italian Music by Gunter Bille: Concerto in A Minor (Vivaldi); Canonetta from the Violin Concerto in D (Boccherini); Sonata in A Minor (Vercini). 6.20, Talk: The Power of Political Propaganda. 6.50, Weather for Farmers, News and Cattle Market Report. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Hucht and Har. Sketch in Dialect. 9.0, Announcements. 9.10, Concert by the Silesian Philharmonic Orchestra, conducted by Franz Marszalek: Academic Festival Overture (Brahms); Prelude to Gaudamus (Humperdinck); Comedietta (Graener); Prelude to Act III of Der Freischütz (Max von Schillings); Heiteres Spiel (Brunner); Light Orchestral Suite, La Barba (Weingartner); Waltz from Der Rosenkavalier (R. Strauss). 10.30, Time, Weather, News, Sports Notes and Programme Announcements. 10.50, Dance Music from Berlin (Witzleben). 1.0 a.m. (Thursday). The Silesian Heaven—Recital of Silesian Folk Songs by the Station Choir, Orchestra and Soloists, conducted by Ernst Praed. 3.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.15 p.m., Talk for Workers: School Problems. 6.25, German Transmission: News, Talk and Broadcast for Workmen. 7.0, See Prague. 7.25, Programme of Poems by Taras Shevchenko, the National Poet of Ukraine, and National Ukrainian Songs. 8.5, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No.1)

I.N.R., 590 kc s, 509 metres; 15 kW.—12 Noon, Gramophone Concert: Overture, 124 (arr. Delroy Samers); Sérénade à Lisette (Cubati); Goldwag's Cake Walk (Debussy); Comme au plus beau jour (Pepper); Selection from Hans the Flute Player (Ganne); Chanson d'Arlette (de Tayer); Selection from Enlevé-moi (Galarocher); Kol Nidrei (Bruch); Selection from The Cinema Star (Gilbert); Etat de rire, from Manon Lescaut (Auber); Dance of the Tumbler

(Rimsky-Korsakov-O'Connell). 1.0 p.m., Le Journal Parlé. 1.10, Concert by Mickey's Club Jazz Attraction. 5.0, Gramophone Concert: Spanish Songs (Fallas); (a) Nana, (b) Cancion, (c) Polo, and (d) Tirana; Waltz (Liszt); Concerto for Clarinet (Weber); Andante pastoral (Tallandier); Coronation Scene from Boris Godunov (Mussorgsky). 5.30, Variety Programme. 6.0, Talk on the Unemployed. 6.15, Gramophone Records: Military March (Schubert-Tausig); Polichinelle (Rachmaninov); Prelude in B Flat (Rachmaninov). 6.30, Sextet in G, Op. 36, for Two Violins, Two Violas, and Two Cellos (Brahms). 7.15, Talk: The Belgian Coast. 7.30, Medical Talk. 8.0, La Mascotte—Operetta (Andran) Concert Version by the Radio Orchestra and Choir, conducted by Charles Walpot, and Soloists. In the interval, Poems dedicated to May—Readings from the Works of Gezelle, Deibel, Vield-Griffin, Gille, Hardy, Melloy and Nothomb. 10.0, Le Journal Parlé. 10.10, Dance Music relayed from the St. Sauveur Palais de Danse.

BRUSSELS (No. 2)

N.I.R., 887 kc s, 338.2 metres; 15 kW.— Programme in Flemish. 12 Noon, Concert by the Mickey's Club Jazz Attraction, conducted by Ludo Langlois. 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert: Réunion des Braves (AUX); Bird Songs at Eventide (Couste); Berceuse (Andoh); Selection from Fra Diavolo (Auber); The Marriage of the Marionettes (Wetzell); Holzschulntanz (Petras); Agitato (Zamecnik-Paris); Humoresque (Barus); Selection from Manzelle Nitouche (Andran); Waltz (Rohrsch); Selection from Louise (Charpentier); Trés-prose (Zamecnik-Paris). 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March of the Cadets (Souss); Waltz, On the Banks of the Neva (Ellenberg); Jubilée Overture (C. Bach); Vitragephone Solo: Romance (Lil); Selection from A Kiss in Spring (Kahn); Mazurka (Weyss); Melody (Richter); Sérénade napolitaine (Massenet). 6.0, Gramophone Records: Aveygne Airs (Debussy); Dance of the Dervishes (Bouli). 6.15, Talk: The Vastness of the Universe. 6.30, Gramophone Concert: The Mill in the Black Forest (Ellenberg); Saxophon (Wiedoh); Selection from The Three Musketeers (Prind); Polka, The Canary and the Frog; Parade au jardin des enfants (Bouli); Pizzicati (de la Rivière); La tonturette (Damaré); Valse vanité (Wiedoh); Selection from Romeo and Juliet (Gounod); Selection from Les Saltimbanques (Ganne). 7.15, Talk: The Rhine in May. 7.30, Review of Foreign Affairs. 8.0, Gramophone Records: Overture, Patrie (Bizet); Ballet Music from Naimoua (Lalo). 8.35, Dramatic Programme. 9.0, Concert relayed from Grand Hôtel, Antwerp. Conductor: André Gellman. In an interval at 10.0, Journal Parlé.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert of Military Music. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, Light Music on Gramophone Records. 8.0, Choral Music of Sacred Music. 8.20, Symphony Concert of Romanian Music: The Station Orchestra, conducted by C. C. Nottara. 9.45, Concert of Popular Romanian Music by the Fania Luca Orchestra. 10.15, Radio Journal.

BUDAPEST

545 kc s, 550.5 metres; 18.5 kW.—Also relayed on 640 metres from 7.45 p.m. to 12 Midnight. 5.0 p.m., Concert by the Zsiga Racz Gyany Band. 5.50, Reading. 6.20, Concert by Bachmann Orchestra Soloist, Paul Fekete; relayed from the Café Rappapark. 7.15, Talk. 8.0, Count Apponyi Memorial Concert by the Budapest Concert Society Orchestra, conducted by Emil Sauer: Chaccone (Bach-Habey); Suite (Weiner); Funeral March from the Eroica Symphony (Beethoven); Memorial Address; Piano-forte Concerto in A (Liszt); Les Péloides (Liszt). 9.40, News Bulletin. 10.0 (approx.), Concert by the Bela Racz Gyany Band. 11.0, Concert from the Café Sumpion. 12 Midnight (approx.), Close Down.

Cassel.—See Frankfurt.

COPENHAGEN

1,067 kc s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.1 p.m., Music by A. Bendix and his String Ensemble from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Gramophone Concert: Constance's Aria from Il Seraglio (Mozart); Dream from Manon (Massenet); Mephistopheles Serenade from Faust (Gounod); Melancholy Serenade (Tchaikovsky); Three Melodies. 3.30, Concert by the Radio Orchestra, conducted by Lanny Gröndahl: Dance from King and Marshal (Heise); Prelude to Act III of Esther (Horneman); Movement from the Suite On the Bosphorus (Lange-Müller); Prelude to Act II of Saul and David (Nielsen); Suite, Summer Life (Glass). 4.15, Talk for Children. 4.30 (approx.), Concert (contd.): Torch Dance (Lundbye); Waltz, Resignation (Lundbye); Selection from La Fille de Madame Angot (Lemaire); Gavotte (Kovárovic); Piece (Blanc); Moorish Rhapsody and French Military March from the Algerian Suite (Saint-Saëns). 5.40, Exchange and Fish Market Prices. 5.50, Talk. 6.20, French Lesson. 6.50, Weather and News. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Time Signal from the Town Hall. 8.1, Samson—Oratorio in Three Parts (Handel), for Soloists, Choir, Piano-forte and Orchestra, relayed from St. Martin's Church, Randers. 10.10, News Bulletin. 10.25, Reading. 10.50, Dance Music from the Ritz. In the interval at 12 Midnight, Time Signal from the Town Hall. 12.30 a.m. (Thursday), Close Down.

Cork.—See Athlone.

Danzig.—See Heilsberg.

Dresden.—See Leipzig.

FECAMP

1,328 kc s, 225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News. 12.45, Concert of Opera and Operetta Music. 5.30 to 7.0, Programme in English by the I.B.C. C. Dauvers Walker, T. St. A. Ronald and B. McNabb announcing. 5.30, Concert of Special Request Items for Portsmouth and Southsea Listeners: Largo (Handel); Two Eyes of Grey (McGeogh); Violin Solo: John Anderson my Jo; My Heart is where the Mohawk flows (Carson); Selection from Miss Hook of Holland (Rubens); For the sake of the Days gone by (Wallace); Gipsy Melody (Nicholls); Let's all sing like the Birdies sing; Shenandoah (arr. Terry); Turkey in the Straw; selection from The Gipsy Princess (Kálmán). 6.15, Concert of Light Music for Isle of Wight Listeners: The Hit Parade; Body and Soul (Green); If I had a talking Picture of you (de Sylva); Sometimes I'm happy (Comman); Sous les toits de Paris (Moretto); In the Night (Tate); Selection from The Desert Song (Romberg); I'm a dreamer (de Sylva); Varsity March; Musical Comedy Medley (arr. Hall). 7.0, Radio Gazette. 7.20, Local News. 7.30, Popular Music on Gramophone Records. 7.45, The Listeners' Half Hour and News. 8.30, Popular Concert. 9.0, Dramatic Programme. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Heolians: Put that sun back in the sky; Georgia on my mind; Lullaby of the leaves; Good-night Vienna; Goodie; You've got what gets me; If I didn't have you; Love, you funny thing; The Echo of a Song; Don't tell a soul; Gone for ever; Living in clover; One little quarrel; I got rhythm; Oh! Monah. 11.0, Club Concert for Lull's End and Penzance Listeners: Selection from The Pirates of Penzance (Sullivan); Am Meer (Schubert); Whistling (Schubert); Piccolo Solo: Deep Blue Sea (Brewer); Drake's Drum (Stanford); The Old Shperb (Stan-

MAY 10th

WEDNESDAY

continued

ford); The Grasshopper's Dance (Bucalossi); Song of the Vagabonds (Friml); Blonde Women, sung by Marlene Dietrich; The Lute Player (Alison); Das Lied von der See (Künneke); The Wedding of the Rose (Jesse). 12 Midnight, Military Band Concert: Overture, Zampa (Herold); King's Guard March; Wogenlied (Brahms); Tally Ho; In a Monastery Garden (Ketelbey); National Emblem March (Bagley); Selection from The Three Musketeers (Friml); March, Thunder and Blazes. 12.30 a.m. (Thursday), Songs from the Shows: The Night was made for Love, from The Cat and the Fiddle; A New Love is Old, from The Cat and the Fiddle; Selection from Frederika (Lehár); Farewell, from The Maid of the Mountains (Fraser-Simson); Love will find a way, from The Maid of the Mountains (Fraser-Simson); You are my Heart's Delight, from The Land of Smiles (Lehár); I give my heart, from The Dubarry (Müllbeck-Mackeben); Selection from The Dubarry (Müllbeck-Mackeben). 1.0, Violin Solos: Lord Lovat's Lament; Lea Rigs; Quartet; Union Red; Kashmiri Love Song; Chant Hindu; Quartet; Unlucky Blues; Mary Morrison; The Logic of Bechuan. 1.30, Popular Songs: The first week-end in June (Ellis); I'm in the market for you (Hanley); Sweet temptation (Young); Orchestra: Selection from Viktoria and her Hussar; I fell for you (Walker); Just like in a story book (Hanley); Who cares? (Backforth). 2.0, Dance Music by the Deolians: The King's Nave; Leave a little for me; Toasts; How do you do, Mr. Brown?; I can't write the words; Let's all dance the Polka; The Lady I love; How are you?; Isn't it romantic?; Balloons; Liszt, Chopin and Mendelssohn; Ain't cha comin' out to-night?; When they're on the love parade; Big Ben's saying Good-night. 2.57 a.m., I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—5.0 p.m., See Munich. 5.50, Economic Notes. 6.0, Talk. 6.25, Topical Talk. 6.50, Time, Programme Announcements. Weather and Economic Notes. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Reading: Literary Self Portraits (arr. Alfred Simon). 8.20 to 10.15, See Stuttgart. 10.15, The German Almanac. 10.25, Time, News, Weather and Sports Notes. 10.40, Dance Music from Stuttgart. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HANOVER.—See Hamburg.

HAMBURG

Call ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.30 p.m., Concert from the Lüne Bremen, conducted by Franz Koennecke; Fatherland Overture, 1813 (Weber); Waltz, Deutsche Grösse (Strauss); Waltz, Erinnerung an Wien (Bausser); Serenade, Op. 7 (R. Strauss); Intermezzo from Stimmungsbilder, Op. 9 (R. Strauss); Helmsman's Song and Sailors' Chorus from The Flying Dutchman (Wagner); March, Heil Hitler! (Koennecke). 5.30, Hamburg, Bremen and Lübeck—Report from the Senate and Citizens' Councils of the Hanseatic Free Cities. 6.30, Reading: The Vindication of Xantippe's Honour. 6.45, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Variety Programme by the Radio Male Voice Choir and Quartet and Soloists. 9.0, Reading. 9.30 (from Flensburg), Vocal Concert, relayed from the Deutsches Haus. 10.0, Time, Weather, Announcements, Sports Notes and Police Report. 10.20, Topical Talk. 10.30 (from Kiel), Orchestral Concert, conducted by Hans Böring; March, Mein Heimatland (Leuschner); Selection from Fedora (Giordano); Waltz, Im Reiche der Venus (Gröschel); Selection from Griegi (Lincke); Blumengellüster (Blon); Ein Opernabend (Manfred); Die Heinzelmännchen (Eilenberg); Schleswig-Holstein, Meerenschlingen (Wilke).

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Classical Music. In the interval at 1.20, News. 2.30, A Programme arranged by the Post Office, with Gramo-

phone Records. 3.0, Exchange Quotations. 3.20, Talk for the Housewife. 3.30, Talk for Parents. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Preciosa (Weber); Selection from Undine (Lortzing); Evening, I d y l l (Humphries); Gipsy Eyes (Filippini); Witz, An der schönen grünen Narenta (Fetras); Schwarzwald-Suite (Thiele); Fantasia on Chopin Music (Kernzak); Serenade from I Medici (Leoncavallo); Falling Leaves (Carena); Overture, Le Postillon de Longjumeau (Adam); Ballet égyptien (Luigini). 5.45, Bridge Lesson. 6.15, Agricultural Prices. 6.25, Talk: What People still do not know about the Telephone. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Königsberg; East Prussian Composers' Concert by the Wireless Male Voice Choir, the Königsberg Opera House Orchestra, conducted by Erich Seidler, and Willy Binder (Tenor); Introductory Talk; E. Th. A. Hofmann Ouverture (Otto Besch); Von der Nehrung for Tenor, Male Voice Choir, and Orchestra, Op. 19 (Herbert Brnst); Symphony in F (Hermann Götz). 8.0, Piano-forte Recital by Gerhard Wiener. 8.30, See Langenberg. 10.0, News. 10.10 (approx.), Concert by the Little Station Orchestra, conducted by Eugen Wilcken; Modern Dance Suite (W. Niemann); Serenade No. 5 for Cello (Volkmann); Suite Op. 98 (Dvornik); Love Waltz from The Ballet Suite (Max Reger); Divertissement, Op. 43 (Tchaikovsky); Spanish Suite (Joaquin Nin); Divertissement hongroise (Schubert); Wo die Zitronen blühen (Joh. Strauss). 12 Midnight, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 5.40 p.m.).—12.40 p.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 12.40, Concert by De Notenkrakers, conducted by D. Wins. In the interval: Gramophone Records. 2.25 to 2.40, Interval. 2.40, Programme for Women. 3.40, Programme for Children. 6.10, Concert of Light Music by De Eclierluiders. 7.10, Medical Talk. 7.40, Topical Talk. 7.55, Violin and Piano-forte Recital by L. van Coevorden and Brookhouse McCarty; Violin Concerto in E Minor, Op. 64 (Mendelssohn); Gramophone Records; La chasseur (Bastin); Scherzo Tarantella (Wieniawsky). 8.38, S.O.S. Messages. 8.40, Talk. 9.0, Life in these Days—Musical Play (Nick). 10.40, News. 11.10, Organ Recital by J. Jong; Evening Bells (Billi); Tiny Tailor (Brown); Lullaby of the Leaves; In a Clock Store (Orth); The Old Man of the Mountains (Young); In a Monastery Garden (Ketelbey). 11.40, Popular Music on Gramophone Records. 12.40 a.m. (Thursday), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—12.55 p.m. till Close Down. Programme of the Christian Radio Society (N.C.R.V.). 12.55, Polovstian Dances from Prince Igor (Borodin) on Gramophone Records. 1.10, Time Signal. 1.11, Quintet Concert. 2.40, Programme to be announced. 3.10, Gramophone Concert: Symphony No. 2 in D Minor, Op. 43 (Sibelius); Karelia Suite (Sibelius); Symphonic Poem, Le Fontaine di Roma (Respighi). 4.10, Concert by Marie Grebe de Lange (Soprano) and the Amsterdam Instrumental Ensemble; Trio Sonata in B Minor (Loelliet); Dido's Aria from Dido and Abandonata (Sarr); Aria from Enrico Leone (Stellani); Sonata in G Minor (Marcello); Aria, Allegro, Prestissimo, Andante and Aria for Violin and Piano-forte (Jean Marie Leclair); Soprano Solos (Brahms); (a) Des Hebesten Schwur, (b) Vergleichliches Ständchen; Prayer for Soprano, Cello, and Piano-forte (Versepny); Cello Solos; (a) Elegy (Faure); (b) Butterflies (Popper); Trio (Turina). 5.40, Time Signal. 5.41, Programme for Children. 6.40, Time Signal. 6.41, Concert by a Children's Choir. 7.10, Report of the Department of Buildings and Roads. 7.40, Time Signal. 7.41, Police Notes. 7.55, Time Signal. 7.56, News Bulletin. 8.10, Talk. 8.40, Time Signal. 8.41, Choral Concert. 9.40, Time Signal. 9.41, Talk: Anarchy. 10.15, Trio Concert: Trio in E Flat for Violin, Viola, and Piano-forte (Mozart); Trio in E Flat, Op. 40, for Violin, Horn, and Piano-forte (Brahms). 11.10, News Bulletin. 11.20, Gramophone Concert: Concerto No. 1 in G Minor, Op. 26 (Brahms); Harre, meine Seele (Malan); Es ist bestimmt in Gottes Rat (Mendelssohn); Dir, dir Jehova will ich singen (Bach); Alles, was Odem hat (Bach); Gods Voorzienigheid; Psalm 105, Verses 1 and 3. 12.10 a.m. (Thursday), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Report and Racing Notes. 8.10, Scientific Talk. 8.20, Reading. 8.30, Radio Concert. 9.0, News Bulletin. 9.15, Concert, with Com-

mentary. 12 Midnight to 1.0 a.m. (Thursday), Programme in English by the I.B.C., H. K. Hitechoek announcing. 12 Midnight, Military Band Concert: El Abanico (Javaloyes); Bullfighters' March (Kotoum); Quand Madelon (Bousquet); Post Horn Gallop (Koenig); Medley of British Songs (arr. Dundas); National Emblem (Bagley); Le Réve Passe (Krier); March, King Cotton (Sousa). 12.30 a.m., Dance Music: What more can I ask?; I may never pass your way again; Brighter than the Sun; A Boy and Girl were dancing; I'm playing with Fire; Do you recall?; Willow, weep for me; Can't we meet again. 12.57, I.B.C. Good-night Melody. 1.0 a.m. (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLACENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15, Piano-forte Recital by Maire Hadava, Clair de lune (Palmgren); Nocturne (Heikki Aalto); Three Pieces (Debussy); (a) Le soir à Granada, (b) Reflet dans l'eau, (c) Pagodes. 6.40, Recitations. 7.0, Concert by the Station Orchestra, conducted by Erkki Linko, Soloist: Pia Ravenna (Songs). Overture, Schirin and Gertrude (Graener); Minuet (Bolzon); Songs (a) Aria from La Traviata (Verdi), (b) Waltz, Frühlingsstimmen (Joh. Strauss); Gavotte, Harlequin and Columbine (Kaskel); Symphonic Poem, Les Préludes (Liszt). 8.0, Talk. 8.25, Light Music on Gramophone Records. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, relayed from Frankfurt. 12.50 p.m., Weather, Time and Announcements. 1.0, Concert, conducted by Wolf, Soloist: Marta Brühmayer (Soprano); Der Adler von Lüh-Blankenburg; Waltz, Waldeszauber (Vollstedt); Songs (R. Strauss); (a) Cello, (b) Belfort, (c) Meine Mutter hat's gewollt, (d) Unter Blüten; Overture, Paragraph 3 (Suppe); Kömische Suite (Zimmer); Liebesleid (Kreislner); Schön Rosmarin (Kreislner); Selection from Manon Lescaut (Puccini); Strauss Operetta Potpourri (Schlögel). In an interval at 2.0 (approx.), Announcements. 2.30, Sponsored Concert with Gramophone Records. 3.0, Talk: Films in Schools for Local History Lessons. 3.30, Economic Notes and Time. 3.50, Programme for Young People. 4.30, Concert, conducted by Eysoldt: Coronation March (Kretschmer); Overture, Hunyadi Laszlo (Erkel); Rhapsody in A Minor (Dvorák); Minuet (Mozart); Suite, Aus aller Herren Länder (Moszkovsky); Scenes from Le Postillon de Longjumeau (Adam). 5.50, Talk: Protection against Aerial Attack. 6.15, The World on Gramophone Records: Among the Nomad Shepherds of Epirus. 6.50, Weather, Time, Economic Notes and Sports Notes. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Announcements. 8.5, Violin Concerto in D (Brahms). 8.50, "Bastien and Bastienne"—Musical Play in One Act (Mozart). 10.0, Announcements, Educational Notes and Sports Notes. 10.25, Serenade and Dance Music, conducted by Eysoldt. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber: Spring Overture (Goetz); Minuet in D (Schubert); Maurische Rhapsodie (Humperdinck); Overture, Semiramis (Rossini); Selection from Der Freischütz (Weber); Selection from As you like it (Wetzler). In the interval at 1.0 p.m., News, Weather and Time. After the Concert, Exchange Quotations. 2.0, Reading. 2.15, Talk on the Post Office. 3.0, Violin Recital by Erika Hüpfeld, with Friedbert Sammler (Accompianist). 3.35, Economic Notes. 4.0, Programme for Young People. Part I—German Folk Song Recital, relayed from the Stadt-Kirche, Pirna. 4.35 (approx.). Part II—Illustrated Talk on Music. 5.5, German Folk Dances with Commentary. 5.50, Economic Notes, Weather and Time. 6.0, Book Review. 6.20, Talk on Economics. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, Topical Talk. 8.15, A Relay from Pirna. Part I—Military Band Concert, conducted by Kurt Heinitz; March, Heil Reichskanzler Adolf Hitler (Heinitz); Prelude to Das Modell (Suppe); The Mill in the Black Forest (Eilenberg); Three Marches Concert Polka; Die beiden kleinen Finken (Kling); March, Heil Pirna (Heinitz); Four Marches. Part II—Bunter Abend. 10.15, News. 10.30

(approx.), Dance Music relayed from Berlin (Witzleben). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C., F. Miklavcic announcing. 5.0, International Broadcasting Club Concert: What more can I ask? Brighter than the Sun; Falling in love with you; Ladies, you're lucky for me; Zigeuner, you have stolen my heart; Night of Love Divine; For you, Rio Rita; Sweet Amanda. 5.30, Reading. 6.0, Gramophone Records. 6.30, Children's Songs. 7.0, Russian Lesson. 7.30, Literary Talk. 8.0, Song Recital. 8.30, Quintet Concert. 9.30, Time and News. 9.50, Light Music on Gramophone Records. 10.30 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—11.30 a.m., Concert of Light Music and Mexican and Cuban Songs. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Thursday), Talk. 12.40, Light Music. 1.0 a.m. (approx.), Close Down.

MADRID

UNION RADIO, Call EA47, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, and Radio Journal, followed by Request Gramophone Records. 9.25, News Bulletin and Political Review. 9.30 to 10.30, Interval. 10.30, Chimes, Time Signal, and Political Review. 10.40 (approx.), Romanian National Festival Programme. 12.45 a.m. (Thursday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert by the Station Orchestra, conducted by J. Plichta; Potpourri, From A to Z (Geiger); Waltz, Vive la Danse (Waldteufel); Humoresque (Simecek); Polka, Tomie (Kostal); March (Labsky). 7.0 to 10.15, See Prague. 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—5.0 p.m., Orchestral Concert, conducted by Erich Klösch; Prelude to Die Markteliederin (Humperdinck); Largo from the Symphony from the New World (Dvorák); Scenes from André Chénier (Giordano); Liebeswälder (Reger); Oriental Suite, An den Ufern des Nils (Platen); Hungarian Dances Nos. 2 and 4 (Brahms); Ballet Music from Ritter Pausan (Joh. Strauss). 5.45, Talk: From an Artist's Studio. 6.5, Talk: One Hundred Years of Electro-Magnetic Telegraphy. 6.25, Time, Weather and Agricultural Notes. 6.40, Dialogue—Reminiscences of the Origin and Development of the Nazi Storm Troops. 7.0, Transmission for all German Stations, relayed from Heilsberg. 8.0, National Revolution Festival Programme by the Students of Munich University and Technical College and the Bavarian Students' Association, relayed from the Studentenhaus; Overture, Egmont (Beethoven); Address; Two Movements from the Small Serenade, Op. 53 (Trunk); Address; Two Songs; Address; Recital of Two Ballads; Die Ehre Gottes in der Natur (Beethoven). 9.30, Variety Programme by the Station Orchestra and Choir, by Franz Käppel Trio, and Soloists. 10.20, Time, Weather, News, and Sports Notes. 10.45, See Stuttgart.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 452.3 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert relayed from the Grand Hotel, Rakoczy Overture (Köler, Béler); Waltz, The Blue Danube (Joh. Strauss); Selection from Tiedand (F. Albert); Indian Song (Dvorák); Impromptu (Schubert); Danse macabre (Saint-Saëns); 6.0, French Lesson. 6.30, Two Talks for Girls. 7.0, Announcements, Weather and News. 7.30, Talk relayed from the Trondheim Technical School. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kraam; Overture, Oberon (Weber); Symphony No. 6 (Haydn); Lyric Suite (Grieg); Selection from La Boutique fantasque (Rossini-Respighi); Intermezzo from L'Amico Fritz (Mascagni); 1812 Overture (Tchaikovsky); 9.10, Holze Krog reads from his own poems. 9.30, Agricultural Market Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, A Sketch. 11.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio, 8.20, Light Music on Gramophone Records, 8.30 (in an interval), Time Signal and Announcements, 8.45, Concert of Popular Music; Soloists: Hella Held di Gregorio (Soprano) and E. Paladino (Cello); Slav Dance (Dvorak); Soprano Solos: (a) Ungeduli, (b) Erszarning (Schubert); Persian Dance from Khovanschina (Mussorgsky); Mazurka (Chopin); Minnet (Bocherini); Soprano Solos: (a) Cavatina from Linda di Chamouny (Donizetti), (b) Cello (R. Strauss); Cello Solos: (a) Andante (Bartók), (b) Gigue (Bartók); Serenade, Casanova a Venezia (Pik-Mangiagalli). In the interval, Talk: Confessions before the Microphone, 10.0, Song Recital, 10.55, News.

PARIS

IFFEL TOWER, Call FLE, 207.5 kc/s, 1,645.7 metres; 15 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-nd Signals), 7.0 p.m., News, 7.15, Weather Report, 7.25, Le Journal Parlé, 7.45, Programme for Children, 8.15, Le Journal Parlé (cont'd.), 8.45, Concert of Romanian Music in Honour of the Romanian National Festival, The Station Orchestra, conducted by Edouard Flament; Soloists, Mme. Pia Igy (Songs) and M. Hertz (Pianoforte); Nocturnes (André); Songs: (a) Crasanthemum (Drago), (b) Love Song (Paschil), (c) Green Leaf (Kerker); Pianoforte Solos: (a) Toccata (Euseco), (b) Finale from a Sonata (Negre); Four Popular Romanian Songs with Cobia accompaniment; Pianoforte Solos: (a) Nocturne (Mihalovici), (b) Dance (Mihalovici), (c) Melody (Nottara); Extracts from the First Orchestral Suite (Euseco); Songs: (a) Song (Alessandrescu), (b) The Pipe (Schiller); Violin Solo, Intimacy (Goldstein); Romanian National Anthem, 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW. 6.45 p.m., Journal Parlé and Foreign Press Review, 7.5, Popular Music on Gramophone Records, 8.0, Talk: Parisistes, 8.15, Interval, 8.30, Le Chandelier Play (Alfred de Musset), arranged for Radio by A. Alchaut, 10.30, Dance Music, relayed from the Lido, 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW. 6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (cont'd.), 7.45, Light Music on Gramophone Records, 8.0, Press Review and Weather, 12 Noon, Educational Talk, 12.15 p.m., Extracts from Norma Opera (Bellini), by the Radio Paris Orchestra, 12.30, Organ Recital from the Gammont Palace; Ich liebe dich, my dear (Bligh), Melody (Lattini); Bollet Music from Sylvia (Delibes); Tell me tonight (Spoliansky); Flitter-wochen (Seide), 1.0, Exchange, News and Weather, 1.5, Concert by the Radio Paris Orchestra; selection from Le roi malgré lui (Chabrier-Antray); Selection from La Vamma (Bastide-Delsaux); Selection from Jalousie (Christine); Overture, L'écoissais de Chafon (Delibes). In the interval at 1.30, Exchange, 2.0, Exchange, 3.45, Exchange and Market Prices, 6.10, Agricultural Talk, 6.40, German Lesson, 7.3, Medical Talk, 7.20, Concert: Paysage clair (Pons); Quand l'ombre descend (Marie); La Landierne magique (Godard); Selection from Iris (Mascagni); Selection from Le Petit Effe Fernand (Schmitt), 7.50, Commercial Prices and News, 8.0, Reading, 8.45, Two scenes from Parsifal Opera (Wagner) on Gramophone Records. In the interval at 8.30, News and Weather; at 8.40, Fashion Review by Mlle. Jose, 9.15, Press Review and News, 9.30, Act II of Tristan and Isolde—Opera (Wagner) on Gramophone Records.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk, 7.35, KDKA Home Forum, 8.0, Betty and Bob, from New York, 8.15, Radio Troubadours, from New York, 8.45, Microphone Melody Makers, 9.0, Teaberry Baseball Scores, 9.5, Business News, 9.15, Programme to be announced, 9.30, Weather and Market Reports, 9.45, Programme to be announced, 10.0, Teaberry Baseball Scores, 10.5, Jean and Gene, 10.15, Dick Darling, from New York, 10.30, The Singing Lady, 10.45, Little Orphan Annie, from New York, 11.0, Programme to be announced, 11.15, Time and Weather, 11.17, Teaberry Sport Review, 11.22, Press News-Reader, 11.29, Temperature Report, 11.30, Riggs and Moke, 11.45 to 2.30 a.m. (Thursday), New York Relay, 11.45, To-day's News, by Lowell Thomas, 12 Midnight, Amos 'n' Andy, 12.15 a.m., The Townsend Murder Mystery, 12.30, String Symphony, 1.0, Echo Crime Clues, 1.30, Time and Tastevast Jesters, 1.45, Phil Cook and the Ingram Shavers, 2.0, Adventures of Sherlock Holmes, 2.30, Programme to be announced, 3.0, Dr. Curtis Howe Springer.

PORSGRUND.—See Oslo.

MAY 10th

WEDNESDAY

continued

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., Concert in Honour of the Romanian National Festival; The Station Orchestra, conducted by Otakar Parik; Soloist: Sophia Munteanu (Songs); Romanian Rhapsody No. 1 (Euseco); Seven Songs; Finale from Orchestral Suite, Op. 9 (Euseco), 5.0, Talk, 5.10, Rye the Magician Historical Marionettes Play (Sskalova), 6.5, Agricultural Talk, 6.15, Talk for Workers, 6.25, News in German, 6.30, German Transmission; Talk for Children and Talk for Workers, 7.0, Chinese, 7.1, Talk: Romania, 7.10, Talk on the following Transmission, 7.15, Comedy in Three Acts (Eftimiu), 8.5, Talk on the following Transmission, 8.15, Dvorak Concert arranged by the Society for the Erection of a Dvorak Monument, relayed from the Lucerna Concert Hall; The Czech Philharmonic Orchestra and the Prague Choral Society, conducted by Talleh; Soloists, Zelenka, Zikova (Soprano) and Vilem Zitek (Bass); Overture, Husitska, Op. 67; Te Deum, Op. 103, for Soloists, Choir and Orchestra; Symphony in E Minor, Op. 95, from the New World, in the intervals at 9.0 and at 10.0, Time Signal, 10.15, News, 10.30, Talk in French, 10.45 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Geneva, 395 kc/s, 760 metres, 7.0 p.m. (from Lausanne), Weather and News, 7.50 (from Lausanne), Talk: Sparkling Wines, 8.0 (from Lausanne), Song Recital by Laura Gloria, 8.30 (from Lausanne), Talk: Alpine smugglers, 9.0 (from Lausanne), Popular Concert, conducted by M. Held, 9.15 (from Lausanne), Song Recital by M. Firzel, 9.45 (from Lausanne), Popular Concert (cont'd.), 10.0, News and Weather, 10.10, Tourist Talk: Lake Lemán, 10.30 (from Lausanne), Dance Music from the Bol-Air Métropole, 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert, Juanita (Hamud), Fiorella (Colutta), A sera in terra toscana (Limentari); Tell your Father, Tell your Mother (Nicholls); Partingia degli izigiani (Ranzato); Legend (Brussellmans); Ronda brasiliana (Kessler); Selection from The Flower of Hawaii (Abraham); Serenata a Frieda (Baraghi); Per to (Sant'angeli). In the interval from 1.30 to 1.45, Giornale Radio and Exchange, 4.45, Children's Radio Review, 5.10, Announcements, 5.15, Exchange, Report of the Royal Geographical Society and Giornale Radio, 5.30 to 6.15, Orchestral Concert; Il bel Goe (Colutta); Visione di Litu (Ricciardi); Un'altra volta (Vidale); Fantasia, Nozze Istriane (Smaraglia); Pulcinella and Tarantella (Bruzzi); Etude (Serabino); Testina cara (Chiappino), 6.40 (Naples), Shipping and Sports Notes, 6.50, Agricultural and Dopplavoro Notes, 7.0, Report of the International Institute of Agriculture (in Spanish, German and French), 7.20, Giornale Radio, 8.0, Time, Announcements and Light Music on Gramophone Records, 8.15, Medical Talk, 8.20, Giornale Radio and Sports Notes, 8.45, Germania—Opera in Four Acts (Franchetti). In the intervals, Theatre Talk and Poetry Reading, Giornale Radio after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 to 9.0 p.m. (approx.), New York Relay, 8.0, Pop Concert, 8.30, Texas Cowgirl, 8.45, Charis Programme, 11.45, Stock Reports, 12 Midnight, Royal Vagabonds, from New York, 12.30 a.m. (Thursday), Utica Club Programme, 1.0 to 2.0, New York Relay, 1.0, Band of Famous Brands, 1.15, Rocking Chair Memories, 1.30, Musical Programme, 2.0, Corn Cob Pipe Club of Virginia, 2.30, Dabey Hits of Yesterday, from New York, followed by Programme Resume.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres, 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory, Weather, and News, 12.40 (from Berne), Light Music on Gramophone Records, 1.35 (from Berne), Weather and Exchange, 1.40 to 3.30, Interval, 3.30 (from Berne), Popular Music on Gramophone Records, 4.30 (from Berne), Programme for Children, 5.0 (from Berne), Light Music on Gramophone Records, 5.30, Weather Report, 5.35 (approx.) to 6.30, Interval, 6.30 (from Zürich), Talk: Grecian Temples, 7.0 (from Zürich), Time, Weather, and Market Prices, 7.15 (from Zürich), Eng-

lish Lesson, 7.45, Concert of Swiss Music, 9.30, Weather and News, 9.40 (from Zürich), Light Music and Dance Music, 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 359 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m. (from Malmö), Concert of Light Music by the Breyon Mandoline Trio, relayed from Malmö, 1,301 kc/s, 231 metres, 5.30, Talk, 6.0, Gramophone Records of Popular Music, 7.0, Talk: Health and Hygiene, 7.15, Weather and News, 7.30, Talk, 8.0, Song Recital by Elizabeth Kolmodin, with Readings, 8.20, The Ladies' Pet a Comedy in Three Acts (Santant), 9.45, Weather and News, 10.0, Dance Music, relayed from the Berns Dance Hall, 11.0 (approx.), Close Down.

STRASBOURG

860 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Classical and Light Music on Gramophone Records, 12.15 p.m., News, 1.0, Time and Exchange, 1.5, Light Music on Gramophone Records, 2.0 to 4.45, Interval, 4.45, Talk: Electrical Apparatus in most Common Use, 5.0, Orchestral Concert, conducted by Rokkam, Soloist: Grégoire (Violin); Overture, Masaniello (Auber); Selection from Coppélia (Delibes); Violin Solo: Kuyawiak (Wieniawski); Melody (Schumann); Ich grölle nicht (Schumann); Interlude from Le roi d'Yvetot (Adam-Bonheur); Selection from The Grisha (Jones); Three Dances (German), 6.0, Concert, relayed from Lille, 1,130 kc/s, 255.4 metres, 7.0, Talk: The Economic Situation of the French Middle Classes in 1913 and in 1932, 7.15, Talk in German, 7.30, Time and News, 7.45, See Paris (Eiffel Tower), 8.15, Press Review in German, and Lottery Results, 8.30, Gramophone Concert: Overture, Obéron (Weber); Polonaise in A Flat (Chopin); Indian Lament (Dvorak); Romance (Schumann); Le rygne (Saint-Saëns), 2.0, Symphony Concert, relayed from Besançon, Conductor: Gaston Poulet, Soloists: Suzanne Balmerie (Songs) and Jeanne Ledoux (Pianoforte), Overture, Fatric (Bizet); Songs: L'apprenti sorcier (Dukas); Concerto for Orchestra and Pianoforte (Schumann); Prelude to Tristan and Isolde (Wagner); Aria, The Death of Isolda (Wagner); The Ride of the Valkyries (Wagner). In the interval, Talk and Press Review, 10.45, Dance Music from the Savoy, 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres, 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.15 p.m., Time, News, Weather, and Programme Announcements, 1.30, Concert from Langenberg, 2.0 to 2.15, Musical Programme arranged by the Post Office, 3.10, Song Recital by Liesel (Miesdahl); Songs (Koch); (a) Mein Schatz hat einen Garten, (b) O Lieb, so lang du lieben kannst, (c) Wegewart, (d) Mädele guck raus; Songs (Rücklos); (a) Blumenröschen, (b) Es sprach der Mond, (c) Vergissmichnicht; Songs (Hasse); (a) Morgenlied, (b) Es wollt ein Mädelein Wasser holen, (c) Freunde, holde Freunde, (d) Wenn der jüngste Tag will werden, 3.30 to 4.20 (from Mannheim), Programme for Children, 5.0, See Munich, 5.45, Time, Weather, and Agricultural Notes, 6.0, Das Hebelmädli—a Radio Report of an Old Folk Custom, relayed from Hausen, 6.25, Talk: Hunting and the Preservation of Wild Life, 6.50, Time and News, 7.0, Transmission for All German Stations, relayed from Heilsberg, 8.0, War Stories, 8.20, Brahms Concert, relayed from Mannheim Castle; The Kergl Quartet, and Soloists: Otto Voss (Pianoforte) and Gussa Heiken (Soprano); String Quintet in F; Songs: (a) Wir wandelten, (b) Bei dir sind meine Gedanken, (c) Es liebt sich so lieblich im Lenze, (d) Das Mädchen spricht; Pianoforte Quintet in F Minor, 9.20, Swabian Programme by August Lämle, Gustav Wirsching, and Margarete Kramer (Folk Songs to the Lute), 10.15, Time, News, Weather, and Programme Announcements, 10.30, Dance Music, conducted by Harry Risch, with Käthe Mann (Soprano), 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire, 7.30 p.m., Songs from Sound Films, 7.45, Accordion Music, 8.0, Music by a Viennese Orchestra, 8.15, Songs from Operettas, 8.30, Instrumental Solos, 8.45, Opéra-Comique Songs, 9.0, Concert by La Toulousaine Society, conducted by M. Palette, Light Music in the interval, 10.15, North African News, 10.30, Concert for Listeners in Morocco, 11.0, Dance Music, 11.15, Choral Music, 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown—onstage announcing, 11.30, Military Band Concert: Jungle Drums (Ketehey);

Hungarian Rhapsody No. 2 (Liszt); Selection from Faust (Gounod); Fantasia, The Battle (Eckersberg); Serenade (Hoykens); Marche Iorraine (Ganne), 11.57, I.B.C. Good-night Melody, 12 Midnight, Weather and Announcements, 12.5 a.m. (Thursday), Au Bal Musette, 12.15, Tangos, 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., Concert; Soloists: Elena Colotti (Pianoforte) and Marie Decorti (Soprano); Pianoforte Solos: (a) Liebestraum (Liszt), (b) Nocturne (Schubert), (c) Ballad in A Flat (Chopin); Soprano Solos: (a) Song (Rubinstein), (b) Paranzelle (Persico), (c) Estrellita (Pones), (d) Aria from Le donne curiose (Welf-Ferrari); Pianoforte Solos: (a) Dance (Debussy), (b) Vibration de onde (Ortici), (c) Ballad, No. 2 (Liszt); Soprano Solos: (a) Aria from Edmea (Catalani), (b) Aria from La Zingara (Donizetti), 6.35 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres, and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Song Recital, 6.35, Giornale Radio, Agricultural and Dopplavoro Notes, 7.0, Time, Tourist Report and Gramophone Records of Light Music, 7.20, Giornale Radio, 7.45, Gramophone Records (cont'd.), 8.0, Announcements, Giornale Radio and Weather, 8.15, Medical Talk, 8.30, Comedy in Three Acts, followed by Orchestral Concert, 11.0, Giornale Radio, 11.5 to 11.30 (Florence), Dance Music Relay.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,960 kc/s, 50.25 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish, 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres, and Salzburg, 1,373 kc/s, 218.5 metres.—6.35 p.m. Talk by Ottokar Trold, 7.0, Concert of Light Music by the Emil Bamer Orchestra, 7.30, Time, Weather and Programme Announcements, 7.35, Concert (cont'd.), 8.0, Cologne and the Rhineland Concert by the Vienna German Male Voice Choir, with Introductory Talk, 8.40, Dramatic Programme by Wilhelm Kitzsch (Speaker), with the Vienna Symphony Orchestra, Part I—Das Hexentied (Ernst von Wildenbruch), with Music by Max von Schillings, Part II—Das Horchzeitlied (Goethe), with Music by C. Schneider, 9.40, News and Weather, 9.55, Concert by the Vienna Chamber Orchestra, conducted by Rudolf Pohn; Overture, Euryanthe (Weber); Sinfonia Deutsche (Anton Kozelitz); First Suite from Peer Gynt (Grieg); Three Spanish Dances (Moszkowsky); Military March (Schubert); Wienerwald-Blumen (Rudolf Pohn); Overture, The Merry Wives of Windsor (Nicolaï); Meditation (Bach-Gounod); Minnet (Bocherini); Potpourri of Johann Strauss Opusetta Music (Schliödel); Waltz, An der schönen grünen Marenta (Kozmak); Polka, Sängers Lieben (Eduard Strauss-Pohn).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow, 12.5 p.m., Programme Announcements, 12.10, Popular Music on Gramophone Records, 1.20, Weather Report, 1.25 to 3.10, Interval, 3.10, Announcements, 3.15, Economic Notes, 3.30, Talk for Boy Scouts, 3.35, Programme for Children, 4.0, Light Music on Gramophone Records, 4.40, Talk, 5.0, Programme for Music Teachers, 5.30, Light Music on Gramophone Records, 5.40, Talk: Cooperation of Manual and Brain Workers, 5.55, Programme Announcements, 6.0, Second Concert of Songs and Pianoforte Music by the Polish Candidates for the Second International Competition, at Vienna, in the interval, News, 7.0, Miscellaneous Announcements, 7.20, Answers to Agricultural Correspondence, 7.30, Poetry Recital, with Pianoforte Accompaniment, 7.45, Radio Journal, 8.0, Programme for the Romanian National Festival, Romanian National Anthem, Polish National Anthem, Addresses, and Romanian Music, 9.0, Sports Notes, 9.5, Radio Journal, 9.10, Pianoforte Recital by Z. Drzewiecky; Fantasia in D Minor (Mozart); Chaconne (Bach-Busoni); Six Variations (Lassell); Nachstück (Schumann); Scherzo (Mendelssohn-Bartholdy); Two Waltzes; (a) in E, (b) in A flat (Brahms); Cavatine doube (Drabek-Schödl); Mazurkas Nos. 1 and 3 (Marcievsky); El Vito (Mandel-Infante), 10.0, Typical Talk, 10.15, Dance Music on Gramophone Records, 10.40, Talk in English: The Protection of Minorities according to the Decrees of the League of Nations, 10.55, News, Weather, Report, and Police Notes, 11.0, Dance Music from the Café Giza.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Programme for Children, 6.40, News and Dublin Cattle Market Report. 7.0, French Lesson. 7.15, Literary and Dramatic Talk. 7.30, Time Signal. 7.31, The Station Orchestra. 8.0, Soprano Solos by Mary Burke Collins. 8.10, Pianoforte Solos by Kathleen Geraghty. 8.25, Soprano Solos by Mary Burke Collins. 8.35, Harp Solos by Annie Fagan. 8.50, Tenor Solos by James Cowhie. 9.5, The Station Orchestra. 9.30, Gaelic Song Recital by Tadhg MacFéilbhisigh. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

(EAJ); 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Concert. 8.30, Exchange Quotations and Educational Talk in Catalan. 9.0, Light Music on Gramophone Records, followed by News Bulletin. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Concert by the Station Orchestra. 11.20, Dance Music by the Demon's Jazz Band. 11.0, El Rayo—Comedy in Three Acts (Saca and Nunez). 12 Midnight (in an interval), News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Report, and Dopolavoro Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.35 (approx.), Military Band Concert, conducted by Salvatore Rubino: Overture, Nabucco (Verdi); Intermezzo from Cavalleria rusticana (Mascagni); Concert Overture, Le carnaval romain (Berlioz); Selection from Gloria (Cilea); Suite, Scene calabrese (De Nardis); March No. 4, Op. 76 (Schumann). In the interval, Amusement Guide. 10.30, Popular Music on Gramophone Records. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Concert: Entry March from Tannhäuser (Wagner); Ballet Music from Sylvia (Delibes); Wedding March from A Midsummer Night's Dream (Mendelssohn); Entr'acte and Ballet Music from Rosamunde (Schubert); Coronation March from The Prophet (Meyerbeer); Ballet Music from Undine (Lortzing); Hungarian March (Berlioz). After the concert, Second Weather for Farmers. 12.55 p.m., Time Signal. 1.45, News Bulletin. 2.0, Popular Music on Gramophone Records. 2.45, Programme for Children. 3.0, Talk for Women. 3.30, Weather and Exchange. 3.45, Reading (Georg Rendl). 4.30, Concert from Berlin (Witzleben). 5.0, Talk on Carl Hauptmann on the 75th Anniversary of his Birth. 5.35, String Trio in A Minor, Op. 77b (Reger). 6.0, A Poem. 6.5, Song Recital by Gotthold Dittler. Songs (Schubert): (a) Der Atlas, (b) Der Doppelgänger, (c) Die Stadt; Songs (Loewe): (a) Archibald Douglas, (b) Heinrich der Vogler. 6.30, Agricultural Talk. 6.50, Weather for Farmers and Announcements. 7.0, Transmission for all German Stations: Literature and Songs of the Modern Generation. 8.0, Das Schweine-schlachten—Comedy (August Hinrichs). 9.15, Dance Music from Heilsberg. 10.0, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Serenade, relayed from Langenberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Concert by Josef Reer-Balay and his Orchestra. Overture, The Daughter of the Regiment (Donizetti); Ballet Music from Czar and Carpenter (Lortzing); Oriental Suite, A Thousand and One Nights (Bortkiewicz); Slav Dances (Dvorak); Waltz, Neu-Wien (Joh. Strauss). 5.30, Reading. 6.0, Book Review. 6.10, Talk: Youth and the State. 6.30, Talk on Pomerania. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, Announcement. 8.10, Max Reger Memorial Programme (Died May 11th, 1916). The Station Orchestra, conducted by Eugen Jochem, Memorial Address by Prof. Fritz Stein. Symphonic Prologue to a Tragedy, Op. 108. 9.0, Talk, with Gramophone Illustrations: The Art of Eloquence. 9.35, Ballet Suite, Op. 130 (Reger), relayed from the Singakademie, Conductor: Dr. Gustav Havemann. 10.0, Weather, News, and Sports Notes. 10.15 (approx.), Dance Music, relayed from the Café Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.40, Talk on Bullfighting. 7.55, Lottery Results and Charades. 8.0,

THURSDAY MAY THE ELEVENTH PRINCIPAL EVENTS OF THE DAY: AT HOME NATIONAL Act 2 of "Tristan und Isolde" (Wagne), from the Royal Opera House, Covent Garden. LONDON REGIONAL Variety programme. MIDLAND REGIONAL Recent Impressions, Chicago and Across America, by Mr. E. Littler. NORTH REGIONAL Folk songs of the North—Northumberland. WEST REGIONAL Choral programme. SCOTTISH REGIONAL "Our Father," a Scottish play by D. C. Thomson. BELFAST "Memories," orchestral concert. ABROAD BERLIN (Witzleben) 8.10 p.m. Max Reger musical programme. BRUSSELS (No. 1) 9 p.m. Offenbach concert. HILVERSUM 8.45 p.m. Concert from Amsterdam. RADIO PARIS 8 p.m. Symphony concert, conducted by Eugène Bigot. ROME 8.45 p.m. Music by Salvatore Auteri Manzocchi. STRASBOURG 8.30 p.m. Operetta: "Monsieur Beaucaire," by Messager. STUTTGART 9.20 p.m. Concert of Slav music. VIENNA 8.30 p.m. Opera: "Sicilian Vespers," by Verdi.

Talk on Wine. 8.15, News. 8.30, La Plus Faible—Comedy in Three Acts (Marcel Presto).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.25 p.m., Tchaikovsky Concert by the Station Orchestra, conducted by F. Dák; Soloist: Sylvia Macendzianka-Halmosová (Pianoforte); Overture, Hamlet; Concerto in B Minor, Op. 23, for Pianoforte and Orchestra. 8.20, See Brno. 9.0 to 11.0, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 10 kW., and Gleiwitz, 1,184 kc/s, 253 metres.—11.50 a.m., Concert by the Silesian Philharmonic Orchestra, conducted by Hermann Lehr. 1.10 p.m., Weather Forecast. 1.15, Concert (contd.): Overture, Das Nachtlager in Granada (Kreutzer); Hofballtänze (Lammer); Polka, Bitteschön (Jos. Strauss); March from Boeccio (Suppé). 1.45, Time, Weather, News and Exchange. 2.5, Wagner Gramophone Concert: Arias from: (a) The Mastersingers, (b) The Dusk of the Gods; Sena's Ballad from The Flying Dutchman; Ein Abendblatt; Kaiser-Marsch. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Tourist Talk: The Beauties of Silesia. 3.50, Book Review. 4.10, Pianoforte Recital by Annemarie Boxhammer and Wally Schmidt; Sonata for Two Pianofortes (Huber); Symphonic Variations (Kronke); Four Waltzes (Brahms). 4.40, Programme for Children. 4.55, Concert by the Station Orchestra, conducted by Bruno Janz: Overture, Gipsy Love (Lehar); Peasant Suite (Albion); Intermezzo from Finelli Funicelli (de Cecco); Waltz, Dame in brown (Robrecht); Virola-phon Solo, Liebesserenade (Lühr); Minuet, Sylvia (Hagemann); March Potpourri, Als wir marschierten (Schmidt-Hagen). In an interval at 5.35 (approx.), Agricultural Prices. 5.45, Programme for Children. 6.0, Talk: The Healing Power of Light. 6.15, Programme to be announced. 6.30, Talk: A Nation's Ability to Defend Itself. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the Station Orchestra, conducted by Franz Marszalek: Variations and Rondo on a Song from the Silesian Isorg-berge (Zielowsky); Small Suite for Flute and Pianoforte (Kronke); Waltzes on Themes of Jos. Strauss and Jos. Lammer, for Violin, Cello and Pianoforte (Schmitt); Concertino for Clarinet (Weber); Radio Suite for Small Orchestra (Vodkfel). 9.0, Announcements. 9.10, Max Reger Memorial Concert, relayed from the Salvatorkirche. Bruno Jagielski (Tenor), Franz Schätzer (Violin) and Gottfried Richter (Organ). Aria for Violin and

Organ; Songs: Chaconne in G Minor, Op. 117, No. 4, for Violin; Songs: Fantastic and Fugue, Op. 46, on the name BACH for Organ. 10.10, Time, Weather, News, Sports Notes and Programme Announcements. 10.30, Reading. 10.50 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by R. Bakala. 5.10, News for Young People. 5.20, See Prague. 5.50, Review of Periodicals. 6.0, Literary Review. 6.15, See Prague. 6.25, German Transmission: News and a Radio Play. 7.0, See Prague. 7.25, Popular Orchestral Concert. 8.5, See Prague. 8.20, Moravian Folk Songs. 9.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No.1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert: Overture, Morning, Noon and Night (Suppé); Blumencröscher (von Blon); Melody from Tell me tonight (Spogliansky); Selection from The Gold Diggers of Broadway (Burke); Aubade from Le Roi d'Ys (Lalo); To the Guitar (Nólek); Selection from Les Dragons de Villars (Maillet); Madiana (Almaly); Barn Dance (Lutz); Troika; In a Persian Market (Kotel'nikov); Air from Cavalleria Rusticana (Mascagni); Overture, The Bohemian Girl (Belke). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Paul Leemans: March (Walze); Waltz (Kálmán); Spanish Caprice (Malyevski); Selection from Haasel and Gretel (Humperdinck); Grand-mama (Lange); Potpourri of Hungarian Melodies (Padouk). 7.15, Review for Walkers. 7.30, Wireless Notes. 8.0, Concert by the Station Orchestra, conducted by C. Walpot; Soloist, Mme. G. Lairy (Songs): Overture, Light Cavalry (Suppé); Verdi Potpourri (arr. Weninger); Songs: (a) Lindenbaum (Schubert); (b) Clair de lune (Faure); (c) Berceuse (Gretchaninov); (d) Mainacht (Brahms); Waltz, Wienerblut (Joh. Strauss). 8.45, Talk: The League of Nations. 9.0, Offenbach Concert by the Station Symphony Orchestra, conducted by M. Meulemans: Overture, The Grand Duchess of

Gerolstein; Selection from La belle Hélène, Barcarolle from The Tales of Hoffmann Overture, The Drum-Major's Daughter, Gramophone Records: Airs from (a) La Pêcheuse, (b) Les Brigands; Selection from La Vie parisienne; Selection from Madame Favart; Overture, Orpheus in the Underworld. 10.0, Le Journal Parlé. 10.10, Request Gramophone Records.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, The Black Domino (Anber); Suite, At the Circus (Armandola); Si vous l'aviez compris (Denza); Dance of the Hours from La Gioconda (Ponchielli); Violin Solo: Tango (Albeniz-Kreisler); Selection from Mirella (Gomod); Waltz, Liebling, wie wir's (Erwin); Two Airs from the Film, Die Sclacht von Badernünde (Gilbert). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert: Neptune's March (Ivory); The Gingerbread House (Ivory); Harlequin (Lalo); Four Airs from Hansel and Gretel (Humperdinck-Fried); Le dernier sommeil de la vierge (Massenet); Minuet No. 1 (Paderewsky); Serenade (Schubert); Groucherigen (Liszt); Serenade (Moszkowsky); Overture, Alessandro Stradella (Flotow). 5.0, Concert by the Station Orchestra, conducted by C. Walpot: Summer Day (Coates); Waltz Potpourri (Robrecht); Suppé Potpourri (Morena). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by Paul Leemans. Soloist: H. Wigy (Violin). March of Youth (Kriekia); Romantic Suite (Armandola); Serenade (Moszkowsky); Selection from Aida (Verdi); Violin Solo: Ballad (de Boeck); Selection from Die Puppenzeit (Bayer). 7.15, Talk on Folklore. 7.20, Talk on the Forthcoming Peter Benoit Celebrations. 7.30, Talk for Housewives. 8.0, Concert by the Station Symphony Orchestra, conducted by A. Meulemans: Overture, Prince Igor (Borodin); Czech Dances (Kodaly); Carnaval de Paris (Svendsen); Light Music on Gramophone Records: Waltzes (Brahms); Slav Dances (Dvorak). 8.45, Talk on Rheumatism. 9.0, Concert by the Station Orchestra, conducted by C. Walpot. Overture, Pique Dame (Suppé); Caucasian Suite (Ivanov); Gramophone Records: (a) Erinnerungen (Kreiger); (b) Guitar Solo: Variations on a Popular Theme (Krotkov); Fortissimo (Kálmán); Waltz from The Court of Luxembourg (Lehar); Three Pieces (Fletcher). 10.0, Le Journal Parlé. 10.10, Popular Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert of Light Music and Romanian Music, by the Dinico Orchestra. In the interval at 6.0, Radio Journal. 7.0, Light Music on Gramophone Records. 8.0, Violin Recital by C. Bobescu; Nel cor piu non mi sento (Pagani); Introduction and Rondo Capriccioso (Saint-Saëns); Scherzo-Tarantella (Wiennawsky). 8.30, Talk. 8.45, Pianoforte Recital by Mme. Madeleine Cooraso. 9.15, Cello Recital by J. Thaler; Andante from the Concerto in D (Mozart); Melody (Percy Grainger); Minuet (Brahms); Souvenir-Adagio (Thaler); Dance (Thaler).

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW.—Also relayed on 840 metres from 8.0 p.m. to 12 Midnight. 5.30 p.m., Variety Music on Gramophone Records. 6.0, English Lesson. 6.30, Josef Dözy Memorial Programme—Song Recital by Margarete Bodán and Josef Cselenyi, accompanied by a Cigány Band. 7.25, Talk. 8.0, Harp Recital by Julius Revere; La melancolie (Godefroid); Song (Hasselmanns); Gitana (Hasselmanns); Fantasia (Saint-Saëns); Waltz in A Flat (Brahms); Waltz (Durand). 8.30, Morning, Noon, and Night—Play in Three Acts (Nico-dem). 10.30, News Bulletin. 10.45 (approx.), Cigány Music. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 2.0 to 3.0, Interval. 3.0, Concert by the Radio Orchestra, conducted by Emil Reesen. Soloist: Maja Baerentzen (Songs); Coronation March from The Maid of Orleans (Söderman); Intermezzo and Dance from The King (Halvorsen); Selection from Barbe bleue (Offenbach); Piece en forme de Habanera (Ravel); Ballet Music from Coppélia (Delibes); Seven Songs; Overture, Baudouinreichle (Suppé); Ronde française (Bohlmann); Sicilienne (Chansson); Selection from Tieland (d'Albert); Gavotte-Musette from the Suite, Aus Holbergs Zeit (Grieg); Homage March from Sigurd Jorsalfar (Grieg). 5.0, Programme for Boys. 5.40, Exchange and Fish Market Prices. 5.50, Talk on Swedish Continuation Schools. 6.20, English Lesson. 6.50, Weather. 7.0, News. 7.15, Time. 7.30, Talk on Social Reform. 8.0, Time Signal from the Town Hall. 8.1, Concert by the Radio Orchestra, conducted by Emil Reesen. Soloist: Per Knudsen (Songs). Slav Dance in E Minor (Dvorak); Spanish Dances (Granados); Romanian Fantasia (Dimitiescu); Five Folk Songs; Latvian Folk

MAY 11th **THURSDAY** continued

Songs (Withol); English Folk Melody, Cherry Ripe (Grainger); Russian Dance (Tchaikovsky). 9.0, Talk. 9.30, Selection from The Barber of Seville (Rossini) on Gramophone Records. 9.45, Reading. 10.5, News. 10.20, String Quartet, Op. 17 (Debussy). 10.50, Dance Music by the Richard Johansen Band, relayed from the Lodberg Restaurant. In an interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—12 Noon, Variety Music on Gramophone Records. 12.30 p.m., News. 12.45, Programme for Children. 6.30 to 7.0, Programme in English by the I.B.C. Announcers: C. Danvers-Walker, T. St. A. Ronald, and B. McNabb. 5.30, Octet and Vocal Concert for Worthing and Littlehampton Listeners: Spring Song (Mendelssohn); Hungarian Dance in D (Brahms); Hungarian Dance in A Minor (Brahms); Songs: (a) Because (d'Hardiot), (b) The Second Minuet (Besly); Torador et Andalouse (Rubinstein); Ave Maria (Schubert); Romance (Rubinstein); Song, The Sweetest Flower that blows (Hawley); Valse Bluette (Nevin); The Butterfly (Bendix); Narcissus (Nevin). 6.15, Concert for Brighton and Hove Listeners: When the Lilac blooms again (Rottler); Rocked in the Cradle of the Deep (Knight); Old Music Hall Memories; Blue Pacific Moonlight; Happy Days and Lonely Nights (Fisher); One Night Alone with you; Fall in Love with me; My Sunshine is you (Stolz); Out of Nowhere; One Alone (Kronberg); Goodnight Sweetheart (Noble). 7.0, Radio Gazette. 7.20, Local News. 7.30, The Listeners' Hour and News. 8.30, Concert relayed from the Town Hall, Rouen. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Heilons: When the Guards are on Parade; Ten Cents a Dance; The Queen was in the ParLOUR; Micky Mouse; Smile, darn ya, smile; Pardon me; What's keeping my Prince Charming; Two Heads in the Moonlight; The same as we used to do; Jolly good Company; Le Chemin de Paradis; We're all good Pals at last; When you were the Blossom of Buttercup Lane; If you're really and truly in Love; The Hour of Parting. 11.0, Organ Recital: Selection, Illegal; Paradise; The Wooden Soldier and the China Doll; Sing Brothers; Bells across the Meadows; There's something about a Soldier; Serenade; Butterflies in the Rain. 11.30, Celebrity Concert on Gramophone Records: Auf Wiedersehen, my Dear, by Layton and Johnstone; Hand me down my Walking Cane, by Boswell Sisters; Rolling down to Rio (German); Another Day's Broadcasting, by Clapham and Dwyer; That Man of my Dreams, by Sophie Tucker; Marta, by the Street Singer; Bugle Call Rag, by the Mills Brothers. 12 Midnight, Club Concert for Bude and Tintagel Listeners: Spring Song (Mendelssohn); In Sleepy Hollow (Robinson); With you (Berlin); Autumn (Chaminade); Melody (Dvorak); Waiting at the End of the Road (Berlin); You along o' me (Sanderson); Waltz, Sphärenklänge (Jos. Strauss); Boots (McCall); The Smuggler's Song (Mortimer); Cornet Solo, I hear you calling me (Marshall); The Gay Highway (Drummond); Ballet Music from Sylvia (Delibes). 1.0 a.m. (Friday), Accordion Solos: Perdita (Cuvellier); La Java de Doune (Padilla); Tango de Paques (Cuvellier); The Skaters' Waltz (Waldteufel); Petit Jean (Cuvellier); La Tourterelle (Damaré); Triumph of Eros (Cuvellier); Restless Fingers (Cuvellier). 1.30, Vocal Trios: Laughing down the Lane; Bubbling over with Love; I'll always be true; Orchestra, High Society Blues; Bloudy; Laughing at the Rain; If I had a Girl like you. 2.0, Dance Music by the Heilons: Till tomorrow; My Romance; Puleeaze, Mr. Hemmingway; Pal of my Dreams; Let's all dance the Polka; There's a Crowd; Marching along together; Sweethearts for ever; You're my Everything; I guess I'll have to change my Plan; Ooh! that kiss; I'm forgetting myself; Let's put on the Lights; I wonder how; the Old Folks are To-night. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.: Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—6.50, Time, Programme Announcements. Weather and Economic Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Georg Schumann Concert by the Radio Orchestra, conducted by the Composer: Overture, Lebensfreude, Variations and Gigue on a Theme of Handel. 8.45, Concert by the Radio Orchestra, conducted by Reinhold Merten: Overture, Rübzahl (Flotow); Music to A Winter's Tale (Humperdinck); Prelude to Die Abreise (d'Albert); Norwegian Rhapsody No. 1 (Svendens); Introduction to Act III of Zetsenches Husaren (Scholz); Hungarian Dances Nos. 17-21

(Brahms). 9.45, The Nut Brown Maid—Old English Ballad, by J. F. Christians and Lotte Anndt. 10.15, Time, News, Weather and Sports Notes. 10.40, Horst Wessel—Radio Play (Ewers and Beyer).

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENGA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 506 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 630 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.30 p.m., Hamburg, Lübeck and Bremen—Report from the Senates and Citizens' Councils of the Hanseatic Free Cities.—6.0, Carl Hauptmann Programme for his Seventy-fifth Birthday. Appreciation by Dr. Max Sidow. Reading from his Works, followed by a Scene from Die Lange Julie. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Max Reger Concert, by the Station Choir and the Gestraump Trio. Soloists: Grimm-Herr (Soprano) and Gerhard Gregor (Organ). Song for Eight Voices, Der Mensch lebt und bestellst nur eine kleine Zeit; Prologue; Movements from a Trio, Op. 77b, for Violin, Viola and Cello; Songs, Op. 97: (a) Das Dorf, (b) Wiegendied. (c) Ein Drängen ist in meinem Herzen, (d) Der bescheidene Schäfer; Fantasia and Fugue on the name of B A C H for Organ; Choral Cantata, Meinem Jesum lass ich nicht, for Violin, Viola, Soprano, Choir and Organ. 9.0, Notker, der Deutsche—Historical Radio Play (Herbert Wilk). 10.0, Time, Weather, Announcements, Sports Notes and Police Report. 10.20, Topical Talk. 10.30 (from Hanover), Orchestral Concert, conducted by Otto Ebel von Sosen. March, In Wind und Wetter (Furbach); Ländliches Hochzeitfest (Zimmler); Madels und Burschen (Clemus); Im Trödel Dörfchen (Schmelting); Waltz, Was der Wald erzählt (Zimmer); Schmetzlerlings-reigen (Schmalstieg); Kirmeswallerz (Ailbont); Fünf Uhr Tee im Froschteich (Ailbont); Im Schwarzwald geht ein Mädelchen rad (Rust); Intermezzo, Pfannkuchens Geburtstag (Linck); Potpourri, Jetzt wird's gemütlich (Leuschner); Einsteigen in die letzte Pferdebahn (Raasch); Lumpen-Marsch (Bernards).

HANOVER.—See Hamburg.

HEILSBURG

1,065 kc/s, 276.5 metres; 60 kW.: and Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken. In the interval at 1.20, News. 2.30 to 3.0, Interval. 3.0, Agricultural Prices and Exchange Rates. 3.30, Programme for Young People. 4.0 (from Danzig), Talk: Animals in Popular Belief. 4.30, Concert by the Königsberg Opera House Orchestra, conducted by Erich Birschel: Overture, La Dame blanche (Boieldieu); Selection from Die Puppeifee (Bayer); Nibelungen-Marsch (Somtag); Selection from The Gipsy Baron (Joh. Strauss); Overture, Flotte Bursche (Suppé); Waltz, Wine, Women and Song (Joh. Strauss); Slav Dance No. 8 (Dvorak); Serenade (Moszkowsky); Selection from The Gipsy Princess (Kalmán); Waltz, Estudiantina (Waldteufel). 6.15, Agricultural Prices. 6.20, Talk on Germany's one-time Colony, East Africa. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken, and the Glatzel Band. 9.45, News Bulletin. 9.50, English Lesson for Beginners. 10.15, News and Sports Notes. 10.25 (approx.), Concert of Opera Music on Gramophone Records.

HILVERSUM

295.1 metres; 20 kW (7 kW up to 4.40 p.m.).—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.10 a.m., Light Music on Gramophone Records. 11.40 Talk for Women. 12.10 p.m., Song and Pianoforte Recital. 12.40, Time Signal. 12.41, Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte; Gramophone Records in the intervals. 2.40, Popular Music on Gramophone Records. 3.10, Pianoforte Recital by M. Solomons; Three Waltzes (Beethoven); Scherzo in B Flat Minor (Chopin); Waltz, Op. 34, No. 4 (Moszkowsky). 3.40, Talk for Women. 4.25, Variety Music on Gramophone Records. 4.40, Programme for Hospitals. 5.10, Song and Pianoforte Recital. 5.40, Programme for Children. 6.10, Concert by the Station Orchestra, conducted by Nico Treep; Jagdabenteuer (Schrammel); Overture, The Wolf

Love (Baffe); Selection from Madame Butterfly (Puccini); Waltz, Mia Cara (Busch); Ballet des parfums (Popy); The Sacred Hour (Ketebe); Chappinade (Fischer); A.V.R.O. March (Treep). 7.10, Sports Talk. 7.40, Concert (cont'd), Ballet Music from Faust (Gounod); Splendour and Victory (Finck). 8.10, Talk: Holland. 8.40, Time Signal. 8.41, News Bulletin. 8.45, Concert by the Concertgebouw Orchestra and a Children's Choir, relayed from the Concertgebouw, Amsterdam. 9.55, Schumann Song Recital by Lotte Leonard: Widmung; Jarnand; Der Sandmann; Der arme Peter. 10.10, A Radio Play. 10.30, Concert by the Station Orchestra, conducted by Nico Treep. Soloist: Lotte Leonard (Songs); Overture in Italian Style (Schubert); Der Hirt auf dem Felsen (Schubert); Mendelssohn Potpourri (Furbach); Overture, Pique Dame (Suppé); Waltz, Herrensparzier (Ziehrer); Reverie (d'Ambrosio); Galop (Lindbly). 11.40, News. 11.50, Light Music on Gramophone Records. 12.40 a.m. (Friday), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.40 a.m. to 2.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.40, Popular Music on Gramophone Records. 12.10 p.m., Religious Address. 12.40, Police Notes. 12.55, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud. March, Auf treue Kameradschaft (Blankenburg); Overture, Gri Gri (Lincke); Modern Ballet Suite (Armandola); Selection from A Life for the Czar (Glinka-Petras); Ronde d'Amour (Chaminade); Der Tausendkünstler (Blankenburg); Gramophone Records; Overture, Der Waffen-schmied (Lortzing); Selection from Der Rosenkavalier (R. Strauss); Irish Melody (Grainger); Selection from Herodade (Massenet); March, Potpourri. 2.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 2.40, Lesson in Handicrafts. 3.40, Talk for Housewives. 4.10 to 4.40, Interval. 4.40, Bible Reading and Sacred Music. 5.40, Song Recital by Mlle. Sietse Bolten (Contralto). 6.25, Lesson in Handicrafts for Children. 6.55, Talk. 7.25, Dressmaking Lesson. 7.40, Police Notes. 7.55, Popular Music on Gramophone Records. 8.10, Press Review. 8.40, Organ and Cello Recital by J. de Graaf and M. Gerard Haft; Prelude in E Sharp (Bach); Cello and Organ; (a) Adagio cantabile (Tartini); (b) Air from the Suite in D (Bach); Sonata (Arne); Two Pieces (Johnson); Concerto in D (Handel); Priere (Saint-Saëns); Elevation (Rochini); Elegy (Rabey). 9.40, Talk. 10.10, Light Music on Gramophone Records. 11.10, News. 11.20, Popular Music on Gramophone Records. 12.10 a.m. (Friday), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News Bulletin and Financial Notes. 8.10, Talk on Science. 8.30, Popular Concert. 9.0, News Bulletin. 9.15, Radio Concert. 12 Midnight to 1.0 a.m. (Friday), Programme in English by the I.B.C. H. K. Hitechoek announcing. 12 Midnight, Violin Recital: None but the weary heart (Tchaikovsky); Le Balcon (St. Denis); Souvenir (Drullat); Serenata (Toselli); Serenade (Schubert); Estudiantina (Waldteufel); Dolores (Waldteufel); Standchen (Heykins). 12.30 a.m. (Friday), Modern Rhythm: Stevedore Stomp; Misty Morning; The Diety Glide; Saratoga Swing; I'm so in love with you; Kazoo; Shout'em Amut Tillie; Get together. 12.57 a.m., I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, relayed from Munich. 12.50 p.m., Weather, Time and Announcements. 1.0, Concert, conducted by Eysoldt. Soloist, Eilly Tilhmanns (Soprano). March, Heil Potsdam (Teike); Overture, Der Wildschütz (Lortzing); Songs (Mozart); (a) Das Veilchen; (b) Sehnsucht, nach dem Frühling; (c) Liebesohr-schaft, (d) An die Nachtigall; Waltz in C, Op. 17 (Spies); Liszt Potpourri (Furbach); Suite, Erinnerung an Cairo (Lautenschläger); Albumblatt (Michell); Serenata a Tuscanini (Muzilli); The Rustle of Spring (Souding); Potpourri, Von Wien durch die Welt (Hrabý). In an interval at 2.0 (approx.), News. 2.30, Sponsored Programme with Gramophone Records. 3.0, Programme for Children. 3.30, Economic Notes and Time Signal. 3.50, Educational Talk. 4.20, Notes on the Broadcasts for Schools. 4.30, Concert by the Station Orchestra, conducted by Buschhöfner. Soloist: Adelheid Holz (Soprano). Concerto (Vivaldi); Cleopatra's Aria from Julius Caesar (Händel); Aria from Amadigi (Händel); Overture and Finale from the Ballet Prometheus (Beet-

hoven); Achsa's Aria from Joshua (Händel); Alceste's Aria from Alceste (Gluck); Symphony in D. No. 96 (Haydn). 5.50, Programme of Readings for Carl Hauptmann's Seventy-Fifth Birthday. 6.20, French Conversation Lesson. 6.45, Weather, Time, Economic Report and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Announcements. 8.5, Reading from Das Märchen vom deutschen Herzen (Hermann Stehr). 8.30, Concert, conducted by Wolf. Overtures to: (a) Die Irrfahrt ins Glück (Suppé), (b) Der Bettelstudent (Müllcker), (c) Lysistata (Lincke), (d) The Gipsy Baron (Joh. Strauss). 9.0, Love's Joys and Grief—Variety Programme in Westphalian Dialect, by the Westphalian Choir and a Posaunt Orchestra. 10.5, News, Educational Announcements and Sports Notes. 10.30, Serenade, conducted by Wolf. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW., and Dresden, 941 kc/s, 319 metres.—12 Noon, Concert from Breslau. 1.0 p.m., News, Weather and Time Signal. 1.15 p.m., Gramophone Concert of Light Music: Swedish Peasant Waltzes (Westling); Potpourri of Student Songs (Gerhard Winkler); March, Freiheitsjubiläum (Blankenburg); Two Pieces (Moar); Intermezzo, Pierrot and Pierrette (Hubert Hirsch); Booco Minuet (Josef Leiss); Ländler (Kubacher); Gamsjäger-Marsch (Louis Stamborg); Potpourri of Old Operetta Music. Exchange Quotations after the Concert. 2.0, Film Review. 2.15, Radio Report of the Agricultural Show at Erfurt. 2.40, Sonata in A, Op. 100, No. 2 (Brahms), played by Adolf Busch and Rudolf Leskin on Gramophone Records. 3.0, Hobbies for Young People. 3.35, Exchange Quotations. 4.0, Concert by the Wireless Orchestra, conducted by Willy Steffen; Solicited from the Florilegium I (Georg Müffat); Prelude to the Third Act of Der Prinz wider Willen (Lobse); Pictures from the East, Op. 18 (Unger); Twelve Contraltine (Beethoven); Serenade for Wind Instruments (Richard Strauss); Norwegian Dances (Rabel); Intermezzo in G (Schaub); Overture, Der Vampyr (Matschner); Florantine March (Fueick). In the intervals from 4.45 to 5.0, Reading (Gerhard Schläke); Talk on Political Geography. 5.50, Weather, Time and Economic Notes. 6.0, Talk on Taxation. 6.15, Reading. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Schmalkald. Part I. A Radio Play of Local History (Dr. Hermann Barge). Part II—Jubilee Concert by the Schmalkalder Liedertafel with Military Band Music: Festlicher Hymnus (Sieg); Lass die Helden in deiner Seele nicht sterben (Nöster); Bakenntnis (Heinrichs); Der stille Hof (Sieg); Abendlich schon rauscht der Wald (Stürmer); Der sänntige Landseknecht (Hilg). 9.10, News. 9.20, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber; Overture, Der Wildschütz (Lortzing); Suite for String Orchestra (Wickenhauser); Ballet-Fantasia (Paepeke); Rhapsody in G (Lacombe); Waltz, Seid unerschunden Millionen (Joh. Strauss). In the interval at 9.50, Reading: The First German Flag in America. 10.30, News and Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, Italian Lesson. 7.30, The Letter Box. 8.0, Relay from the Opera House. 9.30, Time and News. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Concert by Mme. Vallier-Deleour (Songs) and the Lyons Instrumental Trio: Trio (Gasper-Gassado); Songs; Liederkreis (Schumann); Trios: (a) Waltz (Brahms), (b) Allegretto and Allegro molto (Tcherepnin), (c) Golliwog's Cake Walk (Debussy); Madrigals; Trio (Berthet). After the Concert, News.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Radio Journal, and Programme for Children. 9.15, News Bulletin and Political Review. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes, Time Signal, Political Review, and Talks: (a) on Astronomy, (b) on Theo Fleischman (by his Translator). 10.45 (approx.), The Midnight Sun—Play in Two Acts (Theo Fleischman). 12.45 a.m. (Friday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.30 p.m., German Transmission: Talks: (a) A Large City and its Dangers for Young People; (b) Adalbert Stifter as a Painter. 7.0, See

FRIDAY

MAY THE TWELFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Brahms Centenary Concert, from the Queen's Hall.
- LONDON REGIONAL** "Stardust and Sawdust," a play by L. Devine and T. W. Rees.
- MIDLAND REGIONAL** Variety programme.
- NORTH REGIONAL** Lieder and sonata recital.
- SCOTTISH REGIONAL** Band concert.
- BELFAST** "The Enthusiast," an Ulster comedy by L. Purcell.

ABROAD

- BERLIN (Deutschland-sender)** 7 p.m. "Blut und Boden," a radio sequence (re-layed by other German stations).
- BUDAPEST** 8.20 p.m. The Concert Orchestra, conducted by F. Friedl.
- HUIZEN** 8.40 p.m. Concert by the Amsterdam Orchestral Society.
- PALERMO POSTE** 8.45 p.m. Opera: "André Chénier," by Giordano. Operetta: "Phi-Phi," by Christiné.
- PARISIEN**
- PRAGUE** 8 p.m. Opéra-comique: "The Two Widows," by Smetana.
- ROME** 8.45 p.m. Symphony concert, conducted by V. Gui.
- VIENNA** 9 p.m. Paul Hindemith concert.
- WARSAW** 8.15 p.m. Symphony concert from the Philharmonic.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Gardening Talk. 7.15, Talk: Life in Sumatra. 7.30, Time Signal. 7.31, Baritone Solos by Frank Cowle. 7.40, Yellow Dust—Play, by Sidney Carroll and Company. 8.10, Baritone Solos by Frank Cowle. 8.20, The Station Orchestra. 9.0, Soprano Solos by Josephine Tyrrell. 9.15, Variety Concert by the Station Orchestra with T. C. Earls and A. J. Thornton. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations. 9.0, Light Music on Gramophone Records followed by News. 10.0, Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange Quotations and Market Prices. 10.10, Concert by the Station Orchestra. 10.30, Orchestral Concert. 11.15, Concert by the Vilalta Orchestra, relayed from the Café Espanol. 12.0 Midnight, (in an interval) News. 1.0 a.m. (Saturday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk, and Populavoro Announcements. 8.20, Giornale Radio and News. 8.30, Time Signal and Announcements. 8.35 (approx.), Concert of Operetta Music. Soloists: Franco Signorile (Tenor) and Mlle. de Santis Bruno (Soprano). Prelude and Sicilienne, from Cavalleria rusticana (Mascagni); Tenor Solo from Rigoletto (Verdi); Soprano Solo from Loreley (Catalani); Intermezzo from I quattro rusteghi (Wolf-Ferrari); Tenor Aria from André Chénier (Giordano); Soprano Solo from La Traviata (Verdi); Selection from Act II of Fedora (Giordano); Prelude to Act I of Dejanice (Catalani); Soprano Aria from Mephistopheles (Boito); Tenor Solo from Tosca (Puccini); Selection from Tosca (Puccini); Soprano Aria from A Masked Ball (Verdi); Romance from Act III of Lodoletta (Mascagni). In the interval, Talk. 10.30, Popular Music on Gramophone Records. 10.55, News.

BASLE. See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER; 183.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Orchestras, conducted by Alois Melnichard; Gramophone Concert; Waltz, Wiener Bomben (Joh. Strauss); Waltz, Wiener Blut (Joh. Strauss); Waltz, Die Schönbrunner (Laurer); Waltz, Loreley Rheinlänge (Joh. Strauss, Senr.); Polonaise from Eugene Onegin (Tchaikovsky). After the Concert, Second Weather for Farmers. 12.55, Time Signal. 1.45, News. 2.0, Popular Music on Gramophone Records. 3.0, Talk for Girls: The May Bride. 3.30, Weather and Exchange Quotations. 3.45, Reading: Das Requiem (Friedrich Huch). 4.0, See Leipzig. 5.0, Educational Talk. 5.25, Talk: Nietzsche. 5.50, Topical Talk. 6.0, A Poem. 6.5, Chamber Music: Prelude in D Minor (Ertel); Scherzo (Sehauss); Adagio and Rondo for Harmonium and Pianoforte (Weber); Adagio and Rondo for Harmonium, Flute, Oboe, Viola, and Cello (Mozart). 6.30, A Discussion on Spurious Works of Art. 6.50, Weather for Farmers and Wireless Announcements. 7.0, Transmission for all German Stations; Pomerania—a Radio Sequence. 8.0, See Stuttgart. 8.30, See Frankfurt. 9.30, A Radio Sequence from a Berlin Newspaper Press. 10.0, Weather, News, and Sports Notes. 10.25, What People are talking about in America, relayed from America (on Gramophone Records). 10.45, Weather Report for Shipping. 11.0, See Leipzig. 12.30 a.m. (Saturday), Close Down.

BERLIN

WITZLEBEN; 715 kc/s, 419.5 metres; 1.5 kW.—6.10 p.m., Pianoforte Recital by Johann Strauss: Four Impromptus, Op. 90 (Schubert); (a) in C Minor, (b) in E Flat, (c) in G Flat, and (d) in A Flat. 6.40, The Witzleben Station informs its Listeners. . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, Announcement. 8.10, Folk Song Recital. 8.30, Talk: Berlin Humour. 9.0, Concert by the Station Orchestra, conducted by Dr. Heinrich Swoboda: Symphonic Rhapsody, Triumph des Lebens (Petekra); Concerto for Orchestra (Finke); Symphonic Overture, Op. 13 (Kornanith). 10.0, Weather, News, and Sports Notes. 10.15 (approx.), Orchestral Concert, conducted by Hermann Henrich, relayed from the Stadthalle, Magdeburg: Overture, The Caliph of Bagdad (Boieldieu); Ballgästler (Meyer-Helming); Helmsman's Song, from The Flying Dutchman (Wagner); Chorus from Rienzi (Wagner); Selection from Coppélia (Delibes); Waltz, Das Leben ein Tanz (Joh. Strauss, Senr.); Rhapsody (Lalo); Millbeker Potpourri; Waltz, Trau, schau, wem (Joh.

Strauss); March, Alte Kameraden (Teike) 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.40, Light Music on Gramophone Records. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News. 8.30, Symphony Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 11 kW.—6.5 p.m., Concert by the Station Orchestra, conducted by Fr. Dyk; Soloist: Emma Simandlová (Songs); Overture (Weinberger); Song: Children's Ballad, Op. 28 (Novák); Slav Rhapsody, No. 1 (Dvorák); Song: Mountain Ballad, Op. 28, No. 2 (Novák); Elegy (Suk); Waltz, Olga (Figuš-Bystry); Waltz, No. 4 (Dvorák). 6.55, Report. 7.0 to 10.15, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 225 metres; 60 kW., and Gleiwitz, 1,184 kc/s, 253 metres.—1.10 p.m., Gramophone Concert. 1.45, Time, Weather, News and Exchange. 2.5, Brahms Gramophone Concert. Programme arranged by the Post Office. 3.10, Agricultural Prices. 3.40, Programme for Young People. 4.5, Talk: Brahms as Friend and Rival of Wagner. 4.50, Concert of Light Music by the Fritz Wollner Orchestra, relayed from the Café Vaterland. 5.30, Agricultural Prices. 5.35, Reading (Kurt Fleming). 6.0, Talk: The National and Social Function of Museums and Picture Galleries. 6.25, Programme to be announced. 6.50, Weather for Farmers, News and Cattle Market Prices. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert of Old Breslau Dances by the Station Orchestra, conducted by Franz Marszalek. 8.20, Announcements. 8.30, See Frankfurt. 9.10, Carl Hauptmann Memorial Programme. 10.0, Time, Weather, News, Sports Notes and Programme Announcements. 10.20, Reading. 10.40, Concert from Frankfurt. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.10 p.m., Smetana Concert by the Station Orchestra, conducted by Jan Janota: Overture, Libussa; Aria from Dalibor; Selection from The Secret; Aria from The Devil's Rock; Selection from Two Widows. 4.55, Theatre Notes. 5.5, See Prague. 6.5, Talk: Creative Art. 6.15, Talk for Workers. 6.25, German Trans-

mission; News, Sports Notes, Talk, and Variety Items. 7.0 till Close Down. See Prague. 10.15 (approx.), Close Down.

BRUSSELS (No.1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by Paul Leemans; Soloist: Mme. Ramboux (Songs); Coronation March (Meyerbeer); Suite from Les Erynnies (Massenet); Songs: (a) Airone (Rossi), (b) L'Offrande (Hahn); Selection from Rose Marie (Friml); Violin Solo: La Gitana (Kreisler); Songs: (a) Il Bacio (Tosti), (b) Les enfants de les amoureux (Plegier); Selection from Ciboulette (Hahn). 1.0 p.m., Le Journal Parlé. 1.10, Concert of Serenades on Gramophone Records. 2.0, Educational Programme. 5.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps; Extracts from A Midsummer Night's Dream (Mendelssohn); Pavane pour une Infante défunte (Ravel); Golliwog's Cake-Walk (Debussy); Divertissement (Kumps). 6.0, Talk on Morality. 6.15, Gramophone Concert: Prelude (Debussy); Tocata (Debussy); Theme with Variations (Tchaikovsky). 6.30, Music by the Ugan Quartet: Le vieux château (Mireille); Le Jardinier qui boite Mireille); Potpourri of Old French Songs (arr. Robère). 6.50, Concert by the Small Station Orchestra, conducted by Paul Leemans: Siamoisele Wachtparade (Lincke); Strauss Potpourri (Weber); Selection from The Tzarevitch (Lehar); L'enclume (van Cost); Waltz, Petite Yvonne (Sachs); La Bouquetière de Séville (Wyn and Langlois). 7.15, Talk on Dentistry. 7.30, Legal Talk and Literary Report. 8.0, Branger Song Recital by Mme. Froidebise, Mme Urban, M. Akers, M. Coppio, and M. Lambrechts; Commentary by M. Eugene Colin. 8.45, Programme for Ex-Servicemen. 9.0, Song Recital (cont'd). 10.0, Le Journal Parlé. 10.10, The Listeners' Quarter of an Hour. 10.25, Concert of Light Music by the Orchestra Bistrouille A.D.O. 11.0, La Brabançonne.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.— Programme in Flemish. 12 Noon, Concert by the Small Station Orchestra, conducted by Paul Leemans: March, Jägertrone (Witte); Overture, Alessandro Stradella (Flotow); Serenade (Lincke); Selection from A Kiss in Spring (Kálmán); Potpourri—Alt Wien in Lied und Tanz (Paehemog). 12.30 p.m., Pianoforte Recital by Mlle. Ida Lowy; Capriccio (Sclaratti); Scherzo (Moskowsky); Perpetuum mobile (Weber); Waltz (Chopin). 12.50, Song Recital by Ernst Busch on Gramophone Records. 1.0, Le Journal Parlé. 1.10, Oscar Straus Concert on Gramophone Records; Extracts from A Waltz Dream; March from Die Teresina; Waltz from The Chocolate Soldier; Waltz from Marietta;

Oh, that Mitzi from An Hour with you; Waltz from Die Teresina; Song from Jenny Lind. 2.0, Educational Programme. 5.0, Concert by the Station Orchestra, conducted by M. André: Italian March (Rousseau); Spanish Pieces (Albeniz); Serenade (Lör); Waltz (Gossiaux); Tempo-tempo (Dostal); In the Bay of Naples (Ellenberg); Ballet Music from The Sleeping Beauty (Tchaikovsky). 5.45, Programme for Children. 6.30, Extracts from The Mikado—Opera (Gilbert and Sullivan) on Gramophone Records. 6.55, Flemish Song Recital by M. Bolleyn (Baritone). 7.15, Talk on Gardening. 7.30, Talk on Wireless. 8.0 to 11.30, Programme in Commemoration of the First Socialist Broadcast from Belgium made from the Hilversum Station. 8.0, Music by De Flierefluiter, under the direction of Jan van der Horst. 8.25, Children's Songs by De Roodborstjes. 8.40, Music by De Flierefluiter. 9.0, Talk. 9.5, Talk: Five Years of Socialist Broadcasting in Belgium. 9.15, Children's Songs by De Krekeltjes. 9.30, Instrumental Music. 10.15, Peer Gynt Suite (Grieg) by the Orchestra of the Workers' Radio Society (V.A.R.A.), conducted by Hugo de Groot; Soloists: Willem Van Cappellen and To van der Sluys (Songs). In the interval at 10.0, Le Journal Parlé, followed by Light Music on Gramophone Records. 11.30 (approx.), Close Down.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiceanu Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talk. 7.40, Light Music on Gramophone Records. 8.0, Song Recital by Mme. Hélène Gorgos. Staccato-Polka (Muller); Aria from Die Fledermaus (Joh. Strauss); The Nightingale (Alabiev); Waltz. 8.20, Concert by the Station Orchestra: Manhattan March (Souza); Suite Mozartiana (Tchaikovsky). 9.0, Talk. 9.15, Concert by the Station Orchestra. Soloists: Nistor Stavay (Horn) and T. Sibiceanu (Pianoforte); Concerto for Horn and Orchestra (Weber); Concerto in E flat for Pianoforte and Orchestra (Rio Gebhardt). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.30 p.m. to 12 Midnight.—5.0 p.m., Song Recital by Helene Ladanyi; Pamina's Aria from The Magic Flute (Mozart); Mondnacht (Schumann); Song (Saint-Saëns); Spätherbst (Tarnay); Song (Szabados); Aria from La Traviata (Verdi); Aria from A Masked Ball (Verdi); Der Schmetterling (Szabados). 5.30, Talk. 6.0, Concert by the Arpad Károlyi (Gyány) Band. 7.0, Talk for Workers. 7.30, Talk, with Gramophone Illustrations: Mexican Music. 8.20, Concert by the Budapest Concert Orchestra, conducted by F. Friedl: Overture, Maritana (Wallace); Selection from Tieland (J. Albert); Selection from Samson and Delilah (Saint-Saëns); Wedding Waltz from Pierrette's Veil (Dohnanyi); Selection from Die schöne Helene (Szabados); March Potpourri (Komzak). 9.45, News Bulletin. 10.0 (approx.), Programme to be announced.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW., and Katundberg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Carl Rydahl Instrumental Ensemble: Overture, Lucia di Lammermoor (Donizetti); Melody (Turina); Valse des fleurs (Waldteufel); Selection from Martha (Flotow); Suite (Rosenberg); Resignation (Schlerder); Rapsodietta (Gade); Serenata napoletana (Sgambati); Selection from Paganini (Lehar); March, Los Banderillos (Volpatti). 1.30 to 2.10, Interval. 2.10, Reading. 2.30, Concert for Children by a Children's Choir. 3.0, Concert by the Radio Orchestra, conducted by Lanny Grondahl; Soloist, Gerda von Bülow (Violin); Overture, Alessandro Stradella (Flotow); Selection from Mephistopheles (Boito); Sommersang (Peterson-Berger); Waltz, In the Moonlight (Fahrbach); Norwegian Dance (Grieg); Russian March (Ganne); Violin Solos: (a) Arioso (Handel), (b) Gavotte (Lully), (c) Adagio in E (Mozart); Poupée valseante (Poldini-Kreisler); Entry March of the Boyards (Halle-vors); Overture, Le Caid (Thomas); Waltz (Gungl); Melody in F (Rubinstein); March (Souza). 5.0, Divine Service, relayed from Christiansborg Castle Church. 6.20, Talk. 6.50, Weather. 7.0, News. 7.15, Time and Sports Notes. 7.30, Talk on the National Museum. 8.0, Time Signal from the Town Hall. 8.1, Programme by Per Knutzon. 8.10, Anders Tiktjob—Radio Play, after V. OSTERGAARD's Rosenkildes Fortælling, with incidental music. 9.40, Pianoforte Recital by Viktor Fischer: Sweet Pepper (Hans Löhr); Der Gankler (Grotzschke); Chopptyk (Mayert). 10.0, News. 10.15, Danish Music by the Radio Orchestra, conducted by Lanny Grondahl: Overture, Aladdin (Hornemann); Piece from the Suite, In Alhambra (Lange-Müller); Prelude to Once Upon A Time (Lange-Müller); Selection from Völund Smed (Henriques); Overture and Dance from Mascarede (Nielsen). 11.0, Dance Music by the Kai Julian Band, relayed from the National Scala. In an interval at 12 Mid-

night, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Saturday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records, 12.30 p.m., News, 12.45, Concert of Light Music, 5.50 to 7.0, Programme in English by the I.B.C., Announcers: C. Danvers-Walker, T. St. A. Ronald and B. McNabb. 5.20, Concert of Light Music for Southampton and Winchester Listeners: Vienna, Vienna (Pöss); Ständchen (Heykens); Songs: (a) To Mary, (b) Maire, my Girl, (c) Beauty's Eyes; Waltz, Gold and Silver (Lehar); The Woman in the Shoe (Brown); Songs: (a) Heather Moon, (b) Passing by, (c) On a Dreamy Summer Night; Memories of Paris (Moretti); Valencia (Padilla). 6.15, Concert of Accordion Music and Songs for Bourne-mouth and Weymouth Listeners: Popular Selection; C'est un petit nid (Eldinger); songs: (a) Life (Sarony), (b) Poor Kid (Gilbert); La Javanette (Bozi); Selection from Congress Dances (Heymann); Mona Lisa (Carter); Songs: (a) Just a Dancing Sweetheart (Frobias), (b) Lily of Laguna (Stuart); Whistling Waltz (Reeves); Now you're in my arms; Regimental March of the Dorsetshire Regiment. 7.0, Radio Gazette, 7.20, Local News, 7.30, Popular Music on Gramophone Records, 7.45, Agricultural Notes, 8.0, Popular Music on Gramophone Records and News, 8.30, Concert relayed from La Haye: 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Deolians: Skin-a-lunk The Sergeant; Sing Something Simple; My Heart is where the Mohawk flows to-night; Whistling in the Dark; Me; Maybe it's the Moon; Makin' Faces at the Man in the Moon; Two Hearts; It must be true; It always starts to rain; I found you; Faithfully yours; Dream a little Dream of me; Cupid's Army; Bubbling over with Love. 11.0, Symphonic Orchestra: Overture, A Midsummer Night's Dream (Mendelssohn); Morning, from the Peer Gynt Suite (Grieg); Song without Words (Tchaikovsky); The Wife's Ride, from Hansel and Gretel (Humperdink); The Gipsy-broad Waltz, from Hansel and Gretel (Humperdink); A Supper with Suppé (Monna); 11.30, Vocal Concert: Brothers of the Empire (Helmov); The Two Grenadiers (Schumann); Waltz, Gold and Silver (Lehar); Selection from Il Trovatore (Verdi); Vulcan's Song (Gounod); Largo al factotum (Rossini); Song of the Flea (Mussoresky); Minuet (Mozart). 12 Midnight, Club Concert for Powey, Saltash and Budini Listeners: Selection from Merrie England (German); Beware of the Maidens (Craske); Sea Songs; The Song of the Nightingale (Ailbunt); Ho, Jolly Jenkin (Sullivan); Pretty Flowers; The Musical Clock of Magagne Pompadour (Noack); A Soldier's Song (Mascaroni); One More Day; Sheep Valley (Hanky); In Sheltered Vale (Clarke); Blow the man down; Waltz from Bitter Sweet (Goward). 1.0 a.m. (Saturday), Hawaiian Band: Hawaiian Hotel; Mantilla Moon (Gaston); Kiiuna; Hawaiian Love (Gaston); La Poloma (Yradier); Padikiko Blues; My Wakiki Mermaid; Aloha (Broxers). 1.30, Vocal Duets: Pasadena Rose; Liza Lee; Hawaiian Stars are gleaming; Orchestra; Happy Intonides; That silver-haired Daddy; My Baby just cares for me; When I was a boy from the Mountains. 2.0, Dance Music by the Deolians: I love a Parade; Lullaby of the leaves; I do like to see a Game of Football; Underneath the Arches; Listen to the German Band; Paradise; The Clouds will soon roll by; Round the Marble Arch; Just another Dream of you; It ain't no fault of mine; They all start whistling Mary; Love me to-night; Happy go lucky you; While we danced at the Mardi Gras. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLensburg. See Hamburg.

Florence.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW., Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., See Munich. 5.50, Economic Notes, 6.0, Talk: Hygiene in the Home, 6.25, Legal Talk, 6.50, Time Programme Announcements, Weather and Economic Notes, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Talk: The Splitting up of the Atom. 8.30, Concert by the Station Orchestra, conducted by Reinhold Merlen. Soloists: Willi Wörle (Tenor). Overture, The Siege of Corinth (Rossini); Ballet Music from Aida (Verdi); Arias (Verdi) from: (a) Aida, (b) A Masked Ball; Forest Murmurs from Siegfried (Wagner); Aria from The Valkyries (Wagner); Siegfried's Rhine Journey and Siegfried's Death from The Ring of the Gods (Wagner); Overture, Der Betelstudent (Müllacker); Aria from Der Betelstudent (Müllacker); Legunenwalzer from Eine Nacht in Venedig (Joh. Strauss); Emperor Waltz (Joh. Strauss). 10.0, The German Almanac, 10.10, Time, News, Weather and Sports Notes, 10.30, Concert by the Station Orchestra, conducted by Reinhold

MAY 12th

FRIDAY

continued

Merten, Soloist: Gustav Leuzewski (Violin). Concerto for Violin and Orchestra (Zemlik); Bilder aus dem Süden (Niède); Violin Concerto in D Minor, Op. 9 (Spohr); Sommertag auf dem Lande, Op. 55 (Gade). 12 Midnight (approx.), Close Down.

FREDRIKSSTAD. See Oslo.

Freiburg. See Stuttgart.

Geneva. See Radio-Suisse Romande.

Genoa. See Turin.

Gleiwitz.—See Breslau.

Göteborg. See Stockholm.

Graz. See Vienna.

Hamar.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.30 p.m., Hamburg, Lübeck, and Bremen Report from the Senate and Citizens' Councils of the Hanseatic Free Cities, 6.0, John Brinkman—Radio Dialogue, 6.45, Frankfurt Exchange and Hamburg Market Prices, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, A German Requiem (Brahms), relayed from the Musikhall; The Hamburg Singakademie Choir, and the Philharmonic Orchestra, conducted by Eugen Papp; Soloists: Jo. Vincent (Soprano), Rudolf Bockelmann (Baritone), and G. Knack (Organ). 9.30, Recitation of Ballads by Carl Hagemann. 10.0, Time, Weather, Announcements, Sports Notes, and Police Report. 10.20, See Berlin (Witzleben). 10.35, Concert from Leipzig.

Hanover.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 662 kc/s, 453.2 metres.—1.0 p.m., Report on the East Prussian Motor Race, 1.20, News, 1.30, Gramophone Concert: Military March No. 4 (Schubert) Villanelle (Dell' Aquino); Donauwelle (Ivanovitch); First Movement from the Violin Concerto in D, Op. 77 (Brahms); Songs (R. Strauss): (a) Nachgesang, (b) Ruhe, meine Seele; Tiroler Echo (Stelzl) by the Blue Hawaiian Waters (Kotelly). 2.30, Programme arranged by the Post Office, with Gramophone Records, 3.0, Agricultural Prices and Exchange Rates, 3.30, Programme for Children, 4.0, Talk for Women, 4.30, Concert from Leipzig, 5.30, Reading, 5.50, Talk: German Gymnastics Society, 6.15, Agricultural Prices, 6.20, Talk: The Art of Piano-forte Playing, with Mozart Illustrations—Sonata in D, Sonata in A, 6.50, Weather Report, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Talk by Kurt G. Sell: What People are Talking about in America, relayed from America, 8.15, Shakespeare and Verdi a Musical and Literary Radio Sequence, from Falstaff and The Merry Wives of Windsor; The Station Choir and the Königsberg Opera House Orchestra, conducted by Ludwig Leschetitzky, 10.0, Weather, News, and Sports Notes, 10.15, Report on the First Day of the East Prussian Motor Race.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 5.40 p.m.).—12.40 to 4.40 p.m., Programme of the Algemeine Vereniging Radio Omroep (A.V.R.O.). 12.40 p.m., Time Signal, 12.41, Popular Music on Gramophone Records, 1.10, Concert by the Wireless Orchestra, conducted by Nien Tremp; Overture, The Black Domino (Auber); Ballet Egyptian (Luigini); Selection from Lohengrin (Wagner); Two Slav Dances (Dvorak); Gramophone Records; Waltz, Loreley Rheinklänge (Johann Strauss); Two Spanish Dances (Moszkowsky); La Serenata (Braga); Potpourri, Von Wien durch die Welt (Hrubý); Orchestral Suite, Calirhoe (Chaminade); Weber Potpourri (Fritsch). In the interval at 2.40, Talk, 3.40, Variety Music on Gramophone Records, 4.40 to 8.40, Programme of the Workers' Radio Society (V.A.R.A.). 4.40, Extracts from Die Elektronen Opera (Joh. Strauss), on Gramophone Records, 5.40, Programme for Children, 6.10, Concert by the Patrologists Quartet, 6.56, Organ Solo, Prelude (Gillman), 7.0, Programme in Commemoration of Pif; Jelles Troelstra; The Dutch String Quartet; Soloist: J. Jong (Organ). 7.20, Concert by De Fliedersluiters, conducted by J. van Horst, 8.25, Light Music on Gramophone Records, 8.40 to 11.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 8.30, Religious Address, 9.10, String Quartet in C Minor, Op. 51, No. 1 (Brahms), by the Hague String Quartet, 9.40, Talk, 10.16, Concert, 10.40, News Bulletin, 10.55, Talk on Brahms, 11.25, Gramophone Records, 11.40 till Close Down, V.A.R.A. Programme, 11.40, Organ Recital by Johan Joag; Vanity

Waltz (Wiedroft); Tangolita (Abrahams); Song (Katscher); Piece (Gauwin); La naissance de Pierrot (Monti); Selection from The Desert Song (Rumberg). 12.10 a.m. (Saturday), Variety Music on Gramophone Records, 12.40 (approx.), Close Down.

Horby. See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 11.40, Two Trios for Violin, Cello, and Piano-forte: (a) Trio, Op. 1, No. 3 (Beethoven), (b) Trio No. 1 (Mozart). 12.40, Police Notes, 12.55, Popular Music on Gramophone Records, 1.10, Concert by the Van der Horst Trio and J. v. Ginkel (Clarinet). Overture, Fra Diavolo (Auber); Seid umschlungen Millionen (Strauss); Suite from Feramors (Rubinstein); Selection from Aida (Verdi); Popular Music on Gramophone Records; Prelude to Loreley (Bruch); March of the Sirdar (Ippolitov-Ivanov); Selection from La Navarraise (Massenet); Intermezzo (Recco); Selection from The Flying Dutchman (Wagner). 2.40 to 3.10, Interval, 3.10, Religious Address, 3.40, Talk for Housewives, 4.10, Organ Recital, 5.10, Talk for Young People; Photography, 5.40, Piano-forte and Violin Recital by Elsa Nethenius and J. van Helden; Sonata No. 3 in E (Bach); Sonatina in G, Op. 100 (Dvorak); Light Music on Gramophone Records; Three Pieces (Debussy): (a) Poissons d'or, (b) Bruyères, (c) Minstrels; Spanish Dance (Granados-Thibaud); Pastorale (Ravel-Dushkin); Gipsy Caprice (Kreisler). 6.40, Talk, 7.10, Horticultural Talk, 7.40, Police Notes, 7.55, Religious News, 8.10, Literary Talk, 8.40, Concert by the Amsterdam Orchestral Society, conducted by F. van Diepenbeek; March, Ernst August (Blankenburg); Overture, Banditenstreich (Suppé); Golden Rain (Waldteufel); Frühlingswachener (E. Bach); Frisch gesungen (Sifeke); Lutows wiede Jagd (Weber); Ave Maria (Bach-Gounod); Ballet Music from Faust (Gounod); March (Finck). 9.40, Talk, 10.10, Concert (contd.); Romantic Overture (Kéler-Béla); Invitation to the Waltz (Weber); Selection from The Pearl Fishers (Bizet); Air from La Gioconda (Ponchielli); Selection from La Traviata (Verdi). In the interval at 10.40, News, 11.25, Light Music on Gramophone Records, 12.25 a.m. (Saturday), Close Down.

Innsbruck. See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News Bulletin and Financial Notes, 8.10, Esperanto Lesson, 8.30, Radio Concert, 9.0, News Bulletin, 9.15, Radio Concert (contd.). 12 Midnight to 1.0 a.m. (Saturday), Programme in English by the I.B.C.: 12 Midnight, Recital of the Songs of Grace Fields: Life's Desire (Hargreaves); Now that you're gone (Kahn); They all fall in love (Evans); Melodious Memories (arr. Finck); Just one more chance (Cosloy); When we all went to the Zoo (Kester); The mocking Bird (Malvern); More Melodious Memories (arr. Finck). 12.30 a.m. (Saturday), Concert by a Tango Band; Play, Fiddle, play (Lawrence); Rosa Mia (Guizár); To-night (Kenedy); Zigeuner (Schwabach); Good bye Argentina (Rodríguez); Farolito (Traditional); Rose Colon (Polito); La Camparita (Rodríguez). 12.57, I.B.C. Good-night Melody, 1.0 (approx.), Close Down.

Kalundborg. See Copenhagen.

Kiel. See Hamburg.

Klagenfurt.—See Vienna.

Kosice. See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Haydn Concert; The Station Chamber Orchestra and Choir, conducted by Josef Breuer; Soloists: Hansen (Soprano) and Strienz (Bass); Overture in D; Minuet and Finale from the Symphony, The Schoolmaster; Pastorale; Song, Aria from The Seasons; The Birthday Cantata; Aria with Choral Accompaniment from The Seasons; Serenade from the String Quartet in F; The Farewell Symphony, 12.50 p.m., Weather, Time and News, 1.0, Concert, conducted by Wolf. In the interval at 2.0, News, 2.30 to 3.15, Sponsored Programme with Gramophone Records, 3.30, Economic Notes and Time, 3.50, Programme for Children, 4.30, Concert; Martha Schulz Körner (Soprano), Eibert Grape (Accompanist), Julie Menz (Harpisichord), and Hermann Drews (Piano-forte); Sonata in A Minor, Op. 61, No. 2, for Piano-forte (Bach); Songs: (a) Wie wunderbar (Schillings), (b) Märchen (Schillings), (c) Schlämmlied (Stigl), (d) Am Wiesensbach (Stigl), (e) Fräuleinliche Vision (R. Strauss), (f) Morgen (R. Strauss); Harpsichord Solos (Schubert): (a) Sonata in E Minor, (b) Sonata in C, (c) Sonata in E; Songs: (a) Die Lerche (Humperdink), (b) Die Schwabe (Heuschel), (c) Vogellied (Greger); Satzfolge No. 2 (Erpf). 5.50, Talk: Swiss Towns in German Cultural Life, 6.10, Review of German Books, 6.25, English Conversation, 6.45, Weather, Time,

Economic Notes, and Sports Report, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0, News, 8.5, Concert by the Small Station Orchestra, conducted by Eysoldt; Overture, The Cunning Peasant (Dvorak); Im Garten, from Ländliche Hochzeit (Goldmark); Selection from Der Kuhreigen (Kienzl); Suite caempêtre (Scassola); Talk: Old German Peasant Anecdotes; Rural Suite (Ailbunt); Mädels und Burschen (Clemens); Ländler (Paehernegg); Peasant Dances (Merling); Selection from The Merry Peasant (Fald). 10.5, News and Sports Notes, 10.25, Serenade on Gramophone Records, 10.45, Concert from Frankfurt, 12 Midnight, Close Down.

Lausanne.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Chamber Music on Gramophone Records, First Movement from the Trio in B Flat, for Clarinet, Cello and Piano-forte, Op. 11 (Beethoven); Air on the G String (Beethoven); Moment musical (Schubert); Romance (Schumann); Scherzo from the Quartet in A Minor (Schumann); Third Movement from the Sonata in C Minor for Violin and Piano-forte, Op. 45 (Grieg); Second Movement from the String Quartet in E (Haydn); Minuet from the Quartet in E (Dittersdorf); First Movement from the Quintet in E Minor (Brahms). Exchange Quotations after the Concert, 2.0, News on Art, 2.30, Talk: The Care of Fruit Trees, 2.45, Talk: German Gymnastics and National Education, 3.15, Talk: The D.L.G. Exhibition and the Countrywoman, 3.35, Exchange Quotations, 4.0 to 5.50, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloist: Prof. Robert Blatz (Violin). Overture to a Comedy by Shakespeare (Paul Scheinplne); Violin Concerto, Op. 50 (Arthur Rüst); Kaiserwalzer (Joh. Strauss); Symphonic Baroque, Harlekinstreich (Carl Schenker); Von künftigen Glücks, Op. 15 (Kienzl); Overture, Des Meeres und der Liebe Wellen (Robert Fuchs). In the interval from 5.0 to 5.25, Review of Books, 5.50, Exchange, Weather and Time Signal, 6.0, A Tour of the German Room of the Dresden Picture Gallery, 6.30, Songs by the Heimecker Quartet, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0, Concert by the Leipzig Symphony Orchestra, conducted by Eduard Weber. Soloist: Emil Gensler (Bassoon). Champagne-Ouverture (Waldemar von Bausnern); Concerto in E Flat, for Bassoon (Adolf Mühlhans); Rhapsody in B Minor, Op. 25 (W. Bartung); Reading: Vom tollen Bomberg; Four Pieces from Op. 76a (Philipp Scharwenka); Hilar-Walzer (Max Dehnert); Prelude to Die Zwillinge (Karl Weis); 9.30, News, 9.45, Reading: Tante Frieda (Ludwig Thoma). 10.15, News, 10.40, Songs by Käthe Heiderbach and Marcel Wittlich (on Gramophone Records), 11.0, Music on Zeesen, 31.38 metres), Chamber Music of Friedrich von Daberg's Day, 11.30, Trio Sonata in G, for Flute, Violin and Bass (Carl P. E. Bach); Songs for Soprano: (a) Der sterbende Christ and seine Seele (Friedrich von Daberg), (b) Aria from Weller (Georg Bendt); Fantasia in C Minor (Bassler); Andante with Variations from the Piano-forte Quartet, Op. 25 (Friedrich von Daberg); Flötendurstücke (Haydn). 12.30 a.m. (Saturday), Close Down.

Linz. See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW. 6.0 p.m., Quintet Concert, 7.0, French Lesson, 7.30, Talk on Geology, 8.0, Programme not yet announced, relayed from Belgrade, 697 kc/s, 430.4 metres, 9.0, Time and News, 9.30, Concert relayed from the Caté Zvezda, 10.30 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East, 8.30, Concert arranged by the Vieune Aero Club, relayed from the Theatre, Vienne, Soloists: Mme. Claudie Lamotte (Soprano) and Mlle. Hejqué (Piano-forte). Addresses by the Mayor and by President of the Club, Talk by Dr. Trenel, Soprano Solos; Aria from (a) The Daughter of the Regiment (Donizetti), (b) Waltz Song from Mirelle (Gounod), (c) Aria from La Traviata (Verdi); You are my Heart's Delight, from The Land of Smiles (Lehar); Piano-forte Solos: Rhapsody in E Flat (Brahms); Two Pieces (Schumann); Barcarolle, No. 2 (Faure); Variety Items. After the Concert, News.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 3,043 metres; 20 kW. 11.30 p.m., Light Music, 11.45, Radio Chronicle, 12.0 Midnight, Light Music (contd.), 12.35 a.m. (Saturday), Answers to Correspondents, 12.40, Spanish American Talk, 12.45, Light Music, 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 4,143 metres; 2 kW. 7.0 p.m., Chimes, Exchange Quotations, Radio Journal, Request Gramophone Records, and Variety Items by Rufino Gomez de la Serna, 9.15, News Bulletin and Political Review, 9.30 to 10.30, Inter-1.

MAY 12th

FRIDAY

continued

10.30, Chimes, Time Signal, and Political Review. 10.40 (approx.), Interviews with Artists before the Microphone. 11.0 (approx.), Melania—Musical Play (Zubizarreta), relayed from the Coliseum. 12.45 a.m. (Saturday), News Bulletin and Programme Announcements for Listeners Abroad. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—4.55 to 10.15 p.m., See Prague. 10.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert, conducted by Erich Kloss: Overture, Alessandro Stradella (Flotow); Madrigal and Minuet (Bolzoni); Selection from Manon (Massenet); Suite, Wedding Music (Jensen); Viennese Dance Melodies (Gärtner); Suite, As you like it (Zilcher); Vell Intermezzo from Mona Lisa (Schillings); Kleine Tanzszenen (Kallenberg). 5.45 (from Nürnberg), Talk: Little Known Customs from the Germanic Period. 6.5, Folk Song Recital by Elvira Bonavia. 6.20, Time, Weather and Agricultural Notes. 6.35, Talk on Colonial Expansion. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, Readings from Modern German Women Poets. 8.20, Goethe Songs to the Lute by Oscar Besenfelder. 8.45, Talk on the following Transmission. 9.0, Hannibal's Journey across the Alps—Radio Sequence (Q. Engasser). 10.20, Time, Weather, News, Sports Notes and Traffic Report.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert by the Station Orchestra, conducted by Hugo Kramm: Overture (Reissiger); Bizet Potpourri (Urbach); Gavotte-Caprice (Nortkiewicz); Elegy (Rachmaninov); Schön Rosmarin (Kreisler); Solitude (Ball); Old Porcelain (Humphries); Minuet (Bjorko); Johann Strauss Potpourri (H. Weber). 6.0, French Lesson. 6.30, Talk. 7.0, Announcements, Weather and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Sacred Concert relayed from the Troföldiget Church. 9.0, Talk. 9.30, Foreign Agricultural Market Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Reading from Hiawatha. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Light Music on Gramophone Records. In the interval at 8.30, Time Signal and Announcements. 8.45, André Chénier—Opera in Four Acts (Giordano). In the intervals, Talk on Music and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Review. 7.0, News. 7.15, Weather Report. 7.25, Le Journal Parlé. 8.30, Musical and Literary Programme for Young People. 9.15, Concert by the Symphony Orchestra, conducted by E. Flamant. Soloists: René Bas (Violin) and M. Marchesini (Cello). Scenade (Malats); Aborada Gallega (Veiga); Jardin Sevillano (Millan); Violin Solo, Selection from Miss Deima (Andran); Cello Solo, Langueur d'Amour (Flamant); Overture, La Dame blanche (Boieldieu). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Sponsored Talk. 7.10, Popular Music on Gramophone Records. 7.55, Review of the Week. 8.0, Talk on Music. 8.15, Interval. 8.30, Phi-Phi—Operetta (Christie). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Jewish Talk. 12.30 p.m., Gramophone Concert: Overture, Ameron (Cherubini); Eclat de rire from Manon Lescaut (Auber); Allegro (Dittersdorf); Selection from Le Postillon de Longjumeau (Adam); Tambourin du triomphe (Destouches-Casadesus); Symphonie Poem, Mazepa (Liszt); Adieu à la forêt, from L'Attaque du moulin (Bruneau); Violin Concerto (Bruch); Ballet Music from The Three-Cornered Hat (Fallá);

Berovse (Gretchaninov); La plus que lente (Debussy); Sinfonia breve (Ingebrecht). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 4.10, Elementary English Lesson. 6.10, Agricultural Report. 6.30, Review of New Books. 6.50, Insurance Societies' Report. 7.0, Talk. 7.20, Gramophone Concert: Granada (Garcia); A Parthian (Weckerlin); Aubade printanière (Lacombe); Myrto (Petit); Rondo (Andolfi); Serenade, Severo Torrelli (Schatté); Le retour du marin (Tiersot); Le Binion (Durand). 7.45, Commercial Prices and News. 8.0, Talk by Georges Colini: Great Romantic Actors: Mounet Sully. 8.30, News and Weather. 8.40, Gastronomic Review. 8.45, Gramophone Records: Un tout petit baïser, from Louis XIV (Pares-Van Parys); Au salon de l'auto (Bach and Laverne); Tango, Te cambiaron la punta (Tabanillo); Where is my Baby to-night? 9.0, Le vol nuptial (de Croisset), relayed from the Théâtre de la Michodière. 9.15 (in an interval), Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 305 metres; 25 kW. Relayd by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. S. Lappin. 8.30, John Dunlap (Tenor). 8.45, Mr. and Mrs. Scores. 9.0, Talk by Dr. Emlyn Jones. 9.10, Business News. 9.15, S.A.I. Musicale—Carnegie Tech Chapter. 9.30, Weather Report. 9.31, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, Muskingum College Music Club. 10.15, Dick Daring. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Programme to be announced. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Vick's Song Weavers. 11.35, Rigs and Moke. 11.45 to 3.0 a.m. (Saturday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Peppodent Amos 'n' Andy. 12.15 a.m., A. and P. Programme. 12.30, Five Star Theatre—Charlie Chan. 1.0, Nestlé's Programme. 1.30, Time Signal and Adventures in Health. 1.45, Howard Thurston—the Magician. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Dr. Curtis Howe Springer.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Brno. 4.55, Talk: Electricity in Modern Homes. 5.5, Sm-tana Commemoration Concert by the Ondricek Quartet: Pianoforte Trio in G Minor, Op. 15; Duet for Violin and Pianoforte. 6.5, Agricultural Talk. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Two Talks. 7.0, Chimes. 7.1, News Bulletin. 7.10, Programme in Memory of Charlotte Garrigue Masaryk. Talk, followed by String Quartet No. 2 in D Minor (Smetana). 7.50, Talk on the following Transmission. 8.0, The Two Widows—Comic Opera in Two Acts (Smetana), relayed from the National Theatre. In the intervals at 9.0 and 10.0, Time Signals. 10.30, News. 10.45 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.: Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Weather and News. 7.30 (from Geneva), Talk: The Future of Aviation in the Stratosphere. 8.0 (from Lausanne), Chamber Music by the Milan Trio: Trio in E Minor (Haydn); Chamber Sonata (Corelli); Trio Sonata No. 1 (Pergolesi); Andante and Scherzo from the Trio in C Minor (Mendelssohn). 9.0 (from Geneva), Concert of American Negro Music by the Orlova Choir and the Broadcasting Serenaders, conducted by J. Pasche. Soloist: Hugues Cœméd. 10.0, News and Weather. 10.15 (approx.), Close Down.

RUKJAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayd by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert: Lassit mich deine Carmen sein (Holländer); Donna Grazia (Ravasi); Festa di maggio (Cilotta); Valzer d'amore (Anardi); One more kiss (Rose); The Enchantress (Chaminade); Bacco in Toscana (Broggi); Kesa-ko (Chapuis); Three Roses (Strecken); Anima catalana (Cortopassi). 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Song and Pianoforte Recital. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.0, Report of the International Institute of Agriculture (in Italian and English). 7.20, Giornale Radio. 7.30, Sports Notes. 8.0, Time and Announcements. 8.5, Gramophone Records of Light Music. 8.30, Talk on Ariosto. 8.45, Symphony Con-

cert, conducted by Vittorio Gui. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayd at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 p.m., Biblical Drama. 8.15, Moore Triangle Club, from New York. 8.30, Echoes of Erin, from New York. 8.45, Stock Reports and Police Notices. 9.0 to 11.45, Interval. 11.45, Stock Reports. 12 Midnight, Cries Service Concert from New York. 12.30 a.m. (Saturday), WGY Farm Forum. 1.0 to 2.30, New York Relay. 1.0, Best Foods Musical Grocery Store. 1.30, Pond's Programme. 2.0, Chevrolet Programme. 2.30, Richfield Country Club, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.: Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory, Weather, and News. 12.40 (from Zürich), Concert by the Small Station Orchestra. 1.35 (from Zürich), Weather and Exchange. 1.40 (approx.) to 3.30, Interval. 3.30 (from Basle), Concert by the Radio Quartet. 4.30 (from Basle), Programme for Children. 5.0 (from Basle), Waltzes and Descriptive Pieces on Gramophone Records. 5.30, Weather. 5.35 (approx.) to 6.30, Interval. 6.30 (from Berne), Programme to be announced. 7.0 (from Berne), Time, Weather, Market Prices, Tourist Talk, and Sports Notes. 7.15 (from Basle), Talk: Switzerland and the Swiss Abroad. 9.30, Weather and News. 9.40 (approx.), Concert by the Station Orchestra. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayd by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Folk Music, relayed from Falun. 9.77 kc/s, 307 metres. 5.30, Reading. 5.55, Popular Music on Gramophone Records. 6.55, Talk on Foreign Politics. 7.15, Weather and News. 7.30, Talk: Freiburg and Würzburg, two Centres of German Culture. 8.0, Songs to the Lute by Ewert Taube, and Recitations by Georg Finkquist. 8.30, An Evening in Sans-Souci—Radio Play. 9.45, Weather and News. 10.0, Popular Concert by a String Orchestra, with Songs by Irish Thorstenson. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Light Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Classical Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Literary Talk in French. 5.0, Jazz Music by the Station Orchestra, conducted by Roskam. 6.0, Concert by the Station Trio, relayed from Lille, 1,130 kc/s (265.4 metres). 7.0, Topical Talk in German. 7.15, Popular Music on Gramophone Records. 7.30, Time and News. 7.45, Gramophone Concert of Light Music. 8.15, Press Review in German, and Lottery Results. 8.30, Léon Moreau Concert by the Station Orchestra, conducted by Maurice de Villers. Soloists: Mme. Manéan (Songs) and M. Caron (Oboe). Symphonie Poem, Sur l'eau lorraine; Song with Orchestral Accompaniment; La grotte; Two Pieces: (a) Le four se lève (b) On danse; Humoresque; Four sections rythmiques, for Oboe and Pianoforte; Songs: (a) Le fiancé, (b) Calmerie; Pastorale for Saxophone and Orchestra. In an interval at 9.30 (approx.), Press Review in French. After the Concert, Il était une bergère—One Act Operetta (Lattès). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—12 Noon, Popular Music on Gramophone Records. 1.15 p.m., Time, News, Weather, and Programme Announcements. 1.30, Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0 to 3.45, Interval. 3.45, Talk: Sunday Walks. 4.0, Folk Song Recital by Hilde Keeler-Bluthardt (Soprano) and Leo Hantz (Guitar). 4.30, See Munich. 5.45, Time, Weather, and Agricultural Notes. 6.0 (from Heidelberg), Medical Talk. 6.25, Talk: Writers and Philosophers of the Romantic Period. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Recital of Songs to the Lute. 8.30, Military Programme. Two Talks, and Marches by a Military Band. 9.0, Concert from Frankfurt. 10.0, Time, News, Weather, Programme Announcements, and Sports Report. 10.30, See Frankfurt. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmission irregular owing to fire.—7.30 p.m., Orchestral Music. 7.45, Songs from Operettas. 8.0, Accordion Solos. 8.15, Songs from Sound Films. 8.30, Saint Saëns Concert. 9.0, Fashion Review. 9.5, Concert of Songs and Military Music. 9.30, Argentine Music. 9.45, Songs from Comic Operas. 10.0, Songs from Operettas. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Organ Recital, Sanctuary of the Heart (Ketelbey); Ave Marie (Bach); Four Indian Love Lyrics (Woodford-Finden); The Storm (Shaw); Largo (Handel); In a Monastery Garden (Ketelbey). 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Saturday), Viennese Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 8.45 p.m., See Turin. 8.45 till Close Down, See Rome.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 10 kW. Relayd by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Concert of Variety Music. 6.35, Giornale Radio and Agricultural and Dopolavoro Notes. 7.0, Time and Report of the Royal Geographical Society. 7.20, Giornale Radio. 7.45, Gramophone Records (cont'd.). 8.0, Announcements, Giornale Radio, Weather, and Gramophone Records (cont'd.). 8.40 (approx.) Notes on Art. 8.45 (approx.), See Rome. Talk in the interval. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayd by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.20 p.m., Concert in C Minor—Pianoforte Recital by Paul Emerich, Prelude and Fugue in C Minor (Mozart); Sonata in C Minor, Op. 11 (Beethoven); Etude in C Minor, Op. 10, No. 12 (Chopin); Etude in C Minor, Op. 25, No. 12 (Chopin); March from The Loves of the Three Oranges (Prokofev); March from the Grosse Suite (Pisk). 5.55, Talk: The Wagner Memorial in Vienna. 6.10, Tourist Report. 6.25, Talk: Gymnastics for Workers. 6.40, Sports Notes. 6.50, Talk: Carnuntum, a Roman fortified Station. 7.5, Concert of Operetta Music by the Josef Hofer Orchestra. Soloists: Maria Reining (Soprano) and Franz Zwonik (Tenor). Overture and Duet from La belle Hélène (Offenbach); Kometenwalzer from Der Kellermeister (Zeller); Tenor Aria from The Bird Fancier (Zeller); Overture, Die geschiedene Frau (Fall); Song from Die goldne Meisterin (Eysler); Duet from Die lustigen Nibelungen (O. Strauss); Ballet Scene from Der Teufelsreiter (Kálmán); Volga Song and Duet from The Zarevitch (Léhar); Soprano Song from Waltzes from Vienna (Strauss—Bittner—Korngold); Strauss-Milchbäcker-Suppe Potpourri (Zielher). In an interval at 7.30, Time, Weather and Programme Announcements. 8.30, Reading. 9.0, Concert by the Vienna Symphony Orchestra, conducted by Oswald Kabasta. Concerto for Viola d'amore and Orchestra (Vivaldi); Symphony in C, No. 97 (Haydn); Concert Music for Viola and Chamber Orchestra. 10.10, News, Weather and Announcements. 10.25, Traffic Report. 10.30, Dance Music by the David Mathé Band, relayed from Hübners Kursalon.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Light Music on Gramophone Records. 1.20, Weather Reports. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Aviation Report and Anti-Gas Drill. 3.30, Naval and Colonial Notes. 3.35, Light Music on Gramophone Records. 4.25, Review of Periodicals. 4.40, Talk on Hygiene. 5.0, Third Concert of Songs and Pianoforte Music by the Polish Candidates for the Second International Competition at Vienna. 5.55, Programme Announcements. 6.0, Talk: May 12; Hospital Day. 6.10, Light Music from the Café Galiciania. In the interval, News. 7.0, Miscellaneous Items. 7.20, Literary Review, from Wilno, 533 kc/s (563 metres). 7.30, Talk. 7.45, Radio Journal. 8.0, Talk on Music. 8.15, Symphony Concert, relayed from the Philharmonic. In the interval, Reading. 10.40, Sports Notes. 10.45, Radio Journal. 10.55, News, Aviation Weather Report and Police Notes. 11.0, Dance Music from Cracow, 959 kc/s (312.8 metres).

ZURICH.—See Schweizerischer Landessender.

SATURDAY MAY THE THIRTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL Variety and musical comedy programmes.
LONDON Military Band concert. Chamber music.
REGIONAL
MIDLAND "The Doctor's Day." a ballad comedy by W. Hitchford.
REGIONAL
NORTH Two plays: "Writing a Play." by J. R. Gregson and "Ducks and Peas." by J. Lund.
REGIONAL
WEST Police Band programme.
REGIONAL
SCOTTISH Concert by Massed School and Children's Choirs from the Usher Hall, Edinburgh.
REGIONAL
BELFAST Orchestral concert from the Ulster Hall.

ABROAD

- LYONS-LA-DOUA 8.30 p.m. Operetta: "The Rose of Stamboul" (Fall), from Paris.
MUNICH 8 p.m. Operetta: "Where the Lark Sings," by Lehár.
PALERMO 8.45 p.m. Operetta: "Clo-Clo," by Lehár.
PITTSBURCH 1.15 a.m. (Sunday). The Boston Symphony Orchestra, from New York.
RIGA 7.5 p.m. Operetta music of the Nineteenth Century.
ROME 8.45 p.m. Opera: "Germania," by Franchetti.
SOTTENS 8 p.m. Opera: "Aida" (Verdi), from Geneva.
TURIN 8.45 p.m. Operetta: "Fior di neve," by G. Blane (relayed from Florence, Genoa, Milan, and Trieste).

Hall); Frühlingsstimmen (Joh. Strauss); The Pilgrim's Progress (Bantock). 6.15, Talk on Joan of Arc. 6.30, Sonata Recital by Mme. Husson-Michaux (Pianoforte) and M. Prozin (Cello); Sonata in E Minor (Vivaldi); Sonata in F (Marelli); Song (José Semant); Dance (J. Semant). 7.0, Concert of Gramophone Records: Prelude from La Deluge, played by Philand (Saint-Saëns); Si je le savais (Tchaikovsky); Spanish Dance from La Vida breve, played by Thibaud (Fall); Rondo (Granados). 7.15, The Oasis and its effect on Agriculture in Belgium. 7.30, Film Review. 8.0, Concert by the Station Symphony Orchestra, conducted by Paul Defauw; Soloists: M. Mathien (Cello), M. Paul Gason (Saxophone); Preludes (Marsick); Violin Concerto (Beethoven). In the interval at 8.45, Recitations. 9.0, Concert (cont.): Three Pieces (Faure); Schmitt: (a) Salammbô, (b) Saxophone and Orchestra, Legend, (c) La tragédie de Salomé. 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse. 11.30, Light Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Overture, William Tell (Rossini); Suite, Scènes d'opéras (Massenet); Selection from Aida (Verdi); Selection from Tip Toes (Gershwin); Potpourri of Viennese Waltzes (Morena); Waltz No. 1 (Dvorak); First Movement from the Symphony No. 5 (Tchaikovsky); Riky (Janacek); Violin Solo: La fille aux cheveux de lin (Debussy); March from Indigo (Joh. Strauss). In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, Light Music on Gramophone Records. 8.0, Dramatic Programme. 9.0, Light Music and Romanian Music, relayed from a Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 8.40 metres.—5.30 p.m., Variations Recital by Eugen Zeitinger; Variations (Mozart); Nocturne (Chopin-Liszt); Melody (Chopin-Liszt); Bachaband (Chopin-Liszt); Rhapsody No. 15 (Liszt); 6.0, Answers to Correspondence. 6.30, Concert by the Workers' Choral Society, conducted by Bela Rezik. 7.5, Review of Foreign Affairs. 7.20, Violin Recital by Eugen Hubay; Sonata in F for Violin and Pianoforte; Two Spring Love Songs (Hubay); Serenade (Hubay). 7.50, Talk. 8.15, Play (Géza Gárdonyi). 10.45, News Bulletin. 11.0 (approx.), Concert by the Budapest Concert Orchestra, conducted by Wilhelm Komor; Overture (O. Strauss); Selection from Don Quixote (Garcia); Ange d'amour (Waldteufel); The Old Musical Clock (Humphries); Potpourri (Geiger-Huber). 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the A. Bendix String Ensemble, relayed from the Wiccy Restaurant. 2.0 to 2.30, Interval. 2.30, Popular Music on Gramophone Records. 3.0, Programme for Children. 3.30, Concert by the Louis Prell Instrumental Ensemble; Spanish March (Gyldenmark); Waltz (Moz); Rogné Song (Stohbart); Anelito d'amore (Leoncavallo); By the Waters of Minnetonka (Lienhance); An Indian Love Song (Lienhance); Slav Rhapsody (Friedemann); Serenade napoletana (Rivelli); Spanish Gypsy Dance (Morquima); The Old Woman in the Shoe (Brown); Ständchen No. 2 (Hayek); Pfänkchen's Geburtstag (Link); Valse Impromptu (Oldenburg-Poulsen); The Red and Blue Blues (Edwards); First Suite (Rosenberg); Ja, der Himmel über Wien (R. Föll); Nächtliche Rinde (Gubach). In an interval at 4.15, Reading. 5.40, Exchange and Fish Market Prices. 6.20, French Lesson. 6.50, Weather, 7.0, News, 7.15, Time Signal. 7.30, Talk: The Copenhagen of the Future. 8.0, Time Signal from the Town Hall. 8.1, Concert by the Radio Orchestra, conducted by Emil Reesen; Marche boraine (Ganne); Waltz, Siesta (Waldteufel); Mazurka (Ganne); Polka, Tournequet (Ganne); Waltz, Le retour du printemps (Waldteufel); Mazurka, La souveraine (Waldteufel); Valse blonde (Ganne); March, Le jour de la victoire (Ganne). 8.45, Talk on Hans Andersen, with Reading of Extracts from his Fairy and Letters. 9.25, Duo brillante for Two Flutes (Kullian). 9.45, Humorous Songs and Recitations by Knud Heglund. 10.5, News. 10.20, Concert by the Radio Orchestra, conducted by Emil Reesen; Overture, Mignon (Thomas); Ballet Music from Aida (Verdi); Selection from The Barber of Seville (Rossini); Prelude and Chorus from Carmen (Bizet); Entry of the Guests into the Wedding (Wagner); The Swan (Lindberg). 11.0, Dance Music by the Otto Lington Band, relayed from the Ritz Restaurant. In an interval, at 12 Midnight, Time and Chimes from the Town Hall. 12.15 a.m. (Sunday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.45, News. 7.0, Gaelic Talk. 7.15, Talk: Life in the Argentine. 7.30, Time Signal. 7.31, The Station Orchestra. 7.45, Tenor Solos by Stephen Long. 8.0, The Station Orchestra. 8.10, Mezzo-Soprano Solos by Mme. Maud Hunter. 8.30, Petit Violin de Roi—A Musical Romance. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 5 kW.—6.30 p.m., Programme for Children. 8.0, Request Gramophone Records. 8.30, Exchange Quotations and Catalan Grammar Lesson. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 10.5, Concert by the Station Orchestra: March of the Horse Guards (Gilsoult); Habanera (Cotó); Romance (Arensky); Dance from Scènes napolitaines (Massenet). 10.30, See Madrid (EAJ7). 12 Midnight (in an interval), News.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Populavoro Announcements. 8.20, Giornale Radio and News. 8.30, Time Signal and Announcements. 8.35 (approx.), Il Trovatore—Opera in Four Acts (Verdi) on Gramophone Records. In the intervals, Book Review, Theatre Notes and News.

BASLE.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANOSENDR, 183.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.5 p.m., Educational Programme: Adolf Hitler—Scenes from his Life (Eberhard Wolfgang Moeller). 12.55, Time Signal. 1.45, News Bulletin. 2.0, Popular Music on Gramophone Records. 3.0, Handwork for Children. 3.30, Weather and Exchange. 3.45, Reading (Menzel). 4.30, See Hamburg. 5.0, Weekly Review. 5.30, Beethoven Concert: Bruno Sänger and Alex Pletsch (Violins), H. Schunmacher (Double Bass), and Herbert Zydattis (Viola); Ländliche Tänze for Two Violins and Double Bass; Duet for Viola and Cello. 6.0, Poetry Reading. 6.5, Hans Herrmann Song Recital, by Alfons Eckerarts; Der Dichter spricht; Erstes Begegnen; Salome; Kirschblüten; Alte Reitererzählung; Mahnung. 6.30, Thoughts on Mother Day. 6.50, Weather for Farmers and Announcements. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Dance Music, relayed from Cologne. 9.15, Wireless Cabaret, relayed from the Zoological Gardens. 10.0, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Serenade, relayed from Munich. 12 Midnight, Close Down.

BERLIN

WITZLIEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Wind Instrument Concert, conducted by Hermann Pape; March, Ein Manneswort (Pollack); Jubel-Overtüre (Weber); Waltz, Bei uns z'haus (Strauss); Potpourri lässt den Kopf nicht hängen (Lincke); Melody (Rivelli); Fantasia on Das reue deutsche Herz (Schreiner); Deutscher Schutztruppen-Marsch (Najork); Overture, Czar and Carpenter (Lortzing); Two Alsatian Peasant Dances (Merkling); March Potpourri, Deutschlands Erwachen (Kochmann); Paraphrase on Die Loozley (Nessvadner); Waltz, In lauslicher Nacht (Zehrer); Die Mädel im Tal (Riold); Prussian March (Göhler). In the interval, at 5.0 (approx.), Talk: German Tennis and the Davis Cup. 6.0, Topical Programme. 6.50, Talk: Exemplary Lives. 6.40, The Witzleben Station informs its listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.5, Announcement. 8.10, Nämie (Brahms) for Mixed Choir and Orchestra, relayed from the Singakademie; The Singakademie Choir and Station Orchestra and Singakademie Choir, conducted by Prof. Georg Schumann. 8.30, Programme from Stuttgart. 9.0, Karol-Festsupp. Karol-festsupp—a Radio Sequence (Peter Hagen and Hans-Jürgen Nierertz). 10.0, Weather, News and Sports Notes. 10.15 (approx.), Dance Music, relayed from the Europa Pavillon. 12.30 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODÖ.—See Oslo.

BORDEAUX-LAFAYETTE

985 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.40, Sports Notes. 7.45, Talk: Patent Laws. 8.0, News, Exchange, Market Prices and Lottery Results. 8.5, English Lesson. 8.20, News. 8.30, Durand et Durand—Comedy in Three Acts (Valabregue and Ordouneau).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.10 p.m., Tichy Concert by the Station Orchestra,

conducted by J. Odcházal. 5.10, Talk: Madame Tussaud's Exhibition in London. 5.20, Recital of Italian Songs by Irma Weiler-Barkányi. Part I: Old Arias; Sento nel cuore (Scarlati); Vergin (L'Amore (Durante); Caro mio ben (Giordano); Part II: Folk Songs; Part III: Modern Song; Salve Maria (Mercadante); Prayer from Maria di Rohan (Donizetti); Ave Maria from Othello (Verdi); Nebbie (Respighi). 6.5, See Prague. 6.25, Light Music on Gramophone Records. 6.35, Talk for Housewives. 6.50, Report. 6.55, See Prague. 8.25, See Brno. 8.55, Programme to be announced. 10.15, Concert by the Station Orchestra, conducted by Fr. Dák. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,194 kc/s, 253 metres.—1.10 p.m., Gramophone Concert of Popular Music. 1.45, Time, Weather, News, and Exchange. 2.5, Light Music on Gramophone Records. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Film Review. 4.0, Radio Report on the Aviation Exhibition, relayed from Gleiwitz Aerodrome. 4.15, Book Review. 4.35, Concert by the Station Orchestra, conducted by Bruno Janz; Overture: Die Frau Meisterin (Suppé); Ziehler Potpourri. So schön wie's einmal war (Dahner); Serenade, Lockende Dämmerung (Lenschner); Kahlenbäume (Mory); Serenade, Heisse Liebe (Wappaus); Suite on Old Silesian Dance Themes (Wappaus); March, Jungmann (Weinhold). 5.35, Reading (Carl Hauptmann). 5.55, Programme to be announced. 6.20, Concert by the Station Orchestra, conducted by Bruno Janz; Melody (Wladigerow); Romance for Violin and Orchestra (Wladigerow); Intermezzo from Si (Mascagni); Selection from L'Éclair (Künneke). 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.10 to 10.0, See Stuttgart. 10.0, Time, Weather, News, Sports Notes, and Programme Announcements. 10.25, Dance Music by the Conny Franz Band, relayed from the Konzerthaus Zoo. 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News and Election Lesson. 6.55, See Prague. 8.25, A Radio Comedy (Petorka). 8.55, Programme to be announced. 10.15, See Bratislava. 11.30 (approx.), Close Down.

BRUSSELS (No.1)

I.N.R., 530 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist, M. Wiy (Violin); Two Step Bohém (Demou); Overture, Les Dragons de Villars (Maillart);

The Musical Snuff Box (Nicolajevsky); Selection from Véronique (Messager); Violin Solo; Zigeunerweisen (Sarasate); Danse de Iolus (Leemans); Waltz, For You (Burke); Selection from The Count of Luxembourg (Lehar). 1.0 p.m., Journal Parlé. 1.10, Concert relayed from the Grand Hotel, Anvers; Conductor, M. André Felleman. 4.45, Talk: The Training of Circus Animals. 5.0, Dance Music from the St. Sauveur Palais de Danse. 6.0, Talk: Aesthetic Education. 6.15, Concert of Gramophone Music: Two Pieces from Le Parc d'extractions (Blauzot); (a) L'orgue du carroussel, (b) Polka de l'équibriste; Nostalgia Andalza (Martinez); Rondino on a Theme of Beethoven (Kreislér); Granada (Albeniz). 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, Gil Orazi e Curiazú (Cimarrós); Valse Triste (Sibelius); Serenade (R. Strauss); Selection from Manon (Massenet); Violin Solo; Spanish Dance (Granados-Kreislér); Ballet Music from Sylvia (Delibes). 7.15, Talk: The Art of Public Speaking in Belgium. 7.30, Journal Parlé. 8.0, Six Days' Play (George Charles). 9.0, Concert by the Royale Légia, relayed from Liège. Conductor, M. Ernest Jérôme; Hymne à la nuit (Rameau); Les trois capitaines (Dambosi); Que n'ayez vous (Lully); Pilgrin's Chorus (Wagner); Nuit de Mai (Radoux). 9.50, Selection from The Danish Rose (Chopin-Liszt) on Gramophone Records. 10.0, Journal Parlé. 10.10, Gramophone Concert: Selection from The Windmill Man (Hollés); Serenade (Prozin); Molly on the Shore (Grainger); Mock Morris (Grainger). 10.30, Concert by the Max Alexys Orchestra, relayed from the Ancienne Belgique.

BRUSSELS (No. 2)

N.I.R., 857 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Concert relayed from the Grand Hotel, Antwerp; Conductor, André Felleman; Choir and Orchestra; Fête champêtre (Zvassén); Overture, The Magic Flute (Mozart); The Troni Quartet (Schubert); The Coffee Cantata for Soprano, Tenor and Bass (Bach). 1.0, Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Paul Leemans; Overture, Raymond (Thomas); Simple ayeu (Thomas); Selection from cavalleria rusticana (Mascagni); Lullie (Kazadze); Ballet Music from The Old (Massenet); Tango (Selyano); One Step (de Grobus). 4.45, Book Review. 5.0, Orchestral Concert: Overture, Maximilian Robespierre (Litolff); Russian Songs (Lado); Air from Faust (Gounod); An hard d'uno source (Bizet); Selection from Mirella (Gounod); The Vision of Fuji-San (K-telloy); Air from Aida (Verdi); Selection from Choulette (Hahn); Prayer to Our Lady (Boellmann); Ariody (Stanby); Tamorcelle (Popezki); Cardus (Grossmann); Chère exquise (Hahn); Musical Comedy Potpourri (arr.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—12 Noon, Gramophone Concert of Variety Music. 12.30 p.m., News. 12.45, Concert of Variety Music. 5.30 to 7.0, Programme in English by the I.B.C. Announcers: C. Danvers-Walker, T. St. A. Ronald, and B. McNabb. 5.30, Request Concert for Tunbridge Wells and Isle of Thanet listeners. Selection from The Maid of the Mountains (Fraser Simpson); Butterflies in the Rain (Myers); You will remember Vienna; The Arrow and the Song (Balfé); Sweethearts of Yesterday (arr. Hall); Selection from Congress Dances (Heymann); The English Rose (German); A Yodelling Lullaby; March of the Men of Harlech. 6.15, Concert of Light Music for Dover and Folkestone listeners. The Devil Dance (Peterson); Dance of the Raindrops (Reeves); Songs: (a) I never knew that Daddy had a Sweetheart (Gay), (b) I've got a Feeling (Nichols), (c) My Granny's Lullaby (Gilbert); The Wedding of the Birds (Peterson); The Clock is playing (Blauw); Songs: (a) Silver toned Chimes of the Angels (Campbell), (b) Eleanor (Hauley), (c) When your Hair has turned to Silver (de Rose); Song, Medley; The Cuckoo Waltz (Jonassen). 7.0, Radio Gazette. 7.20, Local News. 7.30, Popular Music on Gramophone Records. 8.30, Concert of Classical Music. 11.0 till Close Down. Programme in English by the I.B.C. 11.0, Club Concert for Fal-mouth and Lizard listeners. Nautical Moments (arr. Winter); For you alone (O'Reilly); Wind in the Willows (Ellis); The Middy (Alford); My Prayer (Squire); Selection, Hibernia; Shipmates O'Mine (Sanderson); Stonecracker John (Coates); Selection from H.M.S. Pinafore (Sullivan); In an Old-fashioned Town (Squire); Wait (d'Hardelot); On the Quarter Deck (Alford). 12 Midnight, Variety: Raspberries; Corporal Hoskins; The Wink of the Old Glad Eye; In Sunny Seville; Horses carry Tails; Cracker Jack; Slippery Sam the Stoker; You'll Die if you Worry. 12.30 a.m. (Sunday), Popular Songs and Pianoforte Music. Songs: (a) Let me sing and I'm Happy, (b) Violet Eyes and Cherry Lips, (c) To my Mammy; Pianoforte Duet. When the Circus comes to Town; Songs: (a) Rollin' down the River, (b) Handsome Gigolo, (c) Dancing with Tears in my Eyes; Pianoforte Solo, Whoopee Medley. 1.0, Country Dances; Eightsome Reel; Petronella; Paul Jones; Strip the Willow; Irish Set Dance; Russian Ballet; Barn Dance; Gay Gordons. 1.30, Vocal Duets and Orchestral Music. Shake and let's be Friends; Shout for Happiness; River, Stay away from my Door; Orchestra, Sunnyside Up; Tears; You're the one I care for; You're driving me Crazy. 2.0, Dance Music by the Beolians. Looking on the Bright Side; Marta; Please don't mention it; Shadows on the Window; Just hummin' Along; Long Ago; The King was in the Counting-house; Don't tell a Soul; When the Rest of the Crowd goes Home; What makes you so Adorable; By the Fireside; Moonlight on the River; Sing, Brothers; Good-night, little girl. Good-night. 2.57, I.B.C. Good-night Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,167 kc/s, 259.3 metres; 17 kW. Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert by the Station Orchestra. Part I: Conductor: Reinhold Merten. Soloist: Ada Turana (Pianoforte). Overture, Anacreon (Cherubini); Pianoforte Concerto in C Minor, Op. 37 (Beethoven). Part II: Conductor: Walter Caspar. Old Dance Music. 5.50, Economic Notes. 6.0, Talk: Voluntary Workers and Population. 6.25, Talk on Bismark. 6.50, Time, Programme Announcements, Weather, and Economic Notes. 7.0, Transmission for all German Stations, The Romberg—a Play (Hans Heimpel). 8.0 to 10.15, See Stuttgart. 10.15, Time News, Weather, and Sports Notes. 10.45, See Munich. 12 Midnight (approx.). Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Gall ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.30 p.m., Concert by the Symphony Orchestra of Unemployed, conducted by Otto Ebel von Sosen: Overture, Irrfahrt ums Glück (Suppé); Finale from Arioli (Bach); Slav Rhapsody No. 2 (Friedemann); Waltz and March from Serenade No. 2 (Volkmann); Prelude, Chorus, Ballad and Dance (Suppé); Amorettenzänze (Gungl); Flirt-Gallop (Ziehrer). 5.30, Hamburg, Bremen, and Lübeck—Report from the Senates and Citizens' Councils of the Hanseatic Free Cities. 6.0, Variety Programme. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.10, See Stuttgart. 10.0, Time, Weather, Announce-

MAY 13th SATURDAY continued

ments, Sports Notes, and Police Report. 10.20, Topical Talk. 10.30, Dance Music by a Military Band.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. and Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Ali Baba (Cherubini); Nachtfalterwalzer (Joh. Strauss); Intermezzo (R. Strauss); Japanisches Regententouillet (Marx); Selection from La casa delle belle (Giordano); Suite, Ballet-Divertissement (Blüthnermann); Verlorene Liebe (Reggow); Selection from Der arme Jonathan (Müllbeker); Overture, Casanova (Lüncke). 1.5 p.m., Popular Music on Gramophone Records. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange Rates. 3.30 (from Danzig), Handwork for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Romeo and Juliet (Bellini); Selection from La Favorita (Donizetti); Marienwalzer (Lanner); Czardas, Czikos (Joh. Strauss); (Bolsh); Jubel-Walzer (Puccini); Overture, Selection from La Rondine (Puccini); Overture, The Bohemian Girl (Balfé); March Potpourri, Als wir marschierten (Scheidt-Hagen). In the interval at 5.0 (approx.), (from Danzig), Talk on Films. 5.40, Talk: The Army and the State. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Brahms Festival, relayed from the Stadtkirche. Tilsit: The Tilsit Symphony Orchestra, conducted by Herbert Wilhelm; Paneggie and Addresses; Motet, Es ist das Heil uns kommen her, Op. 113. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, News. 8.10, The Hunt for Ely—A Humorous Radio Sequence (Text by Ernst Jerosch). 10.0, News and Sports Notes. 10.20, Dance Music from Berlin (Witzleben). In the interval, Report on the Second Day of the East Prussian Motor Race. 12.30 a.m. (Sunday), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 5.40 p.m.).—12.40 p.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 12.40, Concert by the Small V.A.R.A. Orchestra, conducted by H. de Groot. In the intervals: Gramophone Records. 2.40, Interval. 2.55, Light Music on Gramophone Records. 3.30, Talk. 3.50, Concert by the P.A.R.A. Balalaika Orchestra conducted by L. Powarrie. 4.0, Song Recital by L. Fuld. 4.10, Concert by the V.A.R.A. Balalaika Orchestra (cont'd.). 4.20, Song Recital (cont'd.). 3.40, Talk on Music. 5.10, Talk. 5.30, Concert by De Notenkrakers, conducted by D. Wius. 6.20, Literary Talk. 6.40, Concert by De Wielewaal Children's Choir. 7.10, Concert by the Amsterdam Chamber Orchestra, conducted by Kiekens: Overture, Barbe-Bleue (Offenbach); Pestherwalzer (Lanner); The Caravan (Rey); Selection from The Merry Widow (Lehár); Overture, Tancred (Rossini); Suite from Fontainebleau (Smetana); Dance of the Dervishes (Bendix); Selection from The Drum-major's Daughter (Offenbach). In the interval at 7.40, Talk. 8.38, S.O.S. Messages. 8.40, Variety Programme by the V.A.R.A. Orchestra, conducted by H. de Groot: De Flic-fluiters, conducted by J. van de Horst; and De Notenkrakers, conducted by D. Wius. Soloists: J. Lammen (Bass), Mlle. E. Philippe (Songs), E. Busch (Songs), W. van Cappellen (Recitations), H. Wiggelaar (Violin), M. Komst (Trumpet), J. Huy (Saxophone) and C. Steyn (Accordion). In the intervals at 9.55, News, and at 10.10, Gramophone Records. 11.40, Popular Music on Gramophone Records. 12.40 a.m. (Sunday), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—12.55 p.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 12.55 p.m., Concert by the K.R.O. Sextet, March, Profeliat (de Jong); Manchurian Sketches (Glan); Waltz, Roses from the South (Strauss); Hungaria (Leopold); Spring Song (Mendelssohn); Light Music on Gramophone Records; In der Heitzmännchens Bar (Rosen); Selection from Rosamund (Sehner); Star of Eve, from Tannhäuser (Wagner); Waltz, Over the Waves (Rosas); Serenade (Becca); Finale. 2.25 to 2.40, Interval. 2.40, Programme for Young People. 3.10, Programme for Children. 4.40, Light Music on Gramophone Records. 4.50, Talk. 5.10, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud. Overture, The Mikado (Sullivan); Selection from De Fremersberg (Koene-mann); Old Folks at Home (Busch); My Old Kentucky Home (Busch); Gitana (Bucalossi); Russian Melodies (Iljinski). 5.55, Recitations. 6.10, Concert by the K.R.O. Orchestra (cont'd.). Four Pieces (Bizet): (a) Overture, Patrie, (b) Suite No. 2, from L'Arlesienne, (c) Selection from Carmen, (d) Overture, Djamilah. 7.0, Press Review. 7.20, Concert by the K.R.O. Orchestra (cont'd.). Marche joyeuse (Piery); Waltz, Tesoro mio (Bocacci); Selection from Les

Cloches de Corneville (Planquette); Liberty March (Souza). 7.40, Police Notes. 7.55, Talk. 8.15, Light Music on Gramophone Records. 8.25, Sports. 8.40, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. 9.10, News. 9.15, Recitations. 9.30, Concert by the K.R.O. Boys (cont'd.). 10.10, Programme for Catholic Scouts. 10.55, Concert by the K.R.O. Boys (cont'd.). In the interval at 11.10, News. 11.40, Popular Music on Gramophone Records. 12.40 a.m. (Sunday), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News Bulletin, Financial Notes and Racing Results. 8.10, Literary Talk. 8.30, Concert of Light Music on Gramophone Records. 9.0, News. 9.15, Gramophone Concert (cont'd.). 12 Midnight to 1.0 a.m. (Sunday), Programme in English by the I.B.C. 12 Midnight, Variety Concert. Overture, Jerome Kern Potpourri (arr. Gibbons); Songs: (a) Bankey-doodle-Ido (Saroni), (b) Riding on a Camel (Wright); Accordion Band: (a) Mona Lisa (Sullivan), (b) Whistling Waltz (Evans); Trios: (a) When the Bloom is on the Sage (Vincent), (b) Sleepy Rio Grande (Robison); Intermezzo, Music Hall Favourites; Songs: (a) Snuggled on your shoulder (Lombardo), (b) When we're alone (Jason); Xylophone Solo: The Skaters' Waltz (Waldteufel); Quartet: Way down yonder in the Cornfield (Traditional); Song: Caller Herrin' (Traditional); Finale, Spanish March (Franco). 12.57 a.m. (Sunday), I.B.C. Good-night Melody. 1.0 (approx.). Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.40, Violin Recital by Fritz Kild. 7.5, Talk. 7.30, Concert of Sacred Music relayed from Viipuri, 1,031 kc/s, 291 metres. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert by the Station Orchestra, conducted by Josef Breuer: Overture, Preciosa (Weber); Ballet Music from Rienzi (Wagner); Polonaise in E. No. 2 (Liszt); Selection from Othello (Verdi); Overture, Eine Nacht in Venedig (Joh. Strauss); Waltz, O schöner Mai (Joh. Strauss); March, Unter dem Siegesbanner (v. Bion). 12.50 p.m., Weather, Time and News. 1.0, Concert, conducted by Wolf: March, Deutsch der Rhein (Pesch); Die Schönen von Valencia (Morena); Overture, Die Felsenmühle (Reissiger); Arias from Der liebe Augustin (Fall); (a) Sei mein Kamerad, (b) Und der Himmel hängt voller Geigen; Prelude, Chorus and Dance from Das Pensionat (Suppé); Petite Suite No. 2 (Michelet); Prelude (Kark); Potpourri, Mousseux (Waldteufel). In the interval at 2.0, News. 2.30 to 3.0, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Talk: The Caves in Westphalia. 4.10, English Reading. 4.35, A Children's Cantata, relayed from Soest. 5.0 to 5.30, Concert, conducted by Wolf; Soloist: Otto Wetzell (Pianoforte). 5.45, Talk for the Housewife. 6.5, The World on Gramophone Records; Gottschee. 6.25, Reading. 6.50, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, News. 8.5, The German Forest—Literary and Musical Radio Sequence (Hans Lorenz Leuzen). 10.5, News and Sports Notes. 10.30, Serenade from Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m. (approx.), Gramophone Concert of Romantic Opera Music. 1.0, News, Weather, and Time Signal. 1.15, Gramophone Concert of Operetta Music: Overture, Der Opernball (Hemberger); Two Songs: (a) Aria from Die Fledermaus (Joh. Strauss), (b) Song from Gipsy Love (Lehár); Selection from Der Obersteiger (Zeller); Two Duets: (a) Duet from The Gipsy Baron (Joh. Strauss), (b) Duet from Der Rastelbinder (Lehár); Overture, The Mikado (Sullivan); Two Songs: (a) Song from Bocaccio (Suppé), (b) Song from Der Bettelstudent (Müllbeker); Overture, A Night in Venice (Joh. Strauss). 1.50, Wireless Notes and Exchange Quotations. 2.0, Gramophone Concert: Selection from Liselott (Künneke); Hungarian Rhapsody (Liszt); Radetzky-Marsch (Joh. Strauss); Hoch-und Deutschmeister-Marsch (Ertl). 2.30, Wireless Talk. 2.40, Programme for Children. 3.25, Review of Books. 3.45, Exchange Quotations. 4.0, Legal Talk. 4.30, Concert from Berlin (Witzleben). In the interval from 5.0 to 5.15, Talk on Music. 6.0, German Lesson for Germans. 6.20, A

Modern Dictionary. 6.30, Talk: Luther's Room in the Wartburg. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.10, See Stuttgart. 10.30, Radio Report of the D.H.V. Meeting in Zwickau. 10.45, News, followed by Concert of Light Music by the Endé Orchestra. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 p.m., Quintet Concert. 6.0, Talk on Ethnology. 6.30, English Lesson. 7.0, Programme for Workers. 7.30, Talk on Philosophy. 8.0, Concert by the Ljubljana Choir. 8.45, Concert of Light Music. 9.30, Time and News. 10.0, Quintet Concert. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, The Rose of Stamboul—Operetta (Fall), relayed from Paris (Ecole Supérieure, 671 kc/s, 447.1 metres. After the Relay, News Bulletin.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 30 kW.—7.0 to 9.0 p.m., Programme for Listeners in the Canary Islands, Guinea, and Europe. 7.0, Concert: Two Step, Cielo Andaluz (Marquina); Selection from Maruxa (Vives); Hungarian Rhapsody No. 2 (Liszt); Potpourri of Andalusian Songs and Dances; La Busdogna; Selection from Rose Marie (Friml). 8.15, Talk. 8.30, Light Music. 9.0 to 11.30, Interval. 11.30 See Madrid (EAJ7). In the interval, Radio Journal. 1.0 a.m. (Sunday), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Radio Journal, Medical Talk, and Request Gramophone Records. 9.15, News Bulletin. 9.30 to 10.0, Linguaphone English Lesson. 10.30, Chimes and Time Signal. 10.35 (approx.). A Musical Comedy. 12.45 a.m. (Sunday), News. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert by the Ostravian Tramways' Brass Band. 6.55, See Prague. 8.25, See Brno. 8.55 to 10.15, Programme to be announced. 10.15, See Bratislava. 11.30 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—5.5 p.m., Concert by the Alois Detzer Orchestra. Homage March from Sigurd Jorsalfar (Grieg). Prelude to Act III of Kunihiid (Kistler). Selection from I Pagliacci (Leoncavallo). Waltz, Improvisationen (Gungl). Three Hindu Dances (Sualisi). Intermezzo, Lotoshume (Lincke). March Potpourri Auf geht's beim Sichteitl (Detzer). 6.15, Programme for Young People. 6.45, Wireless Talk. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Where the Lark Sings—Operetta in Three Acts (Lehár). 10.20, Time, Weather, News, and Sports Notes. 10.45, Serenade, conducted by Erich Kloss.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.30 p.m., Popular Music on Gramophone Records. 5.15, Programme for Children. 6.15, On the Hardanger Fiddle and Song Recital of Norwegian Music. 6.45, Talk on Economics. 7.0, Announcements, Weather, and News. 7.30, Talk: Alcohol and Crime. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kramm. March (Blankenburg). Caucasian Suites, Nos. 1 and 2 (Ippolitov-Ivanov). Melody (Heydersahl). Elegy (Borch). Caprice viennois (Kreisler). Poem (Drulla). Carmencita (Ancell). Love Song (Sarmartini-Elman). Potpourri of Norwegian Melodies (Birknes). Frühlingstimmen (Joh. Strauss). American Fantasia (Tobani). Wedding March (Wergeland). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Songs and the Week's Review. 10.45, Dance Music on Gramophone Records. 12 midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Report, Agricultural Notes and Giornale Radio. 8.20, Sports Notes. 8.25, Light Music on Gramophone Records. In the interval at 8.30, Time Signal and News. 8.45, Clo-

Operetta in Three Acts (Lehár). In the intervals, Book Review and Announcements. After the Operetta, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Illustrated Talk on Music. 7.0, News. 7.15, Weather Report. 7.25, Le Journal parlé. 8.30, Joan of Arc—Historical Play, with Music by the Station Orchestra. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé and Foreign Press Review. 7.5, Popular Music on Gramophone Records. 7.30, Answers to Correspondence. 7.35, Gramophone Concert (contd.). 8.0, Review of the Week. 8.15, Interval. 8.30, Concert of Music by M. C. Rousseau, played by the Composer. 9.0, Interval. 9.10, Dance Music by the Sonora-Radio Orchestra. 11.0, Dance Music on Gramophone Records. 12 Midnight, Close Down.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Concert by the Radio Paris Orchestra: Hungarian Serenade (Joucières-Roche); Mazurka from Tarass Boulba (Rousseau); Légende ercole (Chapelier); Gipsy Czardas (Michiels); Napoli (Mezzacappa); Cigale et Magali (Casadesus); Donauweibchen (Joh. Strauss); In the Harbour of Port Said (Armandola); Selection from The Princess in the Golden Slippers (Rust); Mexican Serenade, Lisonja (Armandola); Thé dansant chez la Poupee (Rosen); Mendelssohn Fantasia (Foulds); Dans la sierra (Chillemont); Gipsy Festival (Heykens); Norvegienne (Nerini); Tarantella appassionnata (Nollety). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Dance Music by the Radio Paris Orchestra: A Bungalow, a Piccolo and you; I idolise my Baby's Eyes; Mureta; Siempre; Nana, Song of my Heart; La Java des amours; Autumn Waltz; Dites-moi ma mère; Piece (Coates). 7.0, Talk. 7.20, Light Music by the Radio Paris Orchestra: El clavel (Zullueta); Leonora Waltz (Daniderl); Ay, que calor (Silesu); Myrella (Berniaux); Song (Gershwin); El Nino (Silesu); Dengo, Dengo (Farias); Melody (Woltan); Ping Pong (Bozi). 7.45, Commercial Prices, News, and Review of the Latin Press. 8.0, La Roquette—Variety Programme arranged by Francis Carco. 8.30, News and Weather. 8.40, Review by Dorin. 8.45, Le Conservatoire des Petits Poulbots—Sketch (Poulbot and Vasseur); by Poulbot and Billoquet. In the interval at 9.15, Press Review and News. 10.0, Light Music on Gramophone Records.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by WBKX on 48.86 metres and 25.27 metres.—7.30 p.m., Radio Debuts. 8.0, Radio Troubadors, from New York. 8.30, Wealth of Harmony, from New York. 9.0, Teaberry Baseball Scores. 9.5, Dance Masters, from New York. 9.30, Concert Favourites, from New York. 9.55, Teaberry Baseball Scores. 10.0, The United States Government in Pittsburgh—Safety Measures for Water Navigation by H. Layfield. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Hotel Lexington Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, A Recreo by Bill and Alex of the Downtown Y.M.C.A. 11.45, Jack Pettis and his Orchestra. 11.59, Time Signal. 12 Midnight, American Tax Payers' League, from New York. 12.15 a.m. (Sunday), The Townsend Murder Mystery, from New York. 12.30, Atkinson String Ensemble. 12.45, Homey and Old Fashioned Quartet. 1.0, Programme to be announced. 1.15, The Boston Symphony Orchestra, from New York. 3.0, Gilbert and Sullivan Gems, from New York.

PORSCRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava. 5.10, Talk on Economics. 5.20, Czech Lesson for Germans and German Lesson for Czechs. 5.50, Variety Music on Gramophone Records. 6.5, Agricultural

Talk. 6.15, Talk for Workers: Workers in Czech Poetry. 6.25, News in German. 6.30, German Transmission: Musical Programme for Young People. 6.55, News Bulletin. 7.5, Talk on the Czech Language. 7.20, Programme of Literature and Music dedicated to Mothers. 8.0, Ten Songs, Op. 15 (Suk). 8.25, Talk. 8.30, Programme to be announced. 10.15, See Bratislava. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Geneva, 395 kc/s, 760 metres.—6.30 p.m. (from Geneva). Review of New Books. 7.30 (from Geneva). Weather and News. 7.50 (from Geneva). Film Review. 8.0 (from Geneva). Aida—Opera in Four Acts (Verdi). 11.45 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert: Queridam mia (Ricciardi); Serenata (Petrulli); Impressione russa (Ferraris); Melody (Holländer); La leggenda delle e ciliege (Penna); A Villa d'Este (Malvezzi); Melody (Strausky); Twilight (Fondrain); Fantocini (Dolmestek); Signora (Costaguta). 4.30, Children's Radio Review. 4.45, Report of the Royal Geographical Society and Giornale Radio. 5.5, Exchange and Announcements. 5.15, Reading. 5.30 to 6.15, Organ Recital, relayed from the Reale Conservatorio San Pietro a Maiella, Naples; Fantasia and Fugue in G Minor (Bach); Prayer and Choral in A Minor (Cesar Franck); Prelude and Fugue in C Minor (Bach); Toccata and Fugue in C (Bach); Two Pieces (Boschi); (a) Pezzo eroico, (b) Studio sinfonico. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.10, Lesson in Morse. 7.20, Giornale Radio. 8.0, Time, Announcements, and Gramophone Records of Light Music. 8.30, Giornale Radio and Sports Notes. 8.45, Germania—Opera in Four Acts (Franchetti). In the intervals: Talk and Science Review. Giornale Radio after the Opera.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports. 12 Midnight to 3.0 a.m. (Sunday), New York Relay. 12 Midnight, Kalt-nemeyer's Kindergarten. 12.30 a.m., The Economic World To-day. 1.0, Band of Famous Brands. 1.15, Zora Layman and her Debonairs. 1.30, Neighbours—Sketch. 2.0, B. A. Rolfe and his Terraplane Orchestra. 3.0, Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—12.28 p.m., Time Signal from Neuchâtel (Observatory), Weather and News. 12.40 (from Berne), Popular Music on Gramophone Records. 1.35 (from Berne). Weather and Exchange. 1.45 (from Zurich), The Listeners' Quarter of an Hour. 2.0 (from Zurich), Talk on Fridtjof Nansen, the Explorer. 2.30 (from Zurich), Popular Music on Gramophone Records. 3.0 (from Zurich), Talk: The Treatment of Tuberculosis. 3.30 (from Zurich), Talk by Peter Vogler—Gamekeeper. 4.0 (from Zurich), Popular Concert. 4.40, (from Zurich), Chess Lesson. 5.0 (from Zurich), Light Music on Gramophone Records. 5.30, Weather Report. 5.35 (approx.). 6.30, Interval. 6.30 (from Basle), Talk on Marriage. 7.0, Chimes. 7.10, (from Basle), Time, Weather, and Market Prices. 7.15 (from Basle), The Swiss Aviator, Alphonse Breitenbach, tells of his Adventures in India and the Himalayas. 7.45 (from Basle), Concert by the Milan Trio. 8.45 (from Basle), Reading. 9.30, Weather and News. 9.40 (from Basle), Dance Music and Variety Music on Gramophone Records. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Orchestral Concert of Light Music. 5.5, Programme for Children. 5.30, Popular Music on Gramophone Records. 6.30, The Practical Corner. 6.45 (from Östersund), Cabaret Programme. 7.15, Weather and News. 7.30, Concert of Old Dance Music. 8.15, Talk: The Vikings in Normandy. 8.45, Military Band Concert, conducted by Eloy Isakson; Overture, Patrie (Bizet); Norwegian Rhapsody (Svendsen); Suite (Lacocci); Blumensflüster (Blon); Selection from Viktoria and her Hussar (Abraham); March (Kahrman). 9.45, Weather and News. 10.0, Dance Music. 11.0 (approx.), Close Down.

phone Records. 6.30, The Practical Corner. 6.45 (from Östersund), Cabaret Programme. 7.15, Weather and News. 7.30, Concert of Old Dance Music. 8.15, Talk: The Vikings in Normandy. 8.45, Military Band Concert, conducted by Eloy Isakson; Overture, Patrie (Bizet); Norwegian Rhapsody (Svendsen); Suite (Lacocci); Blumensflüster (Blon); Selection from Viktoria and her Hussar (Abraham); March (Kahrman). 9.45, Weather and News. 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Dance Music on Gramophone Records. 2.0, Legal Talk in German. 2.15, Light Music on Gramophone Records. 3.0, Talk in French on Wagner. 3.15 to 4.0, Interval. 4.0, Orchestral Concert, conducted by Maurice de Villers; Airs (Messager); (a) Suite Junambulesque, (b) Selection from La Basoche, (c) Ballet Music from Les deux pigeons; Overture, Cigale et Magali (Casadesus); Foxtrot, Five o'clock (Rayel); Selection from Die Dreigroschenoper (Weill); Suppe Hlusionen (arr. Michaelov); Rhapsody in Blue (Gershwin); Fantasia of Negro Spirituals (Foulds). 6.0, Talk in French on Railway Improvements. 6.15, French Elocution Lessons. 6.30, Light Music on Gramophone Records. 7.15, Agricultural Talk. 7.30, Time and News. 7.45, Gramophone Concert: Selection from Paganini (Lehár); Lehariana (Griger); Waltz Potpourri (Robrecht); Selection from Rose-Marie (Friml). 8.15, Press Review in German and Lottery Results. 8.30, Variety Concert. Part I: Folk Songs by a Madrigal Choir; Part II: French Orchestral Music, conducted by Maurice de Villers, Soloist: Thierry (Songs). Overture, Masaniello (Auber); Ballet Music, Bolero and Tarantella from Masaniello (Auber); Opening Aria from La dame blanche (Boieldieu); Overture, Jean de Paris (Boieldieu); Air from La dame blanche (Boieldieu); Selection from Le postillon de Longjumeau (Adam). In an interval at 9.30 (approx.). Press Review in French. 10.30, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—12.20 p.m., Max Kratz sings Songs to the Lute on Gramophone Records. 12.40, Gramophone Concert of Marches: Erster Stahlfeldm. Bundesmarsch (Blume); Stahlfeldm. Bundesmarsch No. 2 (Seifert); Treu die alten (Schrobitz); Jung (Bornstedt); Stahlfeldm. Marsch No. 2 (Reinhold); Franz Seltte (Blume). 1.0, Folk Music on Gramophone Records. 1.30, Concert from Langenberg. 2.30, Time, News, Weather, and Programme Announcements. 2.45, Readings. 3.10, Concert by a Balalaika Orchestra. 3.30, Programme for Children. 4.30, See Frankfurt. 5.50, Time and Sports Report. 6.0, Talk. 6.20, Adolf Hölzel Programme on the Eightieth Anniversary of his Birth; Talk by Prof. Hans Hildebrandt; Address by Adolf Hölzel. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0 (from Mannheim), Palatinat Dialect Programme. 8.10, Military Band Concert, relayed from Donaueschingen: Grossherzog Friedrich Marsch (Heffel); Waltz, Aus dem Hochwald (Kaulich); Potpourri, Folk Music of the Black Forest (Husadel); Old Bernese March (Schmelting); Potpourri of Swiss Folk Songs (Häuser); Alpenjäger-Marsch No. 9. 9.0, Wenn wir uns wiedersehen—a Musical Folk Play (Hans Albrecht von Weclmar). 10.15, Time, News, Weather, and Programme Announcements. 10.45, See Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmission irregular owing to fire.—7.30 p.m., Music by a Viennese Orchestra. 8.0, Arias from Operas. 8.15, Accordion Solos. 8.30, Balalaika Music and Russian Songs. 8.45, Instrumental Music. 9.0, Extracts from The Mastersingers—Opera (Wagner), followed by Military Music and Songs from Comic Operas. 10.0, Songs from Sound Films. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C., W. Brown-Constable announcing. 11.30, Musical Comedy Programme. Selection from The Gipsy Princess (Kálmán); Waltz, Künstler leben (Joh. Strauss); Waltz, The Blue Danube (Johann Strauss); Selection from The Countess Maritza (Kálmán);

Selections from Casanova (Lincke); Selection from Floradora (Stuart). 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Sunday), Operetta Music. 12.15, Orchestral Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—6.35 (ill) Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—6.35 p.m., Giornale Radio and Agricultural and Dopolavoro Notes. 7.0, Time, Tourist Report and Gramophone Records of Light Music. 7.20, Giornale Radio. 7.45, Gramophone Records (contd.). 8.0, Announcements, Giornale Radio, Weather and Popular Music on Gramophone Records. 8.30, Talk: Events and Problems. 8.45, Fior di noce—Operetta in Three Acts (Giuseppe Blane). In the intervals, Review of Books, Announcements and Giornale Radio. After the Operetta, Dance Music from Florence.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 254.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.35 p.m., May is Here—Concert by the Viennese Male Voice Quartet and the Karl Eisele Orchestra. Soloist: Maria Gerhart (Soprano). Unter der lachenden Sonne (Eisele); Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss); Rüstele of Sprung (Studing); Spring Serenade (Lacombe); Wanderlied (Hilnak); Quartet: Ich lieb so gern im grünen Gras (Martin); Waltz, O schöner Mai (Jos. Strauss); Frühling ist es wieder (Engel-Berger); Ja, der Himmel über Wien (R. Fall); Selection from Frühlingsluft (Jos. Strauss-Reiterer); Waltz, Wien im Frühling (Polm); Bienenhilfsmarsch (Schneider). 6.50, Talk: Moons. 7.20, The Maxin. 7.25, Time, Weather, Sports Notes and Programme Announcements. 7.35, Harpsichord Recital by Algeo Ehlers; English Suite in A Minor (Bach); Fugue (Pachelbel); Toccata in G (Bach); Le coucou (Daquin); Le rappel des oiseaux (Rameau); The Hunt (Camponi). 8.15, Mutter von Berg—Play in Three Acts (Ludw. Vollmer). 9.40, News, Weather and Announcements. 9.55, Concert by the Gaubberger Orchestra; Overture, Eine Nacht in Venedig (Joh. Strauss); Waltz, Ein Walzer aus Wien (German); Ziehler Potpourri, so schön wie's einmal war (Dauber); Polka, Stadtparkfreuden (Lilienau); Song, Traumersehnte süsse Frau (Loewe-Jascha); Spanish Serenade (Welsor); Waltz, St. Hubertus (Gaubberger); Potpourri, Wien bei Nacht (Kouzak).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.7 a.m., Time Signal and Fantare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Light Music on Gramophone Records. 1.10, Weather Report. 1.15, Programme for Schools from Lwow, 778 kc/s, 381 metres. 3.10, News and Economic Report. 3.25, Answers to questions on military affairs. 3.35, Programme for Children. 4.0, Light Music on Gramophone Records. 4.40, Talk: A Journey to Lisbon. 5.0, Programme for Invalids. 5.30, News. 5.40, Topical Talk. 5.55, Programme Announcements. 6.0, Divine Service, relayed from the Chapel of the Virgin at Czenstochowa. 7.0, Miscellaneous Items. 7.20, Talk on Gardening. 7.30, Topical Talk. 7.40, Radio Journal. 8.0, Orchestral Concert of Light Music, conducted by St. Nawrocki Soloist; M. Fogg (Songs); Overture, Pique Dame (Suppe); Waltz, Künstlerleben (Joh. Strauss); Songs; Suite (Fletcher); Narcissus (Neyin); English Waltz (Wiedler); Songs; Selection from The Gipsy Princess (Kálmán); Two Pieces (Leoncavallo); Waltz, Gold and Silver (Lehár); Algerian Scene (Kettelhey); Soirée solennelle à Hayave (Filippucci); Marche des Journalistes (Wronski). In the interval, Sports Notes and Radio Journal. 10.5, Chopin Recital by Nicola Orloff. 10.40, Talk. 10.55, Weather Report and Police Notes. 11.0, Dance Music from the Bodega Dance Hall. In the interval at 11.30, News items for the Members of the Polish Polar Expedition.

ZURICH.—See Schweizerischer Landessender.

Printed for the Publishers, LIFFE & SONS LTD., Dorset House, Stamford Street, London, S.E.1, by The Cornwall Press Ltd., Paris Garden, Stamford Street, London, S.E.1.

UNITED STATES—The International News Co., 131, Varick Street, New York. FRANCE—W. H. Smith & Son, 248, Rue Rivoli, Paris; Hachette et Cie., Rue Réaumur, Paris. BELGIUM—W. H. Smith and Son, 71-75, Boulevard Adolphe Max, Brussels. INDIA—A. H. Wheeler & Co., Bombay, Allahabad and Calcutta. SOUTH AFRICA—Central News Agency, Ltd. AUSTRALIA—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania). CANADA—The American News Co., Ltd., Toronto, Winnipeg, Vancouver, Montreal, Ottawa, St. John, Halifax, Hamilton; Gordon & Gotch, Ltd., Toronto; Imperial News Co., Toronto, Montreal, Winnipeg, Vancouver, Victoria. NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch and Dunedin.



Worthy of reflection

There's no doubt but that the long life and permanent high efficiency of Westinghouse Metal Rectifiers merits your favourable consideration.

WESTINGHOUSE METAL RECTIFIERS

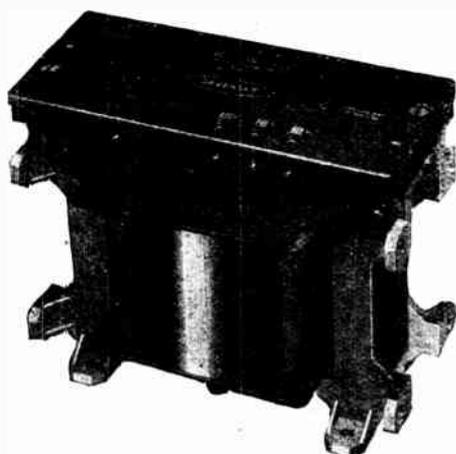
The Westinghouse Brake & Saxby Signal Co., Ltd., 82, York Road, King's Cross, London, N.1

DAVENSET AUTO-TRANSFORMERS

with **HIGH OUTPUTS** at **LOW PRICES**

FREE

Write for a copy of "Mains Transformers and Power Smoothing Chokes for Radio and Industrial Purposes."



DAVENSET Engineers have produced High Output Transformers at extremely Low Prices. NO SACRIFICE IN QUALITY HAS HOWEVER BEEN MADE. DAVENSET add to their comprehensive range of double-wound transformers, a further series of Auto-Transformers, designed with Universal Inputs of 200-250 volts, 40/100 cycles, and with Outputs of 100/110 volts.

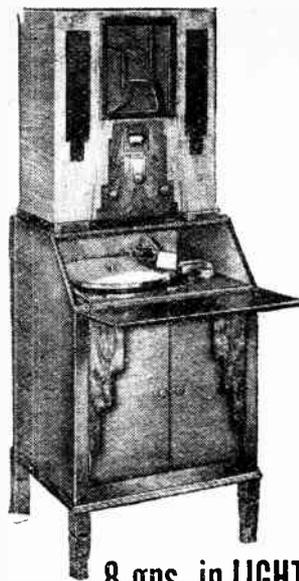
Lat. No.	Max. Loading	Retail Price
18	35 Watts	17 6
19	75 "	22 6
20	150 "	30 -
21	350 "	50 -

DAVENSET Transformers are manufactured to your own specific requirements, whilst our Technical Department is always at your service to advise and suggest the simplest, yet most practical schemes for overcoming your transformer or rectification problems.

PARTRIDGE, WILSON & CO.

Dept. 29, Davenset Works, Leicester.

Scottish Branch: 200, St. Vincent Street, Glasgow, C.2.



your present set

plus APOLLO Playing Desk

equals a fine Radio-Gram

8 gns. in LIGHT, MEDIUM or DARK WALNUT

TO MATCH VARIOUS SETS

Size of top, 18 x 11 1/2 in.

As illustrated, with Collaro Induction motor, and pickup, automatic current stop, volume control, Record cupboard—8 gns. or 12 payments of 15/6. Cabinet only, without motor or pickup, £3.15.0. Also supplied fitted with **GARRARD AUTOMATIC RECORD CHANGER** and volume control complete, £15.5.0. Table Models: Electric, £5.17.6; Spring, £4.4.0.

APOLLO PLAYING DESKS

Ask your Radio Shop, or write to—

APOLLO GRAMOPHONE CO., LTD.,
4-5, Bunhill Row, London, E.C.1.

Look for the 'SCRUIT' Man

the sign of

EFFICIENCY



—and the mark of the finest British Made Electrical Wiring Connectors.

"SCRUIT" Midget and Normal Connectors mean efficiency, speed, safety and simplicity in electrical wiring.

Stocked by all principal wholesalers and factors, or write direct to the manufacturers for samples.

V.G. MANUFACTURING CO. LTD.

GORST RD., PARK ROYAL, LONDON, N.W.10.

Willesden 1632.

SCRUIT

NORMAL & MIDGET CONNECTORS

62PM - 67'6



BLUE SPOT Speakers have been famous for years as the best that money can buy. The **NEW MOVING COIL SPEAKERS** are in the best Blue Spot tradition—designed with foresight and intelligence, manufactured with scrupulous care and sold because they give results unequalled by any other make.

The cabinet model illustrated is 62PM—obtainable in walnut or mahogany. The movement is Blue Spot 45PM. Pleasing in appearance this speaker gives a magnificent response on all frequencies. Never has reproduction achieved so startling a degree of reality, each note and word falling on your ear in perfect harmony and with complete fidelity. There is no variation in the excellence of the tone values. Top, middle and low notes are all perfectly reproduced. In this and other Blue Spot Cabinet Moving Coil Speakers particular attention has been paid to acoustic properties.

The movement is mounted on a separate baffle which is then specially fitted in the cabinet, giving much improved reproduction.

Write for catalogue No. W.W.73.S **Price 67'6**



New BLUE SPOT PICK-UP

Model 33

Brings out the true value of your gramophone records and makes the music alive and real. You can never realise how marvellously beautiful recorded music can be until you hear it reproduced with the aid of this exceptional Pick-Up. Almost complete absence of all surface noise and needle scratch. Complete with wire wound volume control.

Price 35'-

THE BRITISH BLUE SPOT COMPANY LTD

BLUE SPOT HOUSE · 94/96 ROSOMAN STREET · ROSEBURY AVENUE · LONDON · E C 1
 Telephone: Clerkenwell 3570. Telegrams: "Bluospot, Isling, London."
 Distributors for Northern England, Scotland and Wales: H. C. RAWSON (Sheffield and London), Ltd.,
 200 London Road, Sheffield; 22 St. Mary's Parsonage, Manchester; 177 Westgate Road, Newcastle-upon-
 Tyne; 37, 38, 39 Clyde Place, Glasgow.

**NEW
MOVING
COIL
SPEAKERS**

45 PM - 45'-

Speaker chassis without cabinet as illustrated below.

22 PM - 45'-

A handsome cabinet speaker in oak with new 29PM movement giving splendid reproduction.

29 PM - 32'6

Speaker chassis only.

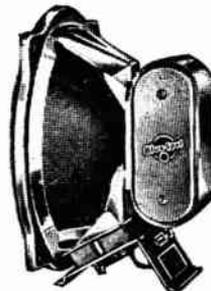
32 PM - 87'6

The most wonderful cabinet speaker ever made. The famous 99PM movement ensures a performance of the most outstanding quality.

99 PM - 59'6

Speaker chassis only.

Write for Catalogue No. W.W.73.U



4^D

The Wireless World

THE PRACTICAL RADIO JOURNAL

with

Complete Foreign Programmes

Friday, May 12th, 1933.

**HIGH TENSION
FOR
NEXT TO
NOTHING**

Ask your dealer for BURTON All-Mains Units, or write for List to the makers—
C. F. & H. BURTON,
Progress Works,
WALSALL.



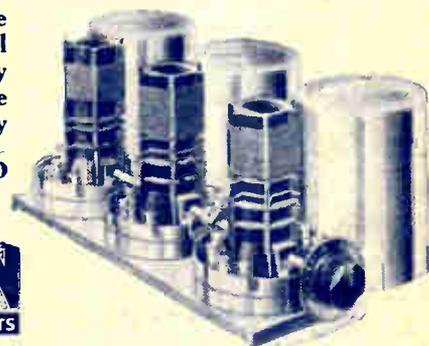
**BURTON ALL-MAINS
UNITS**

Why spend money on H.T. Batteries when you can run your set through a BurTon ALL-MAINS Unit with practically no increase in your Electric Supply account. No mains 'Hum' and your set permanently at peak of perfection. A.C. Models from £2-12-6. D.C. Models from £1-8-6. Trickle Charger £1-18-0.

TELSEN SUPERHET COILS

TYPE No. S.330

Specified for the W. W. Mondial Super Battery Receiver. The ideal coils for any superhet 25'6 circuit.



TELSEN
RADIO COMPONENTS

Announcement of the TELSEN ELECTRIC CO. LTD., ASTON, BIRMINGHAM

D.C.
AND
A.C.
AMPS
VOLTS
OHMS

EVERY TEST

WITH **ONE**
COMPLETE INSTRUMENT



The Avometer is the only complete testing instrument which gives direct readings in amps, volts and ohms without the necessity for mathematical calculations. It is indispensable to the Service men of leading radio manufacturers as the only instrument that adequately meets their needs.

Two models, one for D.C. only, 8 GNS. and the Universal Avometer giving both D.C. and A.C. readings (50 cycles) 12 GNS. Deferred Terms if desired.

Illustrated Pamphlet post free.

The **AVOMETER**

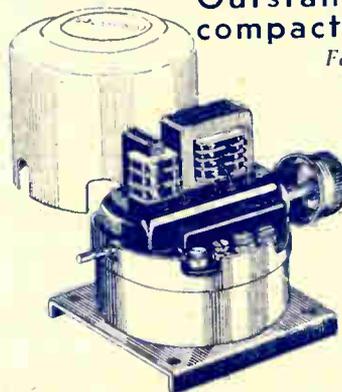
BRITISH MADE

AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD., Winder House, Douglas Street, London, S.W.1
Telephone: Victoria 3405-7.

COLVERN FERROCART COILS

Outstanding selectivity
compactness & efficiency

Following Types now available



Type F1, F2. Input Band-pass filter. Constant selectivity, ganging unaffected by variation in aerial reactance, symmetrical resonance curve.

Type F3. Auto transformer inter-valve coupling with reaction, ganging perfectly maintained on both wave ranges by transfer of tapping point in correct turns ratio, practically constant reaction.

Price: Types F1, F2, F3, mounted on sub-base, ganged wave change switches, 50/- per set.

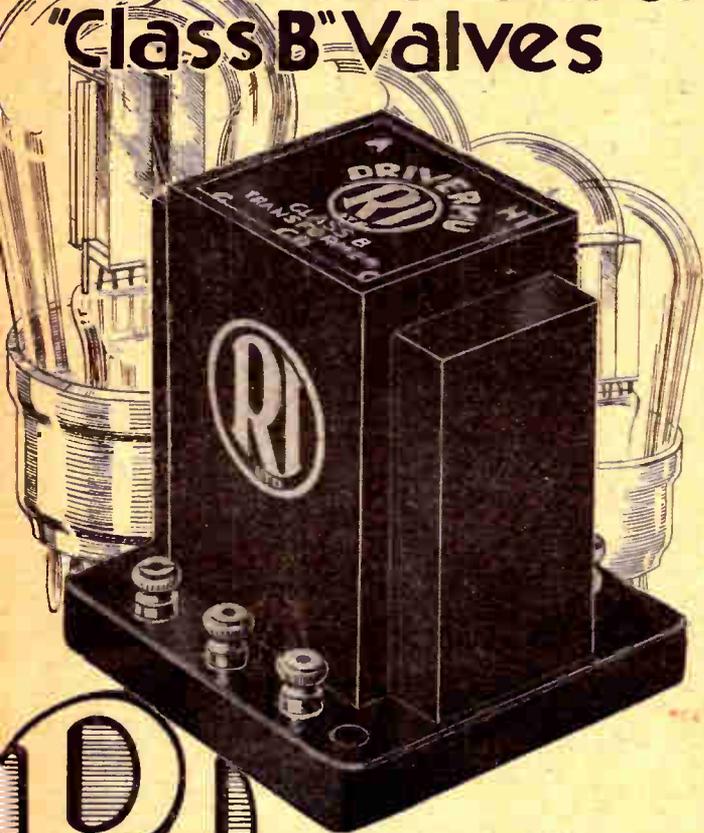
Made under licence from the Patentee—Hans Vogt.

COLVERN LTD.,

ROMFORD, ESSEX.

London Wholesale Depot: 150, King's Cross Road, W.C.1

The **DRIVERMU** gives the best out of "Class B" Valves



'DRIVERMU' CLASS B TRANSFORMERS & 'CLASS B' OUTPUT CHOKE

every "Class B" valve, for every loudspeaker, and for any output may desire, there is the correct R.I. "Drivermu" transformer and Choke to give you to the full all the amazing advantages of "Class B" amplification. R.I.—who have made transformers acknowledged to be the world's best in every valve development for the past eleven years—spent months of comprehensive research in collaboration with the valve manufacturers, before they produced the "Drivermu" series of transformers and chokes which cover every present and future application of "Class B."

R.I. DRIVERMU TRANSFORMERS.

Models DY39, DY41 and DY42 are shown. Models DY37 and DY38 not in bakelite case.

List No.	RATIOS		PRICE Royalty 1/6 extra
	Total	Per Second y	
37	1:1 & 1.5:1	2:1 & 3:1	15/-
38	2:1 & 2.5:1	4:1 & 5:1	15/-
39	1:1	2:1	11/-
41	2:1	4:1	11/-
42	1.5:1	3:1	11/-

R.I. CLASS B BROCHURE with this subject in the easy to understand and comprehensive way—it contains valuable tables enabling constructors to choose the correct transformer, choke and valve for any desired output, diagrams, showing how to apply "Class B" to new set and conversion of existing battery receivers. Write your dealer for a copy, or for the coupon.

"CLASS B" FOLDER FREE

Post this coupon in 1/2d. stamped unsealed envelope to R.I. Ltd., Croydon, Surrey.

Name.....

Address.....

WW

Radio Instruments Ltd., Croydon, Surrey.

ETA TRAFFIC SIGNALS



FOR your safety, protection and satisfaction all ETA valves are now sold with a distinctive label on the ends of the cartons. The colour and shape of these labels make it impossible for you to purchase the wrong type of valves in error.

A square label, for example, denotes a Battery 2-volt valve, a triangular label tells you that the valve inside is a directly heated Mains Valve. Furthermore, if the label is Blue, an H.F. valve is denoted; if Yellow, a screen grid valve—and so on. Thus a square yellow label indicates a screen grid battery valve. Ask your dealer to show you this ingenious new method of marking, and refuse to accept any ETA valve the carton of which does not carry one of the new labels.

ETA Valves are the best that money can buy. You may pay more, but you can get no better service.

THE ELECTRICAL TRADING ASSOCIATION LTD.,
ALDWYCH HOUSE, ALDWYCH, W.C.2.

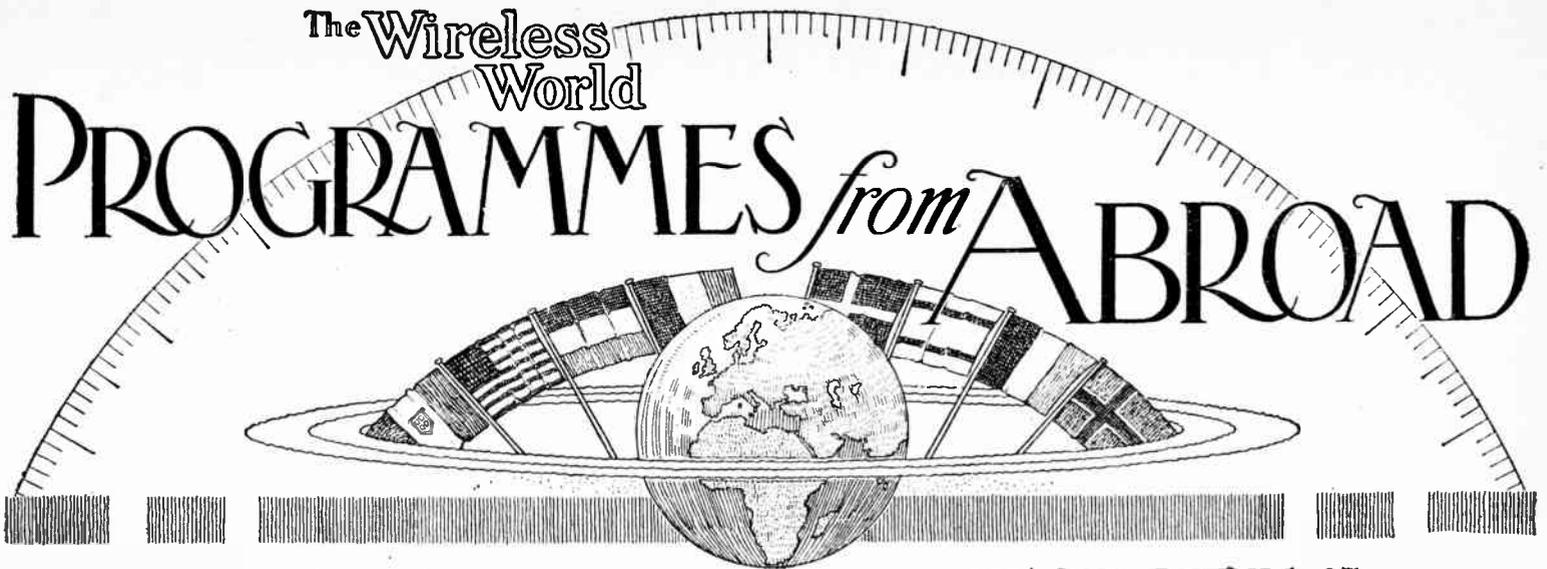
SCOTTISH AGENTS:
RADIOVISION LTD., 233, St. Vincent St., Glasgow, C.2.

Player's
Please
Everybody



N.C.C. 145C

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania) .. .. .	.....	453.2	662	0.25	Agen (France) .. .. .	.....
1875	160	8.5	Huizen (Holland) .. .. .	.....	453.2	662	7	Milan (<i>Experimental Relays Rome</i>) .. .. .	.....
1796	167	40	Lahti (Finland) .. .. .	.....	450.3	666	20	Madona (Latvia) .. .. .	.....
1725	174	75	Radio Paris, C.F.R. .. .. .	.....	447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Bjukan (0.15 kW.); Notodden (0.08 kW.) (Norway) (<i>relays Oslo</i>) .. .. .	.....
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m.) .. .. .	.....	441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.) .. .. .	.....
1554.4	193	30	Daventry National .. .. .	.....	435.4	689	55	Stockholm, SASA (Sweden) .. .. .	.....
1538	195	7	Ankara (Angora) (Turkey) .. .. .	.....	430.4	697	2.5	Belgrade (Yugoslavia) .. .. .	.....
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia) .. .. .	.....	424.3	707	2	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>) .. .. .	.....
1448	207.5	13	Eiffel Tower, FL, Paris .. .. .	.....	424.3	707	100	Moscow, Imini Stalina (Russia) .. .. .	.....
1412	212.5	120	Warsaw 1 (Poland) .. .. .	.....	419.5	715	1.5	Berlin, No. 1, Witzleben (Germany) .. .. .	.....
1380	217.5	100	Novosibirsk, RV6 (Russia) .. .. .	.....	416.4	720.5	5	Rabat (Morocco) .. .. .	.....
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	413	725	60	Athlone (Irish Free State) .. .. .	.....
1304	230	100	Moscow, WZSPS (Trade Union) (Russia) .. .. .	.....	408.7	734	16	Katowitz (Poland) .. .. .	.....
1275	235	0.5	Tunis-Kasbah (Tunisia) .. .. .	.....	403.8	743	25	Sottens (Radio Suisse Romande) (<i>Switzerland</i>) .. .. .	.....
1230	244	0.8	Boden (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	398.9	752	25	Midland Regional .. .. .	.....
1200	250	5	Stamboul (Turkey) .. .. .	.....	394.2	761	12	Bucharest (Roumania) .. .. .	.....
1200	250	21	Reykjavik (Iceland) .. .. .	.....	389.6	770	120	Leipzig (Germany) .. .. .	.....
1190	252	200	Luxembourg (<i>Testing</i>) .. .. .	.....	385.1	779	8	Toulouse (Radiophonie du Midi) (France) .. .. .	.....
1170	256	25	Tashkent, RV11 (Russia) .. .. .	.....	385.1	779	10	Stalino, RV26 (Russia) .. .. .	.....
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>) .. .. .	.....	381	788	16	Lwow (Lemberg) (Poland) .. .. .	.....
1117	268.5	40	Moscow, Popoff RV58 (Russia) .. .. .	.....	376.4	797	50	Scottish Regional (Falkirk) .. .. .	.....
1083	277	60	Oslo (Norway) .. .. .	.....	372.2	806	1.5	Hamburg (Germany) .. .. .	.....
1071	280	35	Tiflis, RV7 (Russia) .. .. .	.....	370.1	810.5	0.8	Radio, L.L. Paris .. .. .	.....
1035	290	36	Kiev, RV9 (Russia) .. .. .	.....	368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Hel- sinki (10 kW.) (Finland) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia) .. .. .	.....
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.) .. .. .	.....	365.8	821	0.7	Fredrikstad (Norway). (<i>Relays Oslo</i>) .. .. .	.....
938	320	20	Kharkov, RV4 (Russia) .. .. .	.....	364.1	824	1	Bergen (Norway) .. .. .	.....
857	350	100	Leningrad (Russia) .. .. .	.....	363.6	825	13	Algiers (Algeria) .. .. .	.....
840	357	18.5	Budapest (Hungary) .. .. .	.....	360.6	832	60	Mühlacker (Stuttgart) (Germany) .. .. .	.....
825	363.6	50	Sverdlovsk, RV5 (Russia) .. .. .	.....	355.9	843	50	London Regional (Brookmans Park) .. .. .	.....
770	389	0.6	Ostersund (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>) .. .. .	.....
760	395	1.3	Geneva (Switzerland). (<i>Relays Sallens</i>) .. .. .	.....	348.8	860	7.6	Barcelona, EAJ1 (Spain) .. .. .	.....
720	416.6	20	Moscow, RV2 (Experimental) (Russia) .. .. .	.....	348.8	860	10	Leningrad, RV70 (Russia) .. .. .	.....
690	434.6	1.5	Oulu (Uleaborg) (Finland) .. .. .	.....	345.2	869	11.5	Strasbourg, PTT (France) .. .. .	.....
680	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>) .. .. .	.....	341.7	878	35	Brno (Brunn) (Czechoslovakia) .. .. .	.....
574.7	522	0.7	Hamar (Norway). (<i>Relays Oslo</i>) .. .. .	.....	338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>) .. .. .	.....
574.7	522	7	Ljubljana (Yugoslavia) .. .. .	.....	335	896	5	Cadiz (Spain) .. .. .	.....
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>) .. .. .	.....	334.4	897	1.9	Poznan (Poland) .. .. .	.....
568.1	528	2	Grenoble (France) .. .. .	.....	331.5	905	50	Milan (Italy). (<i>Relays Turin</i>) .. .. .	.....
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>) .. .. .	.....	328.2	914	60	Poste Parisien (France) .. .. .	.....
563	533	16	Wilno (Poland). (<i>Relay Station</i>) .. .. .	.....	325	923	60	Breslau (Germany) .. .. .	.....
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>) .. .. .	.....	321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>) .. .. .	.....	318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>) .. .. .	.....
558.8	537	1	Tampere (Finland). (<i>Relays Helsinki</i>) .. .. .	.....	318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>) .. .. .	.....
550	545	18.5	Budapest No. 1 Lakihegy (Hungary) .. .. .	.....	315.8	950	1.6	Marseilles, PTT (France) .. .. .	.....
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>) .. .. .	.....	312.8	959	1.7	Cracow (Poland) .. .. .	.....
537.6	558	3	Palermo (Italy) .. .. .	.....	312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>) .. .. .	.....
533	563	60	Munich (Germany) .. .. .	.....	309.9	968	1	Cardiff .. .. .	.....
525	571	15	Riga (Latvia) .. .. .	.....	309.9	968	50	West Regional (<i>Reception Tests 11.10— 11.50 a.m.</i>) .. .. .	.....
517	580	15	Vienna (Rosenhügel) (Austria) .. .. .	.....	312.8	959	0.7	Radio Vitis (Paris). (S.-W. Stn. on 43.75 m.) .. .. .	.....
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>) .. .. .	.....	307	977	0.75	Zagreb (Yugoslavia) .. .. .	.....
500.8	599	20	Florence, IF1 (Italy). (<i>Relays Turin</i>) .. .. .	.....	304	986	13	Bordeaux Lafayette, PTT (France) .. .. .	.....
495.8	605	1.2	Trondheim (Norway) .. .. .	.....	301.5	995	50	North National (Manchester) .. .. .	.....
488.6	614	120	Prague, No. 1 (Czechoslovakia) .. .. .	.....	298.8	1004	11	Tallinn (Estonia) .. .. .	.....
480	625	50	North Regional (Manchester) .. .. .	.....	296.1	1013	20	Hilversum (Holland). (7 kW. before 4.40 p.m.) .. .. .	.....
472.4	635	60	Langenberg (Germany) .. .. .	.....	293.5	1022	0.7	Limoges, PTT (France) .. .. .	.....
465.8	644	1.5	Lyons la Doua, PTT (France) .. .. .	.....	293.5	1022	2.6	Kosice (Czechoslovakia) .. .. .	.....
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland) .. .. .	.....	291	1031	10	Viipuri (Viborg) (Finland). (<i>Relays Helsinki</i>) .. .. .	.....
			San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrund (0.7 kW.) (<i>relays Oslo</i>); Tromsö (0.1 kW.) Bodö (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>) .. .. .	.....	288.3	1040	50	Scottish National (Falkirk) .. .. .	.....
				.....	288.3	1040	1	Bournemouth (<i>Relay Station</i>) .. .. .	.....

BROADCASTING STATIONS ABROAD

(In Order of Wavelength).

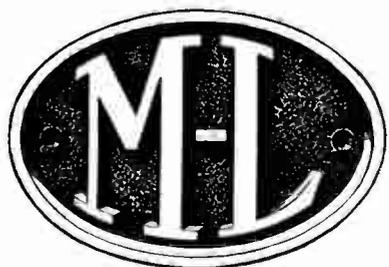
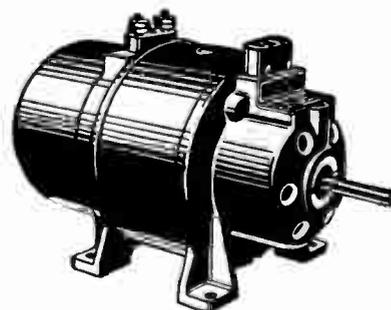
Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
287.3	1022	0.7	Lyons (Radio-Lyon) (France)		244.1	1229	0.5	Basle (Switzerland). (Relays Beromünster)	
283.6	1058	0.5	German Relays (Berlin, Magdeburg, Stettin)		242.3	1238	1	Belfast (N. Ireland)	
283.6	1058	0.5	Innsbruck (Austria). (Relays Vienna)		240.6	1247	0.5	Stavanger (Norway)	
282.2	1063	2	Lisbon CT 1AA (Portugal). (Short-wave Station on 31.25 m.)		238.9	1256	2	Nürnberg (Germany). (Relays Munich)	
					238	1260	1	Nimes (France)	
281.2	1067	0.75	Copenhagen (Denmark)		237.2	1265	3	Bordeaux, Sud-Ouest (France)	
278.8	1076	13.5	Bratislava (Czechoslovakia)		235.5	1274	0.5	Kristiansand (Norway)	
276.5	1085	60	Heilsberg (Germany)		235	1283	1.65	Lodz (Poland). (Relay Station)	
273.7	1096	7	Turin (Italy)		232.2	1292	0.25	Kiel (Germany). (Relays Hamburg)	
271.5	1105	1.3	Rennes, PTT (France)		230.6	1301	—	Swedish Relay Stations. (Malmö, Norrköping, Karlstad and Trollhättan).	
269.8	1112	20	Bari (Italy)						
269.8	1112	0.25	Bremen (Germany). (Relays Hamburg)		227.4	1319	0.5	Flensburg (Germany). (Relays Hamburg)	
267.6	1121	1.5	Valencia (Spain)		225.9	1328	10	Fécamp, Radio-Normandie (France)	
265.8	1128.5	1.3	Lille, PTT (France)		224.4	1337	1	Cork (Irish Free State)	
263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)		222.9	1346	0.15	Huddiksvall (Sweden)	
261.5	1147	50	London National (Brookmans Park)		219.9	1365	1.5	Béziers (France)	
259.3	1157	17	Frankfurt-a.M. (Germany)		218.5	1373	0.2	Plymouth	
259.3	1157	2.3	Trier (Germany). (Relays Frankfurt)		218.5	1373	0.5	Salzburg (Austria). (Relays Vienna)	
257.1	1167	10	Hörby (Sweden). (Relays Stockholm)		217	1382	0.5	Königsburg (East Prussia) (Germany)	
255.1	1176	0.7	Toulouse, PTT (France)		217	1382	0.25	Karlstad (Sweden)	
253.1	1185	5	Gleiwitz (Germany). (Relays Breslau)		215.6	1391	0.1	Brussels, Radio-Clatelineau (Belgium)	
252	1193	1	Barcelona, EAJ 15 (Assoc. Nat.) (Spain)		215.6	1391	0.2	Halmstad (Sweden)	
249.6	1202	0.8	Juan-les-Pins, Nice (France)		214.3	1400	1	Aberdeen	
247.7	1211	10	Trieste (Italy). (Relays Turin)		211.3	1420	1	Newcastle	
245.9	1220	0.12	Swansea		209.8	1430	1.25	Magyarovar, Miskolez and Pees (Hungary)	
245.9	1220		Berne (0.5kW.) (Switzerland)(relays Beromünster); Eskilstuna (0.2 kW.), Sittfe (0.4 kW.) (Sweden) (relays Stockholm); Cassel (0.25 kW.) (Germany) (relays Frankfurt); Linz (0.5 kW.) (Austria) (relays Vienna); Pietarsaari (0.5 kW.), Turku (Abo) (0.5 kW.) (Finland) (relays Helsinki); Schaarbeek (0.1 kW.) (Belgium).		207	1450	0.15	Boras (Sweden)	
					206	1460	0.2	Ornsköldsvik (Sweden)	
					204.1	1470	0.2	Gävle (Sweden)	
					202.7	1480	0.25	Kristineham (Sweden)	
					201.3	1490	0.25	Hälsingborg (Sweden)	
					195	1530	0.2	Karlskrona (Sweden)	

NOW is the time to improve your PUBLIC ADDRESS EQUIPMENT!

Ensure a consistently reliable H.T. Supply by fitting an M-L Rotary Transformer.

(FREE FITTING TO YOUR P.A. VAN AT OUR WORKS)

Gives a constant output and is highly efficient. Works from 12 or 24v. Accumulator or from D.C. Mains. Weighs only 12 lbs. Takes up very little space. Standard models give 300v. 120m.a.; 400v. 150m.a.; 400v. 250m.a., etc.



Also D.C. to A.C. Models to work from 12 or 24v. Accumulator or D.C. Mains, giving an A.C. output of 230v., 50c. (No extra charge for fitting any model to your P.A. Van at our works.)

ROTARY TRANSFORMERS

★ Write for full details, post free, stating your requirements. Also particulars of "M-L" Anode Converters, the only type exclusively adopted and recommended by the makers of McMichael, Eddystone, Geophone, Philips, Peto-Scott, Mavox, Pegasus and Faraday Short Wave Receivers. ★

ROTAX LIMITED, RADIO DEPT. 1, WILLESDEN, LONDON, N.W.10.

FOREIGN SUNDAY PROGRAMMES

MAY THE FOURTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Welsh service from Lampeter. Service from St. Martin-in-the-Fields.
LONDON REGIONAL "Much Ado About Nothing," by Shakespeare. Orchestral concert.
MIDLAND REGIONAL Chopin pianoforte recital.
WEST REGIONAL Service from Soar Welsh Independent Church, Lampeter.

ABROAD

BERLIN (Deutschland-sender) 8 p.m. Popular concert.
BRUSSELS (No. 2) 8 p.m. The Station Symphony Orchestra, conducted by A. Meulemans.
BUDAPEST 5 p.m. The Concert Orchestra, conducted by N. Zsolt.
COPENHAGEN 10.25 p.m. Concert of Italian music by the Radio Orchestra.
HAMBURG 8 p.m. Symphony concert by Unemployed Musicians and the Hanover Teachers' Choral Society (relayed from Hanover).
HEILSBURG 8.30 p.m. Concert of German operatic music.
HILVERSUM 9.40 p.m. Song recital by Richard Tauber.
HUIZEN 8.55 p.m. Johann Strauss concert.
LANGENBERG 8 p.m. The Station Orchestra, conducted by Busch-kötter.
STOCKHOLM 5.30 p.m. Schubert and Brahms song recital.
TOULOUSE 10.30 p.m. Programme in English by the I.B.C.
TURIN 9 p.m. Opera: "Falstaff" (Verdi), from the Politeama Fiorentino (relayed by Florence, Genoa, Milan, Rome, and Trieste).
WARSAW 9.25 p.m. The Station Orchestra, conducted by J. Oziminski.

ATHLONE
 725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal. 8.31, J. J. O'Reilly's Instrumental Trio. 8.50, Poor Old Sam—A Pastoral Farce in One Act (F. M. Howard), by The Mystics. 9.20, Pipe and Fiddle Duets, by S. MacAonghusa and F. O'Higgins. 9.35, Mezzo-Soprano Solos by Gertrude Mortimer. 9.50, Lecture Recital by Carl Hardebeck. 10.20, Instrumental Trio Music. 10.45, Pipe and Fiddle Duets. 11.0, Time Signal, News, Weather Report and Close Down.

BARCELONA (EAJ1), 860 kc/s, 348.8 metres; 8 kW.—12 Noon, Chimes from the Cathedral and Weather Forecast. 12.15 p.m., Concert by the Municipal Band, conducted by J. Llanote de Grignon, relayed from the Palacio de Bellas Artes. 2.0, Light Music on Gramophone Records. In the interval at 2.30, Theatre Notes. 3.0, Film Review and Sextet Concert. 4.0, Programme for Hospitals and other Benevolent Institutions, with Gramophone Records. 5.0 to 6.30, Interval. 6.30, Agricultural Talk in Catalan. 7.0, Concert by the Station Orchestra. 7.30, Song Recital by Pepita Panlet. 8.0, Concert by the Station Orchestra. Soloist: Ricardo Fusté (Baritone). Prelude (Casademont). Baritone Solos: (a) Song (Hahn), (b) The Two Grenadiers (Wagner); Andante cantabile (Tchaikovsky); Dance from Arius VIII (German). Baritone Solos: (a) Hery from The Seasons (Haydn), (b) Brindis (Moya). Polonaise (Dvorák). 9.0, Dance Music relayed from Hollywood Bar. 10.0, An Opera on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.), Close Down.

BARI
 1,112 kc/s, 269.8 metres; 20 kW.—5.30 p.m., Agricultural Talk. 11.5, Sacred Music relayed from the Church of St. Dominic. 11.30, Bible Reading. 1.0 p.m., Giornale Radio. 1.10 to 2.15, Popular Music on Gramophone Records. In the intervals at 1.55, Weather, and at 2.0, Time and Announcements. 5.30 to 6.30, Popular Music on Gramophone Records. 8.0, Sports Notes and Giornale Radio. 8.30, Time and Announcements. 8.35 (approx.), Concert of Operetta Music and Songs. 10.30, Variety Music on Gramophone Records. 10.55, News.

BASLE—See Schweizerischer Landessender.

BERLIN DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.5 p.m., Concert from Hamburg. In the interval at 12.55, Time Signal. 2.0, Demonstration of the Large Families Association, relayed from the Kriegervereinshaus. Programme of Addresses and Music. 3.0, Talk: Germans who fought in the War in a Flight from the Cape to the Suez Canal. 3.30, Concert from Heilsberg. 4.30, Talk: The Maypole and Maypole Dances. 5.0, Concert from Breslau. 6.0, Historia Sacra—a Radio Report from Old Parish Registers of the Mark District. 6.40, Plute Recital: Sonata in F (J. C. Bach); Suite, Op. 160 (Gustav Lazarus); Ffötte (Franz Pflowski). 7.0, Transmission for all German Stations. Programme dedicated to German Mothers. 8.0, Popular Concert, conducted by Richard Richter, Josef Eibenschütz, Horst Platen and Adolf Secker, relayed from the Musikhalle, Hamburg. Soloists: Helene Guhl, Erna Kroll-Lange, Eva Schlee, Erwin Bolt, Herbert Ernst Groß and Bernhard Jackschlath (Songs). Leonora Overture No. 3 (Beethoven); Quartet from Fidelio (Beethoven); Overture, Oberon (Weber); Aria: Roll on thou mighty Ocean, roll from Oberon (Weber); Quintet from The Mastersingers (Wagner); Overture, Tannhäuser (Wagner); Overture, William Tell (Rossini); Duets: Love is the Light of the Soul, from Rigoletto (Verdi); Prelude to Hansel and Gretel (Humperdinck); Divine Aida, from Aida (Verdi); Second Hungarian Rhapsody (Liszt). 10.0, Weather, News and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.5 p.m., Concert from Hamburg. 12.55, Portrait of a Mother (Joseph Wittig). 1.5 to 2.0, Concert from Hamburg (cont'd.). 3.0, Between Town and Country—a Survey of a Model Garden City (arr. Gustav Bellin). 3.30, Portrait of a Mother (Heinrich Lersch). 3.40, Orchestral Concert, conducted by Eugen Sonntag. 5.0, Portrait of a Mother (Agnes Miegel). 5.10, Concert (cont'd.). 6.0, Portrait of a Mother (Hans Friedrich Blunck). 6.10, Mothers and Sons—a Radio Sequence (G. Randolph-Schmalhauer). 6.50, Portrait of a Mother (Josef Magnus Wehner). 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Munich. 8.0, Announcements. 9.5, Concert by the Berlin

Wireless Orchestra, conducted by Etti Zimmer. Die Flöte von Sans-Souci—Suite for Chamber Orchestra, Op. 88 (Paul Graener); Little Norwegian Suite for Chamber Orchestra (Gerhard Schjeldrup); Little Suite for String Orchestra, Op. 55 (Richard Trunk); Finale on Two Themes by Johann Strauss from the Serenade in D, No. 5 (Robert Fuchs). 10.0, Weather, News, and Sports Notes, followed by Concert of Light Music and Dance Music. Soloist: Johannes Maximilian (Baritone). 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.
BEROMUNSTER — See Schweizerischer Landessender.
BODEN—See Stockholm.
BODO—See Oslo.

BRATISLAVA
 1,076 kc/s, 279 metres; 14 kW.—11.0 a.m., Concert by the Lamin Choral Society of Vienna. 12 Noon, See Prague. 12.5, See Moravská-Ostrava. 1.30, See Prague. 1.45, Talk for Farmers. 2.15 to 2.20, Hydrographical Report. 3.30, See Prague. 5.30, Programme from Kezmarok, relayed from Kosice, 1,022 kc/s (293 metres). 7.0, See Prague. 9.0, See Brno. 10.0, See Prague. 11.0 (approx.), Close Down.
BREMEN—See Hamburg.

BRESLAU
 923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—11.10 a.m., See Heilsberg. 1.0 p.m., Concert by the Silesian Philharmonic Orchestra, conducted by Ernst Prade. 2.30, News. 2.40, Reading: Mathilde Wrede, the Prisoners' Guardian Angel (I. M. Sieg). 3.10, Talk: Adolf Dressler, a Silesian Landscape Painter. 3.30, Programme for Children. 4.0, Radio Report from the Gross-Wartenberg Youth Hostel. 4.30, Concert by the Silesian Symphony Orchestra, conducted by G. E. Rischka; Overture, Zampa (Hérold); Selection from Das Nachtlager in Granada (Kretzner); Overture, The Merry Wives of Windsor (Nicolaï); Notturmo (Rehbeck); Madrigal-Gavotte (Broustet); Moorish Intermzzo, Zairah (Woehert); Viennese Waltz (Grammann); Polka, Plapperräulechen (Jos. Strauss); Reiter-Marsch (F. Schubert). 6.0, Talk: The Beauties of Silesia—The Castle of Fürstenteln. 6.30, Talk and Readings: Josef Mühlberger, a German Author of the Sudetic Mountains. 7.0, Sports Results. 7.30, Weather for Farmers. 7.35, Talk: The Danube and its People. 8.0, Concert of German Music, by the Station Orchestra, conducted by Ernst Prade, the Station Choir, and Soloists. In an interval at 9.0, News,

relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by Mickey's Club Jazz Attraction. 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot. 5.30, Sports Results. 6.30, Gramophone Concert of Light Music. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans. Overture, Russian and Ludmilla (Glinka); Liebestraum (Liszt); Aria from Dinorah (Meyerbeer); Selection from Le Grand Mogol (Andron); Violin Solo: Mazurka (Zurzycki); Potpourri, Sashinka (Raff). 7.15, Religious Address. 7.30, Le Journal Parlé. 8.0, Concert by the Station Symphony Orchestra, conducted by Meulemans. Soloists: Niels Hansen (Tenor) and Raskin (Violin). Overture, Hansel and Gretel (Humperdinck); Violin Concerto (Glazunov); La Danza (Rossini); Fantasia No. 3 (Bisont); Invitation to the Dance (Weber). Songs: (a) Aria from Sigurd (Reyer), (b) Aria from La Tosca (Puccini). Slav Dance (Dvorák); Hungarian Dance (Brahms); Russian Dance (Tchaikovsky); Four Danish Songs; Spanish Fantasia (Govaert). In an interval at 8.45, Three Songs to the Lute, by Henri 't Sas. 10.0, Le Journal Parlé. 10.10, Concert relayed from the Grand Hotel, Antwerp.

BUCHAREST
 761 kc/s, 394 metres; 12 kW.—4.0 p.m., Programme for Peasants. 5.0, Light Music and Romanian Music by the Marco Orchestra. In an interval at 6.0, Radio Journal. 7.0, Talks and Review. 8.0, The Secret Marriage—Opera in Two Acts (Cimarosa). In the intervals, Radio Journal.

BUDAPEST
 545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.0 p.m. to 12 Midnight.—8.45 a.m., News Bulletin. 9.10, Report on the Budapest International Fair. 10.0, Divine Service from the Cathedral, Pecs. 11.15, Evangelical Service. 12.15 p.m., News. 12.30, Report on the Budapest International Fair. 2.0, Inauguration of the Pecs Relay Station. 3.0, Agricultural Report. 3.30, Report on the Budapest International Fair. 4.50, Weather Report. 5.0, Concert by the Budapest Concert Orchestra, conducted by Nandor Zsolt. 6.20, Talk: Mothers' Day. 6.50, Concert by the Sandor Vidak Gypsy Band. 7.50, Sports Notes. 8.0, Bunter Abend. 9.5, Franz Liszt—Radio Play in Three Scenes (Halasz and Kristof). 10.25, News Bulletin. 10.45 (approx.), Concert by the Laszlo Boudy Orchestra and the Sandor Parkas Gypsy Band, relayed from the Café Bodo; Soloist: Georg Soltky. 11.10, Concert by the Sandor Parkas Gypsy Band, from the Café Bodo. 12 Midnight (approx.), Close Down.

CASSEL—See Frankfurt.

COPENHAGEN
 1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Town Hall Chimes. 12.2 p.m., Concert by Louis Prells' Instrumental Ensemble. 1.30, Talk in English: The Grand Tour of England. 1.50, Reading in German. 2.10, Talk in French: Spring Impressions. 2.30, Programme for Children. 3.0, Concert by the Radio Orchestra, conducted by Emil Reesen; soloist: Ellen Methling (Songs). Also relayed by Skamleback (31.51 metres). 5.0, Divine Service from Christiansborg Castle Church. 6.20, Talk. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Relations between Denmark and England. 8.0, Town Hall Chimes. 8.2, Niels W. Gade Concert, by the Radio Orchestra, conducted by Launy Gröndahl; Overture, Nachklänge aus Ossian (Gade); Two Melodies from Et Folkesagn (Gade); Five Songs; First Movement from the Fourth Symphony in B flat; Andantino con moto, from the Noctellets for Strings; Concert Overture, Nordisk Sæterrejse. 9.15, Mors Dag—A Radio Play in One Act (Harriet Vendelhaven). 9.45, Negro Spirituals by the Merry Singers, with Introductory Talk: I've got Shoes; Deep River; The Gospel Train; Listen to the Lambs; I want to be ready; Oh, Peter, go ring den Bells. 10.15, News. 10.25, Concert of Italian Music by the Radio Orchestra, conducted by Launy Gröndahl; Overture, Norma (Bellini); Intermezzo from Cavalleria rusticana (Mascagni); Piedmontese Dance (Sinigaglia); Finale from the Second Act of Aida (Verdi). 11.0, Dance Music from the Ritz Restaurant. In the interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Monday), Close Down.

CORK—See Athlone.
DANZIG—See Heilsberg.
DRESDEN—See Leipzig.

FECAMP
 1,328 kc/s, 225.9 metres; 10 kW.—4.0 p.m. to 8.0, Programme in English by the I.B.C. G. Danvers-Walker and B. McNaib announcing. 4.0, Programme for Children. 4.30, Children's Club Concert. 5.0, Songs and Orchestral Music; Under Heaven's Blue (Payan); Songs: (a) My Darling (Heymann), (b) Deep Water (Brian); Duets: (a) Leave the Pretty Girls alone (Robinson), (b) 'Way down in

10.0, Time, Weather, News, Sports Notes, and Programme. Announcements. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO
 878 kc/s, 342 metres; 35 kW.—5.30 p.m., Musical Programme. 6.0, German Transmission: Concert by the Grigor Schrammel Quartet. 7.0, See Prague. 9.0, Military Band Concert. 10.0, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)
 I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by Mickey's Club Jazz Attraction. 1.0 p.m., Le Journal Parlé. 1.10, Concert conducted by André Felleman, relayed from the Grand Hotel, Antwerp. 1.30, Sur le trinard—Sketch (André Blandin). 1.40, Concert (cont'd.). 5.0, Concert by the Station Symphony Orchestra, conducted by A. Meulemans. 5.30, Football Results. 6.0, Popular Music on Gramophone Records. 6.30, Violin Recital of Music by Eugene Ysaye for the Second Anniversary of his death. Sonata in A Minor, Op. 27; Berceuse, Op. 20; Divertissement, Op. 24. 7.0, Gramophone Records. Bourée fantasque (Chabrier); Pax vobiscum (Johnson). 7.15, Religious Address. 7.30, Talk on Music. 8.0, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloists: M. Bisantz (Baritone) and M. Durand (Tenor). March, Granada (José Garcia); The Skater's Waltz (Waldfenfel); Overture, L'Oncle Mathurin (Weyls). Baritone Solos: (a) Legend (Scassola), (b) Ne cueillez pas les fleurs (Ackermans), (c) Sérénade d'amour (Jean Pégues). Tarentelle napolitaine (Desormes). Tenor Solos: The Student passes by (Dhaney). 8.45, Allo! Danton Police—One-Act Play (Picard). 9.0, Concert (cont'd.). Potpourri of Military Songs (Salibert); Down South (Myddleton). Baritone Solos: (a) Tango, Senorita (Demaret), (b) Serenade, Caprice d'amour (de Vos), (c) Waltz. Ton amour (Langlois). Military Waltz, La Housarde (Ganne); Selection from Rose Marie (Friml). Tenor Solos: Galop, Fen d'artifice (Demaque). 10.0, Le Journal Parlé. 10.10, Gramophone Records: Selection from Mignon (Thomas); Spring at the Mill (Zimmer); Waltz Suite from The Count of Luxembourg (Lohár). 10.30, Concert by the Alexis Orchestra, relayed from l'Ancienne Belgique.

BRUSSELS (No. 2)
 I.N.R., 887 kc/s, 338.2 metres; 15 kW.—11.0 a.m., Concert of Variety Music, by the Small Station Orchestra, conducted by P. Leemans. 12 Noon, Concert of Light Music

MAY 14th

SUNDAY

continued

Georgia (Traditional); Songs: (a) How deep is the Ocean? (Berlin), (b) Roamin' through the Roses (O'Flynn); By the Sleepy Lagoon (Coates). 8.30, Light Orchestral Music: Les Sirènes (Waldteufel); Cœur brisé (Gillet); Mon rêve (Waldteufel); Violin Solos: (a) Spanish Dance (Fallal), (b) Ballet Music from Rosamund (Schubert); Minuet No. 1 (Paderewsky); The Dance of the Tea Dolls (Smith-Illgen); The Butterfly (Nevin). 6.0, Club Concert for Guildford Listeners: Waltz, Acclamations (Waldteufel); The Gay Highway (Drummond); Message from the Lord Bishop of Guildford; The Clock and the Dresden Figures (Ketelbey); Passing by (Purcell); Softly as in a Morning Sunrise (Romberg); Fairy on the Clock (Myers); Garden of Happiness (Haydn Wood); Rose in the Bud (Forster); Quartet: Polka Serenade; Love in Cloverland (Peter); On a Dreamy Summer Night (Krome); Mattinata; Selection from The Yeomen of the Guard (Sullivan). 7.0, Military Band Concert: Scottish Patrol (Williams); Valse triste (Sibelius); Carry on (Duudas); Review of the Troops; General Mulcahy March (Brase); Wood Nymphs (Coates); The Standard of St. George (Alford). 7.30, Orchestral and Vocal Concert: Waltz, Tales from the Vienna Woods (Joh. Strauss); Songs: (a) Little Grey Home in the West (Lühr), (b) Roses of Picardy (Haydn Wood); Vienna, Vienna; Songs: (a) The Last Rose of Summer (Moore), (b) Take a pair of Sparkling Eyes, from The Gondoliers (Sullivan), (c) The English Rose (German); Frühlingsstimmen (Strauss). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Light Music: What did I get in return? It's no use, I'm in Love; I'm one of the Lads of Valencia; Let me give my happiness to you; Hot Feet; Three Wishes; Mad Moments; The Village Band. 9.30, Concert of Light Music: Oetel, Valse Bluette (Bizet); Tenor Solo, The English Rose, from Merrie England (German); Contralto Solo, Angus MacDonald (Weatherley); Cello Solo, The Nightingale and the Rose (Rimsky-Korsakov); Oetel, Hungarian Dance in D (Brahms); Song, Street of Dreams (Lewis); Tenor Solo, Down Vauxhall Way (Oliver); Oetel, Narcissus (Nevin). 10.0, Songs: I'm playing with Fire (Berlin); Brother, can you spare a Dime? (Harburg); A Ghost of a Chance (Washington); Pianoforte Solo, Everyone says I love you; Her name is Mary (Sievier); You're still my sweetheart (Yellen); Just an Echo in the Valley (Woods); Pianoforte Solo, Butterflies in the Rain (Reaves and Myers). 10.30, Popular Melodies: Selection from Lilac Time (Schubert-Berté); Yes, Mr. Brown; Three Wishes; What have you got to lose? Sweetheart; Isn't it romantic? My Heart's to let; When you're falling in love. 11.0, Orchestral Music and Songs: Wine, Woman, and Song (Joh. Strauss); Songs: (a) A Bachelor Gay (Tate), (b) Live for to-day (Fraser-Simson); Love Everlasting (Friml); Artists' life (Strauss); Songs: (a) If I were King (Coslow), (b) Marika (Collins); Air de Ballet (Herbert). 11.30, Violin Recital of Traditional Airs: March of the Cameron Men; Mary Morison; Lord Lovat's lament; Orchestra: Selection, The Thistle; John Anderson; The logic o' Buchan; Lea Rigs. 12 Midnight, Club Concert for Guildford Listeners: Waltz, Acclamations (Waldteufel); The Gay Highway (Drummond); Message from the Lord Bishop of Guildford; The Clock and the Dresden Figures (Ketelbey); Passing by (Purcell); Softly as in a Morning Sunrise (Romberg); Fairy on the Clock (Myers); Garden of Happiness (Haydn Wood); Rose in the Bud (Forster); Quartet: Polka Serenade; Love in Cloverland (Peter); On a Dreamy Summer Night (Krome); Mattinata; Selection from The Yeomen of the Guard (Sullivan). 1.0 a.m. (Monday), Variety Music; Forty Found Frushes; Over the Hills; Handsome Gigolo; Toothache; Polly; The Shepherd Boy; Save the Last Dance for me. 1.30, Songs: Goodbye to all that; Make the best of it; It happened in Monterey; Pianoforte Solo, Popular Medley; I need a good kind of Man; Treasure; Song of the Dawn; Pianoforte Solo, More Popular Times. 2.0, Dance Music by the Icolians; The London Fire Brigade; Three's a Crowd; A Bedtime Story; Sweethearts forever; Let's all sing like the Birdies sing; Pu-leze Mr. Beamingway; My romance; I guess I'll have to change my Plan; Till Tomorrow; How deep is the Ocean? Marching along together; Just because you're you; Let's all dance the Polka; You'll always be the same sweetheart. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Unveiling of a Memorial, relayed from Ems; Speech by General von Horn. 1.0 p.m., Concert by a Nazi Band, relayed from the Ronneburg at Büdingen. 2.30, Agricultural Notes. 2.40, Agricultural Talks. 3.30, See Stuttgart. 4.30, Military Band Concert, relayed from London. 5.30, Germans Abroad.—Concert by the Station Choir and Soloists, with Talks. 6.20, A Discussion on Carl Hauptmann by his Wife and

Julius Maria Becker. 6.50, Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Recital of Folk Songs and Alpine Melodies by Anton Maria Topitz (Tenor). 8.30, Concert of Operetta Music by the Station Orchestra, conducted by Reinhold Merten. 10.30, Time, News, Weather, and Sports Notes. 11.0, Concert from Langenberg. 12 Midnight (approx.), Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon (from Hanover), Orchestral Concert, conducted by Richard Grille. In the interval at 12.55, Time Signal and Weather Report. 2.0 (from Hanover), Programme for Young Hitlerites; Homage to German Mothers. 3.30 (from Bremen), Sixteen Folk Songs by Hermann Zilcher, The Double Quartet of the Bremen Cathedral Choir and Richard Liesche (Pianoforte). 4.30 (from Hanover), Talk: Hohe Geiss: the Highest Point in the Harz Mountains. 5.30 (from Hanover), Concert by a Reichswehr Band, relayed from Hohe Geiss. 6.45, Concert of the Less-known Compositions of Pfitow. The Schweska String Quartet and Soloists, Gertrud Grimm-Herr (Songs), and Erich Schenk (Pianoforte). Introductory Talk by Dr. Erich Schenk. Three Songs: (a) Fahr wohl, (b) Zum Scheiden, (c) Grüss dich Gott; String Quartet in C. 7.30, Talk by Carl Anderlik: Excursions in a Rowing Boat. 7.40, Sports Notes. 7.55, Weather Report. 8.0 (from Hanover), Concert to Celebrate the Liberation of Lower Saxony. A Symphony Orchestra of Unemployed Musicians and the Hanover Teachers' Choral Society. Ouverture über Lützows wilde, verwogene Jagd. (Weber); Songs for Choir (Weber): (a) Vater, ich rufe dich, (b) Das Volk steht auf, der Sturm bricht los, (c) Du Schwert an meiner Linken; Overture, Das befreite Deutschland (Spohr); Wir trauern um den braven Helden (Spohr); Heimkehr der Krieger from the Fourth Symphony (Spohr); Choir: (a) Wir wollen deutsch und einig sein (Marschner), (b) Der Schwur des Vater Rhein (Möthfessel); A German Overture (Beck). 10.0, Time Signal, Weather Report, News, Sports Notes and Police Review. 10.20, A Review of Political, Cultural and Artistic Events in the Hanseatic Towns, Hamburg, Bremen and Lübeck. 10.35, Concert from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig 662 kc/s, 453.2 metres.—11.10 a.m., Demonstration of the German Scientific Research Society, relayed from the University, Königsberg; Address by the President, Dr. F. Schmitt-Ott; Address by Prof. Dr. Sauerbruch: Possibilities and Limits of Surgery; Address by Prof. Dr. Sandberger; Joseph Haydn; Extracts from a Newly-Discovered Symphony in D Minor by Haydn, by the Königsberg Opera House Orchestra. 1.0, Concert by the Königsberg Opera House Orchestra, conducted by Werner Franz. 2.0, Talk on Chess. 2.30, Programme for Young People: Scenes from Wallenstein's Camp (Schiller). 3.0, Mothers' Day, Programme: Music and Dialogues. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken; Sports Notes in the Interval. 5.30, Talk: East Prussian Romanticism in Painting—in connection with the exhibition: The Romantic Era and the Present Day in East Prussia. 6.0, A Radio Sequence from German Writings in Celebration of Mothers' Day. 6.30, Pianoforte Recital. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Munich. 8.30, From Lortzing to Humperdinck.—Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetzky. Soloists: Elizabeth Hallstein (Soprano), Josef Poerner (Tenor), and Carl Mehl (Bass). 10.0, News and Sports Notes, followed by Programme from Berlin (Witzleben). In the interval: Gramophone Report on the Spring Gymnastics Display at Insterburg. 12.0 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—9.10 to 11.10 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 9.10, Horticultural Talk. 9.40, Organ Recital. 9.55, Address. 10.20, Concert (contd.). 10.40 to 11.10, Interval. 11.10, Divine Service by

the Liberal Protestant Radio Society (V.P.R.O.). 12.40 to 5.40 p.m., Programme of the Allgemeene Vereeniged Radio Omroep (A.V.R.O.). 12.40, Talk: The Picture of the Week. 1.10, Concert by the Wireless Orchestra, conducted by Nico Treep. In the interval, Light Music on Gramophone Records. 2.40, Weekly Book Talk. 3.10, I Pagliacci—Opera (Leoncavallo) on Gramophone Records. 4.25, Running Commentary on the International Hockey Match, Holland v. Germany, relayed from the Olympic Stadium, Amsterdam. 5.10, Gramophone Records of Light Music, followed by Sports Notes. 5.40 to 8.40, Programme of the V.A.R.A. 5.40, Programme for Children. 6.25, Concert by a Children's Choir. 6.55, Orchestral Concert of Light Music. 7.30, The Adventures of Wakker and Tropenduit. 7.50, Song and Organ Recital, with Address. 8.40 till Close Down, Programme of the A.V.R.O. 8.40, Time and News. 8.50, Concert by the Wireless Orchestra, conducted by Nico Treep; Soloist, Maurits v.d. Berg (Violin); Overture, Maritima (Wallace); Violin Concerto in G Minor (Bruch). 9.40, Song Recital by Richard Tauber (Tenor); Three Songs (Schubert): (a) Ständchen, (b) Der Doppelgänger, (c) Ungeduld; Three Songs (Richard Strauss): (a) Allerseelen, (b) Traum durch die Dämmerung, (c) Heimliche Aufforderung. 9.55, Concert by the Wireless Orchestra, conducted by Nico Treep. 10.20, Song Recital by Richard Tauber (contd.): Sei mir gegrüsst du holdes Venetia, from Eine Nacht in Venetia (Joh. Strauss); Song from Die Czarenvitch (Lehár); Salt 'ein Knah' ein Röslein steh'n, from Friederike (Lehár); Glück hat als Gast nie lange Rast, from Zigeunerliebe (Lehár). 10.40, Gramophone Records of Popular Music. 10.50, Concert of Light Music by Kovacs Lajos and his Orchestra; Songs by Bob Scholte. 11.50, Gramophone Records of Popular Music. 12.40 a.m. (Monday), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—9.10 a.m., Religious Programme of the Christian Radio Society (N.C.R.V.). 10.10 to 5.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 10.10, Gramophone Records of Light Music. 10.40, High Mass from Oldenzaal. 11.55, Gramophone Records of Variety Music. 12.40, Talk. 12.55, Concert by the K.R.O. Boys. 1.40, Talk. 2.5, Concert (contd.). 2.50, Literary Talk. 3.10, Concert by the Dutch Chamber Music Society and the Con Amore Quartet: Clarinet Quintet in D, Op. 115 (Brahms); Songs (a) Abendfrieden am Rhein (Neumann), (b) Justorum animae (Pütz), (c) Still (Ayslinger). (d) Starry Night (Storch); Gramophone Records of Variety Music: Sextet in B. Op. 18 (Brahms); Songs: (a) Schlafglöckchen (Esch), (b) Ein Häuschen leht am Berge (Kämpf), (c) Vale Carissima (Kaun), (d) Christmas Carol (Diamond). 4.55, Programme for Hospitals. 5.40 to 8.25, Programme of the N.C.R.V. 5.40, Sacred Music for Choir and Organ. 6.30, Divine Service from a Church in Amsterdam. 8.25 till Close Down, Programme of the K.R.O. 8.25, Talk. 8.50, Football Report. 8.55, Johann Strauss Concert by the K.R.O. Orchestra, conducted by M. Kühn; Soloist, Mme. Angie van Wickevort (Crommelin (Soprano); Overture, A Carnival in Rome; Waltz, Frühlingsstimmen; Nordseebilder; Tales from the Vienna Woods; Aus der Heimat; Amnen-Polka; Dorfschwalben aus Oesterreich. 9.40, News. 9.45, Songs from Die Fledermaus (Joh. Strauss). 10.5, Concert (contd.): Overture, Die Fledermaus; Selection from Jabuka; Selection from Aschenbrödel; Selection from The Gipsy Baron; Donauweibchen; Bauern-Polka; Tritsch-Tratsch. News after the Programme. 11.20, Choral Epilogue. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide and Radio Concert. 8.45, News. 9.0, An Evening with Papa Yan. 10.30 till Close Down, Programme in English by the I.B.C. H. K. Hitchcock announcing. 10.30, Celebrity Concert of Gramophone Records: On a Little Balcony in Spain, by Layton and Johnston; Breakfast Time, by Billy Caryl and Hilda Mundy; Polichinelle, by Fritz Kreisler; Mighty lak' a Rose, by Turner Layton; Merry-go-round, by Peter Dawson; Ben Bolt, by Florence Anstral; Seekin', by Paul Robeson; Dance of the Marionettes, by Fritz Kreisler. 11.0, Light Orchestral Music: Die Spieluhr der Pompadour (Noack); Speak to me of Love (Lenoir); The Song of the Nightingale (Alibout); Granny's Photo Album (Greer); Waltz, Tales from the Vienna Woods (Strauss); Pierrette's Wedding (Jordan); The Skaters' Waltz (Waldteufel); Angero (Franco). 11.27, I.B.C. Goodnight Melody. 11.30 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.5 p.m., Programme from Heilsberg. 1.0, Concert conducted by Eysoldt. 2.30, Reading in Dialect. 3.0, Agricultural Talk. 3.30, Programme in Celebration of the Fourth Centenary of the Reformation in Soest: Addresses and Sacred Music. 4.30, Orchestral Concert, conducted by Wolf. In the interval from 5.0 to 5.25, Radio Report on the Rochus Club International Tennis Tournament, relayed from Düsseldorf. 6.0, Talk: Towns of the Rhineland and Westphalia—Detmold. 6.30, The Great King—Play in One Act (Herrich von Stein). 7.0, Programme from Berlin (Deutschlandsender). 8.0, Sports Notes. 8.15, Concert by the Station Orchestra, conducted by Buschbüttner; Soloist: Anton Schoenmaker (Violin); Spring Overture (Goetz); Concerto for Violin (Mozart); Siegfried Idyll (Wagner). 9.0, Concert of Folk Music, relayed from Munich. 9.30, Concert (contd.): Suite from Der Rosenkavalier (R. Strauss); Overture, The Flying Dutchman (Wagner). 10.20, News, Announcements and Sports Notes. 10.40, Serenade and Dance Music, conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—11.30 a.m., Transmission for all German Stations. We danken Dir, Herr—(cantata (Bach)); The Municipal Orchestra, the Choir of St. Thomas' Church and Soloists. 12 Noon, Concert by the Station Orchestra, conducted by Hilmar Weber. Soloist: Adrian Rappoldi (Violin). 2.0 p.m., Weather Forecast and Time Signal. 2.5, Programme Announcements. 2.25, Talk for Farmers. 2.40, Programme for Children: Mothers' Day. 3.25, Report on the Dückendörf Mountain Race. 4.30, See Hamburg. 5.30, The Student's Return—Comedy (Niebergall). 7.0, Transmission for all German Stations relayed from Berlin (Deutschlandsender). 8.0, See Munich. 9.0, Topical Talk. 9.15, Concert by the Station Orchestra, conducted by Hilmar Weber. Soloist: Martin Hümsch (Tenor); Overture, Das kaffee Schneidelein (Hanel); German Suite (Gersch); Selection from La Traviata (Verdi); Waltz, Loreley-Rheinklänge (Strauss); Songs from Schön ist die Welt (Lehár); Overture, Gipsy Love (Lehár). 10.25, News. 10.30 (approx.), Dance Music Relay. 12 Midnight, Close Down.

LINZ.—See Vienna.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Review. 12.30 p.m., Concert by the Madrid Municipal Band, conducted by M. Villa, relayed from the Retiro. 3.0, Chimes, Time Signal, Theatre Notes and Concert of Popular Music. 5.0 to 8.0, Interval. 8.0, Chimes, Radio Journal and Dance Music. 9.30 to 10.30, Interval. 10.30, Chimes from the Cathedral and Time Signal. 10.35 (approx.), Pianoforte Recital by Teresa Alonso Parada, Baritone Solos by José Anserri, Guitar Solos by Luis Garcia, and Flamenco Songs by Niño de la Peña. 1.0 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—12.5 p.m., Military Band Concert of Popular Music. Conductor: F. Michalek. 1.30 to 2.15, See Prague. 3.30, See Prague. 6.0, German Transmission: One-Act Operetta (Stolz). 7.0, See Prague. 9.0, See Brno. 10.0, See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW.; relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Orchestral Concert, conducted by Karl List; Soloist: Franz Ortner (Double Bass). 1.5 p.m., Time Signal, Weather Report, and Programme Announcements. 1.15, German Song Recital by Julia Prosl (Soprano) and Sandro Vitoshy (Tenor). 1.35, Gramophone Concert of Music by Bizet, Bruckner, Mozart, Reznicek, Rossini, Schubert, Joh. Strauss, and Verdi. 2.30, Talk. 2.50, Cello Recital by Folkmar Längin. 3.15, Concert by Adolf Denkl's Zither Orchestra. 4.50, Commentary on Bavarian Race Meetings. 4.5, Programme for Children. 4.25, Orchestral Concert. 5.35, Talk: Folk Law of the Amber District. 6.0, Maytime—Musical and Literary Programme. 6.50, Weather Report and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Folk Music from the Chem District, relayed from Siegsdorf. 9.30, Reading: Mutter ohne Tod (Hanns Johst). 9.55, Harpsichord Recital: Three Preludes (Cabezon); Fugue in Four Parts (Frederic

ballo); Toccato (Rocci). 10.20, Time Signal, Weather Report, News, and Sports Notes. 11.0, Serenade, conducted by Erich Kloss.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres. —10.50 a.m., Chimes, 11.0, Divine Service, relayed from the Garrison Church. 5.0 p.m., Concert, relayed from the Continental Hotel. 6.0, Talk. 6.30, Agricultural Talk. 7.0, Parliamentary Notes. 7.30, Choral Concert. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kramm. Part I: Overture, Meeresstille und glückliche Fahrt (Mendelssohn); Symphony No. 1 in B flat (Schumann); Part II: Extracts from The Tales of Hoffmann—Opera (Offenbach), with an Introductory Talk. Soloists: Mme. Schjelderup (Soprano), and Mme. Træ Jersem (Contralto). 9.40, Weather and News. 10.0, Topical Talk. 10.45, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—1 p.m. to 2.0, Concert of Light Music. In the interval at 1.30, Time, Announcements, and Weather. 5.30 to 6.30, Popular Music on Gramophone Records. 8.0, Dopplavoro Announcements and Giornale Radio. 8.20, Sports Notes. 8.25, Gramophone Records. In the interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by A. La Rosa Parido; Soloist: V. Mammino (Pianoforte); Suite in D Minor (Bach); Scarlattiana (Casella); Talk: Young Poets of Palermo; Three Interludes from Figlia di Jorio (Rossi); Pavane pour une Infante défunte (Ravel); Suite (Prokofiev). 10.0 (approx.), Light Music on Gramophone Records. 10.55, News Bulletin.

PARIS

277 kc/s, 1,083 metres; 60 kW. Relayed by Eiffel Tower (Call FLE), 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—1.0 p.m., News and Announcements. 1.15, Weather Report. 1.30, Concert by the Jean Bus Orchestra and M. Duverne (Nyxophone). 6.45, Le Journal Parlé. 7.55, Programme for Children. 8.25, News. 8.30, Gramophone Con-

cert; Part I: Music by Adam and Thomas; Part II: Popular Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW. 10.5 a.m., Sponsored Concerts. 11.40, Popular Music on Gramophone Records. 12 Noon, Interval. 12.15 p.m., Sponsored Concert. 12.45, Sponsored Talk. 12.50, Half-an-Hour of Fantasy by Paul Weill. In an interval at 1.0, Racing Results. 1.30, Sponsored Programme. 2.0 to 3.0, No transmission. 3.0, Racing Results. 3.10 (approx.) to 6.45, Interval. 6.45, Journal Parlé. 7.0, Sports Notes. 7.15, Musical-Saw Solos by Jean Lafitte; Siciliana (Pergolesi); Where my Caravan has rested (Lohr); Little Grey Home in the West (Lohe); Si vous Payiez compris (Denza). 7.30, Catholic Review. 8.0 to 8.15, Popular Music on Gramophone Records. 8.30, Light Music on Gramophone Records. 9.0, Interval. 9.15, L'Attendat—a Radio Play (F. François). 9.45, Concert of Light Music. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather Forecast. 8.30, Physical Culture. 12 Noon, Religious Address. 12.20 p.m., Sacred Music; Prelude in E flat (Saint-Saëns); Kyrie (Palestrina); Andante and Allegro (P. E. Bach). 12.30, Bilbouquet. 12.45, Press Review, News, and Weather. 1.0, Gramophone Concert. 2.0 to 2.30, Programme in English by the I.B.C., Mr. T. St. A. Ronald announcing: Light Music, Signature Tune; Young and Healthy; What would'a like for Breakfast? Street of Dreams; My Wishing Song; You're an old Smoothie; And so I married the Girl; The Girl in the Little Green Hat; Signature Tune. 2.30, Light Music on Gramophone Records. 3.0 (approx.), Running Commentary on the Final of the French Football Championship, relayed from the Colombes Stadium. 5.0 to 7.0, Programme in English by the I.B.C. 5.0, Tea-Time Variety Hour, Mr. S. H. C. Williams announcing. 6.0, Light Music, Mr. T. St. A. Ronald announcing: Grand March (Finck); Lily of Laguna (Leslie Stuart); Selection from Waltzes from Vienna (Strauss); Daisy Bell (Daerc); Selection from White Horse Inn (Stolz-Benatzky). 6.30, Popular Melodies, Mr. T.

St. A. Ronald announcing: Signature Tune; Farewell to Arms; Going, going, gone; Ronald Frankau: A little Café in Vienna; Ronald Frankau: Fouy's Wife; Signature Tune. 7.0, Popular Concert. 8.0, Radio Paris Chimes. 8.30, News, Sport Notes and Weather. 8.45, Music Hall Programme; Soloists: Liane Mérand, M. Cardé, and Mlle. M. Berger. In the interval at 9.15, Press Review and News.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—10.0 a.m., Mass in D. Op. 86 (Dvorák), by the Prague Society for Sacred Music and the Station Orchestra, conducted by Vladimír Nemeč; Soloists: M. Mestekova, M. Nemečova, J. Mestek, and L. Uhlir; Professor B. Wiedermann at the Organ. 11.0, See Bratislava. 12 Noon, Chimes. 12.5 p.m., See Moravská-Ostrava. 1.30, Agricultural Report. 1.45, Agricultural Programme. 2.15 to 2.25, Social Report. 3.30, Report on the Motor Racing, relayed from the Sokol Stadium, Strahov. 5.0, Popular Music on Gramophone Records. 5.30, Talk: An Expedition to a Primeval Forest in Brazil. 5.45, Variety Music on Gramophone Records. 6.0, German Transmission: Popular Programme, arranged by Dr. Dominik Schausberger. 7.0, Czechoslovakian Mothers' Programme: Recitations and Concert by the Station Orchestra, conducted by Otakar Jeronias; Soloist: Jarmila Penickova-Rochova (Songs). 7.50, Talk on the following Transmission. 8.0, Act I of The Parisienne—Operetta (Benes), relayed from the Operetta Theatre. 9.0, Time Signal. 9.1, See Brno. 10.0, Time Signal. 10.1, News Bulletin. 10.20, Popular Czech Songs. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—9.55 a.m., (from Geneva), Chimes. 10.0, Protestant Service. 11.0 (from Geneva), Light Music on Gramophone Records. 12.30 p.m., News and Weather Forecast. 12.40 (from Geneva), Popular Music on Gramophone Records. 2.0 to 3.0, Interval. 3.0 (from Geneva), Report or Concert. 7.30 (from Geneva), Sports Notes, News, and Announcements. 8.0 (from Geneva), Le Bourgeois gentilhomme (Comedy Ballet (Molière-Lully). 9.0, Concert by the Station Orchestra. 9.40 (from Geneva), Trouillard et Cie—Humorous Sketch. 9.50, News and Weather. 10.0, Con-

cert by the Station Orchestra (contd.). 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—12.30 p.m., Concert of Variety Music. 1.30 to 2.30, Orchestral Concert. 3.45 (Naples), Programme for Children, Weather and Sports Notes. 4.0, Orchestral Concert. 4.45, Sports Notes. 5.0 to 6.15, Orchestral Concert. Sports Notes in the interval. 7.30, Football Report, Dopplavoro Notes and News. 8.0, Time and Announcements. 8.5, Recital of Duets by Maria Teresa Barboni (Soprano) and Gino del Signore (Tenor). 8.30, Sports Notes. 8.40, Talk on Art. 9.0, Falstaff—Opera in Three Acts (Verdi). In the interval, Reading. After the Opera, News and Giornale Radio.

SALZBURG.—See Vienna.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10.0 a.m. (from Berne), Catholic Service. 10.45 (from Berne), Concert. 11.30 (from Berne), Swiss Reading 12 Noon (from Zürich), Concert by the Swiss Radio Orchestra. 12.28 p.m., Time and Weather. 12.30, News Bulletin. 12.40 (from Zürich), Concert by the Swiss Radio Orchestra. 1.30 (from Berne), Agricultural Programme. 2.0, Agricultural Talk. 2.30 to 5.0, Interval. 5.0 (from Berne), Popular Music on Gramophone Records. 5.50 (from Berne), Concert by the Berne Mandoline Orchestra. 6.30 (from Berne), Talk in English: Bernese Customs and Traditions. 7.0 (from Berne), Time and Sports Notes. 7.5 (from Berne), Concert. 8.0 (from Berne), Talk. 8.30 (from Berne), Cello Recital by Mrs. Ranz-Godot. 9.0, News Bulletin. 9.10 (from Berne), Programme to be announced. 10.15 (from Berne), Sports Notes. 10.20 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Bodon, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Ostersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—11.0 a.m., Divine Service Relay. 12.45 p.m., Weather and Ice Report. 2.0 (from Sundsvall), Orchestral Concert, conducted by John Hult. 3.0, Talk

"Quite definitely above the average... balance in music exceptionally good"

(Extract from "WIRELESS WORLD" Test Report)

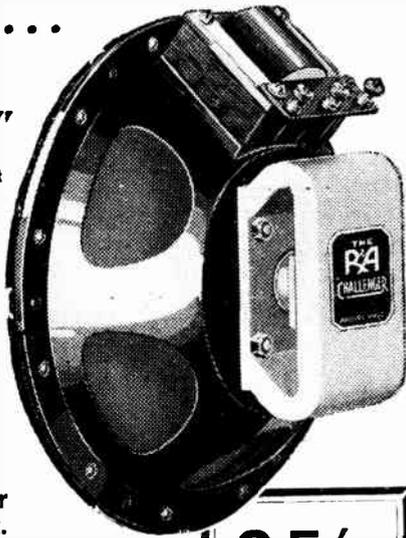
Musi-lovers with a critical sense of values appreciate the R. & A. "Challenger," because it reproduces speech and music with absolute fidelity, and entire absence of objectionable resonances.

Its sensitivity is such that it functions with remarkably small inputs, and at the other end of the scale handles 3 watts undistorted A.C. giving an output of amazing volume and purity.

Beyond question the "Challenger" is supreme in its price class and has justly earned the unstinted praise of technical experts, the Trade and Public.

CHALLENGER 'TYPE P' for use as an extension instrument.

This model is fitted with a specially designed output Transformer, for use with Commercial Receivers which already incorporate an output Transformer and require a speech coil impedance of between 1 ohm and 5.5 ohms. Price 35/-.



35/- COMPLETE WITH 3-RATIO TRANSFORMER

The R & A "CHALLENGER" REPRODUCERS & AMPLIFIERS LTD. WOLVERHAMPTON.

CUT OUT THE LOCAL AND GET ALGIERS!!

AND OTHER FOREIGN STATIONS

No more dual programmes. Enjoy foreign concerts while your local station is working or when being "swamped" or interfered with by a powerful station. Just fix a PIX in your aerial.

2/- WITH CLIP 26

PIX leads the way to better radio. A PIX works equally well on a crystal battery or all mains set. Ask your local dealer or send postal order now.

IMPROVE YOUR RADIO WITH A PIX AS A MILLION LISTENERS DO NOW



THE ONLY VALVE WITH A TRIPLE-COATED NEODYMIUM FILAMENT

4/6

that gives PIX valves long life, long range, loud signals with a pure natural brilliancy of tone. Never before has such a valve masterpiece been sold at such a low price. Every valve is tested and guaranteed and is made in our own valve factory in London.

GUARANTEE.

Every PIX valve carries the usual guarantee. Try one to-day and if it is not better than its equivalent valve in your set we will refund your money immediately. Write for leaflet giving characteristics and comparison tables.

BRITISH MADE IN LONDON

PIX VALVES

Table with 2 columns: Type (e.g., H.F., DET., R.C. or I.F., POWER, SUPER POWER, SCREENED GRID, PINODE) and Price (e.g., 4/6, 6/6, 8/6, 11/8, 11/6).

MAY 14th

SUNDAY

continued

in Norwegian. 3.20, Programme for Children. 4.0, Popular Music on Gramophone Records. 5.5, Reading. 5.35, Schubert and Brahms Song Recital by Knut Olof Strandberg. Songs (Brahms): (a) Wie bist Du, meine Königin, (b) Muss es eine Trennung geben, (c) Ständchen; Songs (Schubert): (a) Die Krähe, (b) Jüngling an der Quelle, (c) Die Nebensonnen, (d) Du bist die Ruh; Songs (Brahms): (a) Gang zum Liechlein, (b) Feldeinsamkeit, (c) Tambourliedchen. 6.0, Evensong, relayed from Lulea. 7.15, Weather and News. 7.30, Professor Bernhardt—Comedy in Five Acts (Arthur Schnitzler), translated by Gustaf Linden. 9.10, Concert by the Station Orchestra. 9.45, Weather and News. 10.0, Concert by the Station Orchestra. Soloist: Greta Torpad-Bratt (Songs); London Symphony, No. 2 in D (Haydn); Sphérazade—Three Songs (Ravel); Overture, Euryanthe (Weber). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—9.30 a.m., Protestant Service, relayed from the Reformed Church. 10.30, Orchestral Concert of Popular Music, conducted by Maurice de Villers. 11.30, Catholic Service. 12 Noon, Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.1, Light Music on Gramophone Records. 2.0, Dance Music on Gramophone Records. 3.30, Interval. 4.0, Gramophone Concert of Variety Music. 5.15, Protestant Service, relayed from St. Paul's Church. 6.15, Sports Notes. 6.30, Talk: Infant Mortality, Its Cause and Cure. 6.45, Orchestral Concert, conducted by Roskam. 7.30, Time, News and Sports Notes. 7.45, Waltz Music on Gramophone Records. 8.15, Press Review in German and Lottery Results. 8.30, Dramatic Programme. Bagarre nocturne—Radio Sketch (E. Bismuth); Le Vagabond—One-Act Sketch in Free Verse (Gaston Baudouin); Angoisse—Radio Drama in Three Pictures (Robert Caillaud); L'Escouade des Phénomènes—One Act Sketch (Rach and Laverne) after Bertal Maubou. In the interval, Press Review in French. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.5 p.m., Talk, relayed from Ulm; Technical Evolution of Wireless. 12.35, Marienlieder, sung by the Drei Madrigals, relayed from the Ufa Palace. 1.5, Topical Talk. 1.20, From the Neckar to the Isar—Gramophone Concert. 2.0, Piano-

forte Recital by Max Ladewig; German Dances; Contredances; Ecossaises. 2.30, Gramophone Concert of Dances of All Nations. 3.0 (from Freiburg), Concert of Folk Songs. 3.30, Mother Day Programme for Children. 4.30, Concert by the Wireless Military Band, conducted by B. Walton O'Donnell, relayed from London. 5.30 (from Freiburg), Music from the Archives of the Prince of Fürstenberg's Library at Donaueschingen; The Freiburg Chamber Orchestra and Soloists: Symphony in C (Canabich); Concerto for Violin and Orchestra (Lindpaintner); Festival Overture (Kaliwodaj); Das Lob des Tabakrauchens (Reisiger); Overture, Alpenhütte (Kreutzer). 6.45, Sports Notes. 7.0, Accordion Recital by Franz Köppl. 7.25, Whitsunday, 1933—Swabian Programme of Literature and Music. 8.0, See Munich. 9.30, Concert from Frankfurt. 10.30, Time, News, Weather, Programme Announcements, and Sports Notes. 11.0, Programme from Langenberg. 12 Midnight, Close Down.

SUNDSVALL—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—6.30 to 7.0 p.m., Programme in English by the I.B.C. W. Brown-Constable announcing. 6.30, Healy Concert of Popular Music: Selection from Congress Dances; My Heart to let; Freddy the Freshman; Puss, puss, puss; I'm playing with Fire; Someone to care for; Can't do without Love; Round about Sundown. 7.0, Military Music. 7.15, News, Racing Results, and Market Prices. 7.30, Sound Film Songs. 7.45, Argentine Music. 8.0, Bal Musette. 8.15, Operetta Music. 8.30, Songs from Opera-Comique. 8.45, Hunting Horn Solos. 9.0, Extracts from Congress Dances (Heymann). In the interval, Symphony Music. 10.0, Popular Songs and Humorous Scenes. 10.15, North African News. 10.30 to 12 Midnight, Programme in English by the I.B.C. 10.30, Variety Half-Hour; Happy Days are here again; Kathleen Mavonriean; On with the Show; Girls of the Old Brigade; Killarney; The Old Contemptibles' Reunion; Time, Gentlemen, Please. 11.0, Light Orchestral Music: Souvenirs classiques; Selection from A Waltz Dream (O. Strauss); My Heart sings a Broken Melody; Minnet from Berenice (Haudel); Triana; Ma Curly-headed Baby (Chitsam); You are my Heart's Delight, from The Land of Smiles (Lehár). 11.27,

I.B.C. Goodnight Melody. 11.30, Opéra-Comique Music. 11.45, Viennese Music. 12 Midnight, Weather and Announcements. 12.5 a.m. (Monday), Accordion Solos. 12.15, Vocal Tangos. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.40 a.m., See Turin. 9.55, Mass from the Cathedral of San Giusto. 11.0, Religious Address. 11.20 to 11.40, Agricultural Talk. 12.30 p.m. (approx.) till Close Down, See Turin.

TRONDHEIM—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayd by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—9.40 a.m., and Giornale radio, 9.55, See Trieste. 10.35 (from Florence), Agricultural Report. 10.40, Agricultural Report. 11.0, Mass from the Church of the Annunziata, Florence. 12 Noon, Bible Reading. 12.30, Variety Concert. In the interval at 1.0, Time, Announcements and Report on a Cycling Race. 1.30 to 2.30, Orchestral Concert, conducted by Ugo Tansini. 4.0, Variety Concert, Sports Notes in the interval. 6.15, Giornale Radio and Sports Notes. 6.30 to 7.0, Interval. 7.0, Time and Announcements. 7.10, Popular Music on Gramophone Records. 8.0, Announcements, Giornale radio and Sports Notes. 8.20, Variety Music on Gramophone Records. 8.50, Talk on the following Transmission. 9.0, Falstaff Opera in Three Acts (Verdi), relayed from the Politeama Fiorentino. In the intervals, Talk and Theatre Notes. Giornale radio after the Programme.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayd by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—10.15 a.m., Recital of Songs by Contemporary Austrian Composers, by Wanda Aehsel (Soprano). 10.45, Radio Report from the Rennstrecke. 11.10, Talk: The Evolution of the Austrian Traffic System. 11.40, Symphony Concert by the Vienna Symphony Orchestra, conducted by Karl Anderleth. 12.50 to 2.15 p.m., Concert of Light Music by the Otto Wacek Orchestra. 2.40, Time and Programme Announcements. 2.45, Review of Books. 3.10, Chamber Music—Haydn's String Quartets;

String Quartet in C, Op. 74, No. 1. String Quartet in B Flat (unfinished), Op. 163. 3.45, Radio Report of the Trotting Derby from the Kriean. 4.15, Concert of Light Music by the Julius Hermann Orchestra, the Frank-Nowotny Franz Schrammel Trio and Soloists. 6.0, Talk: A Spring Journey to Greece. 6.30, Carl Dallago reads from his own Works. 7.0, Choral Concert of Sacred Music by the Dreizehnlindner Choral Society. 7.50, Time, Sports Notes, and Programme Announcements. 8.0, Bunter Abend; The Josef Holzer Orchestra, the Maurittius Hoffmann Accordion Quartet, the Bohemo Quartet, Luzzi Holzschuh (Songs), and Hans Savageri (Pipes). 10.0, News. 10.15, Dance Music from the Grabencafé.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.0, Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Workers' Festival Programme, relayed from The Grand Theatre. 1.0, Weather. 1.5, Concert by the Warsaw Philharmonic Orchestra, conducted by J. Oziminski. Soloist: Armand Gontean-Biron (Pianoforte). 2.0, Talk on Fish. 2.20, Song Recital by Olga Lada. 2.40, Agricultural Talk. 3.0, Weather for Farmers. 3.5, Concert of Light Music by the Wilkasz Orchestra. 4.0, Programme for Young People. 4.25, Popular Music on Gramophone Records. 4.45, Pianoforte and Violin Recital by E. Feinstein and S. Bakman. In an interval, Announcements. 5.55, Programme Announcements. 6.0, Light Music, relayed from the Café Ziemianska. In an interval, News. 7.0, Miscellaneous Items. 7.25, Reading from The Bear (Tchekov). 8.0, Pianoforte Recital by S. Jaroszewicz. 8.30, Variety Programme, relayed from Lwów, 788 kc/s (381 metres). 9.15, Sports Notes. 9.25, Concert by the Station Orchestra, conducted by J. Oziminski. Soloist: S. Adamska (Cello). Slav Dance in G Minor (Dvorak); Overture, Fra Diavolo (Auber); Hungarian Dance (Brdla); Cello Solos: (a) Sonata (Sammartini), (b) Pastorale (Copperin-Cassado), (c) Serenade (Frezin); Persian Dance (Mussorsky); Waltz, I Pagliacci (Bucalossi); Witches' Dance (MacDowell); Selection from Carmen (Bizet); Cello Solos: (a) Intermezzo (Granados), (b) Oriental Dance (Rachmaninov), (c) Tarantella (Popper); Overture, Die Fledermaus (Joh. Strauss); Melody and Popular Song (Komzak); Cracovienne (Noskowski); Ukrainian Dance (Noskowski); Waltz from Casanova (Rozycki); Mazurka (Osmanski-Macura). 10.55, Announcements, Weather for Aviation and Police Report. 11.0, Dance Music from the Hotel Polonia.

ZURICH—See Schweizerischer Landesender.



—BUT AS YOUR SERVANT

By converting your set to a modern Radio Gramophone the "Garrard" Radio Gramophone Unit not only enables you to pick the best of the world's wireless programmes but also, at your will, gives you the pleasures of your own gramophone selections with radio amplification.

A.C.4. "Garrard" Electric Radio Gram Unit	...	...	75/-
No. 10B. "Garrard" Electric Radio Gram Unit	...	...	81/9
No. 202A. "Garrard" Electric Radio Gram Unit	...	...	81/9
Universal "Garrard" Electric Radio Gram Unit	...	...	128/6

GARRARD Radio Gram. Unit

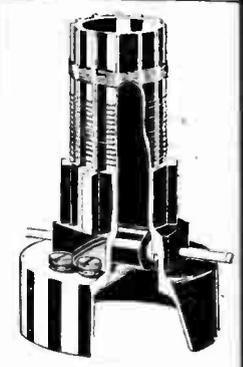
Write for full particulars:
GARRARD ENGINEERING AND MANUFACTURING CO., LTD.,
SWINDON, WILTS, or 17, Grafton Street, London, W.1.

COLVERN SHORT WAVE COILS

TYPE KSW.

Dual Range Short Wave coil totally screened covering the two ranges of 18-32, and 30-64 metres.

Reaction coupling is provided, arranged to be effective on both wave ranges For inclusion in short wave receivers arranged on the autodyne principle.



Special intermediate frequency transformers have been produced for use with the KSW coil, tuned to a frequency of 150 K.C.

TYPE KSW.

Price 9s. 6d. each.

There is a Colvern coil for every modern radio receiver.

COLVERN LIMITED, Romford, Essex.

London Wholesale Depot: 150, KINGS CROSS ROAD, W.C.1.

MAY 15th MONDAY continued

Rangoon Rice Carriers (Holbrook); Rhapsody russe (Nussbaum); Waltz from Der Rosenkavalier (R. Strauss); Pianoforte Execution from Whoopee (Kahn); When the Lilac Blooms again (Rotter); Over the Waves (Rosas); Pianoforte Duet: Melody from Bow Bells (Sullivan); Zigeunerweisen (Borjagov). 7.0, Radio Gazette. 7.20, Local News. 7.30, Gramophone Records. 7.45, Listeners' Half-hour and News. 8.30, Programme dedicated to Caux. 10.0 till Close Down. Programme in English by the I.B.C. 10.0, Dance Music by the Ibcollians. Love is the Sweetest Thing; Good Morning, Mr. Sun; I'll do my best to make you happy; The Voice in the Old Village Choir; Smile and sing your cares away; The Turning of the Tide; An Evening in Caroline; Day by Day; Where the Blue of the Night; By the Sycamore Tree; Now that you're gone; Only me knows why; Blues in my Heart; Now's the time to fall in love. 11.0, Programme of Waltzes: Frühlingsstimmen (Strauss); Acclamations (Waldteufel); Morgenblätter (Strauss); Donauwellen (Ivanovici); O Frühling wie bist du so schön (Lincke); Künstlerleben (Strauss-Potpourri (Robrecht)). 11.30, Sea Shanties: At Santa Barbara; Chorus: Blow the man down; Four Jolly Sailors; The Drunken Sailor; Chorus, One More Day; Rio Grande; Chorus: A dollar and a Half a Day; Quartet: Shenandoah. 12 Midnight, Club Concert for Reigate and Dorking Listeners: Glow Worm Idyll (Lincke); Wobin (Schubert); Home (Steeden); The Biker's Song (Longstaffe); They cut down the Old Pine Tree (Raskin); Birthday Serenade (Lincke); The Heart of the Sunset (Nicholls); The Old Inns of England (La Touche); A Merry Hunting Day (Bucalossi); Song of the Vagabonds (Prina); Sing Something Simple (Hupfeld); There's happiness over the Hill (Snyder); Ragamuffin Romeo (Wayne); Gypsy Melody (Nicholls). 1.0 a.m. (Tuesday), Accordion Solos: Selection from Carmen Bizet; C'est un petit nid (Eblinger); J'aime la musique (Parsons); Medley of Welsh Airs (arr. Cavelier); La Jasquette (Bozi); Les bas à pointes (Lefebvre). 1.30, Vocal Duets: A Dicky Bird told me so; I must be dreaming; Let's dream a little longer; Accordion Solo: Lorentina; In the Lane of Sweet Dreams; Sully in my Dreams; Why? Accordion Solo: Festival March. 2.0, Dance Music by the Ibcollians: Them there Eyes; There's something about an Old-fashioned Girl; Swingin' in a Hammock; Okay, Baby; Beware of Love; O Donna Clara; What a Perfect Night for love; My future just passed; Moonlight on the Colorado; Sons les toits de Paris; You are the Melody; Harmonica Harry; A Little Love Song; Soldier on the Shelf; The Kiss Waltz. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT 1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Talk: Writers of the National Revolution, with Readings from their Works. 6.25, English Lesson. 6.50, Time, Programme Announcements, Weather and Economic Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert of Classical Music by the Station Orchestra, conducted by Reinhold Merten. Soloist: Kurt Gudian (Guitar). 9.0, Programme to be announced. 9.15, Beethoven Concert. Soloist: W. Kempff (Pianoforte). Grand Overture in C, Op. 115; Pianoforte Concerto in G, Op. 56; Overture, Leonora No. 2. 10.15, Time, News, Weather and Sports Notes. 10.45, See Munich.

FREDRIKSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG Call ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relay by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme. 6.40, Exchange and Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, The March of the Black Duke, 1808—An Historical Play of Lower Saxony (Robert Walter). 9.0 (from Hanover), Songs of Lower Saxony, Concert by the Hanover Station, conducted by Otto Ebel von Sosen and the Rosenstedt Choral Society. March, Gott segne Niedersachsen (Thörner-Krause); Choir: Sängerspruch Niedersachsen (Hans Heinrichs); Music of the Weser: (a) Paraphrase on Das Weserlied (Pressel-Urbach), (b) Jung-Weserlied (Ernst Prusch); Songs of the Heath: (a) Das Heidedied (Hermann Ritzau), (b) Das Blümlein auf der Heide

(Franz Abt), (c) Heidenacht (Heinrich Schrader). (d) Ueber die Heide (Albert Schenk); From the Harz to the North Sea: (a) Klänge aus dem Bodetal (Franke), (b) Glückauf, ihr Bergleut' jung und alt (Folk Song), (c) Cantabona (Max Heidorn), (d) Kapitän und Leutnant (arr. Heinrichs); Hannoverscher Königstross (Sommerlatt). 10.0, Time and News Bulletin. 10.20, Bach Recital for Three Cellos, Concerto in C; Concerto in D Minor (Bach). 10.55, Topical Talk. 11.5 (from Kiel), Concert by the Kiel Orchestra of Unemployed Musicians, conducted by Hans Döring. Festival Overture (Kalliwoda); Prelude (Järnefelt); Dämmerstündchen (Forster); Selection from Lysistrata (Lincke); Kirmes-Ländler (Niederlitz); Descriptive Piece, In a Turkish Bazaar (Dreyer); Humoresque, Rencontre (Lindsay-Theimer); Waltz, Der Himmel voller Geigen (Ziehrer); Argonne-Marsch (Männecke).

HANOVER.—See Hamburg.

HEILSBURG 1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Market Prices. 3.30, Talk: The Peasant's House in East and West Prussia. 4.0, Review of Books. 4.30, Concert by the Little Station Orchestra, conducted by Eugen Wilken: Overture, Die beiden Husaren (Doppler); Die Spieluhr der Pompadour (Noack); Liebesromanze (Schmalstieg); Fantasia on Music by Suppé (Michaelow); Waltz, Nordseebilder (Joh. Strauss); La Montagnarde (Fillipucci); Memories of the Ukraine (Ferrari); Selection from The Little Dutch Girl (Kälman); Overture, The Well of Love (Balfe); March, Germanentreue (Blankenburg). In the interval at 5.0, Talk: Memorable Days of the Week. 5.55, Talk: The German Textile Industry. 6.15, Agricultural Prices. 6.20 (from Danzig), Talk: A Century in the History of the Danzig School of Navigation. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0 (from Danzig), Chamber Music by the Society for German Culture; Soloist, Johanna Egli (Contralto); Trio for Pianoforte, Violin, and Cello, Op. 101 (Brahms); Four Songs for Contralto (Reger): (a) Das Dorf, (b) Aeolischarfe, (c) Schelmliedchen, (d) Reiterlied; Quartet for two Violins, Viola, and Cello (A. W. Paetsch). 8.50, Concert of Light Music by the Small Station Orchestra, conducted by Eugen Wilken. 9.50, Elementary English Lesson. 10.15, Weather, News, and Sports Notes.

HILVERSUM 1,013 kc/s, 296.1 metres; 20 kW.; (7 kW up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the Little V.A.R.A. Orchestra, conducted by Hugo de Groot. 12.10 p.m., Concert by De Plieders, conducted by J.v.d. Horst. 12.40, Concert by the Little V.A.R.A. Orchestra (cont'd.). 1.10, Organ Recital by Johan Jong. Overture, Norma (Bellini); Selection from La Bohème (Puccini); The Grasshoppers' Dance (Bucalossi); Ich bei Tag und Du bei Nacht (Heymann). 1.40 to 2.10, Interval. 2.10, Concert by the Amsterdam Chamber Orchestra, conducted by D. Kickens. Overture: Titus (Mozart); Liebeswälder (Reger); Potpourri of Finnish Melodies (Herrmann); Melody (Rubinstein); Torador et Andalouse (Rubinstein). 2.40, Recitations. 3.0, Organ Recital by C. Steyn. Negro Lullaby (Culsum); Im Frühling (Steyn); Wer hat Schuld dran (Goritz). 3.10, Orchestral Concert (cont'd.). Parade of the Elephants (Basque); Scandinavian Suite (Juel Frederiksen); Spanish Dance (Sanzate). 3.40, Organ Recital (cont'd.). A Perfect Day (Jacobs Bond); Selection from The Little Dutch Girl (Kälman). 3.55, Orchestral Concert (cont'd.). Streptococcus (Hiller); Schubert Potpourri (Ulrich); Japanese Carnival (Basque); Treue Kameraden (Holzmann). 4.25, Programme for Children. 4.55, Popular Music on Gramophone Records. 5.40, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot. Overture, The Caliph of Bagdad (Bochlin); Selection from Carmen (Bizet); Two Viennese Dances (Gärtner); Slav Potpourri (Wilke); Hands across the Sea (Souza). 6.25, Recitations. 6.40, Concert (cont'd.). Overture, La princesse Jaune (Saint-Saëns); Beim Tanz der Völker (Mannfred); Waltz, Tales from the Vienna Woods (Joh. Strauss); Pleador March (Oseheit). 7.20, Talk on Music. 7.39, S.O.S. Messages. 7.40, Berlin Concert by the De Stem des Volks Choir and the Utrecht Municipal Orchestra, relayed from Rotterdam. Soloist: M. Gobet, (Tenor); Fantastic Symphony; Requiem Mass. In the interval at 8.40, Dramatic Programme. 10.40, News Bulletin. 11.0 (approx.), Variety Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN 160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Christian Radio Society (N.C.R.V.).—11.55 a.m., Gramophone Records: Theodor Challapin (Bass): (a) O could I but express in Song, (b) The Blind Ploughman; Elena Gerhardt (Mezzo-Soprano): (a) Vor dem Fenster, Op. 14, No. 1 (Brahms), (b) Die Felle (Schubert); The Gresham Singers: Come to the Fair (Easthope Martin). 12.10 p.m., Organ Recital from Amsterdam. 1.40, Broadcast for Schools. 2.15, Talk on Horticulture. 2.55, Dress-making Lesson. 3.25, Programme to be announced. 3.40, Programme for Seamen. 4.40, Choral No. 3, in A Minor (Franck). 4.55, Recital of Sacred Songs. 5.55, Serenade for Thirteen Wind Instruments (Mozart), on Gramophone Records. 6.10, Answers to Correspondence. 6.40, Police Notes. 6.55, Time and News Bulletin. 7.40, Sacred Concert, relayed from a Church in Arnhem. The Arnhem Oratorio Society, J. Vincent (Soprano), C. de Wolf (Organ), Gerard Dekker (Pianoforte), G.v.d. Graaf (Harmonium), and the Arnhem Orchestral Society Wind Instrument Trio. 9.10, News. 9.25, Gramophone Records of Arthur Schnabel (Pianoforte), and the London Symphony Orchestra, conducted by Dr. Malcolm Sargent. Concerto in C, Op. 15 (Beethoven); Pianoforte Solo, Für Elise (Beethoven). 10.10, Gramophone Concert of Classical and Sacred Music. 11.10, Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS 1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements' Guide, News, Financial Notes and Racing Results. 8.15, Sports Report. 8.30, Talk on Ghosts and Ecopsalm. 9.0, Weather and News. 9.15, Literary Talk. 12 Midnight, Italian Song Recital. Amore Canta (Tagliarini); Nun me seeka (Tagliarini); Orchestra: Czardas (Delibes); Carmela (de Curtis); The Old Refrain (Ritornello); Orchestra: Mazurka (Delibes); Vesta la Guibba (Leonecavallo); O Columbian (Leonecavallo). 12.30 a.m. (Tuesday), Dance Music: I may never pass your way again; I called to say Good-night; Till To-morrow; Street of Dreams; Young and healthy; What a perfect Combination; The Japanese Sandman; Look what you've done. 12.57, I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE 734 kc/s, 408 metres; 16 kW.—7.0 p.m., Talk. 7.15, Announcements, followed by Light Music on Gramophone Records. 7.25, Announcements. 7.30, See Warsaw. 8.0, Opera, relayed from Cracow. In the interval at 10.0, Answers to Technical Correspondence. 10.30, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI 167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 368.1 metres.—6.15 p.m., Market Report. 6.25, Hungarian Songs and Duets. 6.40, Talk. 7.5, Concert by the Kansallis Choral Society for its Twenty-Fifth Anniversary, relayed from the University. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG 635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf. 12.50 p.m., Weather, Time and News. 1.0, Concert, conducted by Eysoldt: Overture, Titus (Mozart); Item to be announced; Waltz, Les Fleurs (Waldteufel); Item to be announced; Two Pieces (Grieg): (a) The Return of Peer Gynt, (b) Solveig's Song; Selection from Der Tenor der Herzogin (Künneke); March, Alle voran (Trieke). In the interval at 2.0, News. 2.30, Meat Market Prices. 3.30, Exchange and Time Signal. 3.50, Talk for Young People: The German Nation. 4.30, Haydn Concert by the Station Orchestra, conducted by Buschkitter. 5.50, Reading of Anecdotes by Ludwig Aurbacher. 6.0, Talk: The Rhenish Element in the German East Mark. 6.25, Talk for Parents: An Author's Reminiscences of his Early School Days. 6.45, Weather, Time, Economic Report, and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, First General News. 8.5, Concert by the Small Station Orchestra, conducted by Eysoldt. 9.0, The Nations and their Honour: Hungary. Programme of Hungarian Sketches, Verse, Prose and Music, with Introductory Talk and Commentary by Dr. Erich Fortner. 10.5, News, Announcements and Sports Notes. 10.30, Serenade, conducted by Wolf. 12 Midnight, Close Down.

LAUBANNE.—See Radio-Suisse Romande.

LEIPZIG 769.9 kc/s, 389.6 metres; 120 kW. and Dresden, 941 kc/s, 319 metres.—12 Noon, Weather Report and Time Signal. 12.5 p.m., Spring, May and Sunshine—Gramophone Concert of Choral Music. 1.0, News. 1.15, Classical Music on Gramophone Records. 2.0, Art and Film Review. 2.30, Talk for Women: The Place of Women in Modern Germany. 3.0, Song Recital by Herbert Neck (Tenor). Frühlingsglaube (Schubert); Frühlingsbotschaft (Schumann); Frühlingsgrüss (Schumann); Wanderchaft (Lyra); Tanzlied in Malen (Franz); Heine'sch (Wolf); Mahnung (Hermann); Friedliche (Pretsch); Eines steht Peuchent (Lüttgens). 3.35, Economic Notes. 4.0, Talk: The Seventeenth Century Novel—Grimm'schen. 4.20, Concert by the Emdé Orchestra: Overture, Flotte Hunsche (Suppé); Waltz, Brennende Augen (Becker); Die Spieluhr der Pompadour (Noack); Potpourri, Lehariana (Lehár); Inza campestre (Respighi); Minuet (Gruener); Waltz, Märchen aus dem Orient (Joh. Strauss); Glow-worm Idyll (Lincke); Heine'schen's Hochzeit (Kopping); March, Unter dem Freiheitsbann (Zolner). 5.50, Economic Notes, News, Weather Forecast, and Time Signal. 6.0, Report from the German High School in Pirna. 6.25, Reading: The Blind Man and his Dog. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Variety Programme. 9.0, Topical Talk. 9.15, News. 9.20, Concert by a Nazi Military Band: Die Jugend marschert (Lindemann); Seid unig (Buselt); Overture on a Thuringian Folk Song Theme (Latam); Waltz, Dorfschwestern aus Österreich (Jos. Strauss); Fantasia on the Song Aus der Jugendzeit (Friedemann); Heine'schen's Wachtplade (Noack); Deutsches Land in Sang und Klang (Franke); March, 1933 Deutschlands Aufstieg (Taubert). 10.20, News. 10.30 (approx.), Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Wacker; Shakespeare Suite No. 2 (Humperdinck); Selection from Hans Heiling (Marschner); Spanish Rhapsody (Richardly); Norwegian Melodies (Grieg); Selection from Die Landstreicher (Ziehrer); Waltz, Frühlingslieder (Waldteufel); Selection from Der Obersteiger (Zeller). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA 522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, Esperanto Lesson. 7.30, Serbo-Croat Lesson. 8.0, See Belgrade. In the interval at 9.0, Weather and News. 10.30 (approx.), Close down.

LWOW 788 kc/s, 381 metres; 16 kW.—7.0 p.m., Political Talk. 7.15, Miscellaneous Items. 7.30, See Warsaw. 8.0, Relay of an Opera from Cracow. In the intervals, News from Warsaw and Talk. 10.30 till Close Down, See Warsaw.

LYONS LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW. 7.30 p.m., Radio Gazette. 8.50, Concert relayed from the Conservatoire. After the Programme, News Bulletin.

MADRID UNION RADIO, Call EAJ7, 707 kc/s, 423.3 metres; 2 kW.—8.0 p.m., Chimes from the Cathedral, Exchange Quotations, and Radio Journal. 9.15, News Bulletin. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA 1,137 kc/s, 269.8 metres; 11 kW.—5.50 p.m., Light Music on Gramophone Records. 6.0, Talk on School Examinations. 6.15, Talk for Workers. 6.25, See Prague. 6.30, German Transmission: Talk on Wilhelm Busch and Review of Periodicals. 7.0, See Prague. 7.25, See Brno. 8.25 till Close Down, See Prague. 10.15 (approx.), Close Down.

MOSCOW TRADES UNION, 230 kc/s, 1,304 metres; 160 kW.—6.30 p.m., Concert. 9.0, Talk in English: Marxism and Leninism. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH 563 kc/s, 533 metres; 60 kW. Relay by Augsburg and Künerslautern, 536 kc/s, 566 metres; and Nürnberg, 1,256 kc/s, 232.2 metres.—4.30 p.m., Orchestral Concert. 5.45, Talk: The Rise of Democracy. 6.5, Talk: People of the Sudetic Mountains. 6.25, Pianoforte Recital. 6.45, Time Signal. Weather Report and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Orchestral Concert, conducted by H. Winter. Soloist: Erich Müller-Ahrenberg (Baritone). Overture, The Barber of Bagdad (Cornelius); Ballet Music from Rosamunde (Schubert); Three Songs for Baritone and Orchestra (Franckenstein); Petite Suite

MAY 15th

MONDAY

continued

(Debussy); Waltz, Die Schönbrunner (Lanner). 9.5, Talk: The Hahnfalz in the Bavarian Mountains. 9.30, Concert of Chamber Music. 10.20, Time Signal, Weather Report, News and Sports Notes. 10.45, Serenade by the Bavarian Schrammel Quartet.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert of Chamber Music by the Radio Ensemble: Overture, The Nuremberg Doll (Adam); Waltz, Mon Réve (Waldteufel); Geburtstags-Güthenchen (Lincke); Plaisir d'amour (Martini); In the Shadows (Finck); Corona (Barnon); Popular Finnish Melody (Hermann). 6.0, German Lesson. 6.30, Talk. 7.0, Announcements, Weather, and News. 7.30, 'Cello Recital by Yrjö Selin: Sonata in G (Santmartini); Minstrel Song (Ghazimov); Sicilienne (Faure); Intermezzo (Granados); Spanish Dance (Granados). 8.0, Time Signal. 8.1, Childhood's Friend—Play (Vogt). 9.10, Review of Foreign Politics. 9.38, Talk for Gardeners, Weather Forecast, and News Bulletin. 10.0, Topical Talk. 10.15, The Tront Quintet (Schubert) on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolarov Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Records. In the interval at 8.30, Time and Announcements. 9.0, Variety Concert. 10.0, A Comedy, followed by Gramophone Records of Popular Music. 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 1,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot signals).—6.45 p.m., Theatre Review. 7.0, Le Journal Parlé. 7.30, Concert arranged by the Composers' Society: Trio in the Form of a Suite for Piano-forte, Violin and Cello (Daudelot); Three Songs (Bastien-Couat); (a) Nevermore; (b) Viola; (c) Notre Père; Concert Piece for 'Cello (de Fages-Iosin); Three Poems for Piano-forte, Soirs (Léser); Suite for Piano-forte, Les Carillons; Two Songs (Lantier); Pastorale for Oboe, Cello and Piano-forte (Roosgen-Champion); Sonata for Piano-forte and Violin (Bertrand). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Sponsored Concert. 8.0, Medical Talk. 8.5, Talk on Aviation. 8.15, Half an Hour of Songs, by Max Régner and his Company. 9.0, Interval. 9.15, Sponsored Programme. 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—12 Noon, Concert of Opera and Ballet Music by the Radio Paris Orchestra. 1.0 p.m., Exchange, News, and Weather. 1.5, Piano Recital by Jean Denery. 1.30, Exchange. 1.35, Orchestral Concert (cont'd.). 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Film Review. 7.0, Book Review. 7.20, Concert by the Radio Orchestra: Berceuse (Gaubert); Danse des lutins (Gillet); Selection from The Little Dutch Girl (Kálmán); Scherzo (Muszorgsky). 7.45, Commercial Prices and News. 8.0, A Waltz Dream—Operetta (O. Straus). In the intervals at 8.30, News, Weather, and Sports Notes, at 8.40, Review by Paul Reboux, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W2XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.45, Human Values. 9.0, Teaberry Baseball Scores. 9.5, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Lois Miller—Folk Songs. 10.0, Teaberry Baseball Scores. 10.5, Programme to be announced. 10.15, Dick Darling, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Programme to be announced. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Biggs and Moke. 11.45 to 1.30 a.m. (Tuesday), New York Relay. 11.45, To-day's News, by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Townsend Murder Mystery. 12.30, Five Star Theatre—Marx Brothers. 1.0, Cluquet Club Eskimos. 1.30, Programme to be

announced. 1.45 to 3.0, New York Relay. 1.45, Phil Cook and the Ingram Shavers. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Momenets. 3.0, Time Signal and KDKA Players.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.55 p.m., Theatre Notes and Programme Announcements. 6.0, Miscellaneous Items and Wireless Notes. 6.20, Programme for Soldiers. 7.5, Miscellaneous Items and News. 7.28, Time Signal. 7.30, See Warsaw. 8.0, 'La soumbambula'—Opera (Bellini), relayed from Craow. In an interval, Sports Notes and News from Warsaw. 10.30, Time Signal, Sports Notes and Police Announcements. 10.45 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava. 5.10, Medical Talk. 5.20, Talk: Commercial Engineering. 5.30, Programme for Children. 5.50, Popular Music on Gramophone Records. 6.5, Agricultural Talk. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk on Municipal Politics. 7.0, Chimes. 7.1, News Bulletin. 7.10, English Lesson. 7.25, See Brno. 8.25, Talk: Plants of Medicinal Value. 8.40, Concert by the Nusic Mandoline and Guitar Club. 9.0, Time Signal. 9.1, Concert by the Station Orchestra, conducted by Otakar Jeremias and the Prague Sokol Choral Society, conducted by Jeremias and Kubat. Soloist: Marie Pixova. 10.0, Time Signal. 10.1, News Bulletin. 10.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.—Geneva, 395 kc/s, 760 metres.—7.30 p.m. (from Lausanne), Weather, News and Announcements. 8.0 (from Lausanne), Piano-forte Recital by Mme. Yvonne Gamboni. 8.25 (from Lausanne), Song Recital by Mme. Stierlin-Vallon. 8.50 (from Geneva), Variety Programme by the Broadcasting Sereaders. 9.50, News and Weather. 10.0 (from Geneva), Gramophone Records of Popular Music. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.30 p.m., Orchestral Concert: Aria from Lohengrin (Wagner); Aria from The Valkyries (Wagner); Liebesleid (Kreisler); Russian Song; Moment musical (Schubert); Mattinata (Leoncavallo); Minuet (Padervesky); Spring (Hildaeh); Waltz, Estudiantina (Waldteufel); Overture, Light Cavalry (Suppé). 6.10, Agricultural Talk. 6.40, English Lesson. 7.10, Weather Report. 7.15, Concert of Popular Latvian Songs by the University Choir. 8.0, News Bulletin. 8.20, Suite, Aphrodite (Février) by the Station Orchestra, conducted by J. Medins. 9.0, Weather and News. 9.15, Concert of Waltzes. 10.15 (approx.), Close Down.

RJKUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and RRO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Gramophone Concert of Light Music. In the interval at 1.30 (approx.) to 1.45, Exchange and Giornale Radio. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Song and Piano-forte Recital. Prelude, Sarabande and Toccata for Piano-forte (Debussy); Baritone Solos: (a) Aria from Faust (Gounod), (b) Cavatina from The Barber of Seville (Rossini); Soprano Solos: (a) Donne vaghe (Paisiello), (b) Aria from I Puritani (Bellini), (c) Aria from Hamlet (Thomas); Piano-forte Solo, Allegro from the Concerto (Granados); Baritone Solos: (a) Aria from Nero (Rubinstein), (b) Aria from Falstaff (Verdi). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolarov Notes. 7.10, Tourist Report. 7.20, Giornale Radio. 8.0, Time and Announcements, followed by Popular Music on Gramophone Records. 8.30, Giornale Radio and Sports Notes. 8.45, Concert of Light Music. In the interval, Talk. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 p.m., Book News by Levere Fuller. 8.15 to 9.0, New York Relay. 8.15, Salon Concert Ensemble. 8.30, Three Scamps. 8.45, The Lady Next Door. 11.45, Stock Report. 12 Midnight to 1.30 a.m. (Tuesday), New York Relay. 12 Midnight, Societyland Sketch. 12.30, National Opera Concert. 12.45, Band of Famous Brands. 1.0, A and P Gipsies. 1.30, One Man's Family, by the WGY Players. 2.0 to 3.0 (approx.), New York Relay. 2.0, Contented Programme. 2.30, National Radio Forum, followed by Programme Résumé. 3.0 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Basle), With Kettle Drum and Trumpet Gramophone Concert of March Music. 12.30, News Bulletin. 12.40 (from Basle), Folk Music on Gramophone Records. 1.25 to 1.30 (from Basle), Exchange, Time and Weather. 5.0 (from Basle), Programme for Women. 5.30 (from Berne), Popular Music on Gramophone Records. 6.30 (from Zürich), Talk: Swiss Agriculture. 7.0, Time and Weather. 7.10 (from Zürich), Concert by the Swiss Radio Orchestra. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Concert by the Swiss Radio Orchestra. 8.30 (from Zürich), Report from the New Studio. 9.0, Weather and News. 9.10 (from Zürich), Organ Recital from the New Studio. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 377 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Concert by the Lidings Male Voice Choir, conducted by Gösta Lidman. 5.30, Talk. 5.55, Popular Music on Gramophone Records. 6.55, Parliamentary Report. 7.15, Weather and News. 7.30, Talk. 8.0, Concerts by the Station Orchestra, Incidental Music from Plays: Extract from Meister Oluf (Anlin); Selection from Mneh Ado about Nothing (Korngold); Elegy from Gustavus Adolphus (Alfvén); Selection from Pelléas et Mélisande (Faure); Selection from The Marionettes (Rosenberg); Incidental Music from King Christian II (Sibelius). 9.15 (from Göteborg), Reading. 9.45, Weather and News. 10.0, Orchestral Concert: Overture, Morning, Noon and Night (Suppé); Waltz, Wiener Bonbons (Joh. Strauss); Selection from Lilac Time (Schubert-Berté); Im Wiener Wurste-Prater (Brosch); Potpourri, Servus Wien (Dostal). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW. 11.30 a.m., Selection from the Operas of Massenet on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal and Exchange Quotations. 1.5, Light Music on Gramophone Records. 2.0 to 5.0, Interval. 5.0, Orchestral Concert. Conductor and Solo 'Cello: M. Roskam. Marche joyeuse (Gnécion); Waltz, Fleur d'Alsace (Christol); Schubert, Potpourri (Ralf); Overture, Im Reich der Indra (Lincke); Selection from The Tales of Hoffmann (Offenbach); Andante from the 'Cello Concerto (Gölkertmann); Rose-Thé (Fauchey); Selection from La Mascotte (Audran); Fantocini (Gillet). 6.0, Book Review. 6.15, Talk in French: Through Lorraine. 6.30, Gramophone Concert. Selection from Schön ist die Welt (Lehár); (Lion from Schön ist die Welt (Lehár); Liebesleid (Kreisler); The Nightingale; Nutt joyeuse (Minsart); Lagerflour (Sieler); Serenade (Klose); Am Lagerflour (Sieler); Spanish Waltz (Metra); March (Cariolato); Gipsy Melody, Black Eyes; Russian Melody, Shadows of the Past; Potpourri nos dire adieu (Ros); La Fortune (Marrio); Rund um die Volza (Reichert). 7.30, Time and News. 7.45, Gabriel Faure Concert on Gramophone Records. Après un reve; Berceux; Recontre; Clair de lune; Soir; Les Roses d'Espagne; Les mythes sont hétris; An bord de l'eau; Pie Jésus. 8.15, German Press Review in German and Lottery Results. 8.30, Frederica Operetta in Three Acts (Lehár). In the interval at 9.30 (approx.), Press Review in French. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—12 Noon, Promenade Concert by a Military Band, relayed from the Schlossplatz. Festival March from Tamblüser (Wagner); Overture, Il Guarany (Gomez); Waltz, Tales from The Vienna Woods (Joh. Strauss); Hungarian Rhapsody (Reinold); Potpourri of Soldier Songs (Hannemann). 1.0, Gramophone Records of Light Music. 1.15, Time, News, Weather and Programme Announcements. 1.30, Gramophone Records of Herbert Ernst Groh (Tenor): Romance from Semiramide (Rossini); Cavatina from La Favorita (Donizetti); Romance from The Pearl Fishers (Bizet); Liebesfeier (Weingartner); Song from Le Postillon de Longjumeau (Adam); Song from Mignon (Thomas); Harlequin's Serenade from I Pagliacci (Leoncavallo); Im Prater blühen wieder die Bäume (Stolz); Waltz, Wiener Blut (Joh. Strauss). 2.0 to 2.15, Programme arranged by the Post Office, with Gramophone Records. 2.30, Spanish Lesson. 3.0 to 3.30, Elementary English Lesson. 4.30, See Munich. 5.45, Time, Weather and Agricultural Prices. 6.0, Talk: Germany and her Leaders—Paul von Hindenburg. 6.25, See

Frankfurt. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Leipzig. 9.0, See Hamburg. 10.0, Time, News, Weather and Programme Announcements. 10.20, Talk on Chess. 10.45, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire. 7.30 p.m., Songs from Operettas. 8.15, Songs from Souad Films. 8.30, Arias from Operas. 8.45, Music Hall Programme. 9.15, Military Music. 9.30, Concert: Part I—Solos. Part II—Popular Songs. 10.0, Accordion Solos. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown—Constable announcing. 11.30, Celebrity Concert on Gramophone Records: The Gay Highway, by Peter Dawson; The Buggies prepare for a Party, by Mabel Constanduros and Michael Hogan; Dear, when I met you, by Jeannette Macdonald; The Vagabond, by Peter Dawson; Memories of Maurice Chavalier; The Telegraphy, by Billy Lancet; Love is like a Song, by Dorothy Dixon; Lullaby of the Leaves, by Roy Fox. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Bal Musette. 12.15, Instrumental Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Variety Concert. 6.35, Giornale Radio, Agricultural Report and Dopolarov Announcements. 7.4, Time Signal and Tourist Report. 7.5, Gramophone Records. Fantasia, Excelsior (Marenco); Notte gioiosa (Tufano); Cordoba (Albéniz); Farfalla rosa (Torregrossa); La España caní (Marquina). 7.20, Giornale Radio. 7.45, Light Music on Gramophone Records. 8.0, Announcements. Giornale Radio and Weather. 8.10 (approx.), Gramophone Concert. Overture, Der Freischütz (Weber); Selection from La Gran Via (Chueca-Valverde); Scherzo (Lalo); Selection from Boccaccio (Suppé); Symphonic Poem, Psyche (Franck); The Garden of Roses; Waltz, Roses from the South (Joh. Strauss). 8.45, Talk. 9.0, Chamber Music. 10.0, One Act Comedy. After the comedy, Gramophone Records of Songs and Dance Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—6.0 p.m. Talk: The Wienerwald. 6.25, English Lesson. 6.45, Time, Weather Forecast, Alpine Weather and Programme Announcements. 6.55, Rienz—Opera in Five Acts (Wagner), relayed from the Opera House. In an interval at 9.15, (approx.), News and Weather Forecast. 10.50, Market Prices. 10.55, Concert of Gramophone Records. Overture, Der Opernball (Heuberger); Waltz, Roses from the South (Joh. Strauss); Phrase on the Dance Tune, Handome Gigolo (Casucci); Musikalische Wandelpanorama (P. Lincke); Selection from Die Puppenfee (Bayer).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Press Review. 11.50, Weather for Aviation. 11.57, Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Popular Music on Gramophone Records. 1.20, Weather. 1.25, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Answers to Correspondents. 3.35, Answers to Technical Correspondence. 3.50, Light Music on Gramophone Records. 4.25, Elementary French Lesson. 4.40, Talk on Economics. 5.0, Song and Violin Recital by Z. Kowarska (Soprano) and Z. Roesner. 5.55, Programme Announcements. 6.0, Dance Music. In an interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural Correspondence. 7.30, Topical Talk. 7.45, Radio Journal. 8.0, Dramatic Programme, relayed from the Municipal Theatre, Cracow, 959 kc/s, 312.8 metres. In the intervals, Sports Notes, Radio Journal, and Answers to Technical Correspondence. 10.30, Dance Music. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music from the Adria. 12 Midnight (approx.), Close Down.

ZÜRICH.—See Schweizerischer Landessender.

TUESDAY

MAY THE SIXTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON REGIONAL MIDLAND REGIONAL NORTH REGIONAL WEST REGIONAL SCOTTISH REGIONAL BELFAST

"Tickets, Please," a modern fairy story with music. Act 1 of "Tristan and Isolde" (Wagner), from the Royal Opera House, Covent Garden.
"O, Death, Where is Thy Sting?" a play by Allan Monkhouse, from the Repertory Theatre, Birmingham.
"The Circling Year," a radio drama of the Industrial North, by R. Strickland.
Police Band concert.
"Two Town Topics," a revue by W. Lindsay.

ABROAD

BUCHAREST BUDAPEST EIFFEL TOWER HAMBURG HUIZEN LEIPZIG MUNICH POSTE PARISIEN

8.20 p.m. Concert by the Station Orchestra.
6.30 p.m. Concert of Hungarian opera music.
8.30 p.m. Opera: "L'Arlésienne," by Bizet.
10.30 p.m. The Philharmonic Orchestra, conducted by H. Platen.
2.40 p.m. Pianoforte recital by J. van Emden.
7 p.m. Old German songs, sung by the choir of St. Thomas' Church (relayed by other German stations).
8.5 p.m. Opera: "The Fair at Sorochinsk" (Mussorgsky) (relayed from Nürnberg).
8.30 p.m. Concert of Norwegian music.

8.15, News Bulletin. 8.30, See Paris (Eiffel Tower).

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert of Music by Ganne; The Small Station Orchestra, conducted by Paul Leemans. 12.30 p.m., Concert of Music by Belgian Composers. 1.0, Le Journal Parlé. 1.10, Two Pieces (Liszt) on Gramophone Records: (a) Waltz, Mephisto, (b) Hungarian Rhapsody No. 12; Three Songs by M. Jacquier (Tenor). 1.45, Three Melodies (Berlioz): (a) Dance of the Sylphs, (b) Hungarian March, (c) Scherzo from Romeo and Juliet. 5.0, Labé Concert by the Radio Orchestra, conducted by Franz André; Overture, Le Roi d'Ys; Romance from the Violin Concerto; Divertissement. 5.30, Programme for Children. 6.5, Literary Talk. 6.15, Quartet in D—the Skylark (Haydn) on Gramophone Records. 6.30, Beethoven Concert by the Small Station Orchestra, conducted by Paul Leemans. 7.15, Weekly Review and Film Notes. 7.30, Programme for Women. 8.0, Jazz in the Zoo—Fantasy (Basilevsky), by the Station Orchestra, conducted by Franz André. 8.20, Offenbach Concert: Overture, La Vie Parisienne; Intermezzo and Barenolle from The Tales of Hoffmann; Quadrille from Orpheus in the Underworld; Overture, The Drum Major's Daughter. 8.45, Talk on Music. 9.0, Concert by the Radio Orchestra, conducted by Franz André; Soloist: M. Pierzyk (Songs); Overture and Aria from Si j'étais toi (Adam); Overture and Aria from Véronique (Messager); Overture and Song from La Masette (Andran); Overture, Les Dragons de Villars (Maillart); Waltz from Les Saltimbanques (Ganne); Mademoiselle Sophie (Laclauque); Aria from Les Noeuds de Jeannette (Massé); Waltz from Ciboulette (Hahn). 10.0, Le Journal Parlé. 10.10, Request Gramophone Concert. 10.40, Gramophone Records: Concerto Grosso, No. 14 (Handel); Pièce héroïque (Franck). 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW.—12 Noon, Gramophone Concert of Variety Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Leemans: Overture, Poet and Peasant (Stuppe); Waltz (Ziehrer); Dance of the Hours from La Gioconda (Pouchicelli); Gramophone Records and Racing Notes; Selection from The Bartered Bride (Smetana); Two Airs from a Sound Film (Grun). 5.0, Popular Music on Gramophone Records. 5.45, Programme for Children. 6.30, Extracts from The Merry Widow—Operetta (Lehár) on Gramophone Records. 6.55, Gramophone Records of Songs sung by Ernst Busch. 7.15, Talk. 7.30, Le Journal Parlé. 8.0, Concert of Music by Peter Benoit and Other Flemish Composers; The Station Symphony Orchestra, conducted by Meulmans; Soloists: Irene van Rijsselberghe (Pianoforte) and Jef van Schoeland (Baritone). 10.0, Le

Journal Parlé. 10.10, Light Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Model Orchestra. In the interval at 6.0, Radio Journal. 7.0, Talks. 7.40, Light Music on Gramophone Records. 8.0, Song Recital by Aurel Alexandresco: La nuit (Tchaikovsky); Song (Tchaikovsky); Der Gärtner (Wald); Selbstgefühl (Mahler); O Böhliche Wägen (Brahms); Song (Mozzatti). 8.20, Concert by the Station Orchestra: Prelude and Death of Isolda from Tristan and Isolda (Wagner); Suite, A Midsummer Night's Dream (Mendelssohn); Selection from Turandot (Puccini); Selection from La belle Hélène (Offenbach); Potpourri, Für alle (Dostal). 9.0, Talk. 9.15, Concert (contd.): Soloist, G. Draghici (Cello); Viennese Waltz (Delmas); Second Movement from the Fifth Symphony (Dvorak); Marionettes (Liadov); Serenade No. 3 for Cello (Volkmann); Slav March (Tchaikovsky). 9.45, Radio Journal. 10.0, Talk: The Spas of Romania.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 6.30 p.m. to 12 Midnight. 4.0 p.m., Concert by the Lajos Skikszay Gypsy Band. 4.45, News Bulletin. 5.0, Reading. 5.30, Cello Recital by Paul Hermann. 6.0, Talk by Pilot Tibor Bisti; My Machine, Gerle B. 6.30, Concert of Hungarian Opera Music by the Opera House Orchestra, conducted by E. Friedl; Overture, Ilka (Doppler); Selection from Bánk bán (Erkel); Ballet Music from Tatjana (Lehár); Selection from The Queen of Sheba (Goldmark); Carnival Wedding (Poldini); Ballet Music from Die Maske (Hubay). 8.0, Liszt International Pianoforte Competition relayed from the Academy of Music. 10.0, News Bulletin. 10.15 (approx.), Concert by the Georg Guttenberg Concert and Dance Band and the Antal Koczé Gypsy Band from the Café Ostend. Soloist: Paul Kalmar. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. and KALUNDBORG, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Stranahotel. 2.0 to 3.0, No Transmission. 3.0, Concert by Carl Rydshis Instrumental Ensemble. Soloist: Madeleine Pfeiffer (Pianoforte). 5.0, Programme for Children. 5.4, Exchange and Fish Market Prices. 5.5, Talk. 6.20, German Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Talk: Criminal Law in Soviet Russia. 8.0, Chimes from the Town Hall. 8.5, Introductory Talk to the following Transmission. 8.15, Così fan tutte—Opera in Two Acts (Mozart). 10.15, News. 10.30, Reading. 10.50, Dance Music relayed from the Nimb Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. T. St. A. Roudal, C. Danvers-Walter, and B. McNabb announcing. 5.30, Concert of Special Request Items for Torquay and Exeter Listeners: Invitation to the Waltz (Weber); Songs: (a) Just plain Folk (Gilbert), (b) Sleep Baby, sleep (Tucker); Sketch: Days of the Dug-outs; Song: I'll never ask for more (Albert); Waltz, The Blue Danube (Joh. Strauss); Songs: (a) The Heart of the Sunset (Nichols), (b) Take your Tomorrow (Rozof); Tales from the Vienna Woods (Strauss); Song: Hello Sunshine (Murray). 6.15, Organ and Violin Recital for Plymouth and Devonport Listeners: Organ Solos: (a) A Perfect Day (Jacobs Bond), (b) Indian Love Call (Friml); Violin and Organ Duet: Because (d'Hardelot); Organ Solos: (a) Selection from Cavalleria rusticana (Mascagni), (b) Il Bacio (Arditi); Violin and Organ Duet: (a) I'll sing thee Songs of Araby (Clay), (b) Drink to me only (Calcott); Organ Solos: (a) Nola (Arditi), (b) Turkish Patrol (Michalek); Xylophone and Organ Duet: The Whistler and his Dog (Pryor); Organ Solos: (a) Glow Worm Idyll (Lincke), (b) A Life on the Ocean (Binding). 7.0, Radio Gazette. 7.20, News Bulletin. 7.30, Request Programme and News. 8.15, Talk. 8.30, Concert relayed from Le Havre. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Bicolians: Back again to happy-go-lucky Days; Was that the Human thing to do?; Hot Coffee; She didn't say Yes; Good-night Vienna; Snap your Fingers; Five Minutes to Twelve; Sungled on your Shoulder; Somebody loves you; Masquerade; Mujah General Thing-a-me-bob; Auf Wiedersehen, my dear; Ooh! that Kiss; Good Evening. 11.0, Concert of Hungarian Music: Comedy Overture (Keler Bela); Hungarian Dance No. 2 (Brahms); Violin Solo: Hejre Kati (Hubay); Hungarian Dance No. 5 (Brahms); Hungarian Rhapsody No. 2 (Liszt); Lucassi March (Lucassi); Hungarian Medley (arr. Leggatt). 11.30, Songs and Or-

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 5.0, Programme for Children. 6.40, News and British Market Report. 7.0, Gaelic Readings. 7.15, Recitations. 7.30, Pianoforte Solos by Victor Love. 7.50, Violin Duets by Mrs. Larchet and Mrs. Lange. 8.15, Tenor Solos by Joseph O'Neill. 8.25, The Station Orchestra. 8.40, Tenor Solos by Joseph O'Neill. 8.50, The Station Orchestra. 9.0, Soprano Solos by May Doyle. 9.20, The Station Orchestra. 9.50, Gaelic Song Recital by Tadhu MacFhairsigh. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA

(EAJ), 860 kc/s, 348.8 metres—8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records and Talk on Hygiene. 8.30, Exchange Quotations and Art Notes. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral. Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. 10.5, Sponsored Programme. 10.30, Two Musical Comedies: (a) El Pobre Nauvencu (Valverde and Tortigrosa), (b) La Venta de Don Quijote (Chapi). In the interval at 12 Midnight, News. 1.0 a.m. (Wednesday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—5.30 p.m., Pianoforte Recital by Adolforto Sardelli. 6.0 to 6.30, Popular Music on Gramophone Records. 8.0, Agricultural Report, Tourist Report, and Dopplavoro Notes. 8.20, Giornale Radio and Weather. 8.30, Time and News. 8.40 (approx.), Choral Concert: Invocation alla Madonna for Soprano, Choir, Pianoforte, and Harmonium (Mascagni); Ecco (di Lasso); Sereñata (Ari); Three Songs Montanaro; (a) O villano, stimola quei buoi, (b) Dove vai, o Mariolina? (c) La Gianna; Canzone amorosa baresa (Trinadisi); Contrappunto bestiale alla mente (Banchieri). 9.30, Quintet Concert: Overture (Monton); Il minuetto (Licari); Selection from Frederica (Lehár); Valzer campestre, from the Suite siciliana (Marinuzzi); Festa di gnomi (Colotta); Selection from La Figlia di Jorio (Franchetti); Selection from Casanova (Lincke). In the interval, Announcements. 10.30, Concert relayed from the Grand Hotel Moderno. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Concert by the Station Orchestra: March, Serbische Lieder (Rondal); Overture on Serbian Themes (Rondal); Egyptian Suite (Theile); Love Song (Schmalstich); Selection from Tosca (Puccini). 5.0, Talk. 6.55, Time and Programme Announcements. 7.0, Reading. 7.30, Light Music on Gramophone Records. 8.0, See Zagreb. 10.0, News, followed by Concert of Gypsy Music from the Rudnicain.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Variety Music. 3.0, Talk for Young People: Bathing. 3.30, Weather and Exchange. 3.45, Reading: Der Gottesdienst (Gerhard Klose). 4.0, See Leipzig. 5.0, Talks for Women. 5.25, Topical Talk. 5.35, Sextet for Pianoforte and Wind Instruments (Ludwig Thuille) by the State Opera House Wind Instrument Quartet and Soloists. 6.0, A Poem. 6.5, Schrammel Music by the Dietrich Quartet. 6.50, Political Press Review. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, The Honey-moon—after the Novel by de Coster (arranged for Radio by Klaus Herrmann). 9.10, Wind Instrument Concert, relayed from Hamburg. 10.0, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Concert from Hamburg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN; 715 kc/s, 419.5 metres; 1.5 kW.—6.10 p.m., Review of Books. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.5, Announcements. 8.10, Youth and the State—Adventures and Prospects for the Intellectual (Leopold Dingrave). 8.35, Concert by the Berlin Wireless Orchestra, conducted by Erich Orthmann; Reflections on a Russian Folk Song, for String Orchestra, Op. 56 (Erich Anders); Serenade in D (Mozart). 9.40, Gutholz—A Radio Report from a Skittle-Afley. 10.0, Weather, News, and Sports Notes. 10.30 (approx.), Concert from Hamburg. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BERDMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODD.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.30 p.m., News and Exchange. 7.40, Talk for Women. 7.55, Lottery Results. 8.0, Scientific Talk.

BRATISLAVA 1,075 kc/s, 279 metres; 14 kW.—4.10 p.m., Concert by the Yugoslav Children's Choir, relayed from the Reduta Hall. 5.0, Light Music on Gramophone Records. 5.50, Sonata for Violin, Op. 27 (Fibich). 5.50, Talk: Influence of Education on the Character of Children. 6.0, Light Music on Gramophone Records. 6.5, See Prague. 6.15, Sonata in F Minor for Two Pianofortes (Brahms). 6.55, Programme for Women. 7.0, See Prague. 7.25, Talk on the following Transmission. 7.30, Thais—Opera (Massenet), relayed from the Slovak National Theatre. 10.0, See Prague. 10.15, Concert of Schrammel Music. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 263 metres.—1.10 p.m., Gramophone Concert of Waltzes. 1.45, Time, Weather, News, and Exchange. 2.5, Request Gramophone Concert: Overture, The Caliph of Bagdad (Boieldieu); Aria from La Bohème (Puccini); Turkish March (Mozart); Mexican Folk Song (Bourdon); Selection from Tiefland (d'Albert); Liebeslied-Walzer (Joh. Strauss); Puppe und Humpelmann (Stede); Waltz from Die Puppentheater (Bayer); March, Freiheit-jubel (Blankenburg). 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Programme for Children. 4.10, Lieder Recital by Hedwig Zbečka-Fuhrmann (Soprano); Klärenes Lied (Schubert); Im Hain (Schubert); Die Rose (Spohr); Du bist wie eine Blume (Liszt); Eros (Grieg); Ich liebe dich (Grieg); Nur Wer die Sehnsucht kennt (Tchaikovsky); O du wogendes Feld (Rachmaninov). 4.40, Book Review: Portraits of women in Diaries and Letters. 5.0, Concert from Leipzig. 5.30, Agricultural Prices. 5.35, Talk: Christianity and Free Will. 6.0, Memorial Concert of Music by Sigfrid Karg-Elert: Caecilia con variazioni, Op. 14, No. 3; Um Mitternacht, Op. 58, No. 8; Air, Op. 37, No. 5; Canzone, Op. 46, No. 2. 6.25, Programme to be announced. 6.50, Weather for Farmers, News, and Market Prices. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Stuttgart. 9.0, News. 9.10, Military Band Concert from Hamburg. 10.0, Time, Weather, News, Sports Notes, and Programme Announcements. 10.25, Political Press Review. 10.50, Talk: Film Criticism. 11.5, Concert from Hamburg. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.15 p.m., Talk for Workers. 6.25, German Transmission: News and Agricultural Talk. 7.0, See Prague. 7.25, See Bratislava. 10.0, See Prague. 11.0 (approx.), Close Down.

MAY 16th

TUESDAY

continued

chestral Music; Songs: (a) To Mary, (b) Maire, my Girl, (c) Passing by, Wedgewood Blue; Songs: (a) Down Vauxhall Way, (b) Beauty's Eyes, (c) Green Hills of Somerset, (d) Sari Waltz. 12 Midnight, Club Concert for Epsom and Kingston-on-Thames Listeners: Post Horn Gallop (Koenig); I do like a nice Outsider; Sleepy Valley (Hanley); Horses Carry Tails (Redmond); Thompson's Old Grey Mule (Pickard); Sketch: Peter Perkins at the Races; Waltz Favourites (Ancliffe); A Ghost of a Chance (Washington); Valse des Alouettes (Drigo); You're still my Sweetheart (Yellen); Just an Echo in the Valley (Woods); March of the Mannikins; Moonlight on the River. 1.0 a.m. (Wednesday), Mandoline Solos: In old Seville (Rosen); Mandolinata (de Pietro); Capriccio Mazurka (Arienzo); Mandoline Band; Tesorio Mio (Benetti); Napolitana (Meisel); Mandoline (Thomé); Czardas (Monti); Mandoline Band; Waltz, The Blue Danube (Strauss). 1.30, Songs: A Little Kiss each Morning (Woods); The Night was made for Love (Kern); I am the Words (de Sylva); Orchestra: Selection from White Horse Inn (Stolz-Benatzky); Now I'm in love (Vellen); A New Love is Old (Harbach); Little White Lies (Donaldson). 2.0, Dance Music by the Theliosians: By the Fireside; Oh, Monah; The Longer that you linger in Virginia; To-day I feel so Happy; Sunshine and Roses; Consolation; Oh what a Night; Anchor's aweigh; I still get a Thrill; I'd like to find the Guy that wrote the Stein Song; That's where the South begins; Hunting Tigers out in India; If I could be with you; Soldier on the Shelf. 2.57, I.B.C. Good-night Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Astronomical Talk: The Heavens in May and June. 6.25, Talk: The Importance of the German Mystics to us and our Age. 6.50, Time, Programme Announcements, Weather, and Economic Notes. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, See Stuttgart. 9.0, A German Almanac. 9.15, Concert by the Station Orchestra: March, Frühlingskinder (Blankenburg); Sicilienne and Gavotte (Bloekx); Waltz from the Aschenputtel-Suite (d'Albert); Bilder aus Norden (Hoffmann); Musikalische Dorfgeschichten (Kretschmer); Romantic Suite (Armandola); March, Unter deutscher Flagge (André). 10.15, Time, News, Weather, and Sports Notes. 10.45, See Stuttgart. 12 Midnight (approx.). Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.55 p.m., Book Review. 6.20, Lower Saxon Organ Music—Recital for Choir and Organ, relayed from the Christuskirche, Hanover: Organ Solo, A solis ortus cardine (Praetorius); Choir, Es war des ew'gen Vaters Rat (Praetorius); Prelude and Fugue in C for Organ (Böhm); Choir, Hymne an die Novembarnacht, Op. 3b, No. 2 (v. Sosen); Organ Solo, Unseren deutschen Brüdern (Gorissen). 6.45, Frankfurt Exchange and Hamburg Egg Market Prices. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0 (from Bremen), Oldenburg—a Literary and Musical Radio Sequence. Part I.—Address by Herr Carl Rover, The Oldenburg National Anthem, Heil Dir o Oldenburg; Variations for Clarinet and Pianoforte (Weber); The Countryside in Verse; Four Songs: (a) Am Strand (Karg-Ehler), (b) Am Waldessaum (Rehfeld), (c) Zigeunerlied (Allmers), (d) Friesengesang (Allmers); The Sea, Marsh, Moor, and Heath in Prose; Concerto for Flute and Pianoforte (Manns); Poems in North German Dialect; Two Songs (Wüst); (a) Auf den Tod meines Kindes, (b) Folk Song; Finale. Part II.—Military Band Concert of Marches, 10.0, Time and News. 10.20, Topical Talk. 10.30, Concert by the Hamburg Philharmonic Orchestra, conducted by Horst Platen: Prelude to the Third Act and Bridal Chorus from Lohengrin (Wagner); Overture, Genevieve (Schumann); Allegro Molto, Scherzo and Minuet from the Serenade in D (Brahms); Selection from André Chénier (Giordano); Walzer-Szenen (Reuter); Die Mär vom tapferen Schneiderlein (Zimmer); Waltz, Frühlingsstimmen (Joh. Strauss).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 1,622 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Potpourris. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records.

3.0, Market Prices and Exchange Quotations. 3.30, Programme for Children. 4.0 (from Danzig), Police Band Concert: March, Der grüne Jägermann (Albott); Jubel-Ouverture (Plotow); Waltz from The Gipsy Princess (Kálmán); Selection from Mignon (Thomas); Intermezzo, Spring in Japan (Jessel); March, Sport und Spiel (Leuschner); Overture to Josef Lanner (Trבח); Fantasia, Nachruf an Weber (Bach); Introduction and Chorus from Rienzi (Wagner); Slav Rhapsody No. 2 (Friedemann); Kriegsspiele (Möller); Potpourri of Marches, Deutschlands Erwachen (Kochmann). In the interval at 4.50, Programme for the 149th Anniversary of the Birth of Friedrich Rückert. 5.45, Dialogue on the Army Training School for Administration and Economics. 6.15, Agricultural Prices. 6.25, Talk on Handicrafts; The Locksmith. 6.50, Weather Forecast. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, News. 8.5, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken and the Glazal Band. 9.35, News. 9.45, Talk: Seven Centuries of the Village of Marienwerder. 10.15, Weather, News and Sports Notes.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. up to 4.40 p.m.). Programme of the Allgemeine Vereingung Radio Omroep.—10.10 a.m., Organ and Cello Recital by Piet van Egmond (Jr.) and André Fellemann. In an interval at 10.40, Talk. 11.40, Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep: March, Immer froh und heiter (Siede); Lyric Suite (d'Albert); Waltz, Trés jolie (Waldteufel); Selection from I Pagliacci (Leoncavallo); Gramophone Records: Overture, Paragaph III (Suppé); Selection from Die blaue Mazur (Lehar); Liebesleid (Kreislere); Liebesfreud (Kreislere); Prelude (Rachmaninov); Czardas (Michiels); Gramophone Records: Overture, The Nuremberg Doll (Adam); Night in Cairo (Kalman); Hungarian Dance Suite (Kalman); Von Ohr zu Ohr (Dorena); March, Im Zigeunerlager (Oscheit). 1.55 p.m., Interval. 2.10, Gramophone Concert of Light Music. 2.40, Dressphone making Lesson. 3.40, The Emperor Quartet, Op. 76, No. 3 (Haydn). 4.10, Concert by the Children's Choir, conducted by Jacob Hamel. 4.40, Programme for Children. 5.10, Talk. 5.40, Popular Music on Gramophone Records. 6.10, Talk. 6.40, Light Music on Gramophone Records. 7.5, Interval. 7.40, Time and News. 7.45, Concert of Light Music by Kovacs Lajos and his Orchestra. 8.55, Radio Play. 9.40, Concert by the Wireless Orchestra, conducted by Nico Treep: Soloist: Ebert Veen (Pianoforte); Overture, Il Seraglio (Mozart); Pianoforte Solo: Rondo in B Flat (Beethoven); Selection from Tannhäuser (Wagner); Pianoforte Solo: Capriccio, Op. 22 (Mendelssohn); Overture, The Merry Wives of Windsor (Nicolaï). 10.40, News. 10.50, Concert of Light Music by a Women's Orchestra, conducted by Alexander Shirmann. 11.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the Con Brio Trio. 1.25 p.m., Interval. 1.40, Programme for Women. 2.40, Piano Recital by J. van Emden: Invitation to the Waltz (Weber); Rustle of Spring (Sinding); Liebesträume No. 3 (Liszt); La Campanella (Liszt); Gramophone Records: Grande Valse brillante (Chopin); Nocturne in F Sharp (Chopin); Etude in A Flat (Chopin); Etude in G Flat (Chopin); Mazurka in B Flat (Chopin); Minuet in G (Paderewsky). 3.40, Programme arranged by the H.I.R.O. 4.50, Concert by the KRO Sextet: The Belle of Barcelona (Payne); Ich nicht einmal wieder verliebt sein (Stolz); Waltz, Mörgenblätter (Strauss); Potpourri; Lehárana (Geiger); Mir gefällt jede Frau (Grosz); Selection from Lilac Time (Schubert-Berté); Kleine Yvonne (Sachs); Klänge aus Rumänien (Dauber); Femina (Fresco). In an interval at 5.40, Talk. 6.40, Police Notes. 6.55, Talk. 7.20, Gramophone Records. 7.25, Talk. 7.40, Concert by the KRO Orchestra, conducted by M. Kühn: Homage March (Wagner); Selection from Tannhäuser (Wagner); Selection from The Mastersingers (Wagner); Overture, Rienzi (Wagner). 8.20, Press Review. 8.25, One-Act Radio Play. 8.40, Concert (cont'd.); Selection from Romeo and Juliet (Tchaikovsky); Elegy and Waltz from the Suite for Strings (Tchaikovsky); Theme, Variations, and Polacca from Suite No. 111 (Tchaikovsky). 9.10, One-Act Radio Play. 9.30, Concert (cont'd.): Academic Festival Overture (Brahms); Wiener Dreiviertelakt (Wagner); March from The Damnation of Faust (Berlioz). In the interval at 10.10, Press Notes. 10.15, Light Music on Gramophone Records.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Notes,

and Racing Results. 8.40, Agricultural Talk. 8.20, The Listeners' Quarter of an Hour. 8.35, Radio Concert. 9.0, Weather and News. 9.15, Radio Concert (cont'd.). 12 Midnight till Close Down, Programme in English by the I.B.C. 12 Midnight, Organ Recital: Popular Irish Medley; La Serenata (Braga); Sweet Genevieve (Tucker); In a Chinese Temple Garden (Ketebe); Mother Machree (Olcott); Who am I? (Newman); A Perfect Day (Jacobs-Bond); Medley of Wilfred Sanderson's Popular Songs. 12.30 a.m. (Wednesday), Dance Music: A Letter to my Mother; Love will find a Way; Standing on the Corner; Butterflies in the Rain; I'm playing with Fire; Do you recall; Willow weep for me; Can't we meet again? 12.57, I.B.C. Goodnight Melody. 1.0 (approx.). Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW. 7.0 p.m., Talk. 7.15, Announcements, followed by Popular Music on Gramophone Records. 7.25, Sports Notes. 7.30, See Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW., and Helsinki, 368.1 metres.—6.14 p.m. to 8.45 p.m., Coast-guard Programme, Music and Addresses. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., concert conducted by Wolf; Soloist: Magda Langer (Soprano). In the interval at 2.0, News. 2.30 to 2.45, Sponsored Programme with Gramophone Records. 3.0, Programme for Children. 3.30, Economic Notes and Time Signal. 3.50, Notes on the Broadcasts for Schools. 4.0, Educational Talk: The Teaching of Mathematics. 4.30, Concert by the Prisca Quartet, Margarethe Dörr (Contralto) and Ebert Grape (Pianoforte): String Quartet in B flat; Five Songs: (a) Auf dem See, (b) Dämmerung senkte sich von oben, (c) Es träumte mir, (d) Die Mainacht, (e) Swabian Folk Song; String Quartet in A Minor. 5.50, Reading of Poems by Heinrich Lersch. 6.0, Talk: The Open-Air Theatre in Modern Times. 6.20, Italian Lesson. 6.45, Weather, Time, Economic Report and Sports Notes. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, First General News. 8.5, May Night—a Radio Sequence, with Music by Leo Justinus Kauffmann. 8.40, Chamber Music by Young Rheinisch Composers; Josef Ingenbrand (Pianoforte); Walter Kimkel (Violin); Herbert Anrath (Violin) and Robert Grote (Cello); Suite for Cello and Pianoforte (Ingenbrand); String Trio No. 1 in E Minor, Op. 14 (Schröder). 9.15, Station D in the Polar Seas—Radio Play (Hanns Braun). 10.5, News, Announcements, Sports Notes and Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres, 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Weather Report and Time Signal. 12.5 p.m., Concert from Heilsberg. 1.0, News. 1.15, Gramophone Concert of Classical Music. After the Concert, News. 2.0 to 2.15, Agricultural Notes. 3.35, Economic Notes. 4.0, Concert by the Chemnitz Philharmonic Orchestra, conducted by Philipp Werner: Overture, Die vierjährige Posten (Schubert); Ballet Music from Austin (Marschner); Introduction to Act II of Die Königskinder (Humperdinck); Dance Suite (Klaas); Selection from The Black Orhoid (d'Albert); Entr'acte and Hymn from the Stimmungsbilder (von Flietz); Kleine Unterhaltungsmusik, Op. 89 (Siegl); Comedy Overture. In the intervals, Readings in Dialect. 5.50, Economic Notes, Weather Forecast, and Time Signal. 6.25, Talk. 6.45, Programme to be announced. 7.0, Transmission for all German Stations. Old German Songs by the Choir of St. Thomas Church, conducted by Dr. Karl Straube: Wach auf, wach auf, du deutsches Land (Walther, 1496-1570); Das Judaslied (von Brück, d. 1545); Wohlau!, wohlau!, Jung und Alt (Anon., 1540); Trennungsschmerz (Regnart, 1576); Das Gelübt zu Speier (Senfl, 1492-1555); Songs (Hassler, 1564-1612): (a) Mein G'müt ist mir verwirret, (b) Tanzen und Springen, (c) Herzlieb zu dir allein, (d) Im kühlen Maien; Songs (Schein, 1586-1630): (a) Je länger, je lieber, (b) Du Macht der Phyllis; Songs (Brahms): (a) Mit Lust tät ich ansreien, (b) Bei nichtlicher Weil, (c) Die Wollust in den Maieu, (d) In stiller Nacht. 8.0, Speech by R. Walter Darré. 9.0, News. 9.10, Concert by the Leipzig Symphony Orchestra, conducted by Otto Kieckhuf; Symphonic Prelude, Op. 108 (Beger); Siegfried Idyll (Wagner); Serenade, Op. 45 (von Franckenstein); Minuet (Schubert); Old Styrian Dance Music (Pacheregg); Dynamiden-Walzer (Jos. Strauss). 10.25, News. 10.30, Extracts from Czar and Car-

center—Comic Opera (Lortzing), on Gramophone Records. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, German Lesson. 7.30, Programme for Women. 8.0, See Zagreb. 10.0, Weather and News. 10.10 (approx.), Light Music on Gramophone Records. 11.0 (approx.), Close Down.

LWOW

788 kc/s, 381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.30, See Warsaw. 10.45, Popular Music on Gramophone Records. 10.55, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette. 8.30, See Paris (Eiffel Tower).

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW. 8.0 p.m., Chimes, Exchange Quotations, Radio Journal and Request Gramophone Records. In an interval at 8.30, Talk by Joaquin España Cantos. 9.15, News Bulletin and Political Review. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes, Time Signal, Political Review and Relay from a Theatre. 12.45 a.m. (Wednesday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by J. Plichta. 5.10, See Prague. 5.50, Popular Music on Gramophone Records. 6.0, Talk on Neurology. 6.15, See Brno. 7.0, See Prague. 7.25, See Bratislava. 10.0, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 160 kW.—6.30 p.m., Concert from the Radio Theatre. 9.0, Talk in French: Social Democracy in Russia and the Power of the Soviet. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserlautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Orchestral Concert, conducted by Max Textor. Overture, Die Fledermaus (Joh. Strauss); Immerose (Dvorak); Czardas in A Minor (Zheutbauer); Selection from Aida (Verdi); Perpetuum mobile (Strauss); Minuet (Mozart); Aufschwung (Schumann); Symphonic Intermezzo (Mascagni); Potpourri, Von Wien durch die Welt (Hrubý). 5.45 (from Nürnberg), Talk on the Fourth Centenary of the Death of Veit Stoss. 6.5, Talk: Bi-march's Work—German Problems and German Union, 1815-62. 6.25, Introductory Talk to the 8.5 Transmission. 6.45, Time Signal, Weather Report, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.5 (from Nürnberg), The Fair at Sorochinsk—Opera (Moussorgsky). 9.20, News. 9.45 (from Nürnberg), Caucasian Comedy—Opera (Otto Wartsch), relayed from the Municipal Theatre. 10.45, Time, Weather Report, News, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres; 5.0 p.m., Light Music on Gramophone Records. 6.0, Programme for Housewives. 6.45, Recital of Jazz Music on Two Pianofortes. 7.0, Announcements, Weather and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Talk. 8.30, Concert by the Station Orchestra, conducted by Hugo Kraum. Overture, Le cheval de bronze (Anber); Potpourri (Schmalstich); In an Old Convent Garden (Humm); Melodies of Spring (Sandell); Wanderer in der Nacht (Rubinstein); Danse lente (César Franck); Czardas (Lindsay-Thiemer); Selection from Die indische Witwe (O. Strauss). 9.38, Agricultural Report, Weather and News. 10.0, Topical Talk. 10.15, Recitations, relayed from Trondheim, 605 kc/s, 495.8 metres. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Report and Giornale Radio. 8.20, Gramophone Records. In the interval

at 8.30, Time and Announcements. 8.45, Carmen—Opera (Bizet) on Gramophone Records. In the intervals, Literary Talk and Announcements. After the Opera News.

MAY 16th

TUESDAY

continued

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

PARIS

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., Sec Moravska-Ostrava. 5.10, Talk arranged by the Board of Trade. 5.20, Czech Lesson for Germans and German Lesson for Czechs. 5.50, Gramophone Records of Light Music. 6.5, Market Prices. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission; Beethoven Recital by Hans Hotter (Songs); Ervina Brokesova (Violin), Kurt Passer and E. Brendt-Totmayer (Pianoforte); An die Hoffnung; Song; Violin Concerto in A, Op. 12; Freudvoll und Idyllvoll. 7.0, Chimes from the Church of St. Ludmila. 7.1, News. 7.30, Talk. 7.25, See Bratislava. In an interval at 9.0, Time Signal. 10.0, Time, News, and Sports Notes. 10.15, Gramophone Records of Popular Music. 11.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Sponsored Concert. 8.0, Talk on the Cinema. 8.5, Legal Talk. 8.15, Interval. 8.30, Concert of Norwegian Music in Honour of the National Festival; Conductor, Theodore Mathien; Soloist, M. Maurice Bèche (Pianoforte); Overture, Im Herbst (Grieg); Songs: (a) Die Prinzessin, (b) Ich liebe dich (Grieg); Extracts from the Concerto in A Minor for Pianoforte and Orchestra (Grieg); Norwegian Rhapsody (J. S. Svendsen); Melodies for Strings (Sigurd Lie); Two Songs (Sigurd Lie): (a) Snow, (b) Light; Carnaval à Paris (Svendsen); Dance and Wedding March (Halvorsen); Song, Liberty (Elling); White Nights (Hurum); Rustle of Spring (Sinding); Three Songs (Sinding); Two Melodies (David Monrad Johansen); Entry March of the Boyards (Halvorsen); Norwegian National Anthem. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—12 Noon, Concert of Opera Music by the Krettl Orchestra. 1.0 p.m., Exchange, News, and Weather. 1.5, Song Recital by M. Marino. 1.30, Exchange. 1.35, Orchestral Concert (contd.); Overture, Don Giovanni (Mozart); Air from the Suite in D (Bach); First Part of the Trio in C Minor (Beethoven); Overture, To the Story of the Lovely Melusina (Mendelssohn); Nocturne and Musette (Sibelius). 2.0, Exchange and News. 3.45, Exchange. 6.10, Agricultural Talk. 6.30, English Lesson. 6.50, Theatre Guide. 7.5, Talk on Art. 7.20, Concert by the Krettl Orchestra; Selection from Lysistrata (Lincke); Gavotte (Steek); Russian Song (Manière); Suite, Joyous Youth (Coates). 7.45, Review of the English Press. 8.0, Half-an-hour of Fantasy by Paul Will. 8.30, News, Weather, and Sports Notes. 8.40, Review by Pierre Seize. 8.45, La maison des juges—Play (Leroux). 10.0, Press Review and News. 10.15, Gramophone Concert; Overture, William Tell (Rossini); L'eau qui court (Georges); Les adieux à la forêt (Brumcau); Le sommeil de l'enfant Jesus (Büsser); March from Aida (Verdi).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 900 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, Congress of Clubs Period. 9.0, Teaberry Baseball Scores. 9.5, Meredith Wilson Orchestra, from New York. 9.15, Selma Brandt (Pianist). 9.50, Weather Report. 9.31, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, Programme to be announced. 10.15, Dick Darling, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Village Barn Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.30, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Vick's Song Weavers. 11.35, Riggs and Moke. 11.45 to 3.15 a.m. (Wednesday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pop-sentiment Amos 'n' Andy. 12.15 a.m., National Advisory Council on Radio in Education. 12.45, Southern Singers. 1.0, Euro Crime Clues. 1.30, Adventures in Health. 1.45, From the Composer to You with Herman Hupfeld. 2.0, Household Musical Memories. 2.30, Willard Robinson's Deep River Orchestra. 3.0, Time Signal and the Tune Detective.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.0 kW.—5.55 p.m., Theatre Notes and Programme Announcements. 6.0, Light Music on Gramophone Records. 6.35, Topical Talk. 6.50, Miscellaneous Items and News. 7.10, Book Review. 7.28, Time Signal. 7.30, See Warsaw. 8.0, Concert of Light Music by the Station Orchestra. 8.30, Soloist Concert. Part I: Violin Solos by Prof. Witold Both, Chaconne (Vitali); Arab's Song (Rimsky-Korsakov); Air from Rosamunde (Schubert-Kreisler); Andalusian Romance (Sarasate); Gipsy Dance (Nacht). Part II—Song Recital by Mmes. Jasnoch and Mancezak. Part III—Concerto for Cello (Saint-Saëns) by E. Sienkiewicz. In an interval, News from Warsaw. 10.0, See Warsaw. 10.15, Time Signal, Sports Notes and Police Announcements. 10.30, Dance Music from the Esplanade Café. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., Sec Moravska-Ostrava. 5.10, Talk arranged by the Board of Trade. 5.20, Czech Lesson for Germans and German Lesson for Czechs. 5.50, Gramophone Records of Light Music. 6.5, Market Prices. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission; Beethoven Recital by Hans Hotter (Songs); Ervina Brokesova (Violin), Kurt Passer and E. Brendt-Totmayer (Pianoforte); An die Hoffnung; Song; Violin Concerto in A, Op. 12; Freudvoll und Idyllvoll. 7.0, Chimes from the Church of St. Ludmila. 7.1, News. 7.30, Talk. 7.25, See Bratislava. In an interval at 9.0, Time Signal. 10.0, Time, News, and Sports Notes. 10.15, Gramophone Records of Popular Music. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m., New Gramophone Records. 7.30 (from Geneva), Weather and News. 7.45 (from Geneva), Answers to Correspondence. 8.0 (from Lausanne), Talk: The Twenty-Ninth Cantonal Festival of the Vaudois Singers on May 24th, 27th, and 28th. 8.30 (from Lausanne), Recital of Sonatas, by M. Charles-Lassueur (Pianoforte) and M. Edmond Appia (Violin). 9.0 (from Lausanne), Country Programme by the Moser Orchestra and C. Gerval (Songs). 9.50, News and Weather. 10.0 (from Lausanne), A Musical Innovation—Part I: Instrumental Solos on Gramophone Records, with Pianoforte Accompaniment in the Studio. Part II: Songs from the Studio, with Gramophone Accompaniment. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW. 5.30 p.m., Soloist Concert. 6.30, French Lesson. 7.0, Weather Report. 7.5, Dramatic Programme. 8.0, News. 8.15, Concert by the Dziesnuvara Choral Society, relayed from the Conservatoire. After the Concert at 8.50, News. 9.0, Weather Report. 9.15, Dramatic Programme. 9.35, Popular Concert, conducted by A. Parups; Overture, Amerson (Cherubini); Selection from The Tales of Hoffmann (Offenbach); Suite, Scènes d'Italie (Godard); Selection from La Traviata (Verdi); Waltz, Wine, Woman and Song (Joh. Strauss). 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 620 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Concert of Variety Music. In the interval from 1.50 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Orchestral Concert; Sons (de Serra); Valzer del sole (Mariotti Mendez); Con me ti porterò (Prote Rano); Strimpellata alle stelle (Zanfù); Fantasia, Cinema Melodies (Schubert); All for love (Gay); Visione orientale (Bever); Mona Lisa (Stolz); Melody (Brodszky). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Giornale Radio. 8.0, Time and Announcements. 8.2, Talk. 8.15, Song Recital by Maria Valente (Soprano). 8.30, Giornale Radio and Sports Notes. 8.45, Variety Concert; Sonata in G for Violin and Pianoforte (Porpora); Tenor Solos: (a) Aria from Mignon (Thomas), (b) Ballata del pastorello in montagna (de Angelis), (c) Aria from Manon (Massepet), (d) Aria from Lucia di Lammermoor (Donizetti); Five Pieces for Violin and Pianoforte: (a) On a Theme of Salinas, (b) On a Theme of José Bassa, (c) On a Theme of Rafael Angles, (d) On a Theme of Pablo Esteve, (e) On a Dance Air of Pablo Esteve; Violin Solo, Caprice Viennois (Kreisler). 10.0 (approx.), Coreo bendato—Comedy in One Act (Sabatino Lopez). 10.30, Songs of South America—Recital by Maria Senes, followed by Gramophone Records of Popular Music. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF, on 31.48 metres; and by W2XAD, on 15.56 metres.—11.45 p.m., Stock Reports. 12 Midnight to 3.0 a.m. (Wednesday), New York Relay. 12 Midnight, Blackstone Plantation. 12.30 a.m., Wayne King's Orchestra. 1.0, Ben Bernie's Orchestra. 1.30, Ed Wynm and the Fire Chief Band. 2.0, Walter Damrosch Symphony Orchestra, followed by Programme Résumé. 3.0 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.: Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuenburg Observatory and Weather. 12.5 p.m. (from Zürich), Concert by the Swiss Radio Orchestra. 1.25 (from Zürich), Exchange, Time, and Weather. 1.30 to 5.0, Interval. 5.0 (from Zürich), Orchestral Concert. 5.30 (from Basle), Light Music on Gramophone Records. 6.30 (from Berne), Programme for Children. 7.0 (from Berne), Time, Weather, and Notes on the Broadcasts for Schools. 7.10 (from Berne), Variety Music on Gramophone Records. 8.0 (from Berne), Programme to be announced. 9.0, Weather and News. 9.10 (from Berne), Programme to be announced. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Programme for Children. 5.30, Popular Music on Gramophone Records. 6.15, Song Recital by Karin and Niels Juul. 6.45, Elementary French Lesson, relayed from Malmö, 1,301 kc/s, 231 metres. 7.15, Weather and News. 7.30, Cabaret Programme. 8.0 (from Göteborg), Dis-ension on Co-operation between the Middle Classes. In an interval, at 9.45, Weather and News. 11.30 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Music. 12 Noon, Orchestral Concert, conducted by Maurice de Villers. In the intervals at 12.45, News, and at 1.0, Time and Exchange. 2.0 to 4.45, Interval. 4.45, Talk in French on the French Colonies—Cambodia. 5.0, Jazz Music conducted by Roskam. 6.0, Historical Talk in French. 6.15, Topical Talk in French. 6.30, Concert of Chamber Music: String Quartet (Dumas); Sonata for Viollo and Pianoforte (Boillmann). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German and Lottery Results. 8.30, Gala Evening, relayed from Paris. After the Relay, Press Review in French. 10.30 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Concert from Langenberg. 2.0, Programme arranged by the Post Office, with Gramophone Records. 2.30 to 3.0, Advanced English Lesson. 3.30, Talk: Flowers. 4.0, Programme for Women. 4.30, See Munich. 5.45, Time, Weather, and Agricultural Notes. 6.0, Talk: The Dumb Speak. 6.25, Talk: German Gliding. 6.50, Time and News. 7.0, Transmission for all German stations, relayed from Leipzig. 8.0, A Soldier's Life—Report from Ludwigshafen. 8.30, Operetta Concert by the Station Orchestra, conducted by Gustav Göhrlich; Soloists: Gerda Hans (Soprano) and Hans Huns (Tenor); Overture, Gasparone (Milkicker); Recitative and Air from Die selbige Galathee (Suppe); Duet from Boccaccio (Suppe); March from Boccaccio (Suppe); Dream Waltz from Der Feldprediger (Milkicker); Song and Duet from Frasquita (Lehar); Selection from Paganini (Lehar). 9.45, Talk on the Theatre. 10.15, Time, News, Weather, and Programme Announcements. 10.45, Dance Music by the Philharmonic Orchestra, with Soloists. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—7.30 p.m., Sound Film Music. 7.45, Music by a Symphony Orchestra. 8.15, Popular Songs. 8.30, Military Music. 8.45, Opera-Comique Music: Selection from Hamlet (Thomas), Lakmé (Delibes) and Carmen (Bizet). 9.0, Concert by the Toulouse Symphony Orchestra, conducted by M. Tartanac. Light Music in the intervals. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Music by an Argentine Orchestra. 11.15, Popular Melodies. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing; A Song and Dance Programme: Miss Elizabeth Brown; River stay away from my door; I'll always be true; With my guitar and you; Dance of the raindrops; Life's Desire; Old-fashioned Girl; You are the Melody. 11.57, I.B.C. Good-night Melody. 12 Midnight, News and Weather. 12.5 a.m. (Wednesday), Selection from The Grisha (Jones). 12.15, Accordion Music. 12.30 (approx.), Close Down.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 999 kc/s, 300.8 metres.—5.15 to 6.0 p.m., Dance Music Relay. 6.35, Giornale Radio, Agricultural Report and Dopolavoro Announcements. 7.0, Time and Report of the Royal Geographical Society. 7.5 (approx.), Gramophone Records of Songs. Ombre (Galdier-Don Caslar); Chiacchiere (Gurgo-Mari); Jungla (Di Lazzaro-Galdieri); Fez (Marr-Mischeroni). 7.20, Giornale Radio. 7.45, Light Music on Gramophone Records. 8.0, Announcements, Giornale Radio, Weather and Popular Music on Gramophone Records. 9.0, Variety Programme. 10.0, Talk. 10.15, Dance Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in English. 8.0 to 8.15 p.m., Religious information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,658 kc/s, 283 metres; Klagenfurt, 657 kc/s, 453.2 metres; Linz, 1,220 kc/s, 244.9 metres; and Salzburg, 1,373 kc/s, 216.5 metres.—5.25 p.m., Pianoforte and Song Recital by Olga Hueber-Mausel (Pianoforte) and Cäcilie König (Soprano). Accompanist, Erich Moller. Sonata in F Minor, Op. 2, No. 1 (Beethoven); Songs: (a) Aria from Avis and Galathea (Händel), (b) Aria from Julius Caesar (Händel), (c) Aria from the cantata, Frome dich, erlöste Selar (Bach); Aria from The Creation (Haydn); Aria from Idomeneo (Mozart). 6.5, Agricultural Talk. 6.30, French Lesson. 7.0, Military Band Concert, March, Kaiserhymnen (Lehar); Overture, Der Schatzmeister (Zichner); March, Heil dem Ring der Goldenen (Penz); Waltz, golden Rain (Waldtaubel); Pol-pouri, Lilac Time (Sehner-Berte). 7.30, Time, Weather Forecast, Alpine Weather and Programme Announcements. 7.35, Concert (contd.), March (Grieg); Pol-pouri of Marches (Kozzak); March, Aller Ehren der Österreich voll (Novotny). 8.0, Talk: The First International Flight over the Austrian Alps. 1933. 8.5, Topical Talk. 8.20, Honour where Honour is due—Radio Sequence. 9.20, Talk: 1933 in German and Austrian History. 9.50, News, Weather Forecast and Market Prices. 10.5, Dance Music by Gustav Rohl and his Orchestra, from the Palmhof Café. Soloists: Viktor Sternau (Songs), Will Swobala (Pianoforte), and Hans Pische (Vibraphone).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 Time and Fanfare from St. Mary's Church (Cracow). 12.5 p.m., Programme Announcements. 12.10, Popular Music on Gramophone Records. 1.20, Weather. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Aviation Report and Anti-Gas Drill. 3.30, Announcements. 3.35, Book Review. 3.50, Popular Music on Gramophone Records. 4.25, Talk for Teachers. 4.40, Talk relayed from Cracow, 959 kc/s (312.8 metres). 5.0, Symphony concert by the Warsaw Philharmonic Orchestra, conducted by Grigorie Fitelberg. Soloists: Armand Ganteau-Biron (Pianoforte); 5.55, Programme Announcements. 6.0, Concert of Light Music from the Café Italia. In an interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural Notes. 7.30, Talk on Symphonies. 7.45, Radio Journal. 8.0, Concert by the Station Orchestra, conducted by J. Oziminski. Soloist: Marie Ronska (Songs). Overture, Maximilien Robespierre (Litolff); Divertimento from the suite Op. 43, No. 2 (Tchaikovsky); Waltz from Eugene Onegin (Tchaikovsky); Arias from: (a) Il Trovatore (Verdi), (b) Don Carlos (Verdi), (c) Norma (Bellini); Suite from King Christian II (Sibelius); Prelude and Air from Déjanire (Saint-Saëns); Spanish Dance (Sarasate); Pauline's Aria from The Queen of Spades (Tchaikovsky); Song (Zelenka); Song, Deception (Szopski); Second Peer Gynt Suite (Grieg); Minuet (Paderewsky); Concert Waltz (Moszkowski); March from Sigurd Jorsalfar (Grieg). In an interval, Sports Notes and Radio Journal. 10.0, Reading. 10.15, Song Recital by Georges Czapski. 10.45, Popular Music on Gramophone Records. 10.55, Weather and Police Report. 11.0, Dance Music from the Gaza.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.40 p.m., Announcements. 8.0, Pianoforte Recital. 8.30, Concert of Slav Music. 10.0, News and Weather. 10.10, Dance Music. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.



Great END-OF-SEASON Clearance Sale

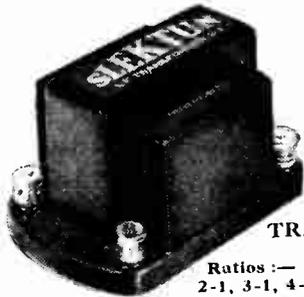
A WONDERFUL OPPORTUNITY!

OF BRAND NEW TESTED COMPONENTS AT LIQUIDATION PRICES

MONEY-SAVING IS MONEY-MAKING!

This is a perfectly genuine offer. The famous high-grade Slektun components here illustrated are being sacrificed at these exceptional prices because we were able to clear the manufacturers' end-of-season surplus stocks at specially low prices in order to release valuable factory space for work on important new contracts.

Even though you may not be requiring any of these components now, it will pay you to secure some to put aside, for this opportunity will not be available after present stocks are exhausted. Every component is bench-tested and *guaranteed*. Orders will be executed in strict rotation and delivered *Post Free*.

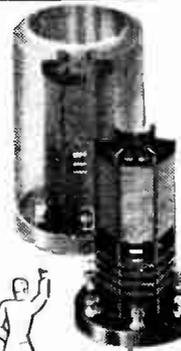


SLEKTUN "SUPER" TRANSFORMERS

Ratios:—
2-1, 3-1, 4-1, 5-1.

~~8/6~~
5/!

The finest L.F. Transformer ever made. Patented process makes short-circuited turns impossible. Windings hermetically sealed and all interleaved. Marvellous value at the list price of 8/6. Now offered at only



SLEKTUN Dual Range SCREENED COILS.

These coils have a particularly low loss construction and exceedingly wide range—185 to 2,300 metres with a .0005 mfd. variable condenser. Aerial coil H.F. with reaction. Both listed at 6/6 each.

~~6/6~~
4/6

A wonderful offer at only



SLEKTUN SHORT WAVE CHOKES

~~2/9~~
2/!



A well-designed Short Wave H.F. choke for use in sets covering the 15-100 metres wave-band.

SLEKTUN H.F. CHOKES

~~4/!~~
2/6

SUPER-HET CHOKES

A very superior job. Extraordinarily high inductance combined with low self-capacity. Extremely low D.C. resistance. List price 4/!. Offered at

~~3/!~~
3/!



SLEKTUN MAINS TRANSFORMERS

Metallic screening between primary and secondary windings. Positively no background noises.

Type H.W.2.

Universal input 0-200-220-230-240. Output 250 volts at 75 milliamps. 4v. 4a. C.T. 4v. 1a. C.T. List price 25/6. Offered at 15/-

~~25/6~~
15/!

Type F.W.2.

Universal input 0-200-220-230-240. Output 250-0-250 at 75 milliamps. 4v. 4a. C.T. 4v. 2a. C.T. List price 29/6. Offered at 17/6

~~29/6~~
17/6

Type F.W.3.

Universal input 0-200-220-230-240. Output 350-0-350 volts at 75 milliamps. 4v. 4a. C.T. 4v. 2a. C.T. List price 32/6. Offered at 20/-

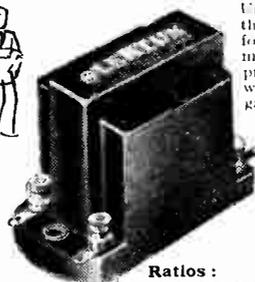
~~32/6~~
20/!

A few only now left of the famous S.G. BROWN BATTERY SUPERSEDERS.

A really wonderful offer. Gives H.T. supply from your accumulator. Original price 75/-. Offered at

~~75/-~~
30/!

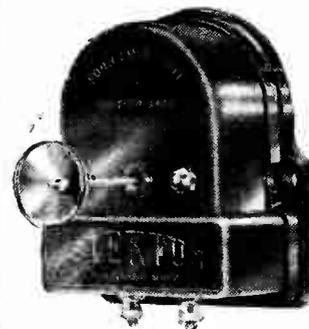
SLEKTUN "COLT" L.F. TRANSFORMERS.



Unquestionably the finest transformer ever made at its list price of 1/6. A wonderful bargain at only 2/6.

~~1/6~~
2/6

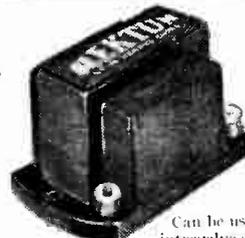
Ratios:—
2-1, 3-1, 4-1, 5-1



SLEKTUN LOUDSPEAKER UNITS.

This perfectly designed and beautifully finished 4-pole balanced Armature Unit is used by many leading Set and Loudspeaker manufacturers. It was cheap at list price 8/6, but positively a gift at

~~8/6~~
5/!



SLEKTUN General Purpose L.F. CHOKES

~~7/6~~
4/!

Can be used as an intervalve coupling choke or as output filter choke. Always fine value at its list price of 7/6. A wonderful bargain at

NEW SETS AT REDUCED PRICES: We are in a position to offer Sets of various well-known makes, both for A.C. and D.C. Mains and Battery models, at bargain prices. Also, we will make a liberal part-exchange allowance for old sets of any make. Send particulars of set required and also of your old set.

THE CABARET ELECTRIC Co., Ltd.
182, VAUXHALL BRIDGE ROAD, WESTMINSTER, S.W.1

Telephone: Victoria 5022.

See how much an Ekco Unit saves you!

50 times cheaper than batteries!

Study the table shown above. It gives some illuminating facts about running costs of sets. It shows that whatever your set, providing you have electric light, you can reduce its running costs to a negligible amount by installing an EKCO Power Unit in place of expensive batteries! It shows that an EKCO Power Unit saves the money it costs in the first year of use! And Easy Payments are as low as 3/8 per month. All you have to do is to connect the suitable EKCO Unit in place of the battery, plug in to the electric light or power and switch on—that's all! No alterations to set, valves or wiring. Consult your dealer or post-coupon below.

A.C. Mains.					
Class	Type of Set	Annual running cost of batteries	Ekco Unit suitable	Cost price of Ekco Unit suitable	Annual running cost of Unit *
1.	Screened-Grid 3 ; Straight Three, and smaller sets	50/-	A.C. 12 12 m/a Output	55/- or by Easy Payments	1/-
2.	S.G. Three with Pentode; Screened-Grid Four ; Sets with "Class B" Output	75/-	A.C. 18 18 m/a Output	67/6 or by Easy Payments	1/6
3.	S.G. Four with Pentode; Super-Hets. ; 5-Valve Sets ; Sets with "Class B" Output	100/-	A.C. 25 25 m/a Output	77/6 or by Easy Payments	2/-
D.C. Mains.					
1.	Any set shown above	50/- to 100/- as shown above	D.C. 15/25 15 or 25 m/a Output	39/6 or by Easy Payments	Class 1
2.					1/-
3.					Class 2 or 3 1/7

L.T. Charging costs 6d. a year extra (instead of 25 - a year!).
 Combined H.T. and L.T. Charger Units from 79 6 (for A.C. Mains only).
 * Based on 3 hours' daily use.



EKCO Units and "Class B"

All standard EKCO Units have adequate regulated capacity for use with receivers employing "Class B" amplification. Models A.C.18, A.C.25, K.18 and K.25 are particularly recommended.

To E. K. COLE, LTD., Dept. W.S.,
 Ekco Works, Southend-on-Sea.
 Please send me FREE illustrated literature of EKCO All-Electric Radio.

Name

Address



Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

The Wireless World

THE PRACTICAL RADIO JOURNAL
23rd Year of Publication

No. 715.

FRIDAY, MAY 12TH, 1933.

VOL. XXXII. No. 19.

Proprietors: ILIFFE & SONS LTD.

Editor:
HUGH S. POCOCK.

Editorial,
Advertising and Publishing Offices:
DORSET HOUSE, STAMFORD STREET,
LONDON, S.E.1.

Telephone: Hop 3333 (50 lines).
Telegrams: "Ethaworld, Watloo, London."

COVENTRY: Hertford Street.

Telegrams: "Cyclist, Coventry." Telephone: 5220 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.
Telegrams: "Autopress, Birmingham." Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester." Telephone: Blackfriars 4412 (4 lines).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other countries abroad, £1 3s. 10d. per annum.

As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp. I—XXIV	
Editorial Comment	333
Increasing Bass Response	331
Athlone	337
Practical Hints and Tips	338
The Catkin Valve	340
Broadcast Brevities	342
Marconiphone 3-valve Radio Gramophone	344
Laboratory Tests	346
The Pentagrid Converter	317
Letters to the Editor	348
News of the Week	349
Unbiased	350

EDITORIAL COMMENT

Heading for Disaster

Back Pedalling in America

INTELLIGENT opinion in America is calling for a halt in the downward trend of prices of sets which, with ever-increasing impetus, is dragging down the quality of reproduction till there is no place left for pride in performance. Leading American journals are urging a return to quality in radio receivers, and the following is an actual quotation which is typical of the views held: "Steadily the average of our receiving sets grows worse and worse, more and more deficient in quality of reproduction, inadequate in material equipment and durability." America, it would seem, has during the past season or two been infected with the idea that mass-production and low prices are the only road to prosperity in the radio industry, but now at last the rather bitter experience through which the radio industry in America has passed seems to have taught the lesson that shoddy products in the radio industry do not mean prosperity, and that mass-production and cheapness are a safe policy only when quality does not suffer.

Are manufacturers in this country ready to profit by the example of America's mistakes and for once show initiative by short-circuiting America's season of retrogression whilst America is back pedalling? For the first time the opportunity presents itself to catch up technically and then lead the way with British individuality in future designs. If we in this country firmly resolve to maintain the quality of our sets at a high level we stand a very good chance of being at least on equal terms with America in the coming season. But if America's products of this season are again to be the British

manufacturers' standard for next, we shall be mass-producing cheap and nasty sets at a time when the pendulum in America has swung right over to a policy of "quality first."

Of what use is it for the designers of broadcast transmitters to have gone on from year to year making steady improvements in the technique of broadcasting, until the quality transmitted has to-day reached a very high standard indeed, if set designers begin to pull away in the opposite direction and undo the good work which has been accomplished on the transmitting side?

The Catkin Valve

New Ideas in Construction

FIRST details are now available of a new series of valves which represent an entirely new departure in construction and promise much for the future development of this most important unit of the receiver. In this issue constructional drawings are included with our description so as to give our readers complete information on the points of novelty which have been introduced.

The "Catkin" is not a new valve with entirely new characteristics. The valve is at present being manufactured in types which are interchangeable with the existing series of receiving valves, so that no special receivers need be designed around these valves; they can be used in the same positions as their equivalents of orthodox type. Samples of the new valves are in our hands, but they have reached us too recently for it to be possible to include a report of our own tests with this first description which is based on information from the makers whom we congratulate on being first with a development of this importance.



Increasing Bass Response

How to Choose the Coupling Condenser for the Parallel-fed Transformer

By R. W. H. BLOXAM

IT is probably not generally known that the parallel-fed low-frequency transformer, which has found such wide application in receivers, can be arranged in circuit so as to raise the level of the bass response. This valuable property is explained in the accompanying article and a diagram is given which shows at a glance the value of coupling condenser required for different transformers to effect the bass resonance at any required frequency.

IT is well known that the problem of securing good bass response is more serious in the case of gramophone reproduction than in radio reception, owing to the falling characteristic of the recording level below about 250 cycles.

Assuming that the overall response of the amplifier and loud speaker is sensibly level down to, say, 50 cycles, the bass reproduction for broadcast reception will generally be reasonably satisfactory.

It must not be forgotten, however, that the frequency characteristic of the modern receiver with a small self-contained loud speaker is not inherently level, and compared to its prototype, the moving-coil speaker with a large cone, freely suspended at the edge, the bass is likely to be deficient.

Attempts to bring up the low-frequency response by acoustic or mechanical resonance, that is to say, by introducing cabinet resonance, or by making the loud speaker diaphragm resonate on its surround at an audible frequency, often result in an artificiality of bass response that is only too obvious to the keen musical ear.

For gramophone reproduction the use

of a pick-up with a rising characteristic at low frequencies may provide a measure of compensation, but this will generally be insufficient to maintain the response to the extent desirable, bearing in mind the additional loss in the loud speaker and the decreased sensitivity of the ear towards the limits of the audible frequency spectrum.

In Fig. 1 the lower curve shows the falling characteristic of the recording below 250 cycles. The response at 250 cycles corresponds to the "level," since the response for all recorded frequencies higher than this will remain about the same until the upper recording limit is approached.

The uppermost curve has been plotted from the published response curve of a well-known pick-up of high quality, having a generally rising characteristic at the lower frequencies.

The dotted curve shows the resultant electrical output from the pick-up, and is obtained by algebraically summing the values of A and C referred to the level.

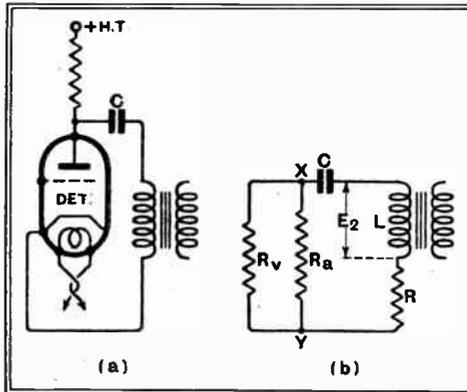


Fig. 2.—The conventional parallel-fed transformer scheme (a) and the equivalent electrical circuit (b).

It is plainly seen that the electrical output below 80 cycles falls badly below level, being accentuated in this particular case by a droop in the pick-up characteristic.

Whilst another design of pick-up might make this deficiency good to some extent it is not possible to extend the compensation to very much lower frequencies without introducing undesirable features.

Down to 50 Cycles

Special compensating filters or networks provide the correction necessary to raise the bass response, but they suffer the disadvantages of adding considerably to the bulk and to the cost of the apparatus.

For true fidelity of reproduction excessive resonances of a mechanical nature are undesirable, since they are not readily controlled or altered. Rather the compensation should be electrical in character, in which case excessive responses are more readily obviated.

Before considering means of providing a measure of compensation in the ampli-

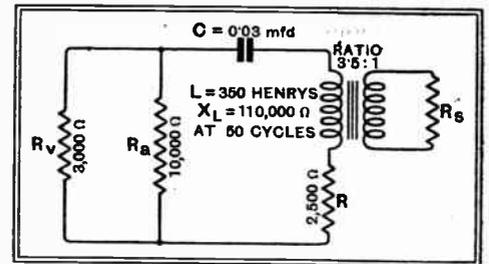


Fig. 3.—Showing typical values for the components used in the circuit of Fig. 2.

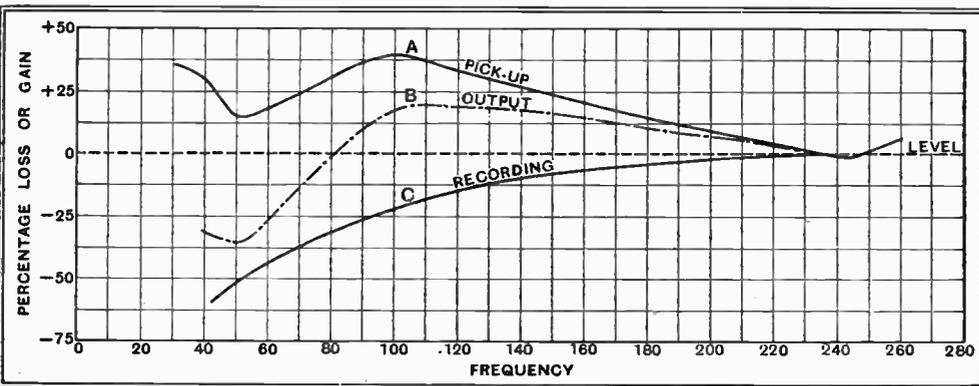


Fig. 1.—By combining the response curves of a well-known pick-up (A) and a typical gramophone record (C) the resultant output (B) is seen to give bass attenuation.

fier itself, it is desirable to give some consideration to the question of the lowest frequency which we need to reproduce for good quality.

Glib talk is sometimes heard of "reproduction down to 20 cycles," but, in point of fact, whilst such low frequencies do convey some sensation of sound they hardly ever occur in music. A study of the frequency characteristics of musical instruments shows that the lowest fundamental frequency of a few reaches 32 cycles, but the majority of the bass instruments do not reach much below 50 cycles. This has been clearly shown in articles on reproduction.¹

It is instructive to apply a small 50-cycle potential derived, say, from one-

¹ "The Last Component," *The Wireless World*, March 4th, 1931, and "Broadcast Reproduction," *May 4th, 1932.*

Increasing Bass Response—

half of a mains transformer heater winding to a potentiometer connected across the input of the amplifier. This gives a tone practically free from harmonics, and those who have not tried it previously will possibly be surprised at the very low pitch of the resulting sound. A frequency of 25 cycles implies that the pitch will be an octave lower, of course.

It is therefore certain that if cut-off (i.e., 70 per cent. of the normal "level") is not reached until 40 cycles we shall miss very little.

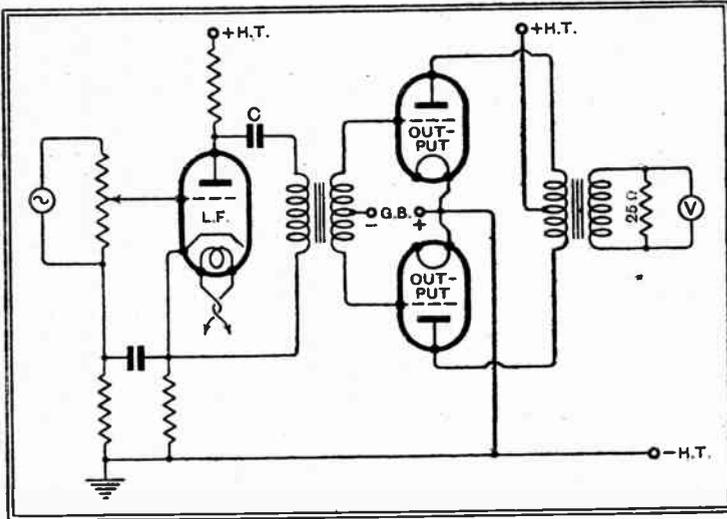


Fig. 4.—Circuit with push-pull output used by the author to examine the frequency response of parallel-fed transformer coupling.

It has recently been shown that a measure of bass compensation can be obtained with pentode valves when a choke-capacity output coupling is employed by choosing a coupling condenser having a somewhat smaller capacity than that previously adopted by convention.

The Equivalent Circuit

It is the purpose of this article to show that some measure of compensation can be obtained also with the now commonly employed parallel-fed transformer inter-valve coupling, although the action differs somewhat, and the application is not limited to pentodes.

Fig. 2a shows the conventional connections of a triode valve with resistance anode feed, coupled by means of a con-

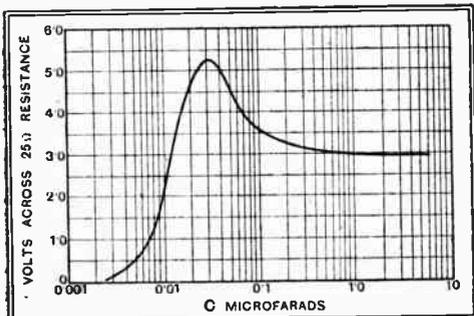


Fig. 5.—An increase of bass response can be obtained by arranging a suitable resonance frequency between the L.F. transformer primary and the coupling condenser.

denser C to the primary of the transformer. Fig. 2b shows the equivalent electrical circuit, in which Rv represents the A.C. resistance of the valve, Ra the external feed or coupling resistance, and R the resistance associated with L.

Considering the action of the circuit, it is convenient to assume the application of an A.C. voltage across the points X Y representing the signal voltage developed across the anode feed resistance Ra. We will assume this to be 10 volts.

As far as the output is concerned, we are interested in the resulting voltage E2 developed across L, since this voltage, multiplied by the ratio of transformation, gives us substantially the voltage impressed between grid and filament of the succeeding valve, neglecting core losses, etc.

We thus have a series circuit formed by L and C, with the input voltage applied across its ends, and at a frequency $f = \frac{1}{2\pi\sqrt{LC}}$ cycles

the voltage across L will be a maximum, and if the total resistance Rt of the circuit, which comprises R plus Rv and Ra in parallel, is sufficiently low, the voltage E2 across L may be greater than the voltage applied across X Y at frequencies near resonance.

Let us assume that the constants of the circuit are as shown in Fig. 3. If we assume the total resistance Rt to comprise the primary resistance plus the resistance of the two parallel paths through Rv and Ra, and the resonant frequency is 50 cycles, then the impedance at the resonant frequency is equal to $R_t = 4,800$ ohms, and the current $I = \frac{E}{Z} =$

$$\frac{E}{R_t} = \frac{10}{4,800} = 0.00208 \text{ amp.}$$

The voltage across L is then given by $I \times XL$ ($XL = 2\pi fL$) = $0.00208 \times 110,000 = 228$ volts, which is obviously impossible in practice. But we have not taken into account the resistance thrown into the circuit by the transformer, which will be equal to Rs divided by the square of the transformation ratio = $R_s/3.5^2$, which must be added to R and the effective value of Rv and Ra in parallel.

Now it will readily be seen that since

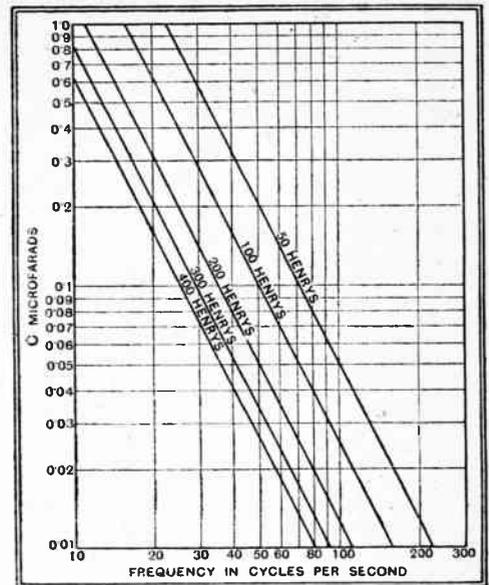


Fig. 6.—Given the primary inductance, the value of the capacity required to produce resonance at various frequencies can be read from this diagram.

Rs is the dynamic input resistance of the valve connected to the transformer secondary, Rs divided by the square of the ratio of transformation will be very large; indeed, it will be so large that R, Rv, and Ra may be almost neglected. Thus if we now assume the input resistance to the valve to be 0.8 megohm, we find that Rt will be approximately 70,000 ohms, and across L we have 15.7 volts at resonance. At any other frequency the impedance of the circuit is

$$Z = \sqrt{R^2 + (\omega L - 1/\omega C)^2}$$

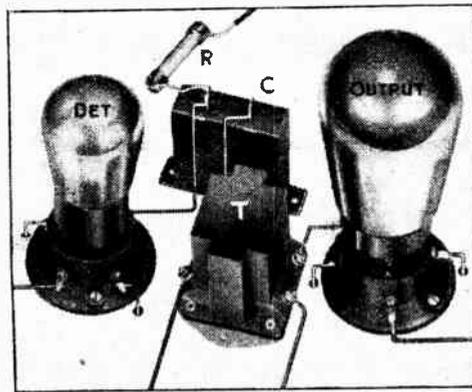
At frequencies well above resonance the voltage across L is a little less than the applied voltage across X Y.

From the foregoing two facts emerge. First, that the total resistance of the circuit determines whether or not any increased voltage will appear across L at resonance, and secondly that the step-up obtained will be greater for higher resonance frequency, since the value of ωL also becomes greater.

If the values of L and C are suitably chosen, we can arrange the resonant frequency at a point towards the lower end of the audible frequency

range where it will be effective in compensating the bass to some extent, provided that the resistance of the circuit is low enough. The actual working value of the resistance is therefore all-important, since its value determines, together with XL, whether we obtain any step-up that is worth while.

Measurements were made on an amplifier comprising a push-pull output stage, since this case would seem to be the worst



The essential components required for L.F. parallel feed. By a suitable choice of the transformer T and the condenser C the bass response can be increased.

Increasing Bass Response—

in regard to the high value of Rs to be expected.

The arrangement is shown in Fig. 4. A constant 50-cycle voltage was applied to the input of the first valve, and the voltage across the 25-ohm resistance, representing the loud speaker, was measured with various values of coupling capacity C.

The results are shown in Fig. 5, from which it is seen that an increase of response of over 50 per cent. above level is obtained for resonance at this frequency.

The value of the open circuit inductance of the transformer primary is generally stated by the makers, and the value of capacity required to produce resonance at a given frequency may be determined from Fig. 6, or by calculation. Alternatively, the value of L may be obtained experimentally by the method mentioned above and illustrated in Fig. 4.

The shape of the response curve will be similar to that of Fig. 5, and it will be noted that the cut-off point is reached

rather rapidly, below the resonance frequency, which suggests that the latter should be arranged as low as possible in the audible range, but it must be remembered that when records are reproduced the input voltage has the form of the middle curve B of Fig. 1 and falls off at the lower frequencies; hence the compensation obtainable becomes less with decreasing frequency, due to this cause, and the decreased value of XL.

A compromise must be made, therefore, and in the particular case discussed this was found to be effected satisfactorily by fixing the resonance frequency at about 60 cycles by choice of a suitable value of capacity. Aural tests with various values of capacity show that the bass is considerably augmented when the resonant frequency falls anywhere between about 50 and 100 cycles. Screening should be fairly comprehensive, in order to prevent hum voltages being picked up from the rectified H.T. supply or from the heater wiring.

DISTANT RECEPTION NOTES

Can Stations Claim Wavelength "Rights"?

ONE does not envy the wavelength allocation committee of the forthcoming Lucerne Conference its task! Every little nation in Europe (as well as most of the big ones) will urge its claims to more—and longer—wavelengths and to higher-powered transmitters. Nobody wants wavelengths below 250 metres, though there are more than thirty channels below this mark and the bottom of the medium waveband that must be allotted to someone. Most of them will probably be

One of the most pressing problems is the Russian programme. In all previous plans Russia has been regarded as outside Europe; but the interference caused by her stations nowadays gives ample proof that from the broadcasting point of view she is very much within it. The Russians have a most ambitious programme entailing the erection of fifty or more high-powered stations, some of them with output ratings up to 500 kilowatts. Will it be possible to make Russia realise that if she proceeds with this scheme,

adhere strictly to their allotted channels. In the United States the Federal Radio Board allows no station to deviate by more than 200 cycles from its proper frequency. The first offence brings an immediate warning; the second, unless some acceptable explanation is forthcoming, leads to the guilty station being ordered "off the air."

A glance at any month's U.I.R. report will show that many European stations wander by two thousand cycles or more between the beginning and the end of a given four weeks. At present the U.I.R. has no real powers to prevent this kind of thing. Acting through the Governments concerned, it could and should have such powers, if only international agreement could be reached that the most drastic action would be taken against offenders.

Wintry Conditions

There is very little noticeable diminution in the volume at which distant stations are received and the choice of programmes is still almost, if not quite, as wide on most evenings as it was in the depths of winter. On looking back through long-distance logs covering the last ten years I can find no similar instance of the persistence of what are virtually winter conditions for reception to such a late date. Improvements in transmitters must be largely responsible for this happy state of affairs.

Motala, Oslo and Kalundborg are outstanding long-wave transmissions at the moment. As they all transmit excellent programmes and are usually receivable at any time when they are working, the long-distance enthusiast should make a special note of them.

The medium-wave band is a very happy hunting ground just now. Between 450 and 550 metres something is to be found at almost every division of the tuning dials and there is a band almost as good between 320 and 350 metres.

Noteworthy medium-wave stations are: Katowice, Rome, Stockholm, Lyons la Doua, Beromünster, Leipzig, Budapest, Prague, Florence, Strasbourg, Hilversum, Heilsberg and Turin. D. EXER.

"THE WIRELESS ENGINEER"

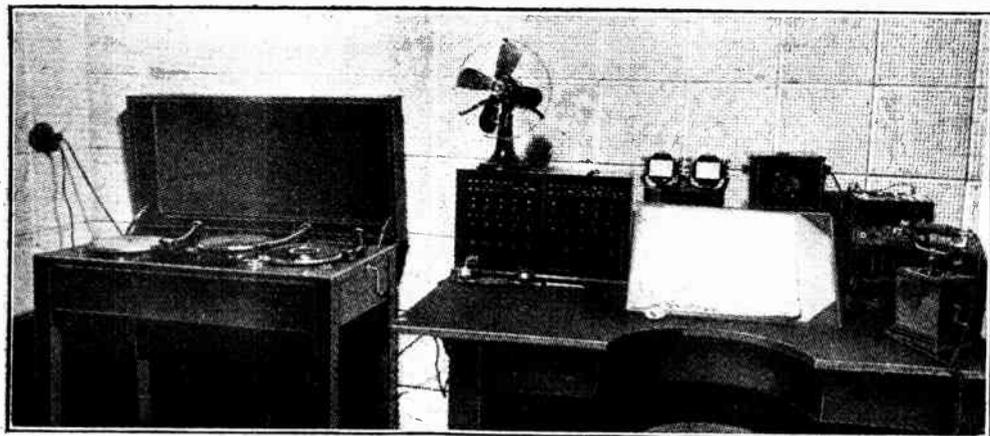
IN the May number of *The Wireless Engineer* is an important contribution on "The Simplification of Accurate Measurement of Radio-frequencies," by W. H. F. Griffiths, F.Inst.P., A.M.I.E.E. Dealing first with the successive stages in the improvement of resonant circuit oscillators and the development of the dynatron oscillator, the author then describes in detail a stable oscillating wavemeter working on this principle.

The American developments up to the present time in A.V.C. are discussed in another contribution, and details of some typical circuits are given.

An absorption wavemeter for use on short waves is described by the staff of the Radio Research Station, Slough. Although covering a wide frequency range, a portion of each band can be spread to extend over the major part of the condenser scale, thereby affording greater accuracy within the restricted range.

In addition to other material, the issue contains monthly abstracts and translations of the world's technical wireless articles and patents.

Copies can be obtained by order from newsgents or direct from the publishers of *The Wireless World*.



TAKING NO RISKS AT WARSAW. Every possible contingency seems to have been provided for in the announcer's studio at Warsaw (Polskie Radio). Two microphones, three gramophone turntables, a specially shaped desk, an electric fan, and an elaborate internal telephone system all help the announcer in his task of "keeping the pot boiling."

assigned as group wavelengths to families of small relays; but even so there is sure to be much heartburning.

Stations that have used certain wavelengths for so long that they have come to regard them as their inalienable right will be loth to give them up; yet give them up they must in many cases, for nothing short of a complete reshuffle can straighten out the present tangle and make room at the same time for the thirty-odd new high-powered transmitters that are likely to be in operation within the next eighteen months.

which is out of all proportion, the inevitable result must be chaos so far as broadcast reception is concerned, not only in neighbouring countries, but also in her own? One hopes so, but the present régime in Russia may prove unwilling to co-operate with the rest of Europe.

Whatever else it does, the Lucerne Conference must endeavour to obtain from Governments an undertaking to put down wavelength wandering with a firm hand. Owing to the crowded state of both wavebands, no plan can succeed unless stations

ATHLONE



High power alone does not account for the excellence of the Athlone transmissions. The station is situated on an ideal site 300 feet above sea level, and the masts are 330 feet high.

WITH the advent of the 60-kilowatt transmitter at Athlone the Irish Free State has definitely won a place in the broadcasting sun. Although in January, 1926, the 1½ kW. Dublin station, 2RN, made its broadcasting début and was followed soon afterwards by the low-powered relay station at Cork, English and Continental loud speakers have heard comparatively little of the Emerald Isle. But the "voice of Dublin" has now become the "voice of the Irish Free State," and since Athlone joined the ranks of the ether giants in February, reports of good reception have been received from all parts of England, Scotland and Wales and from Scandinavia, Europe, Newfoundland, the Yukon, Canada and the United States. The station has even received a report from Gisborne, New Zealand, though Dublin officials cannot but doubt the accuracy of this remarkable claim.

The Athlone and 2RN studios are in the Post Office building, Dublin, and the station director, Mr. S. Clandillion, presented me with the freedom of the studios. These, for a country possessing one of the most modern transmitters in Europe, are somewhat disappointing. There are three studios proper—one for orchestral and dramatic performances, another for vocal presentations, and the third for solo items—besides two rehearsal rooms which can also be used for broadcasting. All the studios have sound-proof walls, and drapings are suspended on the ugly-looking rafters to obviate echo effects.

Mr. Clandillion, the station director, who has been associated with 2RN since its inception, is a versatile and capable programme builder. The fluent Gaelic

speaker and the principal announcer is Miss Margaret O'Grady, an M.A. graduate of the National University.

The Athlone transmitter is at Moydrum, 2½ miles east of historic Athlone on the river Shannon. The station obtains its 10,000 volts from the famous Shannon hydro-electric scheme. The site is ideal, flat rural country, about 300 ft. above sea level and practically at the geographical heart of Ireland. The station now wears a more pretentious air than in June last when, under dripping tarpaulins, engineers "carried on" for distant listeners to hear the Eucharistic Con-

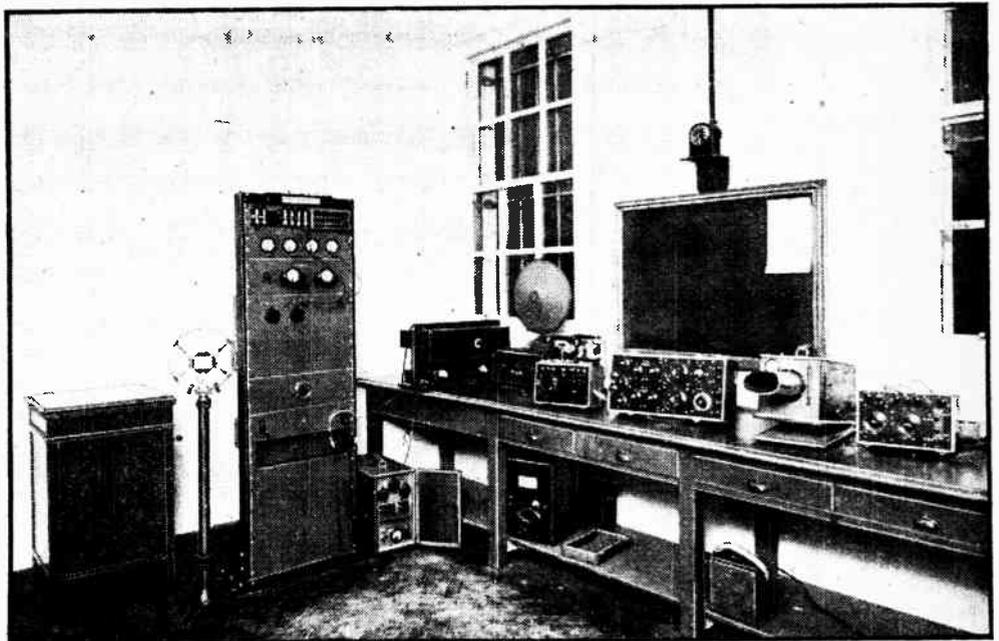
The New Voice of the Irish Free State

By A SPECIAL CORRESPONDENT

gress. The two 330ft.-high unpainted galvanised steel masts supporting the T-aerial are hinged on insulated ball and socket joints, thus permitting a greater degree of sway than in the case of the more common system of stays alone.

The engineer, Mr. Lyons, whose staff numbers about seven, conducted me through the transmitting hall, which is 100 ft. long by 35 ft. wide. The transmitter is of the same type as the B.B.C. Regional plants, but of higher power; if necessary, this power can be doubled to 120 kW. Points of difference between Athlone and the Regional transmitters are that the former uses a crystal-controlled oscillator instead of tuning fork, and in place of the ordinary H.T. generators employs mercury arc rectifiers for supplying the H.T. current to the valve anodes.

Among the features that impressed me were these: The largest valve dissipates 10,000 watts at the anode, and the smallest valve about 3 watts. From the 5,000-gallon storage tanks under the building 3,000 gallons of distilled water pass every hour through the valves. If a valve fails another is automatically switched into place. The whole of the transmitter is screened and cannot be operated if a "gate" is open. The power demand off the supply mains is 350 kW.



The control room with its checking equipment fills a dual rôle, for on special occasions it can be used as a studio. Note the microphone and gramophone cabinet.

Practical Hints and Tips—

doing harm through a short-circuit to earth. Lastly, the risk of hum being produced by induced voltages from badly installed lighting circuits, etc., is greatly reduced. Almost the only disadvantage is that the ohmic resistance of the extension leads must be low in proportion to that of the speech coil of the loud speaker.

The ordinary method of connecting a loud speaker with the output transformer at the remote end is shown in Fig. 2 (b). This has all the disadvantages previously suggested, but, as it is in effect a high-impedance transmission line, ohmic resist-

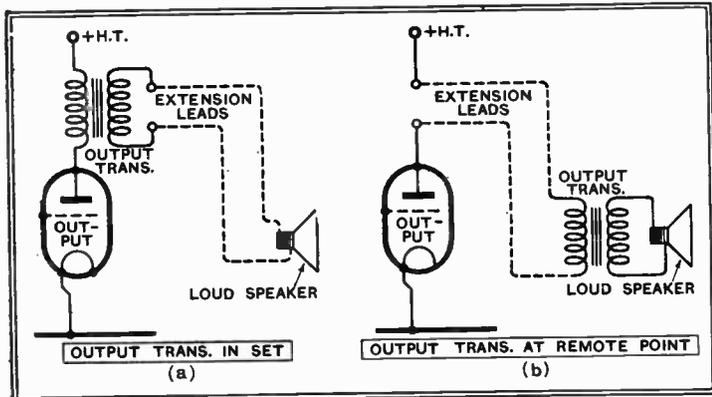


Fig. 2.—Alternative positions for an output transformer.

ance is of little importance, and so the finest wire that is sufficiently strong mechanically may be used. Insulation is, of course, important with this system.

IN ninety-nine cases out of a hundred nothing but good can result from increasing the capacity of by-pass condensers in L.F. decoupling circuits. In most modern sets, when motor-boating or some other form of instability occurs, or even when quality is deficient, the first thing to do is to try the addition of extra capacity in parallel with the existing detector-anode decoupling condenser.

Ensuring L.F. Stability

Even when dealing with a well-tried standard receiver of known excellence, it may be worth while to try this expedient if quality seems to be a little "rough."

No designer advocates a by-pass condenser very much larger than that considered necessary for dealing with the amount of magnification obtainable under average conditions, but sometimes the average is exceeded by a very fair margin. For example, the detector valve may be a particularly "hot" specimen; rectifier output may be high, and the associated decoupling resistance may be under rather than over its rated value. All these factors work in the same direction, tending to reduce the margin of safety, and this is a case where extra decoupling might well be beneficial.

One cannot usually increase the value of a decoupling resistance without risk of upsetting the designer's original intentions, but the use of a larger condenser should have the same beneficial effect, and, at the worst, can do no harm.

AS stated in the article in which the "A.V.C. Unit" was described, the potentiometer adjustment of bias voltage for the control valve will generally provide the small amount of manual regulation that is needed when automatic control is in operation.

Manual and Automatic Control

For maximum loudness this potentiometer is adjusted so that the grid of the A.V.C. valve is made to work at a voltage appreciably more negative than that which stops the flow of anode current entirely. In this way delayed control is introduced, and no bias voltage is fed back to the controlled valves until signals have reached a certain value, which may easily be determined by trial.

When, on the other hand, it is desired to reduce volume below the normal level, a certain amount of anode current may be allowed to flow in the A.V.C. valve by reducing its negative bias by rotating the potentiometer slider towards the positive end, i.e., that end of the resistance element which is connected to the least negative socket on the bias battery.

In cases where a further manual control is desirable it is generally best to fit it in the L.F. section of the receiver. Where resistance coupling is employed it is a fairly easy matter to substitute a potentiometer for the normal fixed grid leak or anode resistance, but with transformer coupling it is rather more difficult to devise a control that is entirely free from objections. In most cases the fitting of a 50,000-ohm vari-

able resistance in shunt with the transformer primary will prove satisfactory enough.

IT is worth while to bear in mind that the input capacity of a valve changes with variations in H.T. voltage or heating current, and as a consequence the stray capacity existing across its grid circuit is also subject to variation through these causes.

Therefore it follows that the operations of calibrating, or "gang-ing," a set should only be carried out when voltages throughout are those which will normally be applied when the set is in operation.

To carry the subject a little farther, it may be pointed out that when tuning "drifts," and the condenser setting corresponding to a known station is observed to have undergone a change, we have an indication that the power supply system may be behaving erratically, and that investigation is called for.

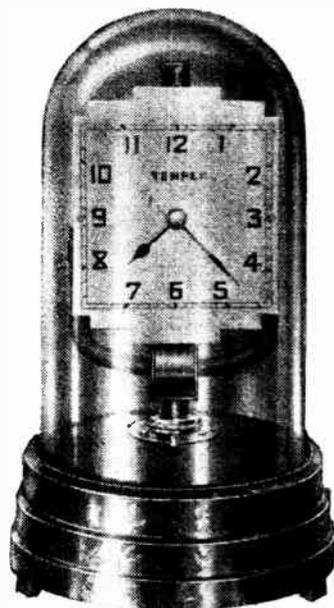
USERS of battery-fed receivers in which volume is regulated by variation of negative bias supplied to the H.F. valve should remember that, when using the set for gramophone reproduction, the "radio" volume control should always be set at minimum. In this way H.T. battery current is conserved; with maximum bias, anode and screening grid current combined will usually amount only to a matter of microamperes, whereas with the bias potentiometer set for maximum sensitivity, it may rise to 3 or 4 milliamps.

As an alternative to this plan, there is no reason why, in a battery set, an extra switch should not be fitted in to break the filament circuit of the H.F. valve.

Why Tuning Changes

Variable-mu Battery Sets

"TEMPEX" CLOCKS



A NEW range of electric clocks is now being marketed by Messrs. Exide Services, Ltd., 203-231, Shaftesbury Avenue, London, W.C.2, and will be available through all Exide Service Stations and the usual dealers. There are two types, a synchronous motor clock for controlled A.C. mains, and for those without mains supply a pendulum-controlled clock for operation from batteries.



"Tempex" electric clocks. (Left) Battery model, type N.202. (Right) A.C. mains model, type A.C.303.

The A.C. model (type A.C.303) is housed in a neat moulded case and costs 30s., while the battery-operated model is available in two types, the P.101 at 45s. in a case similar to the A.C. model, and the N.202 at 49s. 6d. enclosed in a domed glass container.

The Catkin Valve

A Radical Departure in Design

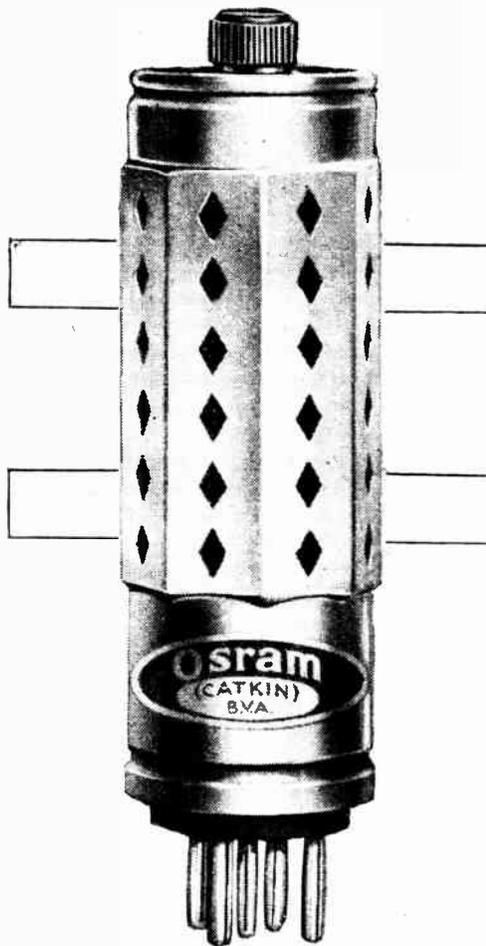
VALVE design is never at a standstill. The steadily increasing figure for mutual conductance is, perhaps, to be expected, and the addition of an extra grid or so no longer creates surprise. Now we are to experience what is undoubtedly a most radical development in valve technique since the inception of the triode. The familiar form of valve with its glass bulb is soon to disappear. Its place will be taken by one of greatly reduced dimensions where the glass envelope is replaced by a metal cylinder which is actually the anode.

Valves in which the glass envelope has been replaced by a copper container represent, of course, well-proved practice in transmitting valves where water-cooling is directly applied to the anodes. Such valves are designated C.A.T. (cooled anode transmitters), promptly designated "cats" in laboratory slang. From this abbreviation is derived the name "Catkin" as indicating the genealogy of the valve better than kitten; so Catkin was adopted as the name for the new miniature air-cooled version now to be available for reception.

An examination of the Catkin valve manufactured by Marconi and Osram supports the claims put forward.

Smaller Valve Losses

The spacing between the elements of a valve governs characteristic. If uniformity between one valve and another of corresponding type is to be maintained, accuracies of less than a thousandth of an inch are required in the disposition of the electrodes. Such precision is undoubtedly difficult to maintain when the only support afforded to the elements depends upon the critical setting up of wires embedded in glass. The Catkin has no such arrangements. First of all a robust steel clamp surrounding a mica insulator firmly holds the supporting wires. These wires are, moreover, straight, for it will be appreciated that where bent wires are used accuracy cannot so well be maintained. Next, the entire electrode system is located with precision within the anode envelope by mica spacing pieces. Thus the entire system forms a single and absolutely rigid unit as distinct from the comparatively meagre support which it is possible to provide for the electrodes in the glass type. This is the primary merit of the Catkin, accruing from which we may expect uniformity of set performance, and there will be no such thing as a "picked" valve. To the set manufacturer valve uni-



formity permits of standardisation of receiver performance, and the correct working conditions will be maintained without the need for special testing of the initial set of valves. The rigidity of the electrodes and accuracy of spacing are claimed to be immeasurably greater than is possible in the valve of conventional design.

It cannot be denied that the flattened glass portion giving support to the electrodes is a source of losses. Glass is by no means one of the best dielectrics, and the time has come when attention must be drawn to the magnitude of the dielectric losses arising in the valve itself. The advent of tuning coils of very high efficiency has served to emphasise that the losses arising from the conventional type of valve are of sufficient magnitude to mar the superior merits of a modern tuned circuit. Bearing this in mind, in the design of the Catkin it was decided to abandon the glass "pinch" and substi-

tute mica as the insulator. It is true that the outgoing leads pass through a glass ring at the base of this new valve, but here they are set around the circumference. The resulting capacity between the leads is exceedingly small where we have glass as the dielectric.

Screen-grid and detector valves are, nowadays, usually metallised. There is thus an earth potential spread over the insulating glass, preventing it from acquiring an electric charge. Metallising has the effect of reducing interelectrode capacity, and, moreover, it prevents the setting up of stray electric fields which would otherwise arise between the charged globe and the surrounding leads, a condition which, if permitted, is a prodigious source of hum in mains receivers and a common cause of spurious back-coupling.

The electric field within the anode of the Catkin valve is entirely uninfluenced by any surrounding charges, and the electrons cannot build up unwanted potentials which might interfere with the field within the electrodes.

Better Screening

Should circumstances demand it the signal potential on the anode of the Catkin may be prevented from creating stray coupling by the provision of a tubular metal screening cover shown in the photograph. The inclusion of this outer screen is optional. It extends over the valve from top to bottom, and, like metallising, is connected to the cathode in the case of mains valves, but has the additional advantage that it embraces the outgoing leads at the base. This outer screen is perforated to afford ready dissipation of heat and its octagonally flattened faces prevent it rolling. Being parallel sided, quantities of valves occupy much less space than hitherto.

In the exposed anode type a coating of black enamel is applied giving sufficient insulation to prevent shock should one accidentally touch the high-voltage anode. It will be appreciated that the generous heat dissipation afforded by the Catkin design gives cooling for the grid as well as the anode. Conditions are very different in the glass type, where the large surrounding vacuum presents the difficult problem of getting the heat away where dissipation by convection or conduction is non-existent. Effectiveness of cooling does, of course, to a very large extent, govern the rating of output valves.

Present-day sets with enormous overall gain are very prone to what is commonly called "howling," which arises from the sound vibrations



The Catkin Valve.—

causing movement of the electrodes, usually in the case of the detector valve. By virtue of its rigidity the Catkin is not likely to be influenced in this way. As a further precaution, however, the valve is secured to its base ring by a rubber clamp, and the sound conduction path is limited to the thin conducting wires joined to the valve pins. It is well known that rubber is the only sound insulating material which will provide a non-microphonic mounting, and we now have, for the first time, an effectively sprung clamp, and this is independent of the valve holder. A non-microphonic mounting is of vast importance when the set, as is now commonly the case, takes up a position immediately behind a single or perhaps dual loud speakers, into which the output valve delivers several watts.

Wireless is now finding its place as part of the equipment of the car, and the

ing for the voltage variation of the car battery. Compactness is another important advantage in this application. The much reduced size of the metal envelope as compared with the glass counterpart is an important feature in the prevention

floor with but little risk of damage either by fracture or by derangement of the critical spacing of the electrodes.

The copper-to-glass union is an interesting feature of the new valve, and it is a creditable achievement to produce a gas-tight seal under mass production methods. In order that the vacuum may be well maintained in a valve, excessive temperature rise for any prolonged period must be avoided. All metal parts within the valve are, of course, gas-freed at a high temperature, but in the course of manufacture the glass bulb in a conventional valve is a prolific source of gas and necessitates prolonged de-gassing.

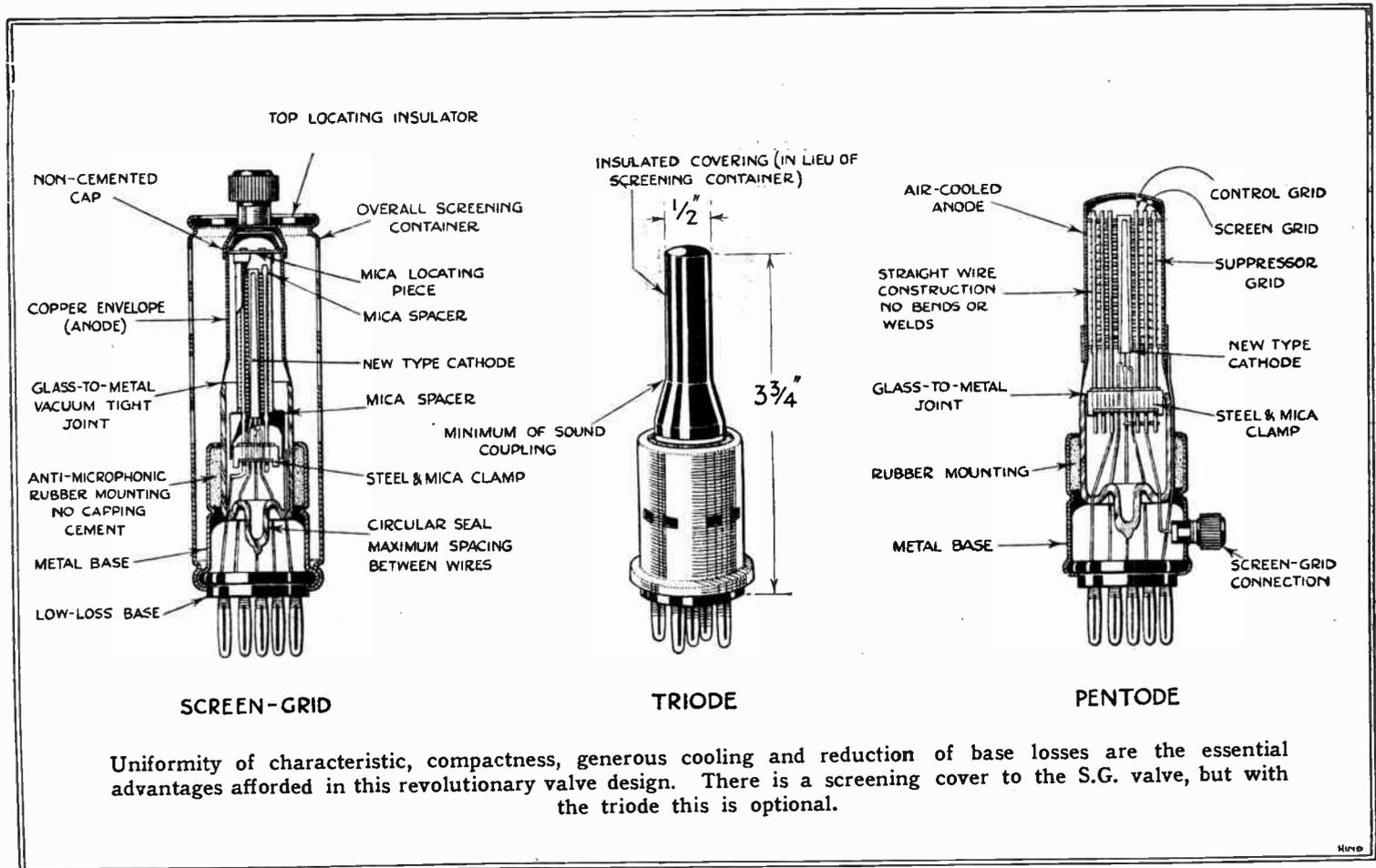
Catkin equivalents of the MS4B, VMS4, MH4, and MPT4 will make their appearance on the market almost immediately. These are the types which are in most general use, and it is the intention of the manufacturers to add to this range shortly. The characteristics of the Catkin valves

BY resorting almost entirely to metal, instead of glass, in the manufacture of a revolutionary new receiving valve called the "Catkin," the Osram and Marconi Companies claim to have achieved for the first time real consistency in valve characteristics. In other words, every "Catkin" can be regarded as a "picked valve." The anode forms the external envelope in the new valve, which is almost unbreakable and non-microphonic.

of direct coupling with the sound output of the loud speaker.

Some valve users have experienced trouble due to the glass bulb breaking away from its bakelite base. Fracturing of the cement in this way is a weakness of present valves, and it is interesting to note that no form of

DRAWINGS TO ILLUSTRATE DETAILS OF THE NEW VALVES



Uniformity of characteristic, compactness, generous cooling and reduction of base losses are the essential advantages afforded in this revolutionary valve design. There is a screening cover to the S.G. valve, but with the triode this is optional.

Catkin valve, being uninfluenced by vibration, whilst being robust and compact, has attractive possibilities for car radio. In this connection, in addition to durability, it should be noted that a new form of filament-cathode design has been adopted, which permits of a 10 per cent. fluctuation of heater potential, thus allow-

cementing is employed and a loose cap becomes an impossibility.

Copper-to-glass Union

The Catkin valve is practically unbreakable, and may be dropped from a height of several feet on to a concrete

follow those of the glass equivalents and for which they serve as replacements. The four types issued are those adopted in the more popular sets, so that in many cases immediate advantage can be taken of their use.

At a later date we hope to give a report of our own experiences with these valves.

BROADCAST



WHEN LEEDS SPEAKS. The talks studio at the new Yorkshire headquarters of the B.B.C. On the right is the "cue light" device for indicating to the speaker when the microphone is in circuit for broadcasting or, alternatively, connected to the dramatic control panel. The studio colour scheme is green and orange.

A little self-selection might be advisable, and I think readers who are interested might do worse than forward applications to the Corporation now.

An Awkward Period

THE period "twixt tea and dinner" has always offered a problem to the programme builders, and now that it is definitely decided to exclude talks from

the 6.30 to 8 p.m. period during the summer months, their difficulties are accentuated.

The trouble is that there is very little suitable "outside broadcast" material available at this hour; it is the transitional period in the day when the world refuses to take life seriously. Work is over, but the pleasures of the evening have not really begun.

For the Present . . .

For the present the Programme Department is obviously in a bunker as regards new ideas for this period. At the moment the intention is to fill the 6.30 to 8 p.m. period exclusively with light music of the kind provided by the Gershom Parkington Quintet and Reginald King's Orchestra.

Car Drivers and Wireless

This, by the way, seems to be the ideal sort of programme for the radio-minded motorist, of whom we shall probably see and hear quite a lot this summer. Few people will object to the reception of soothing music while driving; it is only when the man at the wheel is tempted to listen too closely to a classical concert, or, more dangerous still, a debate in the talks studio, that pedestrians and other motorists will stand in peril.

Programmes for Motorists

But even light music, according to some people, might prove too much of a distraction to a driver who has any musical sense. If this is really the case, it might be advisable to prepare special programmes for motorists. As these would require a minimum amount of mental concentration, it is difficult to say what form they should take. Tom-tom music and slow fox-trots might make for safety.

The Leeds Recipe

TAKE one old Quaker Meeting House, as much money as you like, and Mr. J. C. Proctor, F.R.I.B.A. With these ingredients there is nothing more to worry about; in a few months' time you have one of the finest broadcasting studios in Europe.

Last week, by kind invitation of Mr. Edward Liveing, North Regional Director, I was escorted into a rather severe-looking conventicle in Woodhouse Lane, Leeds. Only the inscription "Broadcasting House" on the outside door prepared me for the startling transformation within.

The Last Word

The Leeds building is undoubtedly the last word in broadcast studio technique, for the architect, Mr. Proctor, has benefited by the experience gained in Portland Place, and has not hesitated to add a number of clever and original touches of his own.

New Mike Suspension

It is not often, I imagine, that an architect gives a lead to the engineering department, although close co-operation between the two branches has always been the rule with the B.B.C., but at Woodhouse Lane Mr. Proctor has set the engineers thinking by producing his own design for a microphone suspension device, and this gleaming arrangement, chromium-plated and balanced like a huge crane, dominates the whole of the big studio.

What Mr. Ashbridge Thought

Mr. Ashbridge, Chief Engineer of the B.B.C., was eyeing the arrangement with a non-committal expression, and I asked him whether the design had the full approval of the engineering branch.

The "Chief" said that it was possible that the arrangement might be adopted in other studios. Could an architect receive higher praise?

Function of the Studios

Mr. Liveing was anxious to explain that the new studios must not in any sense be regarded as the special property of Leeds. They were intended to "put Yorkshire on the map." Lancashire has always had its say at the North Regional microphone, but since the Leeds-Bradford relay station faded out two years ago it cannot be said that Yorkshire has enjoyed the same facilities.

Now, however, with a studio bigger than anything at Broadcasting House except the Concert Hall, listeners in the North will have an opportunity to hear the brass bands and massed choral concerts which are so dear to the heart of every Yorkshireman.

Broadcasting House in Miniature

The new accommodation comprises two floors and a basement, and consists of two studios, artists' and band waiting rooms, a control room with the most modern equipment, battery, machine and echo rooms, dramatic control room and administrative offices.

The Northern Repeater

Special importance attaches to the control room, for it is the focal point for all S.B.

The New Organ

WORDS are always inadequate to describe the impressions created by music, and I will not attempt the verbal fireworks which would be necessary to do justice to the new organ in the Concert Hall at Broadcasting House.

There is no doubt that listeners may expect a real treat on or about June 16th, when the organ will be heard for the first time in a broadcast programme to which a number of eminent organists will contribute.

Inaugural Recital

Having regard to the distinguished players who have shown an interest in the instrument during its construction, I think the B.B.C. will have to include among its recitalists Mr. Berkeley Mason, Mr. G. D. Cunningham, and, of course, the designer of the organ, Sir W. G. Alcock. Probably the inaugural recital will resolve itself into a performance of a composition by each of these great executants.

Orchestral Flexibility

During a test recital I was struck not only by the organ's richness of tone, but by its ease of control. Thanks to a combination of all the latest "gadgets" and the enclosure of the whole instrument in swell boxes, the player can command an almost infinite range of tone with the flexibility of an orchestral conductor.

A Studio Audience ?

Most of these effects should be apparent to broadcast listeners, but the B.B.C. will doubtless admit some of the general public to the Concert Hall for the inaugural recital, though how the lucky few will be chosen is undecided.

BREVITIES

By Our Special Correspondent

programmes between London, Manchester, Newcastle and the North.

In fact, Leeds is the Northern repeater station, filling the same function as Bristol in the West.

"We Want West Regional"

SOMETHING quite new in the experience of the B.B.C. engineers has occurred in connection with the West Regional tests. Listeners, instead of protesting at the changed conditions, as has usually occurred when a Regional has been on test, are actually clamouring for a complete service from the new high-power station.

In consequence, West Regional will tomorrow (Saturday) take over all the Regional transmissions.

A Daring Test

This transfer from the old to the new transmitter has been carried out in a very much shorter time than was the case with the other Regional stations, but I, for one, am a little doubtful as to whether things will go quite so smoothly when West National begins testing.

No Heterodyning ?

This synchronising of the West and London National wavelengths constitutes quite the most daring test of its kind ever attempted by the B.B.C., and it will be distinctly interesting in a fortnight's time to see whether the two transmitters can avoid heterodyning each other.

It is quite likely that West National will begin its first tests on or about June 1st.

"Tickets, Please"

THE platform of a wayside station provides the scene for a modern fairy story with music entitled "Tickets, Please," which is to be broadcast on May 16th (National) and May 23rd (Regional). This is the first musical play to be put on the air under the direction of Mr. Val Gielgud.

I am told that the play contains several very catchy tunes (train catchy?); one, "I am singing while you are dancing," is in the repertoire of the B.B.C. Dance Orchestra, while another, "Tell me at teatime," is shortly to be published, and is likely to be sung and whistled everywhere.

An "R. L. S." Play

IF you want the cosmopolitan atmosphere these days spend a few minutes in the foyer of Broadcasting House. Any day you may see the English, French, American, Negro, Polynesian, Japanese and Indian artistes who are rehearsing for the broadcasting of "The Bottle Imp," by Robert Louis Stevenson, on Saturday, May 20th.

The story of Keewe and his wonderful bottle was written for a Polynesian audience. It is a thrilling tale, and is to be found among the Island Night's Entertainments. It should make a good microphone play. Lance Sieveking is the producer.

Memories of the Lyric

MEMORIES of the Lyric Theatre, Hammersmith, will be revived by a programme to be broadcast on May 20th, with Sir Nigel Playfair as compère and Alfred

Reynolds as conductor of the B.B.C. Theatre Orchestra. The name of the Lyric, Hammersmith, is inseparably connected with the names of Nigel Playfair and Alfred Reynolds, for these two created the Lyric tradition. During their régime such plays as "Derby Day," "Midsummer Madness," "Tantivy Towers," "The Beggar's Opera," "Abraham Lincoln," and "Riverside Nights" were presented to Hammersmith audiences. Numbers from these and other notable successes will be heard by National listeners on May 20th.

The New Showmanship

BY commissioning professional actors to broadcast translations of speeches given in the English Parliament, Poland has opened up new possibilities for broadcast entertainment.

Hitherto the very notion of broadcast debates from Westminster has made strong men blanch, but a moment's thought will show that the speeches could be made much more acceptable if they were dramatised.

Making Speeches Palatable

I should like Mr. Val Gielgud or Mr. Eric Maschwitz to choose suitable vaudeville actors and comedians who could be guaranteed to give us the actual words from a Parliamentary debate flavoured with the mannerisms and asides which could make even the Budget speech palatable.

Mr. Gillie Potter would make any Cabinet speech more fragrant.

Car Thrills Broadcast

THE thrill experienced last year when one of the sternest battles in the history of motor racing was fought should be repeated on May 27th, when London Regional listeners will share with the Midland Region a running commentary on the Open Hill Climb for Racing and Sports Cars at Shelsley Walsh, given by Mr. F. J. Findon and Major Vernon Brook.

Accidents . . . but Not Serious

Shelsley is situated about twelve miles north-west of Worcester. From the foot to the summit of the hill is over one thousand yards. On each side of the narrow, twisting road are steep banks, forming a natural grandstand for the thousands of onlookers. Beyond the bank on one side rises a beautiful wooded slope; on the other is a sheer drop down the side of a great rolling hill. The commentator's hut will be erected on the bank at an advantageous point on the course.

Although accidents do sometimes occur at Shelsley they are rarely serious.

Something New

IF you should tune in the Scottish Regional on May 25th, do not imagine that your set has suddenly begun converting the speech or otherwise chopping it up, in the manner resorted to by the Post Office to obtain secrecy on the radio telephone routes.

Actually, you may be listening to the first broadcast of a play in Gaelic. This is "Dunach," written by Donald Robertson. Of the plot I can tell you nothing, so get out the old Gaelic lexicon and listen for yourselves.



THE VERY LATEST. This, the new main studio at Leeds, was formerly a Friends' Meeting House. The original gallery has been given distinctly bold treatment and the ugly iron pillars have been completely enclosed by glossy black columns. Note the novel microphone suspension device.



Marconiphone

Model 254

A Compact Three-Valve Console Radio-Gramophone

Type.—Three-valve console radio-gramophone. Moving-coil loud speaker. Disc type induction motor with automatic stop. **Circuit.**—Screen-grid H.F. stage with band-pass input filter, grid detector with reaction, power pentode output valve, full-wave valve rectifier. **Controls.**—(1) Tuning, with rotating horizontal scale calibrated in wavelengths. (2) Combined radio and gramo. volume control and reaction. (3) Wave range and on-off switch. **Price.**—24 guineas. **Makers.**—The Marconiphone Co., Ltd., 210/212, Tottenham Court Road, London, W.1.

The quality of reproduction on both radio and gramophone is full and satisfying, and the bass response is broad without any obvious tendency to resonate on a particular note. Adequate balance is imparted to the general effect by the brilliant response in the upper-middle register, particularly in the region of 2,000-2,500 cycles. To avoid harshness and to reduce background noise and needle scratch, no attempt has been made to maintain the response into the extreme high frequencies, and it will be safe to estimate the top cut-off as being in the region of 3,500-4,000 cycles. At the natural level of the human voice speech is well reproduced though, as might be expected, there is some tendency to hollowness if the volume is excessive.

The volume available from gramophone records is just sufficient to load the output valve fully, so that the full range of the volume control is available. The automatic switch on the induction type disc motor produces an appreciable click in the loud speaker when the record is started and stopped, but there is a commendable absence of mechanical noise

from the pick-up when the lid is closed, as the precaution has been taken of lining this with baize. The friction type hinge, by means of which the lid can be set at any angle, is a refinement which will be readily appreciated.

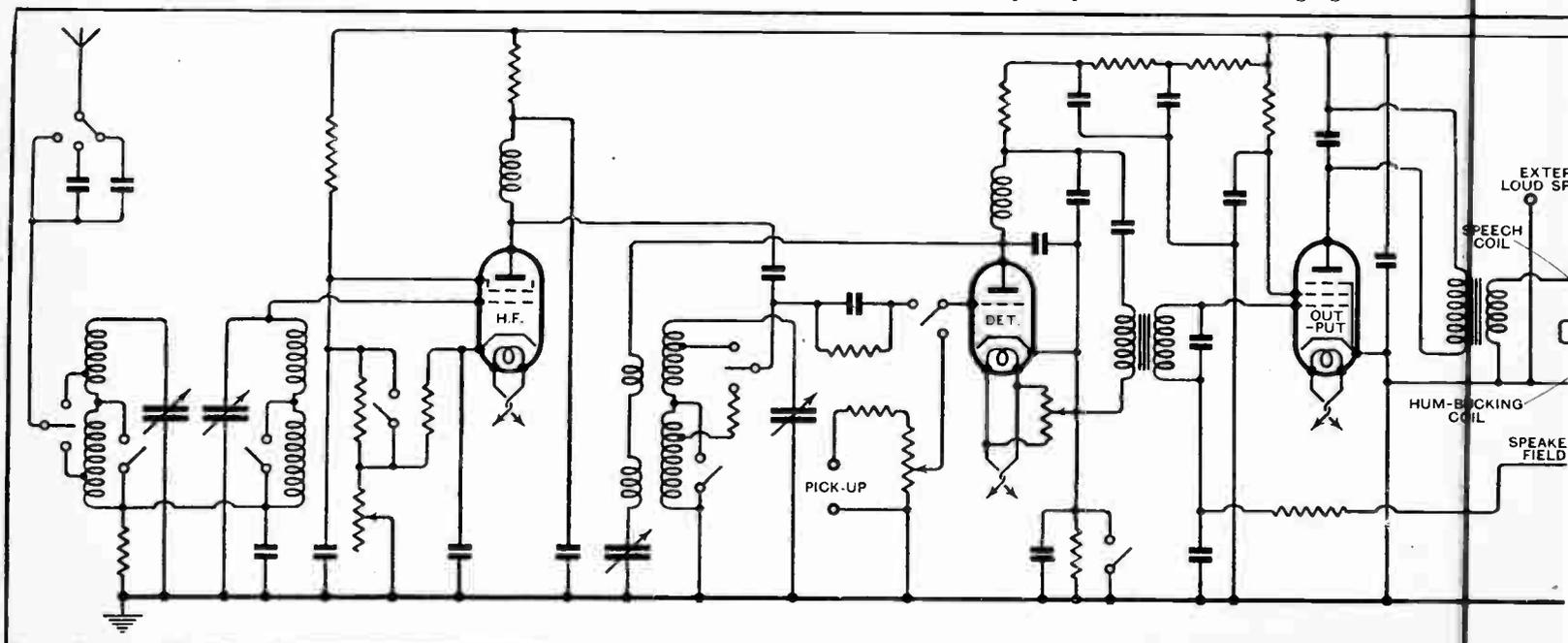
The hum level is sufficiently low to escape notice unless one is sitting close to the loud speaker. It can be adjusted to a minimum by a small filament potentiometer mounted at the back of the chassis.

Range and Selectivity

Tested in Central London the daylight range of the receiver proved to be exceptionally good. At midday no fewer than five Continental stations were available at good programme strength on the medium waveband. After nightfall, therefore, the choice of at least thirty alternative programmes can be confidently predicted. On long waves, of course, the set gave an even better account of itself under daylight conditions, and the absence of background noise on this wave range was a noticeable feature. The selectivity gave ample neutral ground between Daventry

THE specification of this receiver indicates that it is admirably suited to the requirements of the average household. It offers a choice of radio or gramophone reproduction with an undistorted power output of 1½ watts—quite sufficient for a large living room. The three-valve radio circuit has sufficient range to give reliable reception of all the more important British and Continental stations while the inclusion of band-pass tuning ensures adequate selectivity in relation to the sensitivity of the circuit. The controls are simple to operate and the boldly marked horizontal tuning scale is easily read.

Complete circuit diagram of the receiver unit. The reaction condenser and the radio and pick-up volume controls are ganged.



Marconiphone Model 254

and Radio Paris for the uninterrupted reception of Königswusterhausen.

With a full-size aerial and the receiver adjusted for maximum range three, or, at the most, four channels on either side of the Brookmans Park transmitters were lost on the medium waveband. This is quite a good result for a receiver with only one H.F. stage and even better results would, of course, be obtained with a shorter aerial and at a greater distance from the local transmitter. Every precaution has been taken, in addition to the use of a band-pass input filter, to ensure the maximum possible selectivity. The aerial tuning coil is tapped down and the choice of three alternative connections through series aerial condensers is available. Similarly, the tuned grid circuit between the H.F. and detector valves is tapped to reduce detector loading.

Coupled Volume Controls

The volume control, which is arranged to vary the bias on the screened grid valve, also has some bearing on selectivity, as it is coupled mechanically to the reaction condenser. This spindle also carries the pick-up volume control and considerable simplification of the controls is thus effected. When reproducing gramophone records the lower half of the potentiometer feeding the screened grid of the H.F. valve is short-circuited, thus preventing the infiltration of radio signals.

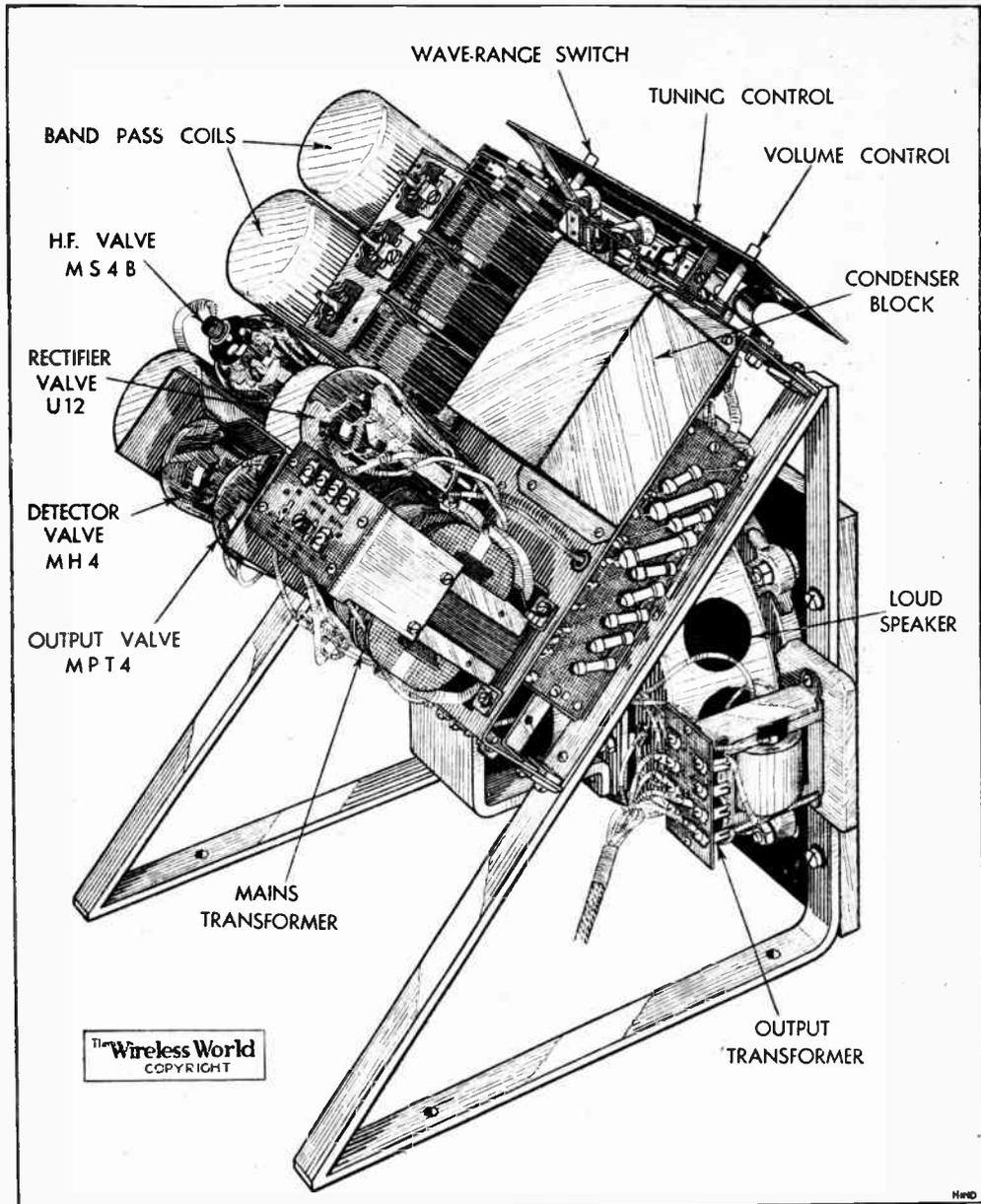
The anode supply to the detector valve is exceptionally well filtered and decoupled and the output from this valve is passed on to the pentode power amplifier through a parallel-ted transformer. The field of the moving coil loud speaker, which is connected in the negative H.T. lead, is used both for smoothing and to provide the bias for the output valve. To reduce mains ripple a hum-bucking coil in series with the speech coil is wound on the outside of the field winding.

The power supply circuit calls for little comment.

It will be noticed that parallel terminals are provided for the gramophone motor and a small series condenser is included to enable radio signals to be picked up from the mains in circumstances where an outdoor aerial is impracticable. The twin dial lamps are connected in series across the filament heater winding.

The chassis assembly is exceptionally well thought out and lends itself to easy removal for servicing. The triangular framework carrying

A CHASSIS LAYOUT DESIGNED FOR ACCESSIBILITY



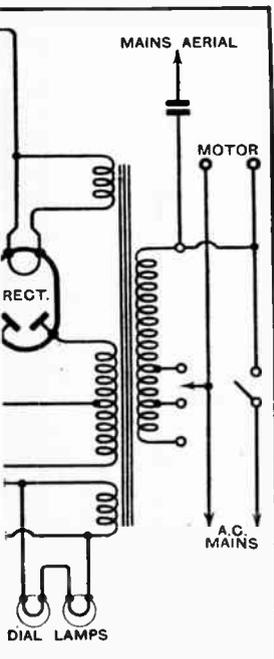
Loud speaker and chassis are combined in a single unit, the chassis being inclined so as to register with the recessed aperture in the cabinet.

the loud speaker on a subsidiary baffle and the receiver chassis at the correct angle for fitting the control recess is pushed up to the front of the cabinet and held down by four screws in the base. Snug fitting between the control panel and the cabinet is ensured by spring loading the panel which presses firmly against the slot provided for it in the cabinet. An incidental advantage of mounting the chassis in this way is the improved accessibility for valve replacements. Incidentally, it is unnecessary to remove the control knobs when withdrawing the chassis.

The design of the chassis itself follows conventional lines with the principal components arranged to give a clean top layout. Most of the resistances are connected on a panel at the side where their values can be easily checked in the unlikely event of failure. A horizontal dial of square section carries the wavelength calibrations on adjacent faces and is rotated to the appropriate position by a link mechanism working in conjunction with the cam-operated wave range switch.

Adjustment of the primary of the mains transformer to the supply voltage is effected by a shorting plug at the back of the chassis. Access to this and to the hum adjuster can only be gained after removing the back panel which is gauze covered to reduce box resonance. It is not necessary, however, to remove this panel to adjust the aerial input, which is controlled by a small three-position switch mounted on a bracket at the side of the cabinet. The cabinet is well proportioned and for a console is not unduly bulky. The dimensions are: height 38in., width 20½in., depth 17in.

To sum up, the reproduction contains no qualities which are likely to attract unfavourable attention after living with the set for some time. The selectivity meets all reasonable demands, both on medium and long waves, while it would probably be necessary to go to a superheterodyne to improve on the range. Ample volume is available and mains hum is unobtrusive. The power consumption on radio is 65 watts and on gramophone 95 watts.



LABORATORY TESTS

New Radio Products Reviewed

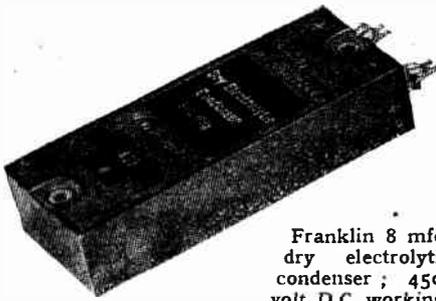


FRANKLIN DRY ELECTROLYTIC CONDENSERS

MADE by the Franklin Electric Co., Ltd., 150, Charing Cross Road, London, W.C.2, these dry electrolytic condensers are obtainable in a wide range of values and for various working voltages. The larger values, which in the low-voltage class amount to some hundreds of microfarads, are suitable for use in grid bias circuits, whilst those of from two to eight microfarads come within the category of H.T. smoothing condensers. A specimen of the latter type, rated at 8 microfarads and 450 volts D.C. working, was tested and successfully withstood D.C. potentials up to 500 volts without unduly straining the dielectric. With potentials of between 500 and 600 volts occasional breakdown occurred, but the condenser immediately resealed itself and did not appear to have suffered in the least by this misuse.

On raising the applied potential to a little over 600 volts, a definite breakdown occurred from which the condenser did not recover by resealing.

The leakage current at the rated working potential is a shade less than one milliamp. All capacities are made to a uniform size,



Franklin 8 mfd. dry electrolytic condenser; 450-volt D.C. working.

a moulded bakelite case measuring $3\frac{1}{2}$ in. \times $1\frac{1}{4}$ in. \times $\frac{3}{4}$ in. being used. The price of the model illustrated here is 6s.

"SME" SOLDERING PASTE

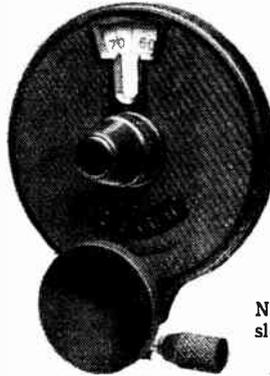
"SME" is not a substitute for solder, but actual solder in the convenient form of a paste mixed with the requisite quantity of a non-corrosive flux. Soldered joints can be made without the aid of a tinned copper bit, the heat being applied to the joint by a poker or a blow-lamp for large work, and by a match or a candle in the case of light materials, such as thin wires, etc.

We have verified by test that "Sme" soldering paste makes a perfectly satisfactory joint, and find that the maker's claims are in no way exaggerated, for it is very simple indeed to handle. The paste is sold in tubes costing 7½d. each, and it is available also in tins, containing 1 lb.; supplies can be obtained from Andrew R. Findlay, 17, Robertson Street, Glasgow, C.2.

IGRANIC INDIGRAPH DIAL

THE Igranic Indigraph slow-motion dial, which embodies a micrometer adjustment, has been redesigned, and in its latest

form is now definitely a better dial for short-wave work than the model it replaces, despite the fact that the earlier dial had



New Igranic Indigraph slow-motion dial with micrometer drive.

few equals in this particular field.

The main drive, giving a 9 to 1 reduction, is much smoother to operate, as the micrometer mechanism can be put entirely out of gear. When in action this

gives a reduction of 600 to 1, and is invaluable for short- and ultra-short-wave reception.

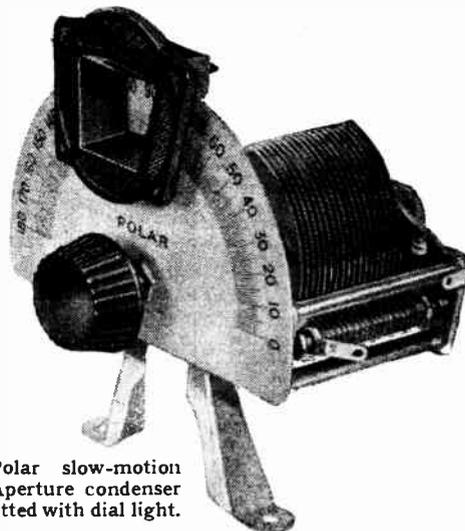
The shape, size, and general design of the new dial is the same as the earlier models, so, also, is the price, which is 9s. 6d.

The makers are the Igranic Electric Co., Ltd., 147, Queen Victoria Street, London, E.C.4.

POLAR APERTURE CONDENSER

THIS condenser is particularly well suited for use in the simpler type of receivers in which a single tuned circuit is used. It consists of the Polar No. 2 type slow-motion condenser mounted on a bracket 2¼ in. high. A semi-circular translucent scale is fitted, and provision is made for illuminating it from the back. The slow-motion drive gives a reduction of about nine to one.

The measured minimum and maximum capacities of a 0.0005 mfd. specimen were 14 m-mfds. and 500 m-mfds. respectively.



Polar slow-motion Aperture condenser fitted with dial light.

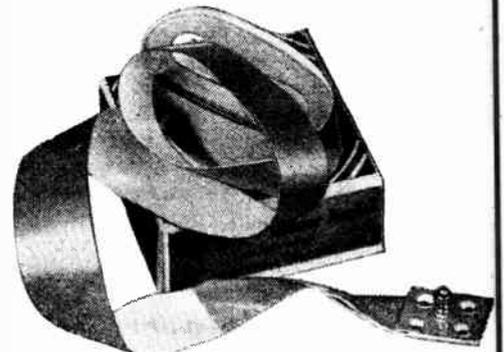
The condenser is quite robust despite its small size. Aluminium is employed for the

vanes and plates, whilst the spindle and supporting rods, also the fixing bush, are of brass.

This style is obtainable in 0.00035 mfd. and 0.0003 mfd. sizes in addition, the price being 7s. 6d. in each case.

"HET" INDOOR AERIAL

MADE by the Univolt Electric, Ltd., 119-125, Finsbury Pavement, London, E.C.2, the Het Indoor Aerial takes the form of a metal foil strip one inch wide and having a backing of adhesive paper so that it can be readily attached to the wall or to woodwork. One end is provided with a small brass plate in which are four screw holes for fixing, and it carries a terminal to which is joined the aerial lead to the receiver. The aerial can be run round the room either above or below the picture moulding in the form of a frieze, and will harmonise with most furnishing schemes



"Het" metal strip indoor aerial.

since it can be obtained finished either in gilt or silver, and the price is 1s. 6d.

Catalogues Received

Westinghouse Brake and Saxby Signal Co., Ltd., 82, York Road, King's Cross, London, N.1.—Leaflet I.P. 11W, giving operating instructions and circuit details for the new high-frequency metal rectifiers designated the Westector.

The Edison Swan Electric Co., Ltd., 155, Charing Cross Road, London, W.C.2.—Sixty-three-page descriptive booklet dealing with the full range of Mazda valves. Characteristic curves, operating conditions and some typical circuits are given. Also illustrated folder describing the B.T.H. range of gramophone pick-ups.

Thompson, Diamond and Butcher, 34, Farringdon Road, London, E.C.1.—1933 radio wholesale catalogue describing and illustrating the full range of receivers, radio gramophones, accessories and components handled by this firm.

R. Cadisch and Sons, 5 and 6, Red Lion Square, London, W.C.1.—New Season's Radio Catalogue in which 206 pages are devoted to illustrations and descriptive matter of this firm's range of receivers, radio gramophones, accessories and components. A separate section deals with the numerous other articles, electrical, mechanical, and of domestic interest also handled.

The Pentagrid Converter

An American Development in Frequency Changers

By CLAUDE L. LYONS, B.Sc.

HERE is the first description of a new single-valve frequency changer which should simplify the construction of the superheterodyne. It combines in one envelope the electrodes necessary for a triode oscillator and a variable- μ first detector with the added advantage that aerial radiation and interaction between tuning circuits is avoided.

IN view of the ever-increasing popularity of the superheterodyne, the Pentagrid Converter valve which has been recently developed in America is of considerable interest. Two types of valve are available in that country: the first is intended for use in ordinary A.C. receivers and has a 2.5 volts heater, while the other, which is also of the indirectly heated cathode type, is rated for 6.3 volts for use in car sets.

The valve is intended to function as a single-valve frequency changer, and it not only oscillates and rectifies, but complete isolation of the two processes is obtained. There are six electrodes; immediately surrounding the cathode is the oscillator grid, and outside this the oscillator anode is fitted. This does not surround the grid in the normal manner, however, but consists merely of two bars. Around the whole oscillator assembly is placed one portion of the screen-grid. Outside this is the control grid of the detector portion, then comes the second portion of the screen-grid, which is connected internally to the first, and, lastly, the detector anode.

detector control grid. This being so, the detector cathode is a cloud of electrons, and the control grid, second screen-grid, and anode form the remaining three electrodes of an ordinary screen-grid first-detector valve, the characteristics of which are of the variable- μ type. It may thus be used for automatic volume control purposes.

Electronic Mixing

The connections for the new valve are shown in Fig. 1, from which the arrangement of the electrodes will also be apparent. It will be seen that the tuned oscillator circuit is connected between the oscillator grid and the earth line, which is negative H.T. for this valve, while the reaction coil in the oscillator anode circuit is coupled to it. The grid is negatively biased by means of the voltage drop set up by the passage of grid current through the resistance R2.

In the detector portion, the incoming signal is applied in the usual way to the control grid, and the initial negative bias is obtained through the drop along the cathode resistance R1. The resistance R4 and condenser C are the usual filter circuit for A.V.C. The I.F. transformer is connected in the anode circuit, to which electrode a potential of some 250 volts is applied. The common screens are fed from the usual 100 volts point on the H.T. supply.

It will be observed that oscillation takes place

among the inner electrodes of the valve, and rectification, through which the beat note between the incoming signals and the local oscillations is formed, and amplification occur in the action of the outer electrodes. Normally, where two separate valves are used, it is necessary to provide coupling between the circuits of the two valves so that the oscillations are applied to the detector as well as the

signal. It is sometimes found that this coupling leads to difficulties, since with certain arrangements interaction may occur between the tuning controls, and there is a danger of radiation from the aerial unless an H.F. stage be used.

No such circuit coupling is employed with the Pentagrid, and the necessary coupling occurs within the valve and, by virtue of the screening, is entirely electronic in nature. It has been stated that the cathode of the variable- μ portion of the valve is a cloud of electrons around the inner screen-grid. The intensity of this cloud depends upon the instantaneous potentials of the oscillator electrodes. These are continuously changing, since the valve is oscillating, and the density of

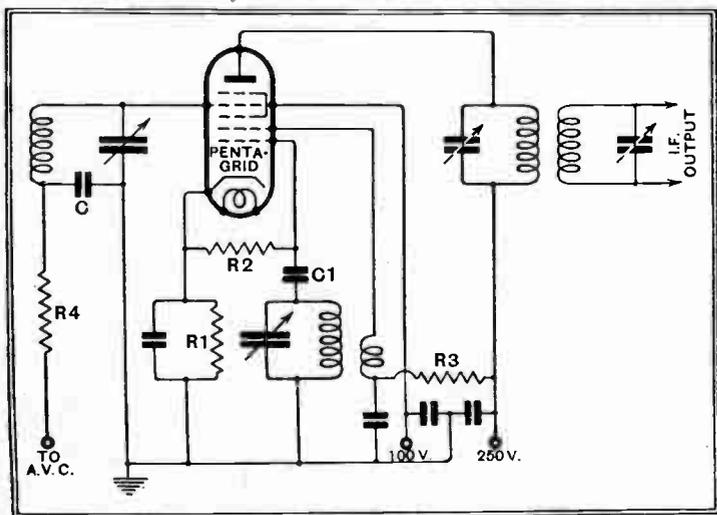


Fig. 1.—The circuit arrangement and the electrode layout of the new Pentagrid frequency changing valve.

In operation the cathode, inner grid, and oscillator anode form the three electrodes of a conventional oscillator system, which is screened from the other electrodes by the first screening grid. From the point of view of connections, the cathode is common to the detector; actually, however, it is stated that the true detector cathode is a cloud of electrons existing between the first screening grid and the

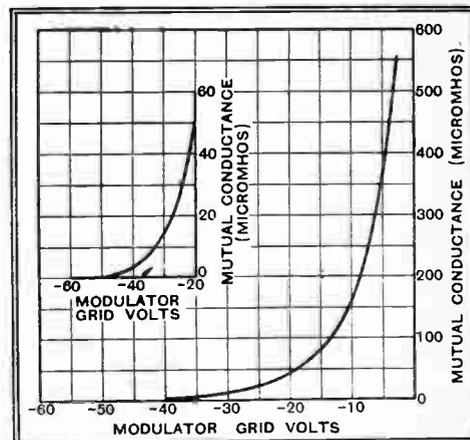


Fig. 2.—Characteristics of the Pentagrid showing that a large negative grid bias can be applied.

the electron cloud varies in sympathy. As a result, the anode current of the variable- μ portion of the valve varies also at the oscillator frequency. The action can perhaps best be visualised by regarding the arrangement as similar to a two-valve circuit in which the first detector cathode is heated by the oscillator current so that its temperature varies with the oscillator current. With ordinary valves, of course, a scheme of this nature is impracticable on account of the temperature lag.

Good A.V.C. Control

Although the oscillator thus affects the operation of the detector so that electronic mixing is obtained, the potentials of the purely rectifier electrodes do not modify the oscillator action in any way. It is possible, therefore, to control volume by varying the bias applied to the control grid, so increasing the range of control in an A.V.C. set. The curves of Fig. 2 show that the bias can be varied up to about 50 volts negative, at which the mutual conductance is under 0.001 mA/V. This is probably impossible with any other single-valve frequency changer.

It is stated that normal type oscillator

The Pentagrid Converter—

coils can be employed, and, of course, the methods of ganging the oscillator and signal frequency circuits follow the usual practice. The values of the other components depend largely upon the voltages applied to the valve, and the grid leak R2 is particularly important. If an incorrect value be employed here, a tendency to low-frequency howling or squegging may be apparent.

It will be seen, therefore, that the new valve combines within a single glass envelope the electrodes necessary for perform-

ing the functions of both a triode oscillator and a variable-mu first detector, and it is claimed that the efficiency is at least equal to the normal arrangement. Furthermore, there is the not unimportant advantage that interaction between the tuning circuits and aerial radiation is avoided. The valve, therefore, is to be welcomed as affording a simplification in the superheterodyne, and it probably represents the first efficient single-valve frequency changing device which is not open to objection on the score of difficulties due to effective balancing.

periodical, be it on radio or other subject, neither Dutch nor foreign, can compare with it. In view of the fact that I spend on professional literature, both radio and medico-chemical, about £10 a year, which is for Holland rather much, I can say I know what a good periodical means and looks like.

I hope that there will be many sequels to your last constructional article, about an input-transformer, and if I am allowed to make a suggestion it would be greatly appreciated by many of your Dutch readers, as myself, experimenting with public-address gear, if you would publish an article on the construction of 20 hy.-120 mA. chokes and tapped output chokes for push-pull. I sincerely hope that shortly we may find something on these lines in the pages of *The Wireless World*. I hope that *The Wireless World* may still a very long time be the factum of every real amateur.

C. W. VERBAARSSCHOTT.

Voorburg, Holland.

Broadcast Stunts

I WAS interested in the notes under "Broadcast Brevities" in *The Wireless World* of April 24th, but would suggest that the complaint that there are "no novelties" nowadays is hardly fair to Midland Regional, in view of the following recent facts.

A series of County Week Broadcasts—the first of their kind—was begun in October. There were actual relays of cattle on a Hereford farm and of big power presses and heavy stampers at various factories, and records by blattnerphone (Stille) process of trawlers arriving and departing, of a fish auction and of a thousand-ton quarry blast.

To take next week only, we are fading in to our Pageant of Gloucestershire, a blattnerphone record of Dr. Hayes' tune from Gloucester Cathedral Chimes, taken in the Tower on a windy day last week, and we are broadcasting the arrival and departure of the Cheltenham Flyer.

Stunts obviously lose their value if they are carried out too frequently, but I do claim that the B.B.C. staff here realise their value and the amount of appreciation accorded them. It probably won't be very long before an announcement will be made of another stunt which our Programme Department and O.B. Engineers have in view.

PERCY EDGAR,

Midland Regional Director,
British Broadcasting Corporation.

Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Stamford Street, London, S.E.1, and must be accompanied by the writer's name and address

The Ferrocart III

The following interesting report on the performance of the above set has been received from Lt.-Col. H. Ashley-Scarlett, President of the Golders Green and Hendon Radio Scientific Society, who carried out a test in collaboration with a fellow member, Mr. J. C. Emerson, B.Sc.

The Ferrocart III A.C. receiver described in *The Wireless World* of March 3rd, has been the subject of a test carried out by myself and a fellow member, Mr. J. C. Emerson, B.Sc. The following report on performance will, we think, be an encouragement to other readers who contemplate building the receiver.

Quality.—For the type of receiver remarkably good; there was no aural evidence of high note loss on local station reception. If any criticism could be made it would be that the very low notes are slightly lacking. Hum is quite absent and volume is quite sufficient for ordinary domestic requirements.

Pick-up.—The set is quite stable when using a pick-up—quality as above.

Selectivity.—Most noticeably good, especially on the lower part of the medium wave band where most interference is usually experienced.

Sensitivity.—Up to standard.

Range.—Twenty-five broadcasting stations easily received on the loud speaker during daytime at programme strength. After dusk the number was increased to 68, with the greatest facility.

Reaction.—Particularly good and effective.

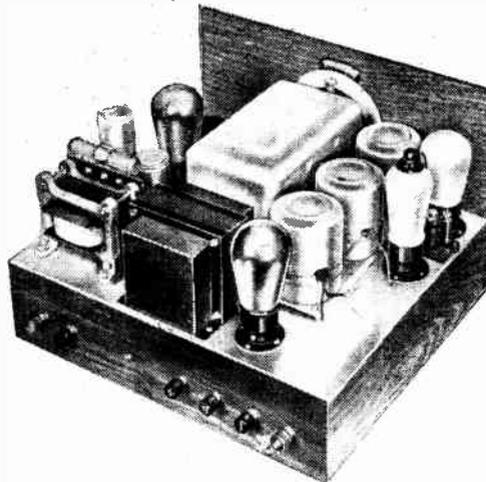
General.—An excellent general-purpose receiver. The set was tested six miles from Brookmans Park. On the National programme use of local station switch was necessary to reduce the signal to a comfortable level. To receive foreign stations when very closely spaced the volume control was turned down to allow full scope to reaction, thus obtaining the necessary selectivity. The reaction control is excellent and does not give rise to the terrific distortion usually associated with its use. The condenser dial is marked in metres, but the readings are approximate only. In view of the high selectivity a closer division of the marking would be an advantage. The dial setting is somewhat affected by the position of the reaction condenser.

The appearance and finish of the set are

excellent, and we would particularly mention the neat method of mounting and bringing out the leads of the power transformer.

H. ASHLEY-SCARLETT, Lt.-Col.
President, Golders Green and Hendon
Radio Scientific Society.

19th April, 1933.



"The Wireless World" Ferrocart III, an A.C. receiver described in our issue of March 3rd, 1933.

A Birthday Greeting from Holland

ON the occasion of the twenty-second birthday and of the moving to new, "bigger and better" premises of *The Wireless World*, I wish to convey my sincere congratulations. I hope that the date of April 17th, 1933, may mark the beginning of a new and very prosperous era to *The Wireless World*, that it may be "bigger and better" still, and may remain to the real amateur and experimenter what it has always been, a real encyclopædia on wireless, the herald of new ideas, a champion for better reception, and always a stimulus to those who seek the real scientific lines and principles of wireless. Being myself a "victim" to "that wireless craze," as some say, since 1922, and a regular reader of *The Wireless World* since 1927, I, and with me many of my old-timer friends, have profited by it.

I can tell you frankly that among all radio periodicals I know I consider *The Wireless World* to be the best of all. No other

BLUE PRINTS

For the convenience of constructors full-sized blue prints are available of the following popular *Wireless World* sets that have been recently described, price 1s. 6d., post free.

Monodial A.C. Super. (Booklet, price 1s. 8d. post free.)

Short Wave Two. (November 4th and December 23rd, 1932.)

Straight Threo. (December 16th, 1932.)

Modern D.C. Threo. (December 30th, 1932, and January 6th, 1933.)

All-wave Monodial Super. (January 27th and February 10th, 1933.)

Modern A.C. Quality Amplifier. (February 17th, 1933.)

Ferrocart III. (February 24th and March 3rd, 1933.)

***A.V.C. Monodial Super.** (March 17th and 24th, 1933.) With 2.5 watt or 5 watt amplifier. State which is required when ordering.

The Glass "B" Ferrocart Receiver. (April 17th, 1933.)

Universal A.C. Short-wave Converter. (April 23rd, 1933.)

* Price of this blue print is 2/.

These can be obtained from the Publishers, Iliffe & Sons Ltd., Dorset House, Stamford Street, London, S.E.1.

NEWS of the WEEK

Current Events in Brief Review

Short Waves and Politics

GERMAN short-wave amateurs desiring transmitting licences must not only pass a rigorous technical test, but must satisfy the authorities as to their political integrity.

In Palestine

AT the end of 1932 there were 900 licensed wireless receiving sets in Palestine, according to the American Consul at Jerusalem. Empire broadcasting is stimulating interest, and new receivers have been reaching the country during the last few weeks.

How France Would Win

WE understand that the French delegates to the Lucerne Conference will present an attractive little scheme for the apportionment of wavelengths. This is based on the geographical size of each country, and the French engineers have calculated that on this basis France, Germany, and Great Britain would obtain waves in the ratio of 6:5:3. Thus France would secure double the number of wavelengths owned by Great Britain.

The Conference opens on Monday next, May 15th.

A Helping Hand

PAPA STEPHAN, the famous president of the Radio Circle of Katowice, who has correspondents all over Europe, has earned the sincere thanks of *Radio Toulouse*. In a public statement the management of *Radio Toulouse*, after thanking listeners for the innumerable messages of sympathy received after the recent fire at that station, recall with gratitude the gesture of sympathy with which M. Stéphan Tymieniecki (Papa Stéphan) has not hesitated to put his station at the disposal of *Radio Toulouse* for answering questions over the ether.

Toulouse is hoping to reopen regular transmissions in the very near future.

Programmes from the Empire: Indian Suggestion

THE Western India Wireless Association is anxious to reciprocate in the matter of broadcast programmes with transmissions from India for distribution over Great Britain. The Association offers to prepare a typical Indian programme for transmission from Poona. This would be picked up at Rugby and sent to London and thence relayed by the B.B.C. stations. The entertainment would consist of a *potpourri* of Indian sounds—musical, vocal, street, and jungle—together with a running commentary by an English-speaking announcer. These transmissions would have to begin about 11 p.m. Indian time.

This strikes us as an admirable idea, and, with the completion of the Post Office Empire telephone services, there should be no obstacle to the reception of programmes from all parts of the Empire.

New Swiss Regional

MONTE CENERI, the Italian-speaking regional station at Tessin, Switzerland, started tests on April 18th with a power of 7 kW, and a wavelength of 680 metres.

Bisamberg in a Fortnight

WE understand that the new 100-kW transmitter at Bisamberg, near Vienna, will open with a special programme on May 26th. Vienna's wavelength is 597.2 metres.

The First Radio Play

TO Britain belongs the honour of broadcasting the first microphone play, according to M. Paul Berger, Editor of the *Antenne*, who declares that this first effort was the broadcasting of a scene from Rostand's "Cyrano de Bergerac" from the experimental station at Writtle, England, more than ten years ago.

A Popular Short-wave Station

SHORT-WAVE listeners will be interested to hear that W2XE, the short-wave station of the Columbia Broadcasting System, has returned to the ether with considerably increased power. The daily schedule is as follows: 4-6 p.m. on 19.64 metres; 8-10 p.m. on 25.36 metres; 11 p.m. to 1 a.m., 49.02 metres. The times are G.M.T.

Midgets in Spain

MIDGET sets are a craze in Spain, where, it is reported, thousands have been sold during the last few weeks.

Lectures on Television

THE first of a series of four lectures on television was given by Mr. H. J. Barton Chapple, Wh.Sc., B.Sc., on Wednesday last, May 10th, at the Polytechnic, Regent Street, London, W.1, and the three remaining lectures will be given on May 17th, 24th, and 31st. The lectures are illustrated by experiments, lantern slides, and demonstrations of television receivers. Full particulars can be obtained on application to the Polytechnic.

Faraday Building

"FARADAY Building can well be described as the switch board of the world," said the Postmaster-General, the Rt. Hon. Sir Kingsley Wood, M.P., at the opening of the International Telephone Exchange, Faraday Building, Queen Victoria Street, London, on Thursday, May 4th. Inspection of the exchange confirms the appropriateness of the remark. Faraday Building not only serves as the converging point for Post Office radio telephone services from Montreal, New York, Buenos Aires, Rio de Janeiro, Cape Town, Cairo, Sydney, Bombay; it is also the exchange for linking-up these centres with each other and with the capitals of Europe. It is, in fact, known as the Overseas Telephone Exchange. Although the actual telephone circuits or channels themselves are a



THE PACE THAT KILLS. This amusing cartoon from the New York trade journal *Radio Retailing* has a serious significance for all who value quality more than quantity. Mass production methods in American radio have led to continual price cutting, and the race to produce the cheapest set has had dire results on tone quality and craftsmanship. Is the process to be repeated over here?

Where the Rainbow Ends

THE "European Zone" over which the forthcoming Lucerne Conference will have jurisdiction actually comprises all countries as far as 40° east of Greenwich and extends southwards to the southern shores of the Mediterranean. Countries on the outskirts include Northern Africa, Palestine, Turkey, the Irish Free State, and part of Russia as far as Moscow.

N.P.L.'s New Radio Department

WE understand that, with effect from May 1st, a new Radio Department has been formed at the National Physical Laboratory, under the superintendence of Mr. R. A. Watson Watt. The new Radio Department includes the former Wireless Division of the N.P.L. Electricity Department, and also the Radio Research Station at Slough, which will continue its present work.

Short Waves and Signal Crashers

TWO wireless vans now leave Scotland Yard daily under sealed orders. Their purpose is to trap motorists who ignore traffic lights. Arrived at the chosen spot, one van is stationed close to the traffic light, while the other van waits 100 yards farther along the road. When a car driver disobeys a signal the nearer van transmits a short-wave message to the one in front, and the offender is intercepted.

May Day Millions

THE May Day celebrations in Berlin were distinguished by the fact that on the Tempelhofer field there was assembled a crowd of over 1,000,000 persons—probably the largest collection of individuals the world has ever seen. That the majority of them were able to hear the Chancellor's speech could only be ascribed to the 112 Telefunken loud speakers.

The broadcasting of the event, says a correspondent, meant a very busy day for the Technical Staff of the Radio Reichs Gesellschaft, which employed a special new O.B. van for the first time. This housed half a dozen amplifiers fed by five groups of microphones distributed throughout the great Berlin port.

highly complicated engineering undertaking, the Overseas Exchange differs very little in appearance from an ordinary inland telephone exchange, though special arrangements have been made to exclude extraneous noises. Sound-absorbing and echo-suppressing materials have been provided for the floor and ceiling of the switch room.

The exchange is coupled up with Rugby, which is the outward transmitting station for all the Post Office overseas radio telephone services. Reception is effected through Cupar, in Fifeshire, which deals with long waves from America, and Ballock, Hertfordshire, for all the short-wave services.

It is now possible to speak from this country to any one of thirty-two million telephone subscribers.

UNBIASED

What Lancashire Thinks To-day . . .

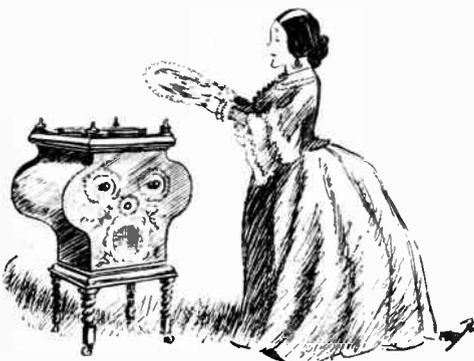
I AM very surprised to learn that "wired-wireless" does, after all, exist in this country. Not only are programmes being relayed to subscribers' houses *via* this system, but my informants (Community Radio, of St. Anne's-on-Sea) tell me that at the Hotel Majestic, at St. Anne's, the incoming radio programmes are being distributed to the various rooms by this method. I presume that they use either the electric light wiring or the electric bell wiring. It says much for this Lancashire city that they are pioneers in using this system instead of the ordinary loud speaker extension.

A "Period" Set

THE other day I was dragged, much against my will, to visit a futuristic-looking dwelling which was supposed to represent the sort of place in which we shall all be living in 1950.

Being neither an architect nor a furniture designer, I do not feel justified in commenting upon the general ugliness of the place and its lack of comfort, to say nothing of the old-fashioned dirt-collecting corners, which I should have thought would have been rounded off by the year mentioned. Concerning the radio set exhibited in the house, however, I feel I can let myself go. It was a real "period" model.

Naturally the instrument was also supposed to be of the 1950 period, and quite properly it was shown as a combined "sound and sight" instrument; in other words, it was a radiophone-cum-radioscope, or radio-phonoscope, as I suppose the combined instrument will be called in days to come. No snag was encountered until I lifted the lid and dived into the innards, despite the protests of a uniformed and much-bewhiskered attendant, who smacked of 1850 rather than 1950.



A real "period" model

Now it is, of course, quite impossible to predict what radio developments will have come along by 1950, and in the circumstances, therefore, I think that the

designer (?) of the set might have left it to our imagination. He had, however, thought otherwise, but so far from attempting to project his mind into 1950, he had retrojected it into the early part of 1931. As for the television part of the apparatus, I could not help thinking that he must actually have borrowed the instrument which is usually on show in the Science Museum.

The most ridiculous part of the whole affair, however, was the radiogramophone. Not only had the sponsor of this instrument failed to perceive that the disc type of record will have sung its swan song long before 1950, but he had forgotten that, with the perfection of television,

By FREE GRID

gramophone records will incorporate sight as well as sound. When that time comes the name of this all-embracing home entertainer will, no doubt, be "radiogramophonoscope," or "radiogramoscophone," or perhaps even just "phonoscope" or "scopophone" for short.

To crown all, this wretched travesty of a house contained no provision for reception in rooms other than the one in which the receiver was operating.

Old Iron at Brookmans Park

I SUPPOSE that all of you have heard the preliminary efforts of the new West Regional station, and I hope that you are all as delighted as I am with the excellent results obtained, more especially from the point of view of quality.

The point to which I wish to call attention, however, is the *relatively* inferior results of the London transmitter when compared with this later station. (I have quality in mind more than anything else.) In other words, isn't it about time that the London transmitter was modernised; rebuilt, in fact? It must be remembered that the proposed Droitwich station is not expected to be in operation before the middle of 1934, and by the time the B.B.C. has dealt with the Belfast area, thus completing the Regional scheme (*circa* 1935), London will be much behind the times; in fact, we shall have the ludicrous spectacle of the capital of the Empire having a transmitter which is more antique than any other in the country.

I am perfectly well aware that the B.B.C. Engineering Department will immediately deny that London will then



Any old iron?

be out of date, just as they did recently when certain journals suggested that it was high time that 5XX (which was opened in 1925) was handed over to the old-iron dealer.

The London station is over three years old, regular transmissions from the Regional transmitter having commenced on March 5th, 1930, and by the time the Regional scheme is finished it will have whiskers on it. A five-year-old broadcasting station (which will be London's age when the Regional scheme is complete) is just about as antique as a one-year-old broadcast receiver; more so, in fact.

Just as in the case of large metal structures like the Forth Bridge the painters are never finished, one gang beginning all over again before the old gang is finished, so ought the B.B.C. to deal with the Regional scheme. At least *one* station should always be in a process of demolition and reconstruction.

It Works

I MUST thank the many readers who sent me such helpful advice in regard to my difficulties in the matter of a hospital radiogram some little time back. You may recollect that one of my greatest problems was to devise a record changer which would keep up a continuous programme of gramophone records in the hospital throughout the night and at such other times when there was no broadcasting.

As one reader remarked, the problem was quite simple, as all that was necessary was to get hold of half-a-dozen or more playing desks fitted with the usual "eight-record" changing gear, and to devise mechanism so that when the first instrument had done its stuff it operated a relay which started the second one, and so on.

My correspondent states that he has already filed his patent, and that if he can't manage to get some manufacturer to take it up soon he will have to file his petition also. I must confess that the apparatus sounds rather cumbersome, and I shall need a complete room to house all the playing desks, but, nevertheless, I am assured that it works, and that is the great thing. I must confess, however, that I think it very remiss of our manufacturers not to tackle the problem of giving us a record-changer which will hold more than a miserable eight records.



"THE WIRELESS WORLD" CLASS "B" FERROCART RECEIVER

In view of the phenomenal interest which is being taken in this wonderful circuit, we have reprinted 10,000 copies of the original constructional article which appeared in "The Wireless World" of April 7th last, and these are being offered free to all readers of "The Wireless World" on receipt of application. Wireless dealers will be supplied gratis with as many copies as can conveniently be disposed of amongst their customers.

Trade Enquiries Solicited.

The fact that this handsome Cabinet, finished in beautifully figured Walnut, was chosen by "The Wireless World" for their latest Receiver, speaks for itself. Fashioned on modern lines, it is of extremely neat design, and its construction leaves nothing to be desired. Special care has been taken to ensure that Cabinet resonances are eliminated. Overall dimensions:—

Height, 19½ in. Width, 15 in. Depth, 12½ in. Complete with Loudspeaker Baffleboard. "Konduktite" metal-lined baseboard and removable back. Front drilled ready to take the "Ferrocart" Receiver, if desired, without extra charge.

Cabinet with metal-lined baseboard **32/6**

The demand for Kits of parts for this wonderful Receiver—which has to be heard to be believed—is increasing daily, but in accordance with our original undertaking, we can still deliver every Component ON DEMAND.

In view of the remarkable performance of the new Class "B" Battery Valve, both as regards quality of reproduction and power output, it can safely be predicted that this type of output will be included in the majority of future battery sets. In efficiency it is considerably greater than any other output stage, and, in combining this method of amplification with the undoubted superiority of the Ferrocart Colls, "The Wireless World" has to be congratulated on evolving a circuit which, at least as far as battery operated sets are concerned, has totally eclipsed all previous efforts.

KITS AS SPECIFIED

(Designer's first Choice).

KIT 'A' Complete (less Valves, Batteries, Cabinet and Loud Speaker) **£8-3-6**

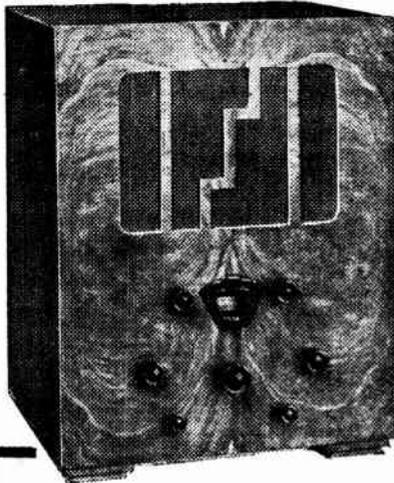
KIT 'B' Complete with Valves (less Batteries, Cabinet and Loud Speaker) **£10-9-9**

KIT 'C' Complete with Valves, Cabinet and Loud Speaker (less Batteries) **£14-1-9**

Detailed Lists, Post Free.

FREE DEMONSTRATION

All readers of "The Wireless World" are cordially invited to see and hear this wonderful Receiver at our Surrey Street Showrooms, where we are displaying a working model of the complete instrument. Hours of business: 9 a.m. to 6 p.m. Two doors from the Strand, facing Aldwych tube station.



The CITY ACCUMULATOR Co., Ltd.,
Showrooms: 4, Surrey St., Strand, London, W.C.2.
Office and Works: 7, Angel Court, 173, Strand, London, W.C.2.
Telephone: Temple Bar 8620. Telegrams: Cityacco, Estrand, London.

The retort courteous!

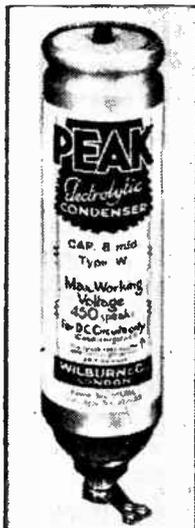
"The Wireless World"
in a recent editorial called for cheaper components.
In reply WILBURN & CO. introduce
The New

CAPACITY 8 mfd.	PEAK ELECTROLYTIC CONDENSER	PRICE 4/9 ea.
---------------------------	--	-------------------------

450 VOLTS.

Not since we introduced our now famous **TYPE 1500**

has such value in condensers been offered to "Wireless World" readers. Remember that recommended and used as they are by the "Wireless World," you take no risks when you buy Peak Condensers.



PEAK WORKING.

The Electrolytic condenser featured here is only one of the many new additions to the Peak range. A new list, ready shortly, contains full particulars and will be gladly sent on request.

PEAK CONDENSERS are used by the War Office, Post Office & other Government Depts. *Manufacturers and Trade Supplied.*

EXAMINE THIS CLOSELY!

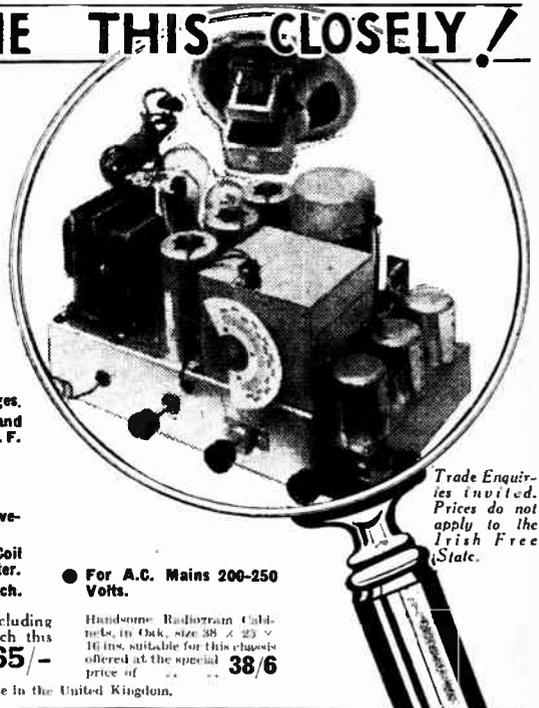
AN ALL-ELECTRIC SIX VALVE CHASSIS AT LESS COST THAN YOUR BATTERY SET

Remarkable results have been obtained under difficult conditions with this highly efficient six-valve circuit (including rectifier). You will be amazed at its standard of selectivity and capacity for receiving long-range stations.

- 2 Variable- μ H.F. stages.
- Distortionless Detector and Resistance-coupled L.F. stage.
- Power-Pentode Output.
- One-dial control
- Long and medium wave-bands.
- Field-energised Moving Coil Loudspeaker, 7" diameter.
- Fitted Tone Control Switch.

★ Kit of 6 Valves (including Rectifier) tested to match this receiver offered at the special inclusive price of **65/-**

Delivered Free in the United Kingdom.



Trade Enquiries invited. Prices do not apply to the Irish Free State.

● For A.C. Mains 200-250 Volts.

Handsome Radiogram Cabinet, 16 in. high, 10 in. wide, 10 in. deep, suitable for this chassis offered at the special price of **38/6**

6 VALVE CHASSIS & 6.19.6
AND
MOVING COIL SPEAKER COMPLETE

23, Bride Lane, London, E.C.4
Ludgate Circus **WILBURN & COMPANY** Phone: CENTRAL 6094
Northern Distributors: W. Andrew Bryce & Co., Bury, Lancs.

BON MARCHE Ltd. **BRIXTON**
S.W.9.

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is 12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST ON MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World" Dorset House, Stamford Street, London, S.E.1, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 269, Deansgate, Manchester, 3; 28a, Renfield Street, Glasgow, C.2.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed

& Co. Notes being untraceable if lost in transit should not be sent as remittances.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

For particulars of **Box Number Advertisements** and **Deposit System** see previous issues.

RECEIVERS FOR SALE.

MURPHY 3 Mains, used 2 months; £10/10.—Sandall, 9a, Powis St., Woolwich. [2611]

LOTUS Bud, D.C., 89 6, condition absolutely as new.—G. Alderson, Poplar Rd., Sidhall. [2594]

PYE 8, All Mains Superhet, list price £23, as new, £15.—Apply 87, Red Post Hill, S.E.24. [2589]

4-VALVE Chassis S.G. Detector, pentode rectifier, complete with B.V.A. valves and energised moving coil loud speaker; £8 8 complete.

5-VALVE Latest Pattern Superhet, Chassis, complete with B.V.A. valves and energised moving coil loud speaker; £10 10, complete. Stott's, Cliff Hill, Huddersfield. [2601]

MORE Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation.—Conitts, Wireless Engineers, Horley. [2613]

D C. Monodial Radiogram, Garrard universal motor, R.T.H. pickup, Magnavox 143H speaker, superb modern cabinet; 25 guineas.—Blake, 95, Hillway, N.6. [2532]

CLIMAX All-electric 200-250 A.C. Band Pass Three, in walnut cabinet, complete with valves and moving coil speaker; list price £16.15, unopened, £9/8; c.o.d., carriage paid.

50/-—Ediswan D.C. all-electric set, S.G., detector and Pentode, without valves, can be converted to A.C.; list price 21 guineas, unopened packing; c.o.d., carriage forward.

PHILIP KAY, Ltd., 167, City Rd., Finsbury, London, E.C.1. [2541]

ALL-WAVE Monodial, 5 valves Columbia Portable, 300, and sundry parts; no junk; genuine bargains; stamp with enquiries.—Frank Rowe, Rylands, Salford Arnold, Tamton. [2477]

7-VALVE American Bosch D.C. Mains Receiver, self-contained, moving coil loud speaker, magnificent instrument, practically unused, full set spare valves; offers.—Box 6836, c/o The Wireless World. [2584]

ELECTRAD Quality Amplifier, model L.W.220, for 220-240v. A.C., complete; cost £12 5, nearest £5/10 secure; also Regentone eliminator (as new), S.G. tapping, accept £2; also Elexa universal short wave converter, complete, cost 57 6 three weeks ago, a sacrifice at £2.—Raymond Snowden, Keighley Rd., Cowling, Yorkshire. [2605]

CHARGERS AND ELIMINATORS.

MILNES 120v. H.T. Unit, £2; 8.22/8.G., 7/6.—Edwards, 14, Pulteney Rd., E.18. [2615]

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

N.P. Battery Chargers for A.C. Mains, eliminators, 4 tappings to 120 m.a., 57/6; with trickle charger, 76/6; photographs.

N.P. Trade Price Lists and Photographs of Battery Chargers; Senior Two will do 1 to 36 2v. cells, also H.T. 120v. at 1 amp; 105/-; H.P., terms; Westinghouse rectifiers.

N.P. Valve Chargers, one, two or four circuits; from 65/-; state requirements.

N.P. Specialise in Battery Chargers and Eliminators of all sizes, for A.C. mains.

N.P. Have a Few Soiled Instruments; bargains; lists.—Nash Products, Ltd., Stechford, Birmingham, 9. [2536]

VOITEXION, Wimbledon, for the latest type transformers, all with screened primaries and 12 months' guarantee, absolute reliability (we supply talkie equipment); regulation guaranteed within 5% all models except supers, which are 2%; you cannot buy more reliable or better looking transformers, not a pressed shrouding, but a substantial casting free from hum.

VOITEXION—Specified for A.C., quality amplifier, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T., terminals, 24; ferronol leads, 20/-; shrouded, 24/-.

VOITEXION—Ferrocart, III, 350-0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 13/6, shrouded 16/-; post 9d.

VOITEXION—250-0-250, 4v. 1 to 2a., 4v. 2 to 4a., open type 10 6, shrouded 12 6; post 9d.

VOITEXION Model for Universal A.C. Short-wave Converter; open type 10 6, shrouded 12 6; post 9d.

VOITEXION—Open type H.T.3 model, 4v. 4a.; 12/6; post 1/-.

VOITEXION—Super model for H.T.8 or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 15/6; post 1/-.

VOITEXION Kit for Output Transformer—Sankey laminations B.I. wire, Empire chdk., cast aluminium frames and terminal strips, state secondary gauge required, 7/6; made to specification, 9 6.

VOITEXION—21-watt Monodial A.V.C. model; open type 14 6, shrouded 16 6; post 1/-.

VOITEXION—5-watt Monodial A.V.C. model, 400-0-400, 120 m.a., 4v. 6a., 4v. 3 1/2a., 4v. 2, 4v. 1a., super screened; 20/-, shrouded 24/-.

VOITEXION—350-0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.

(This advertisement continued in third column.)

for **'SOUND'** AMPLIFYING EQUIPMENT

- Special P.A. Speakers suitable for all outputs.
- Power Amplifiers suitable for DANCE HALLS, SPORTS MEETINGS, FETES, ETC.
- The most up-to-date apparatus for outdoor or indoor sound reproduction and Radio reception.

TANNOY PRODUCTS
DALTON ST., WEST NORWOOD, LONDON, S.E.27.
Manchester Branch:—2, Whitworth St. West, Deansgate, Manchester.

SHORT WAVES!

Announcing the new **SCOTT SESSIONS' "EQUATOR - SUPER"**

An advance design for Overseas Battery users. SPECIAL FEATURES:—

CIRCUIT: 7-valve Super-Heterodyne incorporating Westinghouse Metal-Oxide 2nd Detector, with Automatic Volume Control.

OUTPUT: 2 watts A.C. (Class B).

WAVE RANGE: 12 to 80 metres and 220 to 550 metres with no coil changing.

H.T. BATTERY CONNECTION: Approx. 15 m/a only.

SPEAKER: Fitted with latest "Celestion" P.M. Class "B" Moving Coil Speaker.

CABINET: Teak, specially designed and finished for Tropical use.

COMPONENTS: Specially selected and constructed for Overseas requirements.

PRICE £33 (plus £2-2-0 Royalties)
Write for full details and specification.

TRADE SUPPLIED.

SCOTT SESSIONS & CO.
RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No.: Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

BOOKS on WIRELESS
Write for complete list to **ILIFFE & SONS LTD.**
Dorset House, Stamford St., London, S.E.1. w.w.1

Chargers and Eliminators.—Contd.

(This advertisement continued from first column.)
VOITEXION 400 or 450 or 500 v., 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type, 19/-; shrouded 23/-.

VOITEXION—400 or 450 or 500, 150 m.a., 4v. 4a., 4v. 2.5, 4v. 2, 4v. 2, 4v. 2, core size 2 1/2 in. dia., super job, 2 1/2 regulation; 35/- shrouded, with terminals, less terminals, 30/-; open type 26/-; post 1/3.

VOITEXION—Autos to R.I.S.A. specification, 100 or 110 volts to 200 or 220 or 240 volt, 60 watts, 1/3, post 3d.; 120 watts, shrouded 12 6, open type 10 6, post 1/-; 200 watts, open 14 6, shrouded 16/6, post 1/3; 2,000 watt autos, £4 10.

VOITEXION—Choke, 20 h. at 120 m.a., 8/6; 30 h. at 60 m.a., 5 6; 30 h. at 150 m.a., open type 1 1/6, shrouded 12 6; post 1/-.

VOITEXION—1,000 volt 600 m.a. transformers, weight 34 lbs., £4 10; or similar wattage; carriage free.

VOITEXION—4 1/4 m.f. 500 peak electrolytics; 4 6.

VOITEXION—Transformers made to your specification.

VOITEXION, 182, The Broadway, Wimbledon, T.L. Liberty 2814. [2660]

CABINETS.

RADIOGRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1 86]

DYNAMOS, ETC.

ROTARY Converter, 12in., 200-350 volts output, 5 1/2; wanted, M.L. 24 or 32 input, 400 out.—Jersey, Clunior Hill, Oxford. [2 27]

GRAMOPHONES, PICK-UPS, ETC.

4 Kolster Brandes K.B.158 Pick-ups, new model, in box; cost 32 6, accept 19 6.—Courtier, 22, Foy Place, London. [2 34]

LOUD-SPEAKERS.

TWO Rola K9 10in. Speakers (£6 model), 230v. A.C.; accept £3 0 each, or nearest offer.

MAGNAVOX 10in. Speaker, 210-240v. A.C., model 4 5; cost £11 10, take £4/10, or nearest offer.—Raymond Snowden, Keighley Rd., Cowling, Yorkshire. [2 04]

PAIR Magnavox Dual-compensated Speakers, 42/-; latest standard type; approval.—Oglesby, Exeise, Grantham. [2 00]

COLUMBIA A.C. and D.C. Moving Coil Speakers, novel variable ratio transformers in attractive figured oak cabinets; from 37/6 complete.

All Types of Moving Coil Speakers, pots and windings, etc.; going cheap.—R. Newman, 309, Roman Rd., Bow, E.3. [2 4 8]

30/11—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts, D.C.

27/6—6v. D.C. speaker, as above; £2/7/6, speaker as above for 100-250 A.C.

SIMPSON'S Electric Turntables, 25/-; carriage paid; cash with order, or c.o.d.

B.T.H. Brand New Public Address Amplifiers, 4-stage, including microphone stage, 2 types, 12 watts and 6 watts outputs, 12-watt type has 2 P.P.5 400s in output, 6-watt type has 2 P.P.3 425s in output, 12-watt type price £15, 6-watt type £12/10; B.T.H. cinema type pickup, 16in. tone arm brand new, 17 6.—Ward, 12, Tiedegar Rd., Bow, E.3. [2 5 0]

14/6—Magnavox D.C. 14d. Pentode transformer, 2,500 ohms; Pye shrouded chokes, 32 henry, 4/-; Radiophone potentiometers, with gauge and main switch, 10,000 ohms, 3 9; Utility condensers, disc drive, trimmers, etc., complete, 2 gauge 7 6, 3-gauge 10 6; see manufacturer's new surplus; satisfaction guaranteed.

Howard, 102, Torrington Park, N.12. [2 5 7]

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturer's surplus, original price 12 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30/-; also A.C. models, £2 10; carriage paid, c.o.d. or cash with order; the best value in speakers obtainable today.—Seekamp, 46, Farringdon St., London, E.C.4. [1 42]

ROLAS (last few) F.6 6 volts, 2,000 ohms, 2,500 ohms, 4,700 ohms, or 6,500 ohms (200-250), list 35/-, a 17/-; voltages as above in P.7, list 46 6, at 25/-; permanent magnets, F.6 P.M., list 49 6, at 28/-; P.7 P.M., list £3, at 35/-, complete with transformer; state if power or pentode; all carriage paid; cash with order, or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2 6 2]

CHAL-ELECTRIC Offer Set Manufacturers' Brand New Surplus, Rola's F.6 6 volts (8 1/2 ohms), 110 175 volt (2,000 ohms), 90-150 volts (2,500 ohms), 150-200 volt (4,700 ohms), 200-250 volts (6,500 ohms), list 35/-, a 17/6; P.7's in all above voltages, list 46 6, at 25/-; permanent magnets, F.6 P.M., list 49 6, at 28/-; P.7 P.M., list £3, at 34/-; ultra permanent magnets, type 95 P.M. (real belly job), list £4 10, at £2 5; all complete with transformer; state if power or pentode; all carriage paid; cash with order or c.o.d.—Chal Electric, 6, Conduit St., London, W.1. [2 6 1]

PICTURE RECEIVER APPARATUS.

TELEVISION Components, wide range, used, new, complete, guide, 1 10.—Amel Television, 230, High St., Camden Town. [2 5 8 7]

VALVES.

ANOTHER New Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the makers' characteristics exchanged free.

210 H.L.S. 210H.F.s, 210L.F.s, P.M.H.F.s, P.M.L.F.s, H.L.210s, H.210s, L.210s, 3 9; 215P.s, 220P.s, L.P.2s, P.215s, D.E.P.215s, P.M.2s, P.220s, P.M.2A, 4/9; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C. H.L.s, A.C. 211.L.s, 354V.s, 904V.s, D.C.3 H.L.L., 7/-; 41M.P.s, M.L.4s, A.C.P.E.N.s, 7/6; P.T.4, P.T.41, P.E.N.4V., M.P., P.E.N.4 A.C./P.E.N.s, 12/-; latest metallised S.4V.s, M.S.4B.s, M.S.G./H.A., A.C. S.G.s, 9/-; Coso M.V.S.G., 12/-; 442 B.V.s, 1807s, 7 9; 1821s, 7/-; D.O.60s, 40/-.

4,000 Valves are Always in Stock for Immediate Dispatch; prompt attention, for cash or c.o.d.

NEWMAN, 309, Roman Rd., E.3. [2 6 5 9]

Valves.—Contd.

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.

A.C./Pen. P.T.4s, G.U.1s, A.C.S.G./V.M.s, Pen.4V.s, P.T.625s, V.M.S.4s, D.C.2/Pen.s, D.P.T.s, M.P.T.4s, V.M.4Vs, A.C.S.1 V.M.s, P.M.24Bs, D.C.28.G./V.M.s, 11/-; M.S.4s, M.S.4Bs, A.C.S.G.s, S4V.A.s, S4V.B.s, M.S.G./L.A.s, D.S.B.s, A.C.S./2s, P.N.4s, D.C.28.G.s, 9/6; U14s, 10/-

M.L.4s, A.C. Ps, 41M.P.s, P.M.24s, 8/-; A.C./H.L.s, U10s, 354Vs, A.C.2/H.L.s, 41M.H.s, U10s, U.U.60 250s, M.H.4s, M.H.L.4s, 7/6; V.S.2s, 2158.G.s, 2268.G.s, P.M.12s, P.M.12As, 9/-; 442 H.U.s, D.W.5s, 8/6. A.L.L. Types of Brand New American Valves in Stock.

A first class makes: 247s, 235s, 224s, 236s, 237s, 233s, 244s, 12/-; 227s, 226s, 280s, 245s, 9/6; 242s, 232s, 11/-; U.X.210s, 15/-.

U.X.250s, 7 wats output, 16/-; 281s, 14/6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2609

FOUR Only L.S.6A, 15/-; two D.C./H.L., 6/9; two A.C.2/H.L., 9/-; three Eta By2023, 3/-; all emission as new or money refunded.—G. Alderson, Poplar Rd., Bolihall. [2593

TRANSMITTERS.

RAYMART Transmitting and Receiving Equipment, designed by specialists; all our staff licensed operators, one with years' tropical short wave experience.—Radio Mart, 44, Holloway Head, Birmingham. [2596

COMPONENTS, ETC., FOR SALE.

PEPPER'S Stocktaking Sale.

GENUINE Bargains, must be cleared, offers considered; goods sent on 3-days' approval against cash, or c.o.d. CARRIAGE Paid on Orders over £2; rapid delivery.

VALVES, as new, all tested before despatch.—P.M.1s, P.M.1h.l., P.M.1l.f., etc., 3/3; P.215, 215P, L.P.2, P.M.2, etc., 4/3; P.2, P.220, 230X.P., P.M.252, etc., 5/3; S.G.215, P.M.12, D.G.210, etc., 7/6.

P.M.14, P.M.16, P.M.24, P.M.26, 6/11; P.M.3, P.M.5x, P.M.5b, H.L.610, P.M.6d, P.M.5d, P.M.4ix, L410, H610, L610, Tungstram H607, etc., 1/11; Tungstram P414, 415, P614, P615, etc., 2/6; Mullard P.M.256a, M.O. P625a, 4/11.

L.S.5, L.S.5a, 6/11; P.T.25s, 25/-; P.M.24a, P.M.24b, A.C./Pen., 9/11; A.C.S.G., M.S.4, 41M.S.G., D.C./S.G., D.C./Pen., D.S.B., etc., 8/3; A.C.084, A.C.064, A.C.104, etc., 4/11; M.H.4, A.C./H.L., 904v., 6/11; Cosmos A.C./X, A.C.S.G., S.P.42u, S.P./45u, Ostram 82, S625, 4/9.

RADIOGRAM Accessories.—Garrard 12a. motor, 9/11; foreign, ditto, 7/6; Harlie scratch filters, 2/11; Sovereign, etc. volume controls, 2/-; Centralab, 3/3.

LOUD-SPEAKERS.—Prinstatic (mains), 14/11; Magnavox D.C.144's, 2.500 and 7,000's, 15/6; Baker Elomag, 7,000, 12/6; Epoch 66 6-volt, 19/6.

3 D. Bargains.—On-off switches, valve holders, Benjamin Lotus, etc., Dubilier, Telsen, etc., grid leaks, Spaghettis, plug in coils, Lissen Igranic, etc., 1 watt anode resistors, Dubilier, etc., filament resistances.

6 D. Bargains.—Lewcos, Lissen X and C.T. coils, Dimes, 0.0002, 0.0003, 0.0005 variables, Lyons strip-resistors, Colvern ditto, Weartite decouplers, Formidensers, most capacities; neutralising condensers, J. B. Gambrell, Igranic, etc.; Igranic variable resistances; Lissen, Igranic, Federal potentiometers, 400 ohms, Cussor coils.

1/- Bargains.—Peerless, Emkabe, etc., variable condensers, slow-motion dials. Above bargains are supplied only with other goods.

SWITCHES.—Weartite, Utility, 1 to 4-pole, antipacuity, 9d. each; Lotus, etc., Jackswitches, 6d.; Q.M.B. mains, 9d.; double pole, 1/-.

COILS.—Weartite Binowaves, boxed, 4/11; Weartite 0.2, O.T.1, O.T.2, A.T.G., Lewcos O.sc44, Varley B.P.6, B.P.22, 4/3 each; Varley B.P.5, 6/11; Colvern K21, 22, 23, 16/6; P.W. dual-waves, Star-turns, 2/9; British-General Band-pass units, 4/11; ditto intervalve, 3/3; British-General tuners, old type, 2/11; dual-waves by Colvern, Tangent, etc., R2r, T2R, Orgolas (Tuncwell, etc.), Talisman, 2/11 each; T.G.S.C., and caps, 5/6; H. & B., dual-wave frames, 9/6; Goltone G.B.A., G.H.S., G.G.H., boxed, 3/3 each; Lewcos D.B.A., 2/11; Watnall S.A.1, boxed, 3/6.

REACTION Condensers.—Telsen, Lissen Polar plain, 1/3; differential, 1/6; Polar, Ormond S.M. differentials, 2/-.

SERIES Aerial Condensers. Ferranti, 2/-; Telsen 0.0004, S 1/6; 0.0003, 0.0005, etc., 1/-; Metrovick Elastic aerials, 2/11; Dupons, 1/-.

VARIABLE Condensers.—Polar, Lotus, Lissen, J.B. Legs, etc., 1/9; J.B. Tinsy, Polar J.B. Populars, slow motion types, 2/9; Ormond Legs, S.L.F., Astra, etc., many new, 1/3.

AMSCO 2-gangs, with trimmers, similar Radiophone; listed 21/- in original wrappings, 4/3.

J.B. R1s, 4/6; R2s, 8/6; Polar Uniknobs, twin-gangs, 8/11; J.B. chassismounts, with drives, singles 3/11, 3-gangs 8/9; J.B. dual drum, 0.0005s, 5/11; G.E.C. drum drive, 2-gang, 4/11; Ormond 4-gangs, 8/11; Lyons 4-gangs, 10/6; Cyclon ditto, old type, 5/6; ditto extensers, 3-gangs, drum drive type, 9/11.

H.F. Chokes.—Lewcos, Trix, Igranic, Sovereign, Watmel, 1/6; British-General, Varley, Weartite, McMichael Binocular; 2/6.

L.F. Chokes.—Pye 20H., 32H., 4/11; Telsen 100H., 2/6; Power grid, 3/6; Climax C.P.S., 9/6; 50H 120 m.a., 14/11; Varley Pentode, 8/6.

L.F. Transformers.—Lissen, Croix Fotos, Marconi Popular, etc., 1/9; A.P.4, 6/6; A.P.5, 15/-; O.P.M.3, O.P.M.6, 10/6; O.P.4c., 8/6; Marconi locals, 4/6; Telsen Pentode output, 4/11.

WIRE-WOUND Resistances.—Ferranti, Varley, Mullard, Lissen, etc., various up to 500,000 ohms, 1/3 each; holders, 6d.

FIXED Condensers.—Wego, Telsen, T.C.C., Hydra, Dubilier, etc., 0.01, 0.03, 0.1, 0.5, etc., 9d.; 0.01 mica 1/-; 0.05 mica, 2/6; 0.1 mica, 3/11; 1 mfd., 1/-; 2 mfd., 1/6; 4 mfd., 2/6; 6 mfd., 2/11; Ferranti C19s, 5/11; Hydra 2 mfd., 2,000v., D.C., 3/11; 1,500v. D.C., 1 mfd., 2/11; 2.0 mfd., 3/11; 4 mfd., 4/11; 750 D.C., 1 mfd., 1/6; 2.0 mfd., 2/3.

SERADEX Condenser Blocks.—4x4x4x2x2x1 mfd., 16/9; 4x2x2x2x1, 9/9; 4x4x2 mfd., 8/11; 4x4 mfd., 7/3; 8x8 mfd. 14/6; all 400v. working.

(This advertisement continued in third column.)

BLUE SPOT
The New
PICK-UP 33
With Wire Wound Volume Control

BLUE Spot Pick-up 33 enables you to obtain the true value from your gramophone records. Played and reproduced in any other way you are losing their real worth. Pick-up 33 recreates the original Artistes, bringing out the true quality, revealing the hidden beauty of many passages unobtainable before. It gives you a complete illusion of reality. This new Blue Spot model has many important and special features. Write for free catalogue. w.w.73.P.



35/-

SOME SALIENT POINTS

Complete absence of minor resonance peaks ● Frequency response covers whole musical scale from 30 to well over 4,000 cycles, giving brilliancy without needle scratch ● Almost entire lack of surface noise ● Tracking as near perfection as possible ● Self-contained Wire Wound Volume Control ● Exceedingly light record wear ● Follows faithfully heaviest modern electrical recordings ● Made of non-resonating material ● Mounted to metal plate ensuring perfect alignment and screening it from disturbances due to an electric motor Rotating head for needle changing.

Technical Data : D.C. Resistance 2,900 ohms. Impedance at 1,000 cycles 15,000 ohms. Average output 1 volt R.M.S.

THE BRITISH BLUE SPOT COMPANY LTD.
94/96 Rosoman St., Rosebery Avenue, London, E.C.1

Distributors for N. England, Scotland, and Wales: H. C. RAWSON (Sheffield and London), Ltd., 100 London Road, Sheffield.

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

SERADEX Glasswound Resistors.—G.125, 1 1/4 wats, 25-1,500 ohms, 9d.; 5,000 ohms, 1/-; 10,000 ohms, 1/3. SERADEX G.250 2 1/2 wats Resistors, 25-1,500 ohms 1/-; 5,000, 1/3; 20,000 ohms, 1/6.

SERADEX G.500 5 wats Resistors, 25-1,000 ohms, 1/3; 5,000 ohms, 1/6; 30,000 ohms, 1/9.

SERADEX G.600 8-watt rating, 5% increase on G500, made in values up to 50,000 ohms.

SERADEX G.1,500 15-watt Resistors, from 2/3; G3000 30-watt type, from 2/9; all types supplied colour coded or labelled; few old type glasswound resistors available at half list.

SHOP Soiled Goods.—Few Seradex pentode chokes, 6011, 35 m.a., tapped, giving ratios 1:1, 1.3:1, 1.5:1, 2:1, 3:1, and 4:1, 10/6; ditto, 5011, 30 m.a., 8/6; Seradex Q.P.P. output chokes, ratios as above, 10/-.

SERADEX V.R.328 Charger, charges up to 200 D.T.G.s per week, output 28 volts 1.3 amps., complete; £3/2/6.

NEW Shop Soiled Experimental V.R.328s, perfect order, complete, 42/-; few ditto without cases, 37/6.

COLOURED Connecting Wires, 10ft. 2d. per coil, Clix C insulated plugs and sockets (used on metal panels); 1/3 per dozen.

TRICKLE Chargers.—Ferranti, 2-4-6 volts, 19/11; Philips, 5/11; Ekco, 12/6; symphony, 9/11; Fel-Elec H.T. Westinghouse-rectified, 14/6; Seradex H.T. charger, Westinghouse-rectified, 200v. 1 amp., 32/6.

SHOP Soiled Mains Transformers, with Westinghouse rectifiers L.T.2, 15/6; L.T.4, 18/6; L.T.5, 21/-; L.T.6, 25/-; H.T.6, 12/6; H.T.7, 15/-.

NEW More Seradex Super Type Transformers, guaranteed new, shop soiled only, super type, with terminals, heavy clamps, stripped types, with leads, super H.T.10, 12/-; ditto, with 2 L.T.s, 13/11; stripped, no L.T., 9/11; ditto, H.T.7, 9/-; ditto, with L.T.s, 7/11; ditto, super, 9/3; super 4V 5a, C.T., 6/9; H.T.6, with L.T.s, 7/6; ditto, stripped, 6/3.

SPECIAL Transformers, 400-0-400v 120 m.a., etc., suitable for 5 watt Monodial, listed 52/6, 22/6; ditto 230-0-230v. 120 m.a., with 3 L.T.s, 14/6; 500-0-500v. 120 m.a., with 3 L.T.s, 24/6; all above super type Primaries universal 200/260v.

SEE Advert, page 6, cols. 1 and 3, last week, for further bargains; goods must be cleared.

MAINS Transformers.—Savage 250-0-250v. 80 m.a., with L.T.s, 7/9; ditto, 4v. 5a., and (3) 4v. 1a., all C.T.'d, 7/9; Metrovick 250-0-250v. 4v. 2a., 8/6; Premier ditto, with 4v. 3a., 7/6; also quantity of transformers for U.S., etc., also 25c.; send requirements.

TRIVOR PEPPER, 48, Wakegreen Rd., Birmingham, T.13, guarantees the above goods to be in sound order. Money refunded if dissatisfied. [2607

HOYNES' Transformers and Chokes.

250 -0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T.; 10/7, post 9d.

250 -0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T., 4v. 1a., C.T.; 12/6, post 1/1.

350 -0-350v. 60-70 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., 4v. 1a., C.T.; 12/6, post 1/1.

350 -0-350v. 70-80 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., 4v. 1-2a., C.T.; 13/6, post 1/1.

350 -0-350v. 120 m.a., 4v. 2-3a., C.T., 4v. 4-6a., C.T., 4v. 1-2a., C.T.; 16/6, post 1/1.

400 -0-400v. 90 m.a., 4v. 2-3a., C.T., 4v. 3-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/1.

500 -0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v. 2a., C.T., 4v. 2a., C.T.; 27/6, post 1/3.

WESTINGHOUSE Model O, 110, 135v. 90 m.a., 4v. 2-4a., C.T., suitable for H.T.6 or 7; 10/-; post 9d.

WESTINGHOUSE Model O, 200, 240v. 200 m.a., 4v. 2-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/1; suitable for H.T.8 or 9.

LINE Transformers (auto-wound), 0-100, 110, 200, 220, 240v., 60 wats, 8/-; post 9d.; 120 wats, 11/-, post 1/1; 180 wats, 15/-, post 1/3.

HOYNES' Chokes, 20h. 30 m.a. 3/6, post 6d.; 30h. 60 m.a., 5/6, post 9d.; 30h. 120 m.a., 9/6, post 1/1; 40h. 150 m.a., 12/6, post 1/1.

CLASS B Transformer: ratio 1/1, inductance 60-25h, 0-15 m.a., secondary resistance 100 ohms each half, 11/6, post 9d.; output transformer: ratios 1/1, 1.5/1, 2/1, 11/6, post 9d.

PARALLEL Fed Nickel Iron Audio Transformers: ratio 3/1 or 5/1, primary inductance 80h.; 3/6, post 4d.

HOYNES' Transformers are Used Exclusively by Well Known Set Manufacturers.

HOYNES' Transformers for Perfect Insulation, regulation and reliability; all components are clamped in solid cast aluminium clamps, and fitted with well marked terminal strips; power transformer primaries are tapped and screened; letter components are not available at any price; be safe and use Hoynes' guaranteed transformers.

HOYNES' for the Quickest Service, all from stock.

HOYNES' Transformers Built to Your Specifications.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Liberty 5303. [2537

MAYFAIR RADIO Offer Brand New Set Manufacturers' Surplus.

MAINS Transformers.—Tapped and screened primaries, all L.T. windings C.T., 500-0-500 at 120 m.a., 4v. 2a., 4v. 2a., 4v. 5a., 20/-; same with 4v. 2.5a., 4v. 5a., 18/-; 450-0-450 at 120 m.a., 4v. 2.5a., 4v. 2a., 4v. 5a., 19/-; 350-0-350 at 120 m.a., 4v. 2.5a., 4v. 2a., 4v. 5a., 18/-; 400-0-400 at 120 m.a., 4v. 6a., 4v. 3.5a., 25/-; 400-0-400 at 120 m.a., 4v. 2a., 4v. 4a., 15/-; 250-0-250 at 60 m.a., 4v. 1a., 4v. 1a., 4v. 3a., at 11/6; for H.T.9, with 4v. 3-4a., 9/-; for H.T.9, with 4v. 4-5a., 12/-; H.T.8 rectifier, 16/-; H.T.9 rectifier, 18/-.

SMOOTHING Chokes.—20 henrys 30 m.a. (400 ohms), S 5/-; 30 henry 60 m.a. (600 ohms), 7/6; 20 henry 120 m.a. (720 ohms), 9/3; 50 henry 60 m.a. (500 ohms), 8/6.

CONDENSERS.—C.E.C., 750 test, 1 mfd., 1/1; 2 mfd., 1/9; 4 mfd., 2/6; 1,500 test, 500 A.C. working 800, peak 1 mfd., 1/9; 2 mfd., 2/4; 4 mfd., 4/11; multiple blocks, 20 mfd. each, separate 4+4+2+2+2+2+1+1, 11/-; 11 mfd., 4+2+2+2+1 at 6/9; Dubilier 4 mfd. (2+2) at 4/-; 5 mfd. (2+2+1) at 5/6.

ROTARY Converters.—Electro Dynamic, 2 only (shop soiled cases), with filter unit and silence cabinet, 90 watt model, list £14, at £7; 180 watt model, list £17/5, at 10 guineas.

MOVING Coil Speakers.—Rolas F.6 90-130 volts, 2,500 ohms, list 35/-, at 17/-; F.7, list 46/- (voltages as F.6), at 25/-; say if power or pentode transformer required; all carriage paid; cash with order or c.o.d.—Mayfair Radio, No. 31, George St., Hanover Sq., London, W.1. [2621

ELECTRADIX BARGAINS

— A DIX-ONEMETER —

The ideal of multi-range moving coil meters. Microamps to 20 amps, milli volts to 1,000 volts. 50 ranges on one meter. Two clear scales with mirror and knife edge pointer.

ONLY
60/-

A remarkably low price for a meter worth £10. For Novice or Expert. Test Booklet Free.



The High-grade Radio Tester. Low Price. High Value. INSTRUMENT IN CASE, 60/- MULTIPLIERS, EACH, 6/6. Complete Radio Outfit **£4:19:6**

NO STORE in LONDON has so comprehensive a stock of Scientific Apparatus at such low BARGAIN PRICES.

ALL A.C. users will find our NEW METER a boon. The DIX-MIPANTA

A First Grade Moving-iron A.C. Tester in Bakelite Case. Vest-pocket size. 3 volt ranges to 300 volts. Two m.A. ranges to 75 m.A. A 2-guinea set for **19/6** only

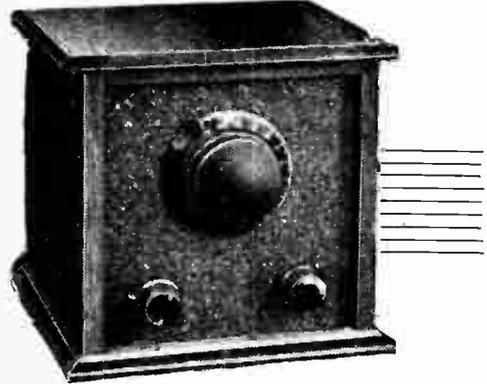


Get a GENEROMETER BATTERY SUPERSEDER.—No H.T. Batteries needed even if you are not on the mains. An H.T. Battery run down is useless and you have to buy another.

The GENEROMETER makes H.T. from your L.T. 2-volt battery, rectified and smoothed. Gives 3 tappings with output exactly suited to Class B Amplification and lasts indefinitely. Reduced from £3.15s. New and Guaranteed. **37/6** Laboratory Equipment. Service Battery Charges 1 to 200 cells. Relays, Switches, Bells all on view and at rock bottom prices. Sale List W 12 on request to

ELECTRADIX RADIOS, 218, UPPER THAMES ST., E.C.4.

MAKE YOUR SET an ALLWAVE RECEIVER



With an **EELEX SHORT-WAVE CONVERTOR**

HERE'S a wonderful instrument that will enable you to tune down as low as 14 metres with your present set. Adds a valve and makes your set an Allwave receiver without interfering with its present performance. If you are interested in long distance short-wave reception, you should certainly fit an Eelex Short-Wave Converter, you can then receive America, Australia, New Zealand, Russia, etc. Ask your dealer to show you the Valve Duplex model. Price **52/6** extra

FREE If you are interested in short-wave reception, send for a copy of Eelex Short-Wave Booklet No. C43 to: **J. J. EASTICK & SONS, EELEX HOUSE, 118, BUNHILL ROW, LONDON, E.C.1** Phone: Metropolitan 0314 (6 lines).

Components, etc., for Sale.—Contd.

R. SELECTED Parts for Sale, as new; any e.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to our customers; goods tested for callers and guaranteed.

WE Hold a Large Stock of First Class Radio Apparatus, meters, resistances, condensers, heavy chokes, etc., in addition to goods advertised.

VALVES, all guaranteed as new, full emission—V.P.M.24D, 20; P.T.4, 6; P.M.22, 5; P.N.4, 10; A.C./P.L. 8, 6; A.C.H.L. 6, 6; M.H.F., 7, 6; A.C. 82, 9; N4V, A, new, 12; M.S.4, 7, 6; M.S.4B, 9; D.W.2, 7/6; U.10, 7/6; D.W.3, 8, 6; 164v., 7, 6; P.V.4200, rect., 7/6. Following callers only: P.T.625, 5; P.625, 5.

VARLEY S.P. Coil, 7, 6; H.F., 5; Varley auto arm, 5; Atlas Q eliminator, new, 42; R. and A. 100P.M. speaker, 25; pair Varley P.P. transformer, 25; R.L. 20H, 250 ma. chokes, as new, 15; Varley 2,500 ohm power pots, 1/6.

RYALL'S RADIO Offer Reliable Resistances, 1 watt, suitable for all "Wireless World" sets where a 1 watt resistance is specified, in values 100, 500, 1,000, 2,000, 5,000, 6,000, 10,000, 25,000, 30,000, 75,000, 150,000, 250,000, 20,000, all values stated in ohms, 6d. each, guaranteed one year, wire ends, new goods.

B.T.H. Universal Senior Gramophone Motors, A.C. or D.C., brand new, complete with auto stop and all fittings, 55; Radiophone 4 gang condensers, 12/6; Polar Chokes, 2 gang, 7/6.

TRANSFORMERS, Ferranti A.F.4, 8; A.F.6, 18/6; O.P.M.10, 16/6; O.P.M.2, 13; O.P.M.4, 14; Ferranti 7.1, G type, 7/6; B.I. chokes, new, 14; O.P.M.4c, 16; A.F.5c, 21/6; A.F.5c, 21/6.

B.T.H. 6m. Cone M.C. Plain 100v. and 6v., 17/6 each; Lovens and Wearite superhet. coils, 5.

SAVAGE Mains Transformer, 500v., tapped at 450v., 4 v. windings, terminal type, 25; Beye 350v., 2 1/2 v., No. A.B.35, 17/6; R.I. Truxon, output transformers, 4 each, 12/6; Polar Star 3-gang condensers, new, 16/6; with drive, 18/6.

GRANIC Mains Transformers, 110 220v. input, 250v. 75 ma. 4v., 1 amp., 12; 460v. 120 ma. 7.5, 8v., 15v., to cater at 15; ditto 11 W, 550v., 60 ma., 7.5v., 6/-.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or tram to Savoy St.), Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R. **MAINS RADIOS** Special One Week Offer, guaranteed set manufacturers' surplus; carriage paid.

T.C.C. Dry Electrolytics, 6.5 x 6.5 mfd., 200v. working, 1/-; T.C.C. blocks, 250v. working, 4 x 2 x 2 x 2 mfd., 4/6; T.C.C. 1 x 2 mfd., 250v. working, 1/3; Dubilier 2 mfd., 250v. working, 1/4.

PHILCO Pattern New Table Cabinets, walnut, 8/6; table radiogram cabinets, blue texture, 5.

VALVES, as new, M.H.48, 6, 3; A.C.82, 7, 6; M.V.S.G., 10; 41M.S.G., 9; 8.215, 8; M.S.4, 6, 3. Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2602]

EVERYTHING for Movies and Talkies. Phone, write, or, better still, call and inspect immense stock of bargains.

INDUSTRA ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

HIGHEST Allowances Made on Following Material in Part Exchange for New; transactions by mail to any part; enquiries, stamp, please!

MODERN High Grade P.M. and Energised M. Coil Units and Balanced Pairs, etc.; Ferranti and Weston M.C. meters; useful ranges.

HIGH Grade L.F. and P.P. Input and Output Transformers, Ferranti, Varley, etc., high grade electric gramophone motors, record changers, and pickups and arms.

ALL Types of Standard A.C. Mains Rectifiers and 2-volt Battery Valves, all late type and full emission.

LATE Model Westinghouse Rectifiers, high grade mains transformers for same, or high voltage mains transformers for 4x, rectifying valves, high grade L.F. chokes, Ferranti, Varley, etc., and electrolytic or fully screened ganged condensers.

APPLEBY'S, 109, Edgware Rd., Hyde Park, London, W.2. Agents for all "worth while" radio equipment, and the originators of radio part exchange over fourteen years ago. [2626]

LARGEST Stocks in Midlands of converters, generators, L.P.A. equipment, by leading makers. Radio Mart, 44, Holloway Road, Birmingham. [2598]

CHAL-ELECTRIC Offer Brand New Set Manufacturers' Surplus Coils, Colvern Ferrocart (3), ganged and boxed (10 only), list 50/-, at 38/-.

VARIABLE Condenser, Polar Star, 1933 (3-gang 0.0005), complete with disc driving cover, esutchon knob, etc., in sealed cartons, list 30/6, at 17/-; J. B. NoGang 3-gang, fitted as above, at 15/-.

CONDENSERS, Multiple blocks, 1,500 D.C. test, 500 A.C. working, 800 peak, separate tappings, 20 mfd. (4) 4 x 2 x 2 x 2 x 2 x 1 x 1, 11 -; 11 mfd. (4) 2 x 2 x 2 x 1, 6/6; Dubilier 4 mfd. (2) 2, 4 -; 5 mfd. (2) x 1, 5 -.

MAINS Transformers for H.T.B. rectified 250 volts at 60 ma., 4 volts 3-4 amps., 10 -; Westinghouse H.F.8 for same, 15/9; H.T.9, 300 volts 60 ma., 4 volts 4-5 amps., 12/-; H.T.9 rectifier for this, 17/6; all carriage paid; cash with order or e.o.d. Chal-Electric, 6, Conduit St., London, W.1. [2619]

CLASS B Output Transformers, for high resistance speakers, ex G.P.O., guaranteed, 6/-; post 6d.—Wickham, 18a, Hercules Rd., Lambeth, S.E.1. [2599]

UTILITY Screened 2-gang 0.0005 Condensers, complete with trimmers disc, dial, esutchon knob, 7/11 (listed 19/6); ditto, semi screened, with Uniknob, 8/6.

RADIOPHONE Radiopak 3-gang 0.0005 Condensers, R. screened, trimmers, 8/11; ditto, superhet, 4-gang, 9/11; (listed 45/-).

VARLEY or Pve H.F. Chokes, 2/6 (listed 7/6).

MAGNAVON M.C. Speakers, 2,500 ohms, with transformer, 15/-; ditto Lamplugh Silver Ghost, 4,000 ohms, 14/6.

MAZDA AC SGVM, 10/11; Coscor 41 MP, 7/6; as new.

REPTON, 95, New Rd., Clingford, E.4. Phone: Silverthorn 1427. [2544]

CONDENSERS, Ferranti 0.0005 extensers, 7/-; Philips 0.0005 1500 gang trimmer, 9/-; Telsan 0.0005 1500 gang, 2/6; Dubilier 0.04, 9200, 1/6; G. Alderson, Parker Rd., Solihull. [2515]

BRITISH Radiophone Radiopak Super Het 4-gang, 0.0005, fully screened with trimmers; list 37/6, our price 9/11; e.o.d., postage paid, Kay, 167, City Rd., London, E.C.1. [2542]

EPOCH

MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.5a. It is free.

EPOCH RADIO MANUFACTURING CO. Ltd.
Exmouth House, Exmouth St., London, E.C.1.
At the Junction of Roehampton Avenue and Parrington Road.
Phone: Clerkenwell 6016 (4 lines).

STAMPINGS

for TRANSFORMERS and CHOKES

INSTRUMENT and RESISTANCE WIRES

Lumen ELECTRIC CO.

Send for Lists

9, Scarisbrick Ave., Litherland, LIVERPOOL, 21.

Grippleshell

Aerial Brackets

are simple and economical to install and avoid unsightly poles. Write for leaflet to:—

PARTRIDGE WILSON & CO.,
Dept. 29, Davenset Works, Leicester.

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists

CRESSALL MANUFACTURING COMPANY,
31-32, TOWER STREET, BIRMINGHAM.

T.A.P.A.

for

SAVAGE FOR MAINS EQUIPMENT

56 58, CLERKENWELL RD., LONDON, E.C.1.
Phone: Clerkenwell 3009/9.

SERADEX RESISTANCES

Lists from

TREVOR PEPPER
49, WAKE GREEN ROAD, BIRMINGHAM, 11



RATED 20 WATTS

FOR LARGE AMPLIFIERS.

Bulgin Power Resistors have been completely re-designed and improved. The compound wire element comprises a non-ferrous nickel-chrome resistance wire spiralled on a special heat-resisting core so that it retains itself on the grooved porcelain former, the tapping bands being only incidental to the actual connection. They can thus be moved if it is desired to adjust the resistor to a non-standard value. All values will comfortably dissipate the rated 20 watts.

- 300 to 5,000 ohms, 3/6 each.
- 7,500 to 40,000 ohms, 3/9 "
- 50,000 4/- 60,000 4/6 "
- 75,000 5/- 80,000 5/6 "
- and 100,000 ohms, 6/- "

Send 2d. postage for 80 p. Catalogue "W"



A. F. BULGIN & Co. Ltd., Abbey Rd., Barking ESSEX.

Telephone: Grangeview 3266, 3267.
London Showrooms: 9, 10, 11, Cursitor Street, E.C.

Telephone: Holborn 2072.

Components, etc., for Sale.—Contd.

KREXO, the new plug-in tone corrector and L.F. stabiliser, cuts out the hiss and improves the tone, plugs straight into your set; price 2/- each, post free.—Krexo Radio, 20, Union St., Jersey, C.I. [2586]

MOVING COIL Milli-Ammeters, 0-50, 10/6 each; 2 milliamps and 120v. 17/6 each; other ranges in stock; alterations, repairs of every description.—The Victa Electrical Co., 47, High St., Battersea, S.W.11. [10355]

PREMIER SUPPLY STORES Offer the following Manufacturers' Surplus Brand New Goods at a Fraction of the Original Cost; all goods guaranteed perfect; carriage paid over 5/., under 5/- postage 6d. extra (Ireland carriage forward).

SPECIAL Offer of Shrouded Transformers, input 200-250 volts, output 500-0-500v. 120 m.a., 4v. 1-2a., 4v. 2-3a., 4v. 2-5a., 4v. 3-5a.; 19/6, cost 50/-.

T.C.C. Electrolytic Condensers, 440v. D.C. working; 4 mid. 5/., 8 mid. 3/6.

T.C.C. 1 mid. 2,000v. Working Condensers, 3/-; 1x1x0.1, 0.1, 0.1x0.1x0.1x0.1 mid., 250v. working, 2/.

ROLA 2,000 ohms and 6,500 ohms type F.6 Moving Coil Speakers, 17/6; A.C. model 200-250v., 27/6; type F.5 permanent magnet, 20/-; type F.6 permanent magnet, 31/-.

DOUBLE Reading, moving iron, volt meters, read A.C. and D.C., pocket watch type, 0-120v. and 0-12v.; 5/-.

AMPLION Moving Coil Speakers, type E.M.644, dual fields, 2,500 and 5,000 ohms (100-250v.), with output transformer, 12/6; ditto, 200-250v. A.C., 22/6.

WESTON Meters, projecting type ammeters, 0-4, 7/6; milliammeters, 0-5 and 0-100, 15/-.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250 volts, 50/- complete; double spring gramophone motors, with 12in. turntable, 15/- complete.

KOLSTER-BRANDIS Electric Gramophone Motors, all complete with turntables and automatic stop, list price £5, Super Universal, 100-250v. A.C. and D.C.; £2.

SPECIAL Offer of Wire Wound Resistances—1-watt, any value up to 10,000 ohms, 6d.; 4-watt, any value up to 10,000 ohms, 1/-; 8-watts, any value up to 15,000 ohms, 1/6; 15-watts, any value up to 50,000 ohms, 2/-; 25-watts, any value up to 50,000 ohms, 2/6; 50-watts, any value up to 50,000 ohms, 3/6.

WIRE-WOUND Potentiometers, 15,000 ohms, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; wire wound Clarostat potentiometer, 50,000 ohms, 2/6.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms quarter amp. and 500 ohms half-amp., 5/- each.

FOR Sellers Only—The following valves, guaranteed as new: P.T.625, M.P., Pen., D.C.S.G., V.D.S., V.M.S., S.V.A., A.C.S.G., A.C.S.G.V.M., V.M.S.G., 41M.S.G., V.M.S.4, M.S.4B, 15, 904V, M.S.G.L.A., M.S.G.H.A., M.H.L.4, M.L.4, M.H.4, P.14, S4V.B., D.W.3, P.T.4, D.S., D.S.B., M.S.4, 41M.L.S., M.V.S.G., A.C.H.L., at half list price.

THE Last Few Western Electric 4211-D Valves—10v. 3a. filament, 750v.-1,000v. plate, 50-65 m.a., impedance 3,500 ohms, amplification factor 12; cost £5; to clear at 15/-.

500 Volt 125 milliamp Full Wave Rectifying Valves—4v. 2a. filament, 7/6.

PHILIPS 328 Valves for L.T. Charging, 5/6; 329 Barometer Lamp, 2/-.

SMOOTHING Chokes for Series Connected Filaments from D.C. Mains, carry 1 amp., 5/-.

PREMIER Eliminators, input 200-250 volts, 40-100 cycles A.C., incorporating Westinghouse metal rectifiers, output 250 volts at 60 milliamps, 30- and 120-volt taps, 42/6; with 4 volts 4 amps. c.t. L.T., 7/6 extra.

PREMIER Eliminators, output 150 volts at 30 milliamps, 80- and 100-volt taps, with 4 volts 3-4 amps. c.t. L.T., 37/6; or with trickle charger, 42/6.

PREMIER Eliminators, output 120 volts at 20 milliamps, 80- and 100-volt taps, 27/6; with L.T. trickle charger incorporated, 35/-.

D.C. Eliminators, output 120 volts at 20 milliamps, 80- and 100-volt taps, 15/-; larger model, output 200 volts at 50 milliamps, 80- and 120-volt taps, 25/-.

ACCUMULATOR Chargers—200-250v. A.C. all incorporating Westinghouse rectifiers; 2v. at half-amp., 8/6; 2, 4 and 6 volts at half-amp., 17/6; 2, 4 and 6 volts at 1 amp., 22/6; 12v. at 1 amp., 27/6; 6 or 12 volts at 2a., 35/6; 12v. at 1.5a., 30/6; 6v. at 3a., 39/6; 12v. at 3a., 52/6; three-core 12v. Ia. circuits, 75/-.

HIGH Inductance Chokes, resistance 2,500 ohms, 80 henrys, 60 milliamps., 5/6.

WESTINGHOUSE Metal Rectifiers—120 volts at 20 milliamps., 6/6; 180 volts at 30 milliamps., 8/6; 250 volts at 60 milliamps., 10/-; 200 volts at 100 milliamps., 11/-; 300 volts at 60 milliamps., 11/-; 8 volts at half-amp., 6/6; 6 volts at 1 amp., 9/6; 12 volts at 1 amp., 12/6; 6 volts at 2 amps., 20/-.

T.C.C. Condensers, 250 volts working, 4x4x1 mid., 5/-; 300 volts working, 4x4x2x2 mid., 7/-; 375 volts working, 6x4x2x2 mid., 10/-; 500 volts working, 4x4x2x2 mid., 6/-.

400 Volts Working, 3 separate 4 mfd. Condensers, 8/6; Western Electric, 400 volts working, 0.01-0.01 mfd., 1/-.

T.C.C. Condensers, 750 volts working, 2 mfd., 4/-; 750 volts working, 4 mfd., 6/-; 4 mfd. 400 volts D.C. working, 300 volts A.C. working, 4/-.

WESTERN ELECTRIC Condensers, 250 volts working, 1 mfd., 6d.; 2 mfd., 1/-.

PREMIER Guaranteed Mains Transformers, engraved terminal strips with terminal connections, input 200-250 volts 40-100 cycles, output 135 volts 80 milliamps., for voltage doubling, 8/6; 4 volts, 3-4 amps., c.t. L.T., 2/- extra; Westinghouse rectifier for above, giving 180 volts at 30 milliamps., 8/6.

PREMIER Mains Transformers, output 250-0-250 volts at 60 milliamps., 4 volts 1-2 amps., 4 volts 2-3 amps., and 4 volts 3-4 amps. (all centre tapped), with screened primary, 15/-.

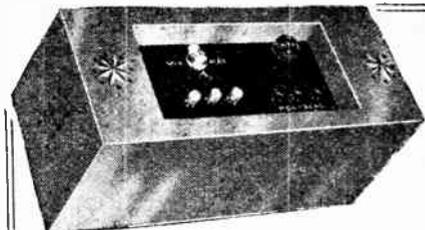
PREMIER Mains Transformers, output 400-0-400 volts at 100 milliamps., 4 volts 4-5 amps., and 4 volts 2.5 amps., 15/-.

H.T.8 Transformers, 250 volts 60 milliamps. rectified, with 4 volts 3-5 amps. c.t. L.T., with screened primary, 15/-; with Westinghouse rectifier, 25/-.

H.T.9 Transformers, 300 volts 60 milliamps. rectified, with 4 volts 3-4 amps. c.t. L.T., with screened primary, 15/-; with Westinghouse rectifier, 26/-.

H.T.10 Transformers, 200 volts 100 milliamps. rectified, with 4 volts 3-4 amps. c.t. L.T., with screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER Mains Transformers, 12 volts 1 amp., 7/6; 6 volts 1 amp., 7/6; 4 volts 4 amps., and 4 volts 2 amps., 8/6; 4 volts 3 amps., 7/6; 4 volts 5 amps., 8/6; 6 volts 2 amps., 7/6; 14 volts 4 amps., 12/6; 22 volts 1 amp., 10/-.



BATTERY OR A.C. RECEIVERS

By means of an alternative output switch, two H.T. outputs are obtainable with the Heyberd MW.1 Mains Unit. With switch at minimum, 30 ma. at 150v. is obtained—suitable for battery sets. The maximum position gives 50 ma. at 200v. for A.C. sets. In addition a L.T. supply of 4v. 5 amps. is provided. You may use this unit to run your present battery receiver; when you desire to convert your set to All-mains you have sufficient H.T. and L.T. for a set using five A.C. valves. Supplied complete in neat steel case ready to switch on. Incorporates Westinghouse Rectifier. Guaranteed Three Years.

TAPPINGS: 40 120v. Var. S.G., 175v. and 200v. (Max.) Price **127/6** Complete

If you have any difficulty in obtaining Heyberd products locally, write to us direct.

POST COUPON TO-DAY.

Mr
Address

I enclose 3d. stamps, please send 36p. Handbook full of Hints and Diagrams to the above signed.

F. C.
HEYBERD & Co.
10, FINSBURY ST.,
LONDON, E.C.2.
Minute from Moorgate Station.



DOES YOUR LOUDSPEAKER SUFFER FROM "BOOMINESS"?

How the B.B.C. has cured it.

In many ways a set is only as good as its loudspeaker. However selective it may be, however powerful, the final result can never be perfect, if the loudspeaker itself "booms" on the low notes and distorts speech.

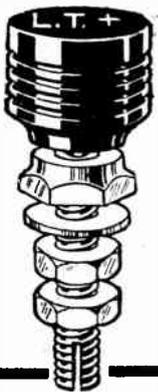
The next time you tune in, listen carefully and you will hear a kind of muffled boom or echo with every low note or deep voice. Imagine how much purer your reception would be if you could cut out all this "boom."

And "boom" as the B.B.C. found is inevitable with the typical modern loudspeaker.

That is why the B.B.C. decided to prevent it arising in their many loudspeakers when they built Broadcasting House, and they did so by fitting every loudspeaker there with the Howe Box Baffle. This patented Baffle is the only way you can ensure perfect boom-free reception. It has now been produced in a form which you can fit at very slight expense and trouble to your existing loudspeaker and the improvement it effects is simply extraordinary. These are just a few extracts from enthusiastic letters from people who have fitted this simple device to their speakers. "Astonished at the wonderful improvement." "Results are simply marvellous." "Almost incredible improvement." "Really excellent." "Enormous improvement. I congratulate you." "Improvement of speech and music was wonderful. The illusion is complete."

If you want perfect reception, purity such as you have never dreamt possible, the sensation of the music being actually in the room and not coming from a mechanical instrument or out of a sort of "tunnel," let us send you free of any obligation full details of this remarkable Howe Box Baffle. It can be bought complete with every detail for fitting to your own speaker, from as low as 20/-. Just send a card to F. McNEILL & CO., LTD. (Radio Dept. 23), Head Office 52, Russell Square, W.C.1.

The TERMINAL for all Serious Amateurs



Extremely robust and soundly made. Hexagonal shoulder, which, by being held with a spanner while the nut behind is made tight, greatly facilitates mounting.

Insulated and non-removable head. Provision for secure, solderless connection if desired. Clear markings, easily read.

CLIX PANEL TERMINALS
Type B - 4d. Type A without Hexagonal Shoulder 2d. (illustrated)



CLIX SPADE TERMINALS
Positive metal-to-metal wiring is fully protected from creeping acid by a specially designed collar making Corrosion impossible. Contact is perfect.

Large size: Nickel-plated or lead-coating 2d.
Small size: Nickel-plated 1d.

CLIX "MASTER" PLUG
Also has positive METAL-TO-METAL wiring. Widely variable and non-collapsible prongs give firm grip and full contact with ANY battery socket. Specially curved ends for easy insertion. Clearly engraved. PRICE 1d.



Folder "W" gives full details of the whole CLIX range of component terminals. Write for a copy.

LECTRO LINX Ltd., 79a, Rochester Row, London, S.W.1

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

MAINS Transformers, output 350-0-350 volts 90 milliamps, 4 volts 3 amps. (c.t.), and 4 volts 2 amps. (c.t.); 12/6.

AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts 120 milliamperes, 4 volts 5 amps., 4 volts 2 amps., and 6 volts 1 amp. (all centre tapped); 17/6.

AUTO Transformers, 100/200-250 volts or vice versa; 60 watt 7/9, 100 watt 10/-, 180 watt 15/-.

SPECIAL Offer of Mains Transformers, manufacturers' type, any input, output 250-0-250 volts 60 milliamperes, 4 volts 1 amp. (c.t.) and 4 volts 3 amps. (c.t.); 8/6; 180-0-180 volts 40 milliamperes, 4 volts 1 amp. and 4 volts 2 amps., 4/6; 175 volts 50 milliamperes, 4 volts 4 amps., and 4 volts 1 amp., 5/6; H.T.B. with 4 volts 3-4 amps., 8/6, with rectifier 18/6.

PYE Chokes, 20 or 32 henrys, 4/-; Multi-ratio output transformers, 6 taps, giving 15 different ratios, 7/6.

PREMIER Chokes, 40 milliamperes, 25 henrys, 4/-; 65 milliamperes, 30 henrys, 6/-; 150 milliamperes, 30 henrys, 10/6.

AMSCO 3-gang 0.0005 Condenser, with trimmers (listed 30/-), our price 7/6; Polar 0.0005 and 0.00035 bakelite dielectric condensers, with knob, 1/-.

POLAR 3-gang Variable Condensers, lub type, fully screened, split end vanes and disc drive, 0.0005, 10/-; Ormond all-brass 2-gang condensers, semi-shielded, 0.0005, 3/6.

BRITISH Radiophone 4-gang Condensers, with trimmers, fully screened, 16/-; Colver-stats, logarithmically wound potentiometers, 6,000 ohms, 1/9.

All the Following Lines 6ld. each or 5/- per dozen Assorted: Shielded S.G. or pentode leads, Polymer 0.01 condensers, 2ft. lengths of screened wire, 5-pin valve holders, (Crabtree 5 amp, sunk switches, T.C.C. 0.1 mfd. condensers, 0.5 condensers.

All Orders to The Premier Supply Stores, 20-22, High St., Clapham, S.W.4., Macaulay 2188. Closed 1 o'clock Wednesdays. Open to 9 o'clock Saturdays. Nearest Station Clapham North Underground. [2578]

APPLEBY, London. Bargains, slightly used material to usual standard; prices quoted nett cash, carriage chargeable on order under 20/- and bulky items; enquiries, stamp, please! Items are standard, in proper order, and not job line rejects.

TRANSFORMERS.—A.F.5, 18/-; A.F.6, 17/-; A.F.7, 19/6; A.F.5C, 20/-; A.F.3, 9/6; O.P.3C, 13/6; O.P.M.5, 16/6; Telsen Arc 5-1, 3/6; Radiogram 7-1, 7/-; Telsen Multi Ratio output, 7/-; Philips, 5/6; Lissen (small), Marconi Popular, 3/-; Varley Rectaphone, 10/-.

MOVING Coil Units.—Ferranti P.M. M1, latest, 90/-; Baker P.M. De Luxe, 55/-.

CONDENSERS.—Utility De Luxe 4-gang, fully screened, 22/6; Polar Tub 2-gang, fully screened, 10/6; J.B. 4-gang, fully screened, disc drive, 18/6; J.H. 2-gang, fully screened, disc drive, panel trimmer, 13/-; Cylton 2-gang Extension, disc drive, 19/6; Cylton S.W. series gap, 0.0001, 0.0002, 3/- each; Cylton S.W., 0.0001, 0.0003, 5/-; J.B. 0.00015 S.W., 3/9; G.E.C. 0.0005 S.M., 5/6; Polar 0.0005 Log, 2/3; Cylton 0.0005 Anal, 7/-; Polar drum drives, 5/-; disc, 3/-; Ormond ultra S.M. dial, 4/6.

CHOKES etc.—G.E.C. Hiflux, 9/-; Pye 20H, 32H, 7/-; Telsen Power Grid, 3/6; Lewens H.F. large, 4/-; M.H. binocular, 2/3; Eddystone or Bulgin H.F., 2/9; Bulgin whistle filter, 7/-.

ODD Bargains. Wearite G.L.32 Super-Hel unit, 34/6; Varley Sq. peak coils, 9/-; Extender type, 8/6; Colvern K.S.W. coil, 5/6; Igranite S.W. coils, set 6/9; Ferranti M.I. voltmeter, 0.75, new, 18/9; R.I. P.W. Selector coil, 6/-; Igranite Potential Dividers, 7/6; Bulkin, 4/6; Harlie De Luxe pick-up, control, 17/6; B.T.H. pick-up, nickel, cranked, 16/-; Harlie tone selector, 2/6; Westinghouse H.T.7, 11/6; Lewens Super-Hel coils, set from 23/6; Lewens I.F.T. 2x coils, 6/6; Ex. O.S.C. 126, 8/6; Wearite S.W. screened oscillator, 9/6; Wearite 8-way base, 4/6.

VALVES.—P.M.10.G., Cosor 210 D.G., Osram D.G.2, Cosor S.G.215, metal or plain, P.M.12, P.M.22; all 8/6 each.

All Rigorously Tested Before Despatch.—Appleby's, 109, A. Edgware Rd., Hyde Park, London. [2627]

CONDENSER Blocks 6d. per mfd., 650-volt test, in blocks of 6 mfd. upward, wired in 2 mfd. units; 2 years' guarantee, send by return of post 7 days' approval; cash with order. Butlers Radio, Ltd., 191, Forest Rd., Waltham-stow, E.17. Phone: 3134. [10396]

GILBERT INDUSTRIES Offer a Further 200 A Parcels, containing one each of the following high grade components: 1 cadmium plated chassis, 1 heavy mains transformer, 350-0-350 at 60 m.a., 4 v. 4 a., C.T., 4 v. 2 a. rect., one H.M.V., 4-gang, with trimmers and 2 coils, one electrolytic 2 mfd., 250 working, one H.M.V. screened H.F. choke, one volume control, one smoothing choke, 50 h., 50 m.a., complete parcel, post paid, £1.

250 B Parcels, containing one each of the following high grade components, suitable for building Class B or straight 30 m.a., 150-180 v. A.C. eliminators: One Westinghouse rect., voltage doubler, one transformer; one condenser pack, 4-4-4-2 1 1/2; one choke, 50 h. 50 m.a., 4 resistances; complete parcel, post paid, £1, by return.—Gilbert Industries, 519, London Rd., Westcliff-on-Sea, Essex. [2575]

SOUTHERN RADIO Wireless Bargains; set manufacturers' guaranteed surplus. Ready Radio constructors' kits: 303 3-valve battery kit, less valves, 18/6, with three Mullard valves (P.M.11.F., P.M.2D.X., P.M.2), 35/- each (list 70/-); Meteor screen grid 3-valve kit, less valves, 26/-, with three Mullard valves (P.M.12a, P.M.2D.X., P.M.2), 49/- each (list 35/7/6); Meteor screen grid 3-valve "A" kit, including cabinet, Celestion permanent magnet speaker and kit of parts, less valves, 43/7/6, with three valves as above, 24/12/6 (list 43/17/6); Mullard Radio for Million 3-valve A.C. kits, complete, with three Mullard valves (P.E.N. 4v., 354v., 84v.), 43/12/6 (list 46/10); please note all kits advertised by us are brand new, and contained in original sealed cartons; the valves advertised with these kits are the manufacturers' specified valves.

CELESTION Permanent Magnet Soundex Speakers, brand new and boxed, 16/- each (list 27/6); Cylton three-gang condensers, 0.0005, shielded and trimmers, 8/9 each (list 32/-); genuine Amplion loud speaker units, 2/9 each (list 12/6); screened chokes (H.M.V.), 1/- each; condensers: 4 mfd., 2.6 mfd., 2 mfd., (2+2+2+2+2+1 1/2), 6/9 each; 10 mfd., (2+2+2+2+2+1 1/2), 6/3 each; all 1,500 volt test; mains transformers, all capacities, in stock, and specials quoted for; all goods guaranteed in every way and carriage paid.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). Phone: Museum 6324. [2535]

PILOT AUTHOR KITS

Exact to Specification

CLASS "B" FERROCART RECEIVER

KIT "A" Author's Kit of FIRST SPECIFIED Components including **Peto-Scott PLYMAX Baseboard, Ready Assembled, but less Valves, Cabinet and Speaker.** CASH or C.O.D. Carriage Paid **£8-10-0** or 12 monthly payments of 15/7.

- 1 Peto-Scott "Plymax" Baseboard 10" x 14" x 1" ready drilled with cutouts and brass strips..... £2 9 6
- 4 Cosor Valves as specified..... £2 6 3
- 1 Polar "Star" 3-gang Auto-tuned Var Condenser with disc drive..... £1 10 6
- 1 Set of 3 Colvern Ferronet Coils..... £2 10 0
- 2 Million Transducers as specified..... £1 7 0
- 1 Amplion Loudspeaker with "Class B" transformer..... £1 19 6

KIT "B" exactly as Kit "A" but including Valves only. Cash or C.O.D. Carriage Paid. **£10-16-3** or 12 monthly payments of 22/3.

KIT "C" as Kit "A" but including Valves and Peto-Scott Cabinet. Cash or C.O.D. Carriage Paid. **£12-1-3** or 12 monthly payments of 22/3.

BUILD YOUR CLASS "B" FERROCART into the beautiful PETO-SCOTT WALNUT CABINET described and illustrated in "Wireless World" April 28. Cash or C.O.D. **25/-** Complete with shelf and Speaker Raffle.

PETO-SCOTT CLASS "B" ELIMINATOR PERFORATED METAL BOX complete with Plymax baseboard 10" x 7" ready drilled, with ballens and bracket for plug socket. Cash or C.O.D. Carriage paid **15/-**

A.V.C. MONODIAL SUPER

KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled, Polished Oak Panel, Ready Assembled and Drilled PLYMAX Set Chassis, screws, wire and deoxy; but excluding Eliminator Components, Valves and Cabinet. Cash or C.O.D. Carriage Paid **£11. 10. 6** or Deposit £1-10-6 and 11 monthly payments of £1

A.C. SHORT WAVE CONVERTER

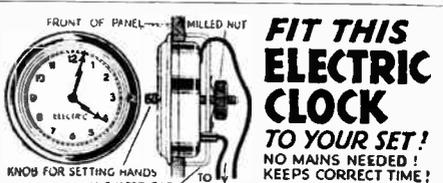
KIT "A" Author's Kit of FIRST SPECIFIED Components including Peto-Scott Ready Drilled Plywood Panel and PLYMAX Baseboard, Ready Assembled, but less Valves. Cash or C.O.D. Carriage Paid **£8.11.6** or 12 monthly payments of 15/9.

1 Peto-Scott Ready Drilled PLYMAX Baseboard..... **10 0**

Prices of all "Wireless World" Broadcast Tested Finished Instruments available on application.

PETO-SCOTT CO. LTD.

77, CITY ROAD, LONDON, E.C.1.
West End Showrooms: 63, High Holborn, London, W.C.1.



FIT THIS ELECTRIC CLOCK TO YOUR SET!
NO MAINS NEEDED!
KEEPS CORRECT TIME!
NO WINDING!

Works off small battery lasting 12 months or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1 1/2" thick. Easy to fix—no screws required. Only 3/4" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.

RIVERSIDE MFG. CO., LTD.
Dept. 20, Crisp Rd., Hammersmith, W.8.
Telephone: Riverside 0292.

12/6
COMPLETE WITH BATTERY
POSTAGE 6D

T.A. for P.A.

—but what's T.A.?
—why TRIX AMPLIFIERS, of course!
for every PUBLIC ADDRESS job.

Eric J. Lover (TRIX) Ltd., 89 Clerkenwell Green, London, E.C.1

Famous Maker's Offer! **£5 Radio-Gram CABINET for 65/-**
7 DAYS' FREE TRIAL (OR 10/- MONTHLY).
Piano built (Pat. 8123), the acoustic tone brings a true thrill (Piano Oak). (Radio Press, B.H.S., 3000 clientele). Models from 35/- to £15. List FREE.
Send for photographs, detail drawings, Piano-Tone Cabinets, Albion Rd., W. W. Bexley Heath, East

£6-15-0 Picketts

Components, etc., for Sale.—Contd.

MULTITONE. 4.1 and pot., 13/6; Ferranti A.F.5c, unused, 22/-; D.O.25, 16/-; M.H.4, 7/6; 354, 5/-; Colvern T.G.S.C. and T.G.S.R. screened coils 25/-, 3/6 each; Colvern double 50,000 pot., 5/6; McMichael binoc. choke, 2/6; R.I. dual-astatic choke, 3/6; Ferranti 750 m./ampmeter, glass cracked, 15/6; A.C.P., unused, 10/6; —Bateson, 13, Rochester Sq., N.W.1. [2580]

MISCELLANEOUS.

EASY Payments.—We supply, by easy payments components, accessories, and sets, any make; 10% down, balance spread over 11 months. Send list of requirements to London Radio Supply Co., 11, Out Lane, London, E.C.2. [10337]

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 9, The Bennett College, Ltd., Sheffield. [10395]

PATENT AGENTS.

A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions.—First Avenue House, High Holborn, London. [1832]
KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 47 years' experience. Advice Handbook free. [10381]
PATENTS and Trade Marks, British and foreign, —Geo. P. and Co. (H.L.) P. & Co., Member R.S.O.H. & A.M.I.R.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [10001]

PATENTS.

THE Owners of Patent No. 287,098 are Desirous of Arranging by Way of License or Otherwise, on reasonable terms, for the commercial development in Great Britain of this invention, which relates to the production of electric radiating elements, particularly electron emitting elements for electric discharge devices. For particulars address: H. Douglas Elkington, (The Patent Agent), 20 to 23, Holborn, London, E.C.1. [2588]

REPAIRS.

REPAIRS to Loud-speakers, transformers and headphones, 4 each; Blue Spot or Wulfa's, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-speaker Repair Works, 2, Shipka Rd., Ballham, London, Streatham 6618. [10394]
GUARANTEED Repairs by Experts, specialists for repairs to S.G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots, any type rewound, renamagnetised and adjusted; 4/-; tested free; mains transformer repairs; terms to trade.—Howell, 91, Morley Hill, Enfield, Middlesex. [9716]

TRAINING.

RADIO Engineering.—Day, evening, and postal courses. This school is fitted with most modern apparatus. Prospects free. Valuable recommendations given to qualified students.—Northern Counties Wireless School, Preston. [10399]

EXCHANGE.

EXCHANGES.—For best allowances send enquiries and stamp for bargain list to Radio Exchanges, 114, Ramuz Drive, Westcliff-on-Sea. [2581]
MAINS Transformers, any make or condition, accepted in part exchange for new; generous allowances. The Sturdy Electric Co., Derwent View, Dipton, Newcastle-on-Tyne. [2425]

YOUR Old Set or Apparatus Accepted in Part Payment for New Set or Apparatus; easy payments are granted if your order amounts to £5 or over, taking your goods as deposit; send lists.—Bostock and Stunhill, 1, Westbourne Terrace, S.E.23. [2630]

WANTED.

SHOP Cash for Components, etc.—Economic Radio Co., 96-98, South Lambeth Rd., S.W.8. [2457]
HIGH Class Radio Sets and Parts Wanted for Cash.—Milnamy Radio Exchange, 24, Milnamy Grove, London, N.1. [2474]
FERRANTI, Weston, and other quality meters, valves, receiving and transmitting. Radio Mart, 19, John Bright St., Birmingham. [2597]
RYALLS RADIO, 33, Chancery Lane, London, purchase modern radio parts for cash; send list for quotation; goods taken in part payment for brand new. [2616]
CLEAN Copy of "P.W." No. 258; "A.W." No. 257 and 278; "M.W." February, 1928; Radio News, October, 1927, January, 1928; postcard, stating price, to Box 6289, c/o The Wireless World. [2624]

FINANCIAL PARTNERSHIPS.

DIRECTOR Progressive Radio Manufacturing Firm wishes dispose of 300 shares; ownership carries small fixed income. Box 6875, c/o The Wireless World. [2592]

AGENTS WANTED.

AGENTS Wanted Sell All Make Radio on Commission.—Selby, 22, South End, Croydon. [2585]

SITUATIONS VACANT.

AMBITIOUS Men Should Apply for Free Particulars of Training or Appointments in Radio or Talkie Engineering; valuable introductions. Radio Training Institute, St. John St., Newcastle-on-Tyne. [1907]
SERVING Engineers Required by Leading British Sound Equipment Manufacturers for Manchester Area; previous experience essential; write age, education, experience.—Box 6381, c/o The Wireless World. [2603]
EXPERIENCED Radio Engineer Required to Organise, control, and develop service department; conversant with all types of circuits and prepared to invest £250, returnable; splendid opportunity. Box 6367, c/o The Wireless World. [2590]
A VACANCY Occurs for an Expert Service Man; must also be efficient salesman, and at least three years' actual trade experience; excellent opportunity for the right man to receive rewards for initiative and hard work.—Apply in first instance by letter, Box 5805, c/o The Wireless World. [2523]
ENGINEERS! Are you earning less than £6 per week? If so, you cannot afford to carry on without reading "Engineering Opportunities." In this 250-page handbook Professor A. M. Low indicates where worthwhile vacancies are constantly occurring. The book also explains the methods of our unique appointments dept., gives details of all leading examinations (A.M.I.Mech.E., I.E.E., G.P.O., etc.) and outlines modern home study courses in every branch of engineering. In your own interests, investigate; send P.C. for handbook to-day, free of charge.—British Institute of Engineering Technology, 87, Shakespeare House, 29-31, Oxford St., London. [2583]

Mr. EXPERIMENTER—
Follow the lead of the manufacturers and make your connections and nuts positively secure with—

"SHAKEPROOF" LOCK WASHERS

AND LOCKING TERMINALS.



British Patent 194987.
The twisted teeth bite into the metal and prevent "slacking off." The more the vibration, the tighter they grip.
ASK YOUR DEALER FOR "SHAKEPROOF."

Manufactured by **BARBER & COLMAN Ltd., Brooklands, Manchester**
Dealers' and factors' enquiries to—
WM. CLARK (Spare Parts) Ltd., 5, Marshalsea Rd., London, S.E.1.

PARIMA SELENIUM CELLS

FOR ALL PURPOSES.

Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. **5/-**
Prices from
PARIMA MANUFACTURING CO.
21, BROMLEY ROAD, S.E.3. *Hitler Green 3629.*

BAKER

WRITE NOW FOR OUR NEW BOOKLET GLEAFLETS

75-77 SUSSEX ROAD, CROYDON SURREY.
Phone: Croydon, 3441-2
FOR QUALITY MOVING-COIL SPEAKERS.

MORE WATTS PER £

With TRIX PUBLIC ADDRESS AMPLIFIERS.

Send for new illustrated booklet.
Eric J. Lever (TRIX) Ltd., 8/9 Clerkenwell Green, London, E.C.1

Situations Vacant.—Contd.
IF You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free. Wireless College, Colwyn Bay. [0388]

SITUATIONS WANTED.
SALES, service engineer (27), nine years' experience, requires situation.—BM/MHTV, London, W.C.1. [2610]
CERTIFICATE Radio Service Engineer, public school, drives car, aged 21, requires situation.—Box 6866 c/o The Wireless World. [2591]

AUCTION SALES.
Re R.C. RADIO-ELECTRIC LTD. Without reserve at
51, WHITCOMB STREET, LEICESTER SQUARE, LONDON, W.C.2 (opposite A.A. Headquarters)
on
WEDNESDAY & THURSDAY, MAY 17th and 18th, 1933, at
12.30 p.m. sharp, each day.
THE WHOLE OF THE VALUABLE STOCK OF HIGH CLASS RADIO WHOLESALEERS, RETAILERS AND MANUFACTURERS,

comprising:
70 Various ALL-ELECTRIC RECEIVERS by IVE, MARCONI, K.B., G.E.C., LISSEN, STANDARD, etc. 6-valve Short W.V. set, 20 Battery and Portable sets, 45 Ferranti and other Meters, 30 P.M. Moving Coil Speakers (leading makes), Pick-ups, 3,500 Variable Condensers (POLAR and ORMOND), 200 Valves, Headphones, Accumulators, Batteries, Ferranti, R.I. and Igranite Transformers, Valve Holders, Volume Controls, Raycraft kits, Wires, Flexes, Dials, Switches, Cabinets, 8 ALL-ELECTRIC RADIOGRAMS, Test sets, Meggers, MAINS COMPONENTS:—150 Transformers, Chokes, 150 Chassis, 3,000 Bakelite Chassis Valve Holders, 4,500 BULLFIN On and Off switches, 500 Electrolytic and Block Condensers, 7,000 Indicating brass parts, Resistances, 600 B.C. Adaptors, 10 gross sleeving, and numerous items of Proprietary Radio Components, 10 Vacuum Cleaners, 15 Electric Clocks, and other Electrical Appliances, 2 KALEE PROJECTORS, 2 GAUMONT PROJECTORS, and 1 PORTABLE TALKIE PROJECTOR, together with Office Furniture, Royal Typewriter, Fittings, etc.
To be offered in lots to suit large and small buyers. Catalogues of the Auctioneers.
On view day prior and days of sale.
WEST CENTRAL MERCHANDISE MART,
WHITCOMB COURT, WHITCOMB ST., LONDON, W.C.2.
Telephones: Whitehall 8877-6.
Grams: Loundsigs, Lesquare, London.

OSTAR-GANZ

HIGH VOLTAGE MAINS VALVES

These valves work direct off either A.C. or D.C. supply. No transformers or resistances required. Remarkably free from mains hum.

A.520. G.F. - - - 17/6	E.G.50. 50 m.a. Half Wave - - 14/6
W.310. R.C. - - - 17/6	E.G.100. 125 m.a. do. - - 15/6
U.820. L.F. Power 17/6	H.G.40. 40 m.a. Voltage doubler 29/6
L.1525. Super Power 18/-	V.O.45. 45 m.a. Full Wave - - 42/-

FREE BLUE-PRINT with first order.

UNIVERSAL

RECEIVER AND AMPLIFIER KITS

With British components. All instructions. Complete, ready for assembly. **Highly efficient yet cheap**, because the Ostar Universal High Voltage Valves cut out cost of transformers and breakdown resistances.
Work off either A.C. or D.C.

2-VALVE RECEIVER Including valves and Rectifier **£5 15 0**
2-VALVE AMPLIFIER Including valves and Rectifier **£4 4 0**
3-v. Receiver including valves and Rectifier **£8 15 0** **3-v. Amplifier including valves and Rectifier** **£5 5 0**

Write for leaflet.
EUGEN FORBAT, Sole rep. for Gt. Britain;
c/o Nivalight Ltd., 1, Rosebery Avenue, E.C.1. Tel.: Clerk 1227

ERIE

Write for NEW Technical Brochure

● THE RADIO RESISTOR CO
1, Golden Sq., Piccadilly Circus, London, W.1

MOTORCYCLE

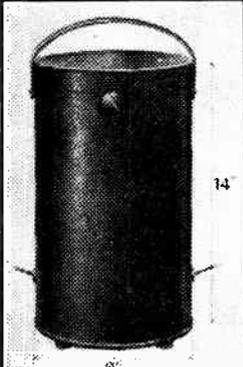
Every Thursday 3d. w.w.1

FOR HIRE RADIO, MICROPHONE & GRAMPHONE AMPLIFIERS giving exceptional quality and volume, suitable for Dances, Sports Meetings, Fêtes, etc., from 15/- per day. McMichael Portable Sets 15/- a week; £2-12-6 a month.

ALEXANDER BLACK, WIRELESS CONSULTANT
55, EBURY STREET, LONDON, S.W.1
ESTABLISHED IN 1933 SLOANE 1655
Trade Inquiries Invited.

SERVICE SETS OF ALL TYPES
Supplied, Serviced and Visited in any district, or may be sent for Full Test and Report, at 2/- per valve-holder; portables, 1/6 per valve-holder.

50 CYCLE A.C. THE NELCO ROTARY CONVERTER
(Prov. Patent)
From your D.C. Mains.



is the only converter specially designed for use with the new Synchronous gramophone motors. It is provided with a speed regulator, and a frequency of 50 cycles is accurately indicated. This device enables anyone to obtain exactly 50 cycle A.C. Irrespective of input voltage and load. Efficiently smoothed and entirely free from electrical interference, it can be used with the most sensitive receivers. Silent and reliable. Occupies extremely small floor space. A highly finished, sound mechanical and electrical job. Made throughout at our works at Shalford, Surrey.

100-WATTS OUTPUT.
£8-8-0

Send for fully descriptive leaflet to—
SPECIAL OFFER TO TRADERS
Write for full particulars.

NELCO LTD.,
15, CAROLINE STREET, LONDON, W.C.1.
Phone: Museum 3474.

You'll recommend it to your friends

OSBORN RADIO-GRAM CABINET FOR 70/-



Model No. 234.—Beautiful Queen Anne style Radio-Gram Cabinet 3' 3" high x 2' 6" wide x 1' 6" deep. Takes panel 19" x 12" or smaller. Ample room for any type of gramophone motor including Garrard Automatic Record Changer and largest H.T. and L.T. batteries made. Accommodation for 35 records each side of set. By omitting records storage, cabinet takes panel 27" long. Height between ashboard and motor-board 12".

PRICES. Mached Ready to Assemble Kit of Parts, Oak £3.10.0. Mahogany £3.15.0. Walnut £4.10.0. Assembled ready to polish: Oak £4.10.0. Mahogany £4.15.0. Walnut £5.10.0. Assembled and polished: Oak £5.10.0. Mahogany £6.5.0. Walnut £7.5.0. ALL MODELS CARRIAGE PAID.

CHAS. A. OSBORN, Regent Works,
Arlington St., New North Road, London, N.1.
Tel.: Clerkenwell 5083. Showrooms, 21, Essex Rd., Islington, N.1. Tel.: Clerkenwell 6634.

OSBORN SUPER ACOUSTIC Baffle Board
prevents 90% speaker worry. Any size hole cut FREE. Guaranteed no vibration. 18" x 18" 24" x 24" 36" x 36" 48" x 48" 60" x 60" 72" x 72" 84" x 84" 96" x 96" 108" x 108" 120" x 120" 132" x 132" 144" x 144" 156" x 156" 168" x 168" 180" x 180" 192" x 192" 210" x 210" 225" x 225" 240" x 240" 270" x 270" 300" x 300" 360" x 360" 420" x 420" 480" x 480" 540" x 540" 600" x 600" 660" x 660" 720" x 720" 780" x 780" 840" x 840" 900" x 900" 960" x 960" 1020" x 1020" 1080" x 1080" 1140" x 1140" 1200" x 1200" 1260" x 1260" 1320" x 1320" 1380" x 1380" 1440" x 1440" 1500" x 1500" 1560" x 1560" 1620" x 1620" 1680" x 1680" 1740" x 1740" 1800" x 1800" 1860" x 1860" 1920" x 1920" 1980" x 1980" 2040" x 2040" 2100" x 2100" 2160" x 2160" 2220" x 2220" 2280" x 2280" 2340" x 2340" 2400" x 2400" 2460" x 2460" 2520" x 2520" 2580" x 2580" 2640" x 2640" 2700" x 2700" 2760" x 2760" 2820" x 2820" 2880" x 2880" 2940" x 2940" 3000" x 3000" 3060" x 3060" 3120" x 3120" 3180" x 3180" 3240" x 3240" 3300" x 3300" 3360" x 3360" 3420" x 3420" 3480" x 3480" 3540" x 3540" 3600" x 3600" 3660" x 3660" 3720" x 3720" 3780" x 3780" 3840" x 3840" 3900" x 3900" 3960" x 3960" 4020" x 4020" 4080" x 4080" 4140" x 4140" 4200" x 4200" 4260" x 4260" 4320" x 4320" 4380" x 4380" 4440" x 4440" 4500" x 4500" 4560" x 4560" 4620" x 4620" 4680" x 4680" 4740" x 4740" 4800" x 4800" 4860" x 4860" 4920" x 4920" 4980" x 4980" 5040" x 5040" 5100" x 5100" 5160" x 5160" 5220" x 5220" 5280" x 5280" 5340" x 5340" 5400" x 5400" 5460" x 5460" 5520" x 5520" 5580" x 5580" 5640" x 5640" 5700" x 5700" 5760" x 5760" 5820" x 5820" 5880" x 5880" 5940" x 5940" 6000" x 6000" 6060" x 6060" 6120" x 6120" 6180" x 6180" 6240" x 6240" 6300" x 6300" 6360" x 6360" 6420" x 6420" 6480" x 6480" 6540" x 6540" 6600" x 6600" 6660" x 6660" 6720" x 6720" 6780" x 6780" 6840" x 6840" 6900" x 6900" 6960" x 6960" 7020" x 7020" 7080" x 7080" 7140" x 7140" 7200" x 7200" 7260" x 7260" 7320" x 7320" 7380" x 7380" 7440" x 7440" 7500" x 7500" 7560" x 7560" 7620" x 7620" 7680" x 7680" 7740" x 7740" 7800" x 7800" 7860" x 7860" 7920" x 7920" 7980" x 7980" 8040" x 8040" 8100" x 8100" 8160" x 8160" 8220" x 8220" 8280" x 8280" 8340" x 8340" 8400" x 8400" 8460" x 8460" 8520" x 8520" 8580" x 8580" 8640" x 8640" 8700" x 8700" 8760" x 8760" 8820" x 8820" 8880" x 8880" 8940" x 8940" 9000" x 9000" 9060" x 9060" 9120" x 9120" 9180" x 9180" 9240" x 9240" 9300" x 9300" 9360" x 9360" 9420" x 9420" 9480" x 9480" 9540" x 9540" 9600" x 9600" 9660" x 9660" 9720" x 9720" 9780" x 9780" 9840" x 9840" 9900" x 9900" 9960" x 9960" 10000" x 10000

SEND FOR FREE SAMPLE.

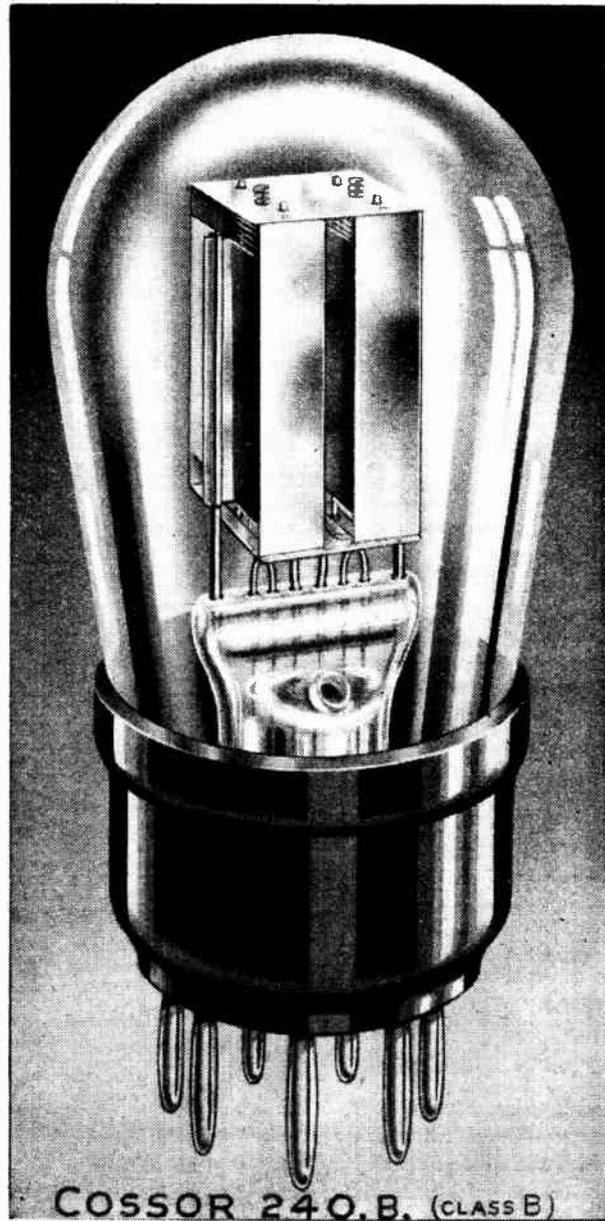
INDEX TO ADVERTISEMENTS:

	PAGE		PAGE
Automatic Coil Winder & Elec. Equipment Co., Ltd.	Front Cover	Partridge, Wilson & Co.	6
Baker's "Selhurst" Radio	9	Pepper, Trevor (Seralex)	6
Barber & Colman, Ltd.	9	Peter-Scott Co., Ltd.	8
Birmingham Sound Reproducers, Ltd.	Inside Back Cover	Pickells	8
Black, Alexander	9	Players	Inside Front Cover
Bon Marche, Ltd.	3	Radio Resistor Co.	9
Britannia Batteries, Ltd.	Inside Back Cover	Reproducers & Amplifiers, Ltd.	v.
British Blue Spot Co., Ltd.	5	R.J., Ltd.	Inside Front Cover
British Pix Co., Ltd.	v.	Riverside Manufacturing Co., Ltd.	8
Bulgin, A. F. & Co., Ltd.	7	Rotax, Ltd. (M.L. Equipment)	11
Burton, C. F. & H.	Front Cover	Savage, W. Bryan	6
Caharet Electric Co., Ltd.	1	Scott Sessions & Co.	4
City Accumulator Co., Ltd.	3	Tannoy Products	4
Cole, E. K., Ltd.	2	Telsen Electric Co., Ltd.	Front Cover
Colvern, Ltd.	Front Cover and vi.	Westinghouse Brake & Saxby Signal Co., Ltd.	Inside Back Cover
Cossor, A. C., Ltd.	10	Wilburn & Co.	3
Crossall Manfg. Co.	6		
Dubilier Condenser Co. (1925), Ltd.	Back Cover		
Eastick, J. J. & Sons	6		
Electralis Radios	6		
Electrical Trading Association	Inside Front Cover		
Epoca Radio Manfg. Co., Ltd.	6		
Garrard Engineering & Manufacturing Co., Ltd.	vi.		
Heywood, F. C. & Co.	7		
Lectro Linx, Ltd.	7		
Lever, Eric J. (Trix), Ltd.	6, 8 and 9		
Lumen Electric Co.	6		
McNeill, F. & Co., Ltd.	7		
Nelco, Ltd.	9		
Osborn, Chas. A.	9		
Ostar-Ganz (Eugen Forbat)	9		
Parima Manfg. Co.	9		

COSSOR 240B

—the new valve
for

CLASS "B" AMPLIFICATION



Filament volts 2.0; Filament amps. 0.4;
Anode volts 150 max.; Max. Anode
Current Swing 50 mA.; Max. Peak
Applied Signal (Grid to Grid) 40 volts;
Static Anode Current at
 $V_a=100, V_g=0$ (each half)
1.5 mA. Price **14/=-**

PLEASE USE THE COUPON

To A. C. COSSOR LTD., Melody Department, Highbury
Grove, London, N.5.

Please send me, free of charge, a copy of Folder No. L93,
which tells me how to use Class "B" Amplification.

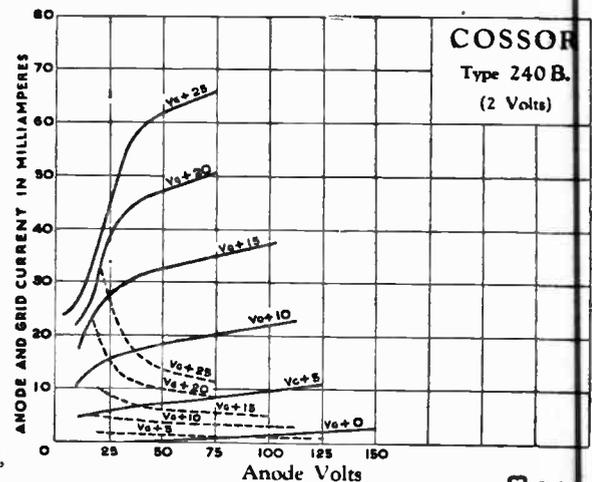
Name.....

Address.....

W.W. 12/5/33

Volume equal to that of the average Mains Receiver is now obtainable from Battery Sets with this new Cossor Valve, and with this remarkable output, the H.T. Current demand of the Cossor 240 B. is lower than that of a small power valve. Thus, a really large output is obtainable without in any way over-stressing the average H.T. Dry Battery.

Anode and Grid Current/
Anode volts curves of
Cossor Class "B" Valve
Type 240 B.



A. C. Cossor Ltd., Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool,
Manchester, Newcastle, Sheffield, Belfast, Cardiff and Dublin.

2816

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

WEDNESDAY

MAY THE SEVENTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Act 3 of "Siegfried" (Wagner), from the Royal Opera House, Covent Garden.
- LONDON REGIONAL** London Music Festival concert from the Queen's Hall.
- NORTH REGIONAL** "Pomp and Circumstances, our Hysterical Pageant," a satirical sketch by Raymond Burns.
- WEST REGIONAL** Orchestral concert from the National Museum of Wales.
- SCOTTISH REGIONAL** Orchestral concert.
- BELFAST** Orchestral concert from Stranmillis.

ABROAD

- BARI** 8.40 p.m. Vocal and instrumental concert.
- BERLIN (Witzleben)** 8.40 p.m. Concert of operatic music.
- BORDEAUX LAFAYETTE** 8.30 p.m. Lecoq concert.
- BUDAPEST** 8 p.m. Liszt International competition for pianists.
- COPENHAGEN** 8.1 p.m. Ballet music from opera.
- HAMBURG** 8 p.m. Opera: "Die Königskinder," by Humperdinck.
- LEIPZIG** 10.40 p.m. The Leipzig Symphony Orchestra.
- PRAGUE** 4.10 p.m. Concert in honour of the Norwegian National Festival.
- STUTTGART** 9.40 p.m. String Quintet No. 2 in G. (Op. 111), by Brahms.
- VIENNA** 8 p.m. A German Requiem, by Brahms.

Gramophone Concert: Hyde Park (Julowicz); Selection from The Mikado (Sullivan). 8.30, Concert of Light Music, relayed from the Grand Hotel, Antwerp. 9.0, Recitations. 9.15, Concert (contd.). 10.0, Le Journal Parlé. 10.10, Concert (contd.).

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra: Spanish March (O. Guldmark); Overture, Carnival (Dvorak); Waltz from Eugene Onegin (Tchaikovsky); Selection from Lakme (Delibes); Potpourri of Grieg Music (Lbach); Honey-moon (Frederiksen); Scandinavian Peasant Dance (Zanella); Russian Dance No. 4 (Bulheian). In the interval at 6.0, Radio Journal. 7.0, Talks. 7.40, Light Music on Gramophone Records. 8.0, See Vienna.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.10 p.m. to 12 Midnight.—5.30 p.m., Dance Music by the Bachmann Band, relayed from the Rajnapark. Soloist: Paul Fekete. 6.0, Italian Lesson. 8.30, Concert by the Sándor Bura Cigány Band. 7.30, Talk. 8.0, Liszt International Competition for Pianists, relayed from the Academy of Music, Racing Results in the interval. 10.0, News Bulletin. 10.15 (approx.), Concert by the Karl Bura Cigány Band from the Ketter Restaurant 11.0, Talk in Italian.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Gramophone Concert. 3.30, Concert by the Station Orchestra, conducted by Emil Reesen: Overture, The Carnival of Venice (Thomas); Hungarian Harvest Festival (Dohnányi); Hungarian Children's Scenes (Dohnányi); Selection from The Girl of the Golden West (Puccini); Song and Dance from Pictures from Valencia (Chavarri); The Queen's Entry and Processional March from The Queen of Sheba (Goldmark); Overture, The Water Carrier (Cherubini); Pestherwalzer (Lanner); Ballet Music from The Cid (Massenet); Selection from The Tales of Hoffmann (Offenbach); Saltarella, from Les Brigands (Offenbach). In the interval at 4.15 (approx.), Talk on Educational Problems. 5.40, Exchange and Fish Market Prices. 5.50, Talk. 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Chimes from the Town Hall. 8.1, Concert of Ballet Music from Opera, by the Station Orchestra, conducted by Launy Grondahl. March from Idomeno (Mozart); Gavotte from Iphigenia in Aulis (Gluck); Bacchanale from Samson and Delilah (Saint-Saëns); Three Dances from The Bartered Bride (Smetana); Waltz from Eugene Onegin (Tchaikovsky); Ballet Music from Othello (Verdi). 8.50, Talk on Finance. 9.20, Jazz Music for Two Pianos, by Viktor Fischer and Svend Hansen. 9.40, Talk and Readings: Sport in English Literature. 10.10, News. 10.25, String Quartet in A Minor, Op. 29, for Two Violins, Viola, and Cello (Schubert). 11.0, Dance Music by the Teddy Petersen Band, relayed from the Wivex Restaurant. In an interval at 12 Midnight, Time Signal and Chimes from the Town Hall. 12.30 a.m. (Thursday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C.; Announcers: T. St. A. Ronald, C. Danvers-Walker, and B. McNabb. 5.30, Orchestral and Vocal Concert of Light Music for Portsmouth and Southsea Listeners: Air de Ballet; Songs: (a) The Shepherd's Serenade, (b) Charming; Try a Little Tenderness; Songs: (a) I remember you from Somewhere, (b) West Wind; Chinese Fantasy; Songs: (a) My Darling, (b) I'm just a Vagabond Lover, (c) Excuse me Lady; Selections from Rigoletto (Verdi); Waltz, Roses from the South (Joh. Strauss). 6.15, Trio Concert and Violin Solos for Isle of Wight Listeners: Un peu d'amour (Silesu); Friend of Mine (Sanderson); Violin Solo: Larghetto (Weber); Chanson triste (Tchaikovsky); Love's Old Sweet Song (Molloy); Violin Solo: Au mois d'avril (Addington); Mia bella Rosa; Cavatina (Raff); Violin Solo: Valse Bluette (Drigo); Pizzicato, from Sylvia (Delibes); Toréador et Andalouse (Rubinstein); Selection from Cavalleria rusticana (Mascagni). 7.0, Radio Gazette. 7.20, Local News. 7.30, Listeners' Half-Hour and News. 8.15, Simplice in his repertoire. 8.30, Sponsored Concert. 9.0, Concert, relayed from Le Treport. 10 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Icolians: I love a Parade; Lullaby of the Leaves; I do like to see a Game of Football; Underneath the Arch; Listen to the German Band; Paradise: The Clouds will soon roll by; Round the Marble Arch; Just another Dream of you; It ain't no fault of Mine; They all start whistling Mary; Love me

ATHLONE
725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Talk in Gaelic. 7.15, German Lesson. 7.30, Time Signal. 7.31, Cello and Pianoforte Recital by M. Jephson and M. Mulcahy. 8.0, Contralto Solos by Nora Finn. 8.20, Forger—a Drama by Elizabeth Young and Company. 8.50, The Station Orchestra. 9.15, The Nono Brothers in Variety. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA
(EAJI), 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Concert by the Escalas Orchestra. 11.0, Programme of Industry and Art. In the interval at 12 Midnight, News. 1.0 a.m. (Thursday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—5.30 p.m., Programme for Children. 6.0 to 6.30, Light Music on Gramophone Records. 8.0, Agricultural Notes, Tourist Report and Dopulavoro Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.40 (approx.), Chamber Music, Soloists: Franco Ruggiero (Pianoforte), Enzo Motti Messina (Soprano) and N. delle Foglie (Cello). Overture, Maryské (Crisuolo); Pianoforte Solos: (a) Villanella (Anon), (b) Gagliarda (Galilei-Rospigliosi); Soprano Solos (Brahms): (a) An einen Veilchen, (b) Ständchen; Pianoforte Solo: Papillons (Schumann); Soprano Solos: Two Songs (Mussorsky); Violin, Cello and Pianoforte: (a) Adagio from the Pathetic Sonata, Op. 13 (Beethoven), (b) Serenade (Widor); Overture, Le donne errante (Usiglio); Soprano Solo: La lavandosa di S. Giovanni (Tommasini); Melody for Pianoforte (Paderewsky); Cello Solos (Cassado): (a) Spanish Serenade, (b) Le fluid of Titit y l'Escarbat, (c) Comlanta; Soprano Solos: (a) Le Flageolet (Casella), (b) Philomela's Second Song (Malipiero); Prelude, Choral and Fugue for Pianoforte (C. Franck). In the interval, Theatre Notes. 10.30, Variety Music on Gramophone Records. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE
897 kc/s, 430.4 metres; 2.8 kW.—3.0 p.m., Gramophone Records of Light Music. 3.30, Recital of Folk Songs. 4.0, Gramophone Records (contd.). 5.0, Medical Talk. 6.55, Time and Programme Announcements. 7.0, Concert by the Radio Orchestra: Overture (Zajc); From My Homeland (Mokranjatz); Song, The Swallow (Hristic); Italian Suite (Kostal). 8.0, See Vienna. 10.0, News.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Light Music. 3.0, Programme for Children. 3.30, Weather and Exchange. 3.45, Reading (Emil Strauss). 4.0, See Hamburg. 5.0, Talk: Industrial Changes of the Age. 5.30, String Quartet No. 2, Op. 22 (Max Trapp), by the Dessau String Quartet. 6.0, A Poem. 6.5, Folk Songs for Mixed Choir: Ich fahr dahin; Du sollst an mich denken; Mein Mädel hat einen Rosenmund; Die Linde im Tal; Aenechen von Thaur; Das braune Mädellein; Der Jäger und die Nixe; Jan Hünerk; Sandmännchen; Schlaf, du mein kleines Böhchen. 6.35, Wireless Technical Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Concert of Spring-time Music: La Primavera for Solo Violin and Strings (Vivaldi); Gabriel's Recitative and Aria from The Creation (Haydn); On Hearing the First Cuckoo in Spring (Bellini); Wonnevoller Mai (Glück); Das Dorf (Reger); Pflöder (Reger); Er ist's (Wolf); Italian Serenade (Ingo Wolf). 8.45, By their Deeds shall ye know them—A Satirical Radio Sequence (on Gramophone Records). 9.30, Dance Music. 10.0, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Programme from Heilsberg. 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.10 p.m., Concert by the Pachaly-Hennersdorf Trio: Pianoforte Trio in D (Haydn); Pianoforte Trio in G (Mozart). 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Breslau. 8.5, Announcement. 8.10, Folk Songs. 8.40, Concert of Modern Operetta Music by the Berlin Wireless Choir and the Berlin Wireless Orchestra, conducted by Dr. Rudolf von Schmidtseck; Soloists: Margarete Slezak, Marianne Meewe, Franz Baumann, and Reinhold Dancke. 10.0, Weather, News, and Sports Notes, followed

by Dance Music from the Europa Pavillon. 12 Midnight (approx.), Close Down.
BERNE.—See Schweizerischer Landessender.
BEROMÜNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE
995 kc/s, 304 metres; 13 kW.—7.30 p.m., News and Market Prices. 7.40, Dramatic Criticism. 7.55, Lottery Results. 8.0, Agricultural Report. 8.15, News Bulletin. 8.30, Lecoq Concert.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—5.0 p.m., Organ Recital by Prof. A. Ledvina, relayed from the Franciscan Church. 5.35, Programme for Children. 5.45, Light Music on Gramophone Records. 5.55, Hungarian Transmission: Talk, Recitations, and Pianoforte Recital by Ilona Magyarová; Ballad in G Minor (Chopin); Jardins sous la Pluie (Debussy); Waltzes, Op. 39 (Brahms); Rondo (Béla-Bartok). 7.0, See Prague. 7.10, See Brno. 7.30, See Moravská-Ostrava. 8.5, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.10 p.m., Gramophone Concert of Music from Well-known Operas. 1.45, Time, Weather, News, and Exchange. 2.5, Gramophone Concert of Spanish Music. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Programme for Women. 4.0, Flute Recital by Theo Knust: Andante in D (Tartini); Sonata for Flute and Bass Continuo, from Der getrene Musikmeister (Telemann); Sonata No. 111 in G (Handel); Sonata No. 11 in A (Handel). 4.30, Book Review. 4.50, Talk: Physical Exercise and Country Sports. 5.10, Agricultural Prices. 5.15, Orchestral Concert, conducted by Emil Glielnic; March, Morgenröte (Jessel); Waltz, Die Hypodromen (Gungl); Potpourri, Musikalische Trümpfe (Noack); Intermezzo, Zwischen Don und Diener (Lenschner); Impression, Es war an der alten Mühle in Parle von Saussonei (Niel); Waltz, Geschichten aus dem Ems-Tal (Pachernegg); Potpourri, Hallo, hier Wien! (Morena); March, Soldatenliebe (Alibout). In an interval at 5.40 (approx.), Agricultural Prices. 6.15, Review of the May Number of Der Oberschlesier. 6.50, Weather for Farmers, News, and Market Prices. 7.0, Transmission for all German Stations: The Glatzer Gebirge—Scenery, Inhabitants, and Customs—a Radio Sequence. 8.0, Peter

Dörfler reads from his own Works. 8.30, Request Concert by the Station Orchestra, conducted by Franz Marsalek; Soloist: Hellmuth Hallendorf (Teur). In an interval at 9.10, News. 10.0, Time, Weather, News, Sports Notes, and Programme Announcements. 10.20, Wireless Technical Talk. 10.30, Talk: Tickets please! A Day in the Life of a Tram Conductor. 10.50, Dance Music, relayed from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News, Talk for Workers, and Talk on Technocracy. 7.0, See Prague. 7.10, Man and his Work—a Report. 7.30, See Moravská-Ostrava. 8.5, Spring in Czechoslovakian Music—Concert by the Station Orchestra, conducted by Bakala; Soloist, M. Bakalova (Songs). 8.40, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert, relayed from the Grand Hotel, Antwerp. Conductor: André Fellenau. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 5.0, Sonata Recital. 5.30, Gramophone Concert. 6.0, Talk: Aesthetics. 6.15, Gramophone Records: Descriptive Symphony (Berlioz); Fantasia in C Minor for Organ (Bach). 6.30, Messages of Welsh Children. 6.35, Gramophone Concert: Overture, Bronwen (Holbrooke); Variations on a Theme of Corelli (Tartini-Kreisler); Fire Dance (Falk); Selection from La serva padrona (Pergolesi); Badinerie (Camus); Overture, Semiramis (Rossini). 7.15, Talk: André Souris—The Belgian Musician. 7.30, Medical Talk. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps. Overture, The Bartered Bride (Smetana); Siegfried Idyll (Wagner); Concerto No. 5, for Violin and Orchestra (Vieuxtemps). 8.45, The Narcotic—Sketch (Bernard). 9.0, Concert by the Station Symphony Orchestra (contd.). Songs by Armand Crabbé, La Mer (Gilson). 10.0, Le Journal Parlé. 10.10, Popular Music on Gramophone Records.

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert of Light Music, relayed from the Grand Hotel, Antwerp. 5.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 6.15, Talk: The Life of the Codfish. 6.30, Recital of Lieder by Gustav Mahler (died May 18th, 1911), by M. Theo Mercier. Ich bin der Welt abhanden gekommen; Reveille; Liebst du um Schönheit; Im Mitternacht. 6.45, Gramophone Concert: Valse Caprice (Rubinstein); Scènes alsaciennes (Massenet). 7.15, Talk on Proverbs. 7.30, Le Journal Parlé. 8.0,

MAY 17th

WEDNESDAY

continued

To-night; Happy-go-lucky you; While we danced at the Mardi Gras. 11.0, Club Concert for Woking and Westbridge Listeners: Dixieland Selection (arr. Stodden); Songs: (a) Absent Minded (Summers), (b) Girl of a Million Dreams (Gay); Selection from Splinters (Gibbons); Songs: (a) The Song of the Clock (Burchell), (b) If I were King (Henry); The Song of the Nightingale (Alboust); Duet: River stay 'way from my Door; You're the one I care for; The Musical Clock of Madame Pompadour (Noack); Song, Darby and Joan (Molloy); Song, My Treasure (Trevalsa); Waltz, Wiener Blut (Joh. Strauss), 12 Midnight, Military Band Concert: Naval Patrol (Williams); Amoretentänze (Gungl); Old Panama (Alford); Turkish Patrol; Præeludium (Järnefelt); Light of Foot (Latani); A Franzosa (Costa); Here, there and Everywhere (Bose), 12.30 a.m. (Thursday), Vocal Duets and Saxophone Solos: Old New England Moon; Songs I heard at Mother's Knee; Sing you Sinners; Saxophone Solo, I need you more each Day; Dancing with Tears in my Eyes; The Journey's End (Hewlett); If I had a Girl like you; Saxophone Solo, Valse Marguerite, 1.0, Accordion Music and Songs: Javanette; Volante March; Bertina Waltz; Songs: (a) I'm in the Market for you, (b) Just like in a Story Book; The Waltz that made you Mine; Señorita; Lullaby of the Leaves, 1.30, Songs: I'm so used to you; Leave the Rest to Nature; Ma Curly Headed Baby; Trio: (a) Old Time Jigs and Reels, (b) Turkey in the Straw; Kiss by Kiss; If I have to go on without you; Indian Love Call, 2.0, Dance Music by the Piccolini: Puttin' on the Ritz; I don't wanna go Home; When I passed the Old Church Door; With you; Lazy Louisiana Moon; Rolling Along; Meet me in my Dreams To-night; Get Happy; When it's Sleepytime down South; Three Little Times; Kisses in the Dark; A Faded Summer Love; Home-Desert Lover, 2.57, I.B.C. Good-night Melody, 3.0, Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Talk: Traces of Old Germanic Customs in Modern Times, 6.25, Topical Programme, 6.50, Time, Programme Announcements, Weather and Economic Notes, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Concert by the Station Orchestra, conducted by Reinhold Merten, Overture, Frau Luna (Lincke); Selection from Das süsse Mädel (Reinhardt); Waltz, Erste Liebe (Reinhardt); Spanish Comedy Overture (Keller-Bela); Selection from Der Sterngucker (Lehar); Waltz, Am Himmelblau See (Müllacker); March, Schönes Persien (Lincke), 9.0, A Conversation between Wilhelm Müller-Scheidt and Walter Oertel: With the 76th Reserve Division through Transylvania and Romani, 9.35, Chamber Music by the Schulze-Priska Quartet: Quartet in F Minor, Op. 95 (Beethoven); Quartet in C, Op. 33, No. 3 (Haydn), 10.20, Time, News, Weather and Sports Report, 10.45, See Munich, 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Mozart Concert by the Station Orchestra, conducted by Eugen Papst: Serenade in D No. 7, Symphony in B Flat, No. 33, 5.0, Mecklenburg Humour from Laubemberg to Wossido—Talk, Recitations and Songs, 5.30, Hamburg, Lübeck and Bremen—Report on Events in the Senate and House of Burgesses of the Hanseatic Free Cities, 6.0, Recital of North German Folk Songs by Käthe Paradies Richard Germer and the Station Male Voice Quartet, 6.40, Frankfurt Exchange and Hamburg Market Prices, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Die Königskinder—Opera in Three Acts (Humperdinck), relayed from the Municipal Theatre. In the intervals at 9.5 (approx.), Announcements and at 10.0, Time, Weather, Announcements, Sports Notes and Police Report, 11.15, Topical Talk, 11.25, Gramophone Concert, Overture, The Gipsy Baron (Joh. Strauss); Hungarian Rhapsody (Liszt); Symphonie Dancaes (Grieg); Waltz, The Arabian Nights (Joh. Strauss); York March (Beethoven), HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. In an interval at 1.20, News, 2.30, Programme arranged by the Post Office with Gramophone Records, 3.0,

Agricultural Prices and Exchange, 3.20, Talk for Housewives, 3.30, Programme for Children, 4.0, Talk for Parents, 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken: Overture, The Barber of Seville (Rossini); Im Rosepavillon (Siede); Sérénade à Graziella (Desprez); Waltz, Hofballtänze (Lanner); Selection from A Waltz Dream (O. Straus); Czardas (Mielchies); Strauss-Müllacker-Suppé Potpourri (Komzák), 5.45, Bridge Lesson, 6.15, Agricultural Prices, 6.25, Song Recital by Mia Xenitzi-Thoenissen, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Breslau, 8.5, Concert of Music by Reznicek by the Königsberg Opera House Orchestra, Conductor: Erieh Seidler, Introductory Talk by Dr. Hubert Geritz, 9.35, News, 9.40, Reading of Poems by Heinrich Anacker, Karl Bülow, Goswin P. Gath, Heribert Menzel and Heinz Rusch, 10.5, News and Sports Notes, 10.15 (approx.), Concert by the Small Station Orchestra, conducted by Eugen Wilken, Overture, Michel Angelo (Gade); Norwegian Dances Nos. 1, 2 and 4 (Grieg); Norwegian Rhapsody, No. 3 (Svendsen); Selection from La Bohème (Puccini); Suite No. 3 (de Michel); Tanzwalzer (Busoni); Overture, Euryanthe (Weber), 12 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.), 11.40, Concert by De Notenkrakers, conducted by D. Wims, 12.25 p.m., Song Recital by Mlle. Stella Seemer, 12.40, Concert by De Notenkrakers (cont'd.); National Dances (Mannfred); Der Spielmann (Wilezinsky); Valse triste (Berger); Dance from Havana (Marbot); Spanish March (Dreyer), 1.10, Song Recital (cont'd.), 1.25 to 1.40, Interval, 1.40, Programme for Children, 5.10, Concert by De Flöteflüters, conducted by J. van de Horst, 6.10, Jewish Programme by the Rotterdam Jewish Choir, conducted by N. Stranders, and Leo Fuld (Songs), 6.40, Talk, 7.0, Concert, M. Weissbach (Tenor), M. Jong (Organ), and J. Vogel and J. Jong (Two Pianofortes); Tenor Solos: (a) Immer wenn ich glücklich bin, muss ich schrecklich weinen (Kaper-Jurmann), (b) Die kleinen Mädchen mit dem treuen Blick (Wachsmann), (c) In 24 Stunden kann soviel geschehen (Kaper-Jurmann); Organ Solo: Selection from Show Boat (Kern); Tenor Solos: (a) Gruss und Kuss Veronika (Wachsmann), (b) Ein Brief von deiner Hand (Snyder), (c) Du kommst für mich in Frage (Rainger), (d) Uns macht das gar nichts aus (Marbot), 7.39, S.O.S. Messages, 7.40, Talk, 8.0, Light Music on Gramophone Records, 9.0, Dramatic Programme, 9.40, Organ Recital by J. Jong, 9.55, News, 10.10, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot: Overture, Poet and Peasant (Suppé); Ballet Music from Lakmé (Delibes); The Dream from William Rateliff (Mascagni); Secrets of the Adige (Carmen); Melody (Strauss); Bahn frei (Ed. Strauss); Selection from The Land of Smiles (Lehar), 10.55, Popular Music on Gramophone Records, 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—11.55 a.m., Gramophone Concert of Variety Music, 12.40 p.m., Gramophone Concert of Light Music, 12.55, Organ Recital, 1.40, Agricultural Talk, 2.25, Programme to be announced, 2.40, Reading, 3.10, Concert by the Hague Trio: Trio, Op. 7, for Violin, 'Cello and Pianoforte (Wolf-Ferrari); Sonata for Violin and Pianoforte (Respighi); Soprano Solos: (a) Nuit d'étoiles (Debussy), (b) Core 'ngrato (Carrillo); Siciliana burlesca for Trio (Casella); Two Pieces (Fernandez-Arbo); (c) Seguidillas, (d) Bolero, 4.40, Programme for Children, 5.40, Talk on Communism, 6.10, Programme arranged by the Department of Buildings and Roads, 6.40, Police Notes, 6.55, News, 7.10, Talk on the League of Nations, 7.25, Talk by Heer Amelink, 7.40, Salvation Army Meeting, relayed from Harlingen—Programme of Addresses and Music, 9.10, Concert by the Hecker Quartet: Serenade for Violin, Viola, and 'Cello, Op. 8 (Beethoven); Two Arias for Soprano from The Magic Flute (Mozart); Quartet, Die Jagd (Mozart), 10.10, News, 10.20, Gramophone Concert: Concerto No. 2 in F Minor, Op. 21 (Chopin); Symphony No. 6 in G Minor, Op. 42 (Widor); Two Sacred Songs; Song for Male Voice Quartet (Aht), 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements' Guide, News, Financial Notes, and Racing Results, 8.10, Talk on Science, 8.30, Concert of Popular Music, 9.0, News, 9.15, Popular Concert with Commentary by Jean Stan, 12.0 Midnight till Close Down, Programme in English by the I.B.C., H. K. Hitchcock announcing, 12.0 Midnight, Songs and Orchestral Music; Songs: (a) Springtime reminds me of you (Carter), (b)

Goodnight Vienna (Posford), (c) Close your Eyes (Carter); Stardust (Carmichael); Songs: (a) Just Friends (Klenner), (b) I'll always be true (Benatzky), (c) Save the Last Dance for me (Spitalny); Trees (Rasbach), 12.30 a.m. (Thursday), Dance Music; Miss Elizabeth Brown; What more can I ask; River stay 'way from my Door; Brighter than the Sun; Betty Co-ed; I may never pass your way again; Tap your Feet; A Boy and Girl were dancing, 12.57, I.B.C. Goodnight Melody, 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.10 p.m., Announcements and Popular Music on Gramophone Records, 7.20, See Warsaw, 10.35, Talk in Esperanto, relayed from Cracow, 9.59 kc/s, 312.8 metres, 10.55, See Warsaw, 11.10, The Letter Box, in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 368.1 metres.—6.15 p.m., Estonian Lesson, 6.40, Talk, 7.5, Concert by the Station Choir, 7.25, A Play (Lauri Haarla), 8.0, Concert by the Station Orchestra, conducted by Erkki Linko: March, Dem Lenz entgegen (Blankenburg); Overture, Poet and Peasant (Suppé); Waltz, Wiener blut (Strauss); Melodies from The Czarevitch (Lehar); Hungarian Dance No. 1 (Brahms), 8.45, News in Finnish, 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert conducted by Eysoldt, 12.50 p.m., Weather, Time, and Announcements, 1.0, Concert conducted by Wolf: Overture, Rautenstreich (Suppé); Bauern-Suite (Alboust); Selection from The Miracle (Hummelindeck); The Butterfly Chase (Keller-Bela); Waltz, Traumdeale (Fueki); Potpourri, Musical Soap Bubbles (Urbach); Spring Serenade (Lacombe); Gallop, Durchs Ziel (Translatenur). In an interval at 2.0 (approx.), Announcements, 2.30, Sponsored Programme with Gramophone Records, 3.10, Talk by Edmund Josef Müller, 3.30, Economic Notes and Time Signal, 3.50, Programme for Young People, 4.30, Concert conducted by Eysoldt, Soloist: Jakob Braun (Violin); Overture, Donna Diana (Reznicek); Symphonic Poem, Orpheus (Liszt); Adagio from the Violin Concerto in G Minor (Brahm); Capriccio italiano (Tchaikovsky); Suite 'Chinesischer Bilderbogen (Matus), 5.50, Book Review, 6.0, Natural History Talk, 6.25, Italian Conversation Lesson, 6.45, Weather, Time, Economic Notes, and Sports Results, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Announcements, 8.5, Extracts from Bismarck's Speeches, with Introductory Talk, 8.30, Concert by the Station String Quartet. Soloists: Hansen (Soprano), Guermanova (Contralto), Woeke (Bari-tone), and Strienz (Bass), 10.0, Announcements and Sports Notes, 10.45, Serenade, conducted by Wolf.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time, 12.5 p.m. (approx.), Concert by the Dresden Philharmonic Orchestra, conducted by Herbert Nerlich, Soloist: Josef Kliner (Clarinet). In the interval at 1.0, News, Second News after the Concert, 3.0, Recital of Pianoforte Duets by Gerhard Burgert and Friedbert Sammler: Sonata in B Flat (Schubert); Kleine Suite, Op. 12 (Fritz Müller-Reinmann), 3.35, Exchange Quotations and Market Prices, 4.0, Programme for Young People: A Radio Play followed by Choral Concert of Folk Songs, 5.10, Talk: The German Folk Dance, with Illustrations, 5.50, Economic Notes, Weather and Time, 6.0, Review of Books, 6.20, Talk: The Middle Classes in Industry and Society, 6.45, Programme to be announced, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0, Gramophone Concert, Wilhelm Backhaus (Pianoforte); (a) Zueignung (Schumann-Liszt), (b) Serenade from Don Giovanni (Mozart); Enrico Caruso: (a) Divine Aida, from Aida (Verdi), (b) Aria from Cavalleria rusticana (Mascagni); Pablo de Sarasate (Violin); (a) Prelude (Bach), (b) Tarantella (Sarasate); Barbara Kemp (Soprano): Two Arias from Carmen (Bizet); Hans Bottemund (Cello): (a) Largo (Handel), (b) Adagio from the Concerto in A Minor (Schumann); Heinrich Schlimms (Baritone): (a) Epiphanias (Hugo Wolf), (b) Ständchen (R. Strauss); Prof. Joseph Penbauer (Pianoforte) Mephistowalzer (Liszt), 9.0, News, 9.15, Es brennt an der Grenze—Radio Play (Hans Kyser), 10.30, News, 10.40 (approx.), Serenade by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Overture, Jessonda (Spohr); Symphony No. 28 in C (Mozart); German Dances (Reger); Variations on the Thuri-

gian Folk Song, Ach, wie ist's möglich dann (Raff); Three Pieces for Orchestra (Carl Reinecke): (a) Romance from King Lear, (b) Idyll, (c) Dämmerung, 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C., F. Miklavcic announcing; International Broadcasting Club Concert: Foxtrot, For you Rio Rita; Foxtrot, Sweet Amanda; Waltz, Why be so unkind to me? Comedy Foxtrot, We all wanna know why; Foxtrot, In a Shanty in Old Shanty town; Foxtrot, This is my Love Song; Slow Foxtrot, Silver Hair and Heart of Gold; Comedy Foxtrot, The Oil Song, 6.0, Gramophone Concert of Popular Music, 6.30, Talk: Contemporary Heroes, 7.0, Russian Lesson, 7.30, Literary Programme, 8.0, See Vienna, 9.30, Weather and News, 9.5, Light Music on Gramophone Records, 10.30 (approx.), Close Down.

LWOW

788 kc/s, 381 metres; 16 kW.—7.5 p.m., Miscellaneous Items, 7.20, See Warsaw, 8.0, See Vienna, 10.0, See Warsaw, 10.11, Baritone Song Recital by Adam Baczewski, 10.35, Talk in Esperanto, 10.55, See Warsaw, 11.0, Dance Music, relayed from the Bagatela Theatre, 12 Midnight, Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 15 kW.—7.30 p.m., Radio Gazette, 8.30, Music Hall Programme. After the Programme, News.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.2 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Radio Journal and Request Gramophone Records, 9.25, News Bulletin and Political Review, 9.30 to 10.30, Interval, 10.30, Chimes, Time Signal and Political Review, 10.45 (approx.), El Amor musico—Play in Three Acts (Barbarin), 12.45 a.m. (Thursday), News Bulletin, 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.10 p.m., Marionette Play, 6.5, Agricultural Report, 6.10, Light Music on Gramophone Records, 6.15, See Prague, 6.25, Zither Recital by Josef Franz, 6.40, Recital of Children's Songs, 7.0, See Prague, 7.10, See Brno, 7.30, Village Band Concert, 8.5, Radio Play, 8.40, See Prague, 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.30 p.m., Dance Music, 9.0, Talk in English: Higher Education in the U.S.S.R., 9.55 Time Signal, 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 232 metres.—4.5 p.m., Programme for Children, 5.0, Concert by the Otto Reiter Orchestra; Overture, Das Nachtlager von Granada (Kreutzer); Waltz, Die ersten Gedanken (Lanner); Weber Potpourri (Urbach); Potpourri, Wien bei Nacht (Komzák); Song, Ein Brief aus Sorrent (Zerkowitz); Potpourri, Mit vereinten Kräften (Richter); March, Treue Freunde (Holzmann), 6.5, Talk on the New East Mark Museum in Passau, 6.25, Talk for Women, 6.45, Time, Weather, and Agricultural Notes, 7.0, Transmission for all German Stations, relayed from Breslau, 8.0 (from Nürnberg), Concert by the Noris Mandoline and Guitar Society, conducted by Stefan Leidenberger: March, Unter dem Bundesbanner (Heine); Marionetten (Ritter); Waltz, Verschnittene Liebe (Lincke); Herzen und Blumen (Czibulka-Ritter); March, Freiheitsgeist (Bahlmann), 8.25, Dauerwelle Rokko—Humorous Musical Radio Play (Eichhorn-Hartung), 9.30, Josef Maria Lutz talk about his Writings, 9.45, Concert by the Small Station Orchestra; Soloists: Maria Grün (Soprano), Hugo Reker (Violin), and Erich Kloss (Pianoforte), 10.20, Time, Weather, News, and Sports Notes, 10.45, Serenade, conducted by Erich Kloss, 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 55.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—10.30 a.m., Procession of Children before the Royal Family outside Oslo Castle, with Music and Norwegian Songs, 12.10 p.m., Unveiling of the Statue of the Historian Munch in the University Square, 12.30, Songs by a Students' Choir, 2.0, Unveiling of the Roald Amundsen Monument at Tansberg, 4.30 p.m., Programme for Children, 5.30, Concert of National Music by Mne. Grave Norlund (Songs) and the W. Schubert

MAY 17th

WEDNESDAY

continued

Ensemble, with Songs by M. Torp and M. Kittelsen. 7.15, Weather and News. 7.30, Festival Concert by the Station Orchestra, conducted by Hugo Kramm. Soloist: Erling Krogh (Tenor). Talk by Mr. Kunt Liestøl, Recitations by M. Odd Fross. Norwegian Rhapsody No. 1 (Halvorsen); Suite from Sigurd Jorsalfar (Grieg); Tenor Solo: Norwegian Songs; Norwegian Rhapsody No. 4 (Svendsen); Sæterjentens Søndag (Bull); Tenor Solo: Songs (Teitman); Rustle of Spring (Sinding); Crescendo (Lasson); Four Dances (Hjelleen); Medley of Norwegian Melodies (Haland). 9.40, Weather and News. 10.0, Dance Music and Popular Music. 11.30, Relay from a Theatre.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopulavoro Announcements, Tourist Talk, Agricultural Report, and Giornale Radio. 8.20, Gramophone Records. In the interval at 8.30, Time and Announcements. 8.45, Variety Concert. Soloists: Pollicino (Tenor) and Rosa Alfano (Harp). Overture, Coriolanus (Brethoven). Tenor Solos: (a) Bimba (Silvestri), (b) Canzone (Laurenti); Movement from the Suite for Harp (Tedeschi); Talk; Tenor Solos: (a) Piangi (Tronchi), (b) Cavatina, from Otello (Verdi); Alba triste (Zandonai); Concert Etude for Harp (Snuer); Gigue (Marteuc); 10.0, Popular Songs; Waltz, Trompe luntane (Figarola); Waltz (Stolz-Reisch-Robinson); Rumba delle Antille (Maraziti-Martelli); Waltz (Szokoll-Di Leo); Passa la nave mia (Buongiovanni); Caterinette (Ravasin-Frati). 10.55, News Bulletin.

PARIS

EIFFEL TOWER (Call FLE), 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot signals).—6.45 p.m., Talk on Music, with Songs by Schumann. 7.0, Le Journal Parle. 8.30, Concert of Sacred Music for Orchestra, conducted by M. Flamant, a Choir, and Soloists. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Popular Music on Gramophone Records. 8.0, Talk on Economics. 8.15, Interval. 8.30, Concert by the Pupils of the Bach School of Piano-forte Music and the Lamoureux Concert Society Orchestra, relayed from the Hall of the Conservatoire. Conductor: M. Albert Wolff. Concerto in D (Bach); Concerto in E (Bach); Concerto in F (Liszt); Concerto in A (Mozart); Concerto in D minor (Mozart); Concerto in F minor (Chopin); Concerto in E minor (Chopin). 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW. 12.15 p.m., Orchestral Concert: Selection from The Nuremberg Doll (Adam-Gaouwin). 12.30, Organ Recital by P. T. Desserre, relayed from the Gaiumont Palace: Prelude (Rachmaninov); Quatuor sans chœur (Desserre); Selection from La Bohème (Puccini); Melody (Rainger). 1.0, Exchange, News and Weather. 1.5, Orchestral Concert (contd.): Overture, Les deux vieilles Gardes (Chabrier); Selection from Aphrodite (Février-Mouton); Selection from Arsène Lupin Banquier (Lattes); Selection from The Blue Mazurka (Léhar-Baillly); Selection from Les Travaux d'Hercule (Terrasse). In the interval at 1.30, Exchange. 2.0, Exchange. 6.10, Agricultural Report. 6.50, German Lesson. 7.0, Medical Talk. 7.20, Concert of Old Time Music: Valse des brunes (Ganne); Cadet March (Souza); Waltz, Wienerblut (Joh. Strauss); Tantara-roum-de-ay (Turlet); Réverie d'Antoine (Ganne); La Czarine (Ganne); Romance (Lecocq); Mariska (Michiels). 7.50, Commercial Prices and News. 8.0, Fashion Report by Mlle. José. 8.15, Concert by the B.B.C. Symphony Orchestra, relayed from London.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W2XK on 48.86 metres and 25.27 metres.—7.20 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, Microphone Melody Makers. 9.0, Teaberry Baseball Scores. 9.5, Mid-week Musicale, from New York. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, Programme to be announced. 10.15, Dick Darling, from New York. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Programme to be announced. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Riggs and Moke. 11.45 to 3.15 a.m. (Thursday) New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., The Townsend Murder Mystery. 12.30, String Symphony. 1.0, Eno Crime Clues. 1.30, Tastyest Jesters. 1.45, Phil Cook and the Ingram Shavers. 2.0, Adventures of Sherlock Holmes. 2.30, Woodbury Programme—Donald Novis and Leon Belasco's Orchestra. 3.0, Time Signal and Revellers' Quartet.

POREGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.55 p.m., Theatre Notes and Programme Announcements. 6.0, See Warsaw. 6.50, Press Review. 7.5, Miscellaneous Items and News. 7.23, Time Signal. 7.35, See Warsaw. 8.0, See Vienna. After the Programme, Sports Notes and News from Warsaw. 10.0, See Warsaw. 10.15, Time Signal, Sports Notes, and Police Notes. 10.30, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., Concert by the Station Orchestra in Honour of the Norwegian National Festival, conducted by Otakar Parik; Carnaval à Paris (Svendsen); Little Norwegian Suite (Halvorsen); Norwegian Rhapsody No. 1 (Halvorsen); Norwegian Dances Nos. 2 and 3 (Grieg). 5.0, Talk on Economics. 5.10, See Moravská-Ostrava. 6.5, Agricultural Talk. 6.15, Talk for Women. 6.25, News in German. 6.30, German Transmission; Talk for Workers, Talk on Liberty and Labour Market Report. 7.0, Chinese. 7.1, News Bulletin. 7.10, See Brno. 7.30, See Moravská-Ostrava. 8.5, Almost a Novel—Variety Programme by the Station Orchestra, conducted by Otakar Parik. Soloists: J. Krepelka and L. Fihir (Songs). 8.40, The Development of the Piano-forte Sonata—Recital by Jan Herman, with Explanatory Notes by Dr. J. Braunberger. 9.0 (in the interval), Time Signal. 9.15, Reading. 9.30, Ludomir Rozycki Concert by the Ondricek Quartet; Aria from Beatrix Cenci; Four Songs and Waltz from Casanova; Piano-forte Quintet in C Minor, Op. 55. 10.0, Time Signal. 10.15, News Bulletin. 10.20, News in French for Foreign Listeners. 10.45 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Agricultural Talk. 7.30 (from Lausanne), Programme for the Seventy-fifth Anniversary of the Union-cadettes romandes; Songs and Address. 8.0, Concert by the Station Orchestra. 8.50 (from Geneva), The Week's Review. 9.0 (from Geneva), Concert by the Thoyerbuche Yodelling Club, an Accordion Band and Mme. Martha Renli (Songs). 9.50, News and Weather Forecast. 10.0 (from Geneva), Talk: The Work of the League of Nations. 10.10 (from Geneva), Dance Music by the Broadcasting Serenaders. 11.0 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.0 p.m., Orchestral Concert of Operetta Music, conducted by A. Parups; Overture, Franz Schubert (Suppe); Waltz, Du und du (Joh. Strauss); Selection from The Merry Widow (Léhar); Waltz from Die Bajadere (Kálmán); Selection from The Flower of Hawaii (Abraham). 6.0, English Lesson. 6.30, Agricultural Talk. 7.0, Weather Report. 7.5, Orchestral Concert of German Music, conducted by J. Medins. Soloist, Eduards Vineris (Violin); Divertissement No. 2 (Mozart); Concerto in E Minor for Violin (Mendelssohn); Overture, Rosamunde (Schubert). 9.0, News. 8.20, Aria and Song Recital by Biruta Jurjans; Aria from I Puritani (Bellini); Widmung (Schumann); Petrarch Sonnet (Liszt); Canzonetta from Salvatore Rosa (Gomez). 8.40, Orchestral Concert of Latvian Music, conducted by J. Medins. In the interval at 9.0, Weather and News. 9.30, Dance Music. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.10 to 2.15 p.m., Orchestral Concert: Uno, due, tre (D'Anzi); Selection from Where the Lark Sings (Lehar); Song (Wallace); A Wedding Trip (May); Vorrei morire (Tosti); Marilena (Tagliferri); Piano fabbricante (Eschobar); Serenita (Petralia); Carovana (Anaddei); I casi sono tre (Mariotti). In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange, Report of the Royal Geographical Society, and Giornale Radio. 5.30 to 6.15, Orchestral Concert: La belle ugherese (Ros Rot); Ottobrata (Giampietro); Selection from Clo Clo (Léhar); Piano-forte Solo, Valzer capriccioso (Napoli); Let's be good friends (Roland); Caccia (Longo); Scherzo (Martucci); Mi piacerebbe, ma (Ravasin). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopulavoro Notes. 6.57, Report of the International Institute of Agriculture (in Italian and Spanish). 7.10, Tourist Report. 7.20, Giornale Radio. 8.0, Time, Announcements, and Gramophone Records of Light Music. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.45, Siberia—Opera in Three Acts (Giordano). In the intervals, Talk: The Miracles at Lourdes, and Theatre Notes. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.43 metres and by W2XAD on 19.56 metres.—8.0 to 9.0 (approx.), New York Relay. 8.0, Pop Concert. 8.30, Texas Cowgirl. 8.45, Charis Musical Review. 11.45, Stock Reports. 12 Midnight to 1.15 a.m. (Thursday), New York Relay. 12 Midnight, Royal Vagabonds. 12.30, Woodlory Programme. 1.0, Band of Famous Brands. 1.15, Rocking Chair Memories. 1.30, General Electric Programme. 2.0 to 3.0 a.m. (approx.), New York Relay. 2.0, Corn Cob Pipe (Club of Virginia). 2.30, Dance Hits of Yesterday, followed by Programme Resumé. 3.0 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12.5 p.m. (from Berne), Popular Music on Gramophone Records. 12.30, News Bulletin. 12.40 (from Berne), Concert. 1.25 (from Berne), Exchange, Time, and Weather. 1.30 to 5.0, Interval. 5.0 (from Berne), Programme for Children. 5.30 (from Berne), Variety Music on Gramophone Records. 6.30 (from Zürich), Talk: Ferdinand Hodler, on the Twenty-fifth Anniversary of his Death. 7.0 (from Zürich), Time, Weather, and Market Prices. 7.10 (from Zürich), Popular Music on Gramophone Records. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Concert by the Swiss Radio Orchestra. 9.0, Weather and News. 9.10 (from Zürich), Programme to be announced. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Bodan, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Accordion Music. 5.45, Popular Music on Gramophone Records. 6.45, With Navigation Chart and Compass—Sketch (Sigurd Sternvall). 7.15, Weather and News. 7.30, Talk: Sweden's Commercial Relations with Foreign Countries. 8.0, Concert by a Salvation Army Band. 9.0, Talk: The Rocks and Islands on the Coasts of Sweden. 9.30, Song Recital by Ester Berggren. 9.45, Weather and News. 10.0, Dance Music by the Enders Orchestra, relayed from Berns Hall. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Concert of Light Music. 2.0 to 4.45, Interval. 4.45, Talk in German: The Electrical Apparatus most commonly used. 5.0, Orchestral Concert, conducted by Raskau; March, Granada (Garcia); Waltz, The Wedding of the Winds (Hull); Minuet, Gracieux page (Dehmann); Overture, Haydée (Auber); Selection from La Favorita (Donizetti); Serenade, Il Bacio (Micheli); Dance Suite (Bierne); Selection from Lila Time (Schubert). 6.0, Trio Concert, relayed from Lille, 1,130 kc/s (265.4 metres). 7.0, Legal Talk in French. 7.15, Light Music on Gramophone Records. 7.30, Time and News. 7.45, See Paris (Eiffel Tower). 8.15, Press Review in German and Lottery Results. 8.30, Concert by Pupils of the Conservatoire, relayed from Metz: Piece in B Flat for Oboe (Busser); Rhapsody No. 11 for Piano-forte (Liszt); Concerto for Violin (Brahm); Fantasia for Flute (Faure); Air from Sappho (Massenet); Impromptu for Trombone (Bizet); Romance for Viola (Brahm); Impromptu for Cornet (Monquet); Ballad for Bassoon (Bacheler); Concerto for Piano-forte (Mendelssohn); Concerto No. 3 for Violin (Viennemps); Larghetto for Horn (Chabrier); Aria from Lucia di Lammermoor (Donizetti); Fantasia for Clarinet (Lefebvre); Fantasia in F for Piano-forte (Chopin); Spanish Symphony (Lalo). In an interval at 9.30 (approx.), Press Review in French. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—12 Noon, Gramophone Concert. 1.15 p.m., Time, News, Weather and Programme Announcements. 1.30, Concert from Langenberg. 2.0, Programme arranged by the Post Office, with Gramophone Records. 2.0 to 2.15 (from Freiburg), Programme arranged by the Post Office, with Gramophone Records. 4.0, Programme for Children. 5.0, See Munich. 5.50, Time, Weather and Agricultural Notes. 6.0, Talk: The Trouble in the Far East. 6.25, Talk: Modern Italy—the Agrarian Plan. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, See Frankfurt. 9.0, Alle Vögel sind schon da—A May Programme arranged by

Martin Lang. 9.40, String Quintet No. 2 in G, Op. 111 (Brahms) by the Wendling Quartet, and Professor Wendling (Piano-forte). 10.10, Time, News, Weather and Programme Announcements. 10.45, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL. See Stockholm.

TOULOUSE

779 kc/s, 355 metres; 8 kW.—Transmissions irregular owing to fire. 7.30 p.m., Operatic Music: Selections from Tannhäuser (Wagner) and Boris Godunov (Mussorgsky), and The Tales of Hoffman (Offenbach). 7.45, Music by a Viennese Orchestra. 8.15 Operetta Music: Melodies from Le Comte Obligato (Moretti); La Pêcholle (Offenbach) and La Poupe (Andran). 8.30, Hawaiian Guitar Solos. 8.45, Operatic Music: Selections from the Philharmonic Society. Light Music in the intervals. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Popular Melodies. 11.15, Bal murette. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. Choral Concert: Grand Opera Favorites; Selection from The Maid of the Mountains (Fraser-Simson); Selection from Macchold (Mayer); Song of the Dawn, from The King of Jazz; Ol' Man River, from Show Boat (Kern); Selection from Bitter Sweet (Noel Coward). 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Thursday), Orchestral Music. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 to 6.10 p.m., Vocal and Instrumental Concert; Soloists: Lydia Bulach-Zeller (Violin) and Gemma Baruch (Mezzo-soprano); Concerto in A for Violin with String Accompaniment (Lohb); Senito nel core (Scarlatti); M'ha preso alla sua ragna (Pardies); Songs (Schumann); (a) Lied der Braut, (b) Widmung; Violin Solo: Air on the G String (Bach); Songs; (a) Der Tod dass ist die kühle Nacht, (b) Three Songs from Nutturi (Saccanti). 6.35 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.10 p.m., Soprano and Tenor Song Recital. 6.35, Giornale Radio Agricultural Report and Dopulavoro Notes. 7.0, Time, Tourist Report, and Songs on Gramophone Records. 7.20, Giornale Radio. 7.45, Popular Music on Gramophone Records. 8.0, Announcements, Giornale Radio, and Weather. 8.15, Medical Talk. 8.30, A Comedy in Three Acts. After the Comedy, Popular Music on Gramophone Records. 11.0, Giornale Radio. 11.5 to 11.30 (Florence), Dance Music Relay.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.25 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—6.30 p.m., Medical Talk: Care of the Feet. 7.0, Talk for Workers. 7.25, Solution of the Prize Competition of Saturday, April 16: Who is the Author? 7.30, Reading: Eine Phantastische Seegeschichte (Paul Jakob). 7.50, Time, Weather Forecast, Alpine Weather and Programme Announcements. 8.0, Brahms Festival, relayed from the Music Society's Hall: A German Requiem, Op. 45; Conductor: W. Furtwängler. The Vienna Symphony Orchestra and the Gesellschaft der Musikfreunde, Soloists: Adelfred Armhold (Soprano), H. H. Nissen (Baritone), Franz Schütz (Organ). 9.45, News, Weather Forecast and Market Prices. 10.0, Concert by a Schrammel Trio and Soloists, from the Hotel Krantz-Ambassador.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57, Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5, Programme Announcements. 12.10, Light Music on Gramophone Records. 1.20, Weather. 1.25, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.30, Scout Report. 3.35, Programme for Children. 4.0, Light Music on Gramophone Records. 4.40, Reading. 5.0, Popular Music on Gramophone Records. 5.40, Talk on Insurance for Business People. 5.55, Programme Announcements. 6.0, Violin Recital by Ede Zathurecky. In an interval, News. 6.50, Miscellaneous Items. 7.10, Agricultural Correspondence. 7.20, Recitations. 7.35, Radio Journal. 7.45, Talk on Brahms' Requiem. 8.0, See Vienna. 10.0, Topical Talk. 10.15, Popular Music on Gramophone Records. 10.35, Talk in Esperanto, relayed from Cracow, 959 kc/s (312.8 metres). 10.55, Aviation Weather Report and Police Report. 11.0, Dance Music, relayed from the Gastro-nomia. ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW; and Cork, 1,337' kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Programme for Children. 6.40, News and Dublin Cattle Market Report. 7.0, French Lesson. 7.15, Talk: The Glass Dancers of Sumatra. 7.30, Irish Music by the Station Orchestra. 7.50, Anglo-Irish Songs by P. J. O'Toole (Tenor). 8.5, Traditional Fiddle Solos by S. O'Mathghamha. 8.20, Duets for Two Violins by E. G. Buckley and Jeanne Russell. 8.40, Songs from Light Operas by Mabel Thrift (Soprano). 8.50, Selection from Musical Comedy by the Station Orchestra. 9.10, Musical Comedy Songs by Mabel Thrift (Soprano). 9.20, Light Opera Selection by the Station Orchestra. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations and Educational Talk in Catalan, relayed from the University. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 10.5, Concert by the Station Orchestra. 10.30, Recital of Flamenco Songs. 11.0, Es mi Hombre—Play in Three Acts (Amiches). In the interval at 12 Midnight, News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—5.30 p.m., Talk for Women. 6.0 to 6.30, Popular Music on Gramophone Records. 8.0, Agricultural Notes, Tourist Report, and Dopolavoro Notes. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.40 (approx.), Military Band Concert, conducted by Salvatore Rubino; Overture, The Barber of Seville (Rossini); Selection from A Masked Ball (Verdi); Selection from L'Historie d'un Pierrot (Costa); Symphonic Intermezzi. Agameunone (Pizzetti); Selection from Tosca (Puccini); Symphonic March, Gloria d'eroi (La Rofella). In the interval, Literary Notes. 10.30, Concert, relayed from the Grand Hotel Moderno. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.30 p.m., Orchestral Concert Yugoslav Music. 6.25, Time and Programme Announcements. 6.30, Dialogue in French. 7.0, Light Music on Gramophone Records. 7.30, Talk. 8.0, See Ljubljana. 10.0, News, followed by Concert from the Imperial Hotel.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.5 p.m., Descriptive Pieces on Gramophone Records, followed by Weather for Farmers. 12.55, Time Signal. 1.45, News. 2.0, Variety Music on Gramophone Records. 2.45, Programme for Children. 3.10, Radio Report from the Zoological Gardens. 3.30, Weather and Exchange. 3.45, Reading (G. Britting). 4.0, Popular Music on Gramophone Records. 4.30, Concert from Berlin (Witzleben). 5.0, Talk for Women. 5.10, Talk: Crime and Heredity. 5.35, Trio in G Minor for Clarinet, Cello, and Piano (Berger). 6.0, A Poem. 6.5 p.m., Folk Songs to the Lute by Emil Kühne. 6.30, Agricultural Talk. 6.50, Weather for Farmers and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, See Stuttgart. 8.50, Agricultural Talk. 9.15, See Stuttgart. 10.10, Weather, News and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Programme from Langenberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Concert by the Ferdj Kaufmann Quintet: Minnet (Schubert); Two Duets: (a) Wo wahr die Sonne scheint, (b) Schön Blümlein (Schumann); Serenade for two Violins and Pianoforte (Ottmar Gerster); Duets: (a) In Sternennacht, (b) Verrätene Liebe (Peter Cornelius); Abendlied (Willi Lautenschlager); Duets: (a) Wiegenlied, (b) O wunderbares Menschenherz (Peter Voelcker); German Dances (Reger). 5.10, Pianoforte Sonata in G Minor, Op. 22 (Schumann), by Gerd Nette. 5.30, Dialogue: Through Berlin—German Destiny as portrayed in the Museum for Marine Research. 5.50, Concert by the Ferdj Kaufmann Quintet (contd.): Two Pieces (Friedrich Herrmann): (a) Canzonetta, (b) Scherzo for three Violins; Duets (Hanns Herrmann): (a) Blätterfall, (b) Wellen; Waltz, Die Romantiker (Lanner); Madrigalet (Hans Bullerier); Two Pieces from Hansel and Gretel (Humperdinck). 6.30, Talk on Magdeburg. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations—Neurode—a Radio Play (Kurt Heynicke). 8.5, Announcement. 8.10, Concert of Old Berlin Dance Music by the Otto Kernbach Band and Soloists. In the interval: Music of the Streets. 10.0,

THURSDAY

MAY THE EIGHTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL "The Bottle Imp," a play from the story by R. J. Stevenson.

LONDON REGIONAL Act 2 of "Parsifal" (Wagner), from the Royal Opera House, Covent Garden.

MIDLAND REGIONAL Worcester City Schools' Musical Festival.

NORTH REGIONAL "A Dose of Physic," a comedy by Margaret Cropper.

WEST REGIONAL Three Valleys Festival, from the Pavilion, Mountain Ash.

SCOTTISH REGIONAL The Foundations of Scottish Poetry: Sir David Lyndsay.

BELFAST Orchestral concert: The Music of Leslie Stuart.

ABROAD

BRESLAU 8.45 p.m. Acts 2 and 3 of "Tannhäuser," by Wagner.

BUDAPEST 8.15 p.m. Finals of the Liszt international competition for pianists.

HILVERSUM LANGENBERG PALERMO 8 p.m. Requiem by Fauré.

4.30 p.m. German chamber music.

9.45 p.m. Comedy: "Nicoline and Nicoletta," by Tiranti.

PRAGUE 8.15 p.m. Programme commemorating the First Broadcast from the Prague Station.

STRASBOURG 8.45 p.m. The Municipal Orchestra, conducted by E. G. Manch.

TURIN 8.30 p.m. Opera: "Germania," by Franchetti (relayed by Florence, Genoa, Milan, and Trieste).

VIENNA 9 p.m. Modern German music.

Weather, News and Sports Notes, followed by Light Music from the Tiergarten. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODD.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.40 p.m., Talk arranged by the International Labour Bureau. 7.55, Lottery Results. 8.0, Talk on Wine. 8.15, News Bulletin. 8.30, Le trouble-fête—Play in Three Acts and an Epilogue (Fleg).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.40 p.m., Light Music on Gramophone Records. 6.55, Talk for Women. 7.0, See Prague. 7.10, Talk on Art. 7.25, See Moravská-Ostrava. 8.0, See Prague. 10.15, See Brno. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—11.30 a.m., Concert by the Silesian Philharmonic Orchestra, conducted by Hermann Behr. 1.10 p.m., Weather for Farmers. 1.15, Concert by the Silesian Philharmonic Orchestra: Overture, The Thieving Magpie (Rossini); Polka, Herzenseintracht (Suppé); Rondo (Kaun); Waltz, Roses from the South (Joh. Strauss). 1.45, Time, Weather, News and Exchange. 2.5, Gramophone Concert of Music by Verdi. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Tourist Talk: The Annaberg. 3.50, Book Review: Young People seen in Novels. 4.10, Songs of Spring, arranged by Käthe Schmitz. Käthe Mann (Soprano), Käthe Schmitz (Lute), Bruno Janz (Violin), Otto Scholz (Viola), Karl Grenlich (Cello), R. Schicke (Flute), R. Grand (Clarinet), and R. Birke (Oboe). Wir tanzen im Maien (c.1780); O der schöne Maienmond (Reichardt); Seht den Himmel, wie heiter (Schulz); Two Pieces for Lute: (a) Tondion (Attaignant), (b) Saltarello (Gerle); Alle Wiesen sind grün (Silesian Folk Song); Heut soll das grosse Flachs-ernten sein (Swedish Folk Song); Instrumental Piece (Schmitz); Mein jung frische Herz ist hoch erfreut (16th Cent.); Wach auf, mein Herzens Schöne zart (c. 1555). 4.40, Programme for Children. 5.0, Concert by the Station Orchestra, conducted by Franz Marszałek: Overture, Martha (Flotow); Sextet from The Bartered Bride

(Smetana); Waltz, Nilluten (Jos. Strauss); Potpourri of the Music of Wagner (Morena). 5.40, Talk: Religious Feeling in the Poetry of Novalis. 6.5, Programme to be announced. 6.20, Reading. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Cello Recital by Carl Grenlich. 8.45, Acts II and III of Tannhäuser—Opera (Wagner), relayed from the Municipal Theatre. 10.10, Time, Weather, News, Sports Notes and Programme Announcements. 10.30, Talk: Wireless Announcers needed! 10.50, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by Janota. Soloist: Hrynek Kaslik (Flute); Concert Overture No. 3 in D; Calm Sea and Prosperous Voyage (Mendelssohn); Scherzo in B flat (Schubert); Concerto for Flute and Orchestra, Op. 5 (Hofmann); Prelude in C (de Massi); Polka and Festival March (Modr); Waltz-Boston (Prozavnik); Spanish Intermezzo, Señorita (Friml); March (Volanek). 5.10, News for Young People. 5.20, Programme for Children. 5.50, Talk: Students' Spring Festivals. 6.0, Literary Review. 6.15, See Prague. 6.25, German Transmission: News and Talk. 7.0, See Prague. 7.25, See Moravská-Ostrava. 8.0, See Prague. 10.15, Schrammel concert. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Light Music on Gramophone Records. 5.0, Gramophone Records of Sound Film Music: Extracts, The Dreigroschenoper (Weill), and Il est charmant (Moretti). 5.30, Programme for Children. 6.0, Cookery Notes. 6.15, Gramophone Records: Aria (Lotti); Navarra (Albéniz); Legend (Wieniawsky); Etude in F Minor (Liszt); Renonce à ton rêve orgueilleux from Les Saltinbanques (Ganne); Alléluia from Manuelle Nitouche (Hervé); L'adjuvant et sa monture from Le cœur et la main (Lecocq); Parmi tant d'amoureux and cours mon aiguille from Les Noces de Jeannette (Masse); Chorus and Cortège from Act Four of Carmen (Bizet); Sketches (Bach-Laverne): (a) A propos d'clous, (b) Chez le magnétiseur, (c) Au garage, (d) Chez le x pédiétre, (e) Boulon-boulon, (f) Le fanfare de Mouillepot. 7.15, Talk for Workers. 7.30, Sports Notes. 8.0, Concert by the Station Symphony Orchestra, conducted by Arthur Menyemans. Part I—Wagner Programme. Overture, The Mastersingers; Siegfried Idyll; The Ride of the Valkyries. 8.45, Talk. 9.0, Concert, Part II—Massenet Programme. Overture, Phédre; Scènes napolitaines; In-

terlude by Jean Charlier; Gavotte and Minuet from Manon; Extracts from Hérodiade. 10.0, Le Journal Parlé. 10.10, Gramophone Concert. Part I—Operetta Music. Selection from Dédé (Christiné); Duet from Miss Decima (Audran); Selection from The Merry Widow (Léhar); Aria from Le Grand Mogol (Audran); Selection from Rose Marie (Friml). Part II—Ultra-Modern Music.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—12 Noon, Tchaikovsky Concert on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. 5.0, Concert by the Station Orchestra, conducted by Charles Walpot. Soloist: J. Sterbens (Tenor). Waltz Suite (Tellam); Overtures, The Merry Wives of Windsor (Nicolaï); Four Indian Love Lyrics (Woodford-Finden); Songs (Beethoven): (a) Adelaide, (b) Aria from Fidelio; Melody (Gervasio); Violin Solo: Czardas (Monti); Turkish March (Mozart). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: J. Sterkens (Tenor). Norwegian Dances (Grieg); Aria from The Magic Flute (Mozart); Potpourri, Mosaic (Zimmer); Liebestraum (Liszt); Minnet (Mozart); Finale from Le Carnaval des animaux (Saint-Saëns). 7.15, Film and Book Review. 7.30, Talk for Women. 8.0, St. Elisabeth—Oratorio (Jos. Haas), by the Symphony Orchestra. Chorus and Soloists. 10.15, Evening Prayer. 10.20, Le Journal Parlé. 10.35, Die Fledermaus—Opera (Joh. Strauss)—Concert Version on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Dimco Orchestra. In the interval at 6.0, Radio Journal. 7.0, Talks. 7.40, Light Music on Gramophone Records. 8.0, Saxophone Solos by Sigismund Seidmann. 8.30, Talk. 8.45, Sonata for Violin (Frank). 9.15, Sonata in B minor for Pianoforte (Chopin). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 6.40 p.m. to 12 Midnight.—5.30 p.m., Song Recital by Gisella Goda. 6.0, Talk. 6.30, Talk with Gramophone Illustrations: Asia. 7.45, Talk. 8.15, Finals of the Liszt International Competition for Pianists. Racing Results in the interval. 10.15, News Bulletin. 10.30 (approx.), Orchestral Concert conducted by Otto Berg: Overture, Susannias Secret (Wolf-Ferrari); Suite (Radnai); Valse triste (Sibelius); Ukrainian Pictures (Aikenko); Wedding March (Szeremi); Overture (O. Strauss); Potpourri (Szabados). 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW., and Kalundborg, 250 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Concert by the Station Orchestra, conducted by Launy Grandahl. Soloist: Otto Matherbes Jensen (Violin). 5.0, Programme for Boys. 5.40, Exchange and Fish Market Prices. 5.50, Talk: How to protect the Home against Fire. 6.20, English Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Talk on the Unemployed. 8.0, Chimes from the Town Hall. 8.5, Concert of Finnish Music, relayed from the Axelborg Studio. The Station Orchestra, conducted by Dr. Toivo Haapanen, Finnish Rhapsody (Linnala); Folk Melody for Strings (Madeltoja); Symphonic Poem, The Swans (V. Ranta); Concertino for Strings and Pianoforte (S. Ranta); Selection (Klamí); Two Folk Melodies for Strings and Pianoforte (Klamí); Largo misterioso (Merikanto); Tone Poem, En Saga (Sibelius). 9.20, A Visit to Rosenborg Castle—a Radio Sequence. 9.50, Gramophone Concert: Lotte Lehmann: Desdemona's Aria from Othello (Verdi); Beniamino Gigli: Cavatina from the Third Act of Faust (Gounod); Humi Leiner: Delilah's Aria from the Second Act of Samson and Delilah (Saint-Saëns); Tancredi Pasero: Mephistopheles' Aria from Mephistopheles (Boito); Figaro's Cavatina from the First Act of The Barber of Seville (Rossini). 10.10, News. 10.25, Cello Recital of Offenbach Music by Rudolf Dietzmann and Volmer Norup; Duo concertant in D Op. 34, No. 1. Andante-Scherzo from the Duo Concertant in A, Op. 34, No. 3. 10.55, Dance Music, relayed from the Arena Etablissement. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsburg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 226.9 metres; 10 kW.—5.30 to 7.0, Programme in English by the I.E.C., T. St. A. Ronald, C. Danvers-Walker, and B. McNabb announcing. 5.30, Pianoforte and Song Recital for Worthing and Littlehampton

MAY 18th THURSDAY continued

Listeners: Rattle of Spring (Sinding); The First Waltz (Durand); Alice where art thou? Songs: (a) McLeod's Galley (Kennedy-Fraser); (b) O Whistle and I'll come to you (Stephens); Wasps (Holbrook); Romania (Holbrook); Songs: (a) Ave Maria (Mascagni); (b) Song (Coledige Taylor); Liebestraum (Liszt); In the Gloom (Harrison); Prelude in C Sharp Minor (Rachmaninov). 6.15, Concert for Brighton and Home Listeners: Selections from Shows: Wonder Bar (Katscher); Selection from The Show Boat (Kern); Airs from The Maid of the Mountains (Fraser-Simson): (a) Live for To-day; (b) A Bachelor Gay; Selection from (a) Waltzes from Vienna (Joh. Strauss); (b) White Horse Inn (Stolz-Benatzky); The Night was made for Love, from The Cat and the Fiddle (Kern); Selection from The Dubarry (Millocker-Mackeben). 7.0, Radio Gazette. 7.20, News. 7.30, Light Music on Gramophone Records. 7.45, The Listeners' Half-Hour and News. 8.30 till 10.0, Programme relayed from the Town Hall, Rouen. 8.30, Book-keeping Lesson and Literary Review. 8.45, Vocal and Instrumental Concert. 10.0, Dance Music by the Heolians: Say it isn't so; Wanderer; How'm I doin'? Let's all sing like the Birdies sing; The Old Man of the Mountains; Try a Little Tenderness; Let's put out the Lights; When the Morning rolls around; Let's all dance the Polka; We will always be Sweethearts; Hummin' to Myself; What would you do? How are you? Night shall be filled with Music. 11.0, Organ Recital: Overture, Poet and Peasant (Suppe); Bells across the Meadow (Ketelbey); To a Wild Rose (Macdowell); Minuet antique (Waltling); Le cygne (Saint-Saëns); Waltz Suite No. 3 (Coledige Taylor); Selb'n Rosmarin (Kreiser). 11.30, Vocal Concert: My Ain Folk (Lemon); Silver Threads among the Gold (Danks); Three Fishers went Sailing (Traditional); Quartet, Molly on the Shore (Grainger); On the Banks of Allan Water (Horn); Love's Old Sweet Song (Molloy); Caller Herrin' (Traditional); Quartet, Cherry Ripe (Traditional). 12 Midnight, Club Concert for Sutton and Surbiton Listeners: The Mad Major (Alford); Songs: (a) Wonderful you, (b) When the Lilac blooms again; Magic Notes (Steininger); Duets: (a) Paradise, (b) Keeping out of Mischief; The Whistler and his Dog (Pryor); Songs: (a) Every little Kindness, (b) Try a Little Tenderness; Happy Feet; Duets: (a) A Paradise for Two (Fraser Simson); (b) My Life is Love (Fraser Simson); Selection from San Toy (Monckton). 1.0 a.m. (Friday), Banjo Solos: Medley of Popular Airs; Heather Bloom; The Buffoon; The Wedding of the Painted Doll; Vocal Duets: (a) Adeline, (b) Sweeping the Clouds away; Riverside; Selection from Faust. 1.30, Songs and Pianoforte Duets; The First Week-end in June (Ellis); I'm in the Market for you (Hanley); Sweet Temptation (Young); Pianoforte Duets: Selection from Bow Bells (Sullivan); I fell for you (Walker); Just like in a Story Book (Hauley); Who Cares? (Hackworth); Pianoforte Duet: Selection from The Cat and the Fiddle (Kern). 2.0, Dance Music by the Heolians: Two Little Blue Little Eyes; That's when I learned to love you; I love you, believe me I love you; Gipsy Dream Rose; My Heart belongs to the Girl who belongs to Somebody Else; The Moon is Low; Beside an Open Fireplace; Kitty from Kansas City; Reminiscing; My Cigarette Lady; I still remember; It must be you; Mary I love you; If I had a Girl like you; Just a little closer. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT
1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert by a Nazi Band: Birthday March (Kühme); Procession to the Minister from Lohengrin (Wagner); Ein Blütenkranz (Weber); Anzug der Stadtwahe (Jessel); Deutscher Sang (Hannemann); Badenweilermarsch (Fürst). 5.50, Economic Notes. 6.0, Talk: Goethe and the French Revolution. 6.30, Talk: Hunting Wild Horses in Germany. 6.50, Time, Programme Announcements, Weather, and Economic Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, See Stuttgart. 9.15, Popular Music on Gramophone Records. 10.0, A German Almanac. 10.15, Time, News, Weather, and Sports Notes.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG
Call ha (in Morse); 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,119 kc/s, 277.4 metres; Hanover, 830 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m.,

Variety Programme. 6.40, Talk for Country Women. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0 (from Hanover), Ehrn Sackmann predigt!—Radio Scenes from the Life of the Strange Hanoverian Preacher, Jobst Sackmann (1718). 9.10 (from Hanover), Lower Saxony in Music—Concert by the Symphony Orchestra of Unemployed Musicians: Overture, Wadleben (Kücken); Was mir der Wald erzählte (Leonhard); Geheimnisvoller See (Schroeder); Scherzo, Sonnenkind und Wolkenmann (Clemens); Wasserwagen-Walzer (Meyer-Stolzenau); March, Wo der Böhmte Fluten rauschen (Ritzau). 10.10, Time, Weather, Announcements, Sports Notes, and Police Report. 10.20, Topical Talk. 10.30, Concert of Folk Music by the Erich voran Mandoline and Guitar Orchestra and the Station Chamber Orchestra. Solist, Heinrich Niederlitz (Concertina); Potpourri of Modern Viennese Folk Music (Kozak); Mandoline and Guitar Orchestra: Selection from Bocaccio (Suppe); Concertina Solo, Einzug der Frühlingskinder (Niederlitz); Mandoline and Guitar Orchestra: Waltz, Twilight (Sartori); Concertina Solo, Tanz der Kohole (Niederlitz); Mandoline and Guitar Orchestra: March, Junges Blut (Blum); Three Bavarian Dances (Pacherweg).

HANOVER.—See Hamburg.

HEILSBURG
1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 622 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. In the interval at 1.20 News. 2.30 to 3.0, Interval. 3.0, Agricultural Prices and Exchange. 3.30, Programme for Young People. 4.0, Book Review. 4.20, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Le roi d'Yvetot (Adam); Tränmerei (Schumann); Schummerlied (Schumann); Faust Waltz (Gounod); Rhapsody No. 9 (Carnaval de Pesth (Liszt); Serenade, Op. 7 (R. Strauss); Ländler (Pacherweg). 5.45, Talk: The Prevention of Blindness and the Education of the Blind. 6.15, Agricultural Prices. 6.25, Agricultural Talk. 6.50, Weather. 7.0, Transmission for all German Stations; relayed from Berlin (Deutschlandsender). 8.0, Concert by the Elbing Mandoline and Guitar Society. 8.30, Gallische Hörner—Radio Play (D'Haussonville and Ludwig von Wohl). 9.25, Recital of Old German Folk Song Duets by Käthe Grundmann (Soprano); and Toni Scholtz (Contralto). 9.50, Elementary English Lesson. 10.15, News.

HILVERSUM
1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Algemeene Vereeniging Radio Omroep. 11.41 a.m., Concert by the Wireless Orchestra, conducted by Nico Treep. 12.40 p.m., Good Will Day Celebration Programme. 1.0, Orchestral Concert (cont'd.). In the Mystic Land of Egypt (Ketelbey); March (Becker); Selection from Les Saltimbanques (Ganne); Elfengelüster (Rhode); Pavlova (Meyer-Beilmund); Selection from Lilac Time (Schubert-Berté); Quand l'amour meurt (Cremieux); March, Stars and Stripes (Souza). 1.55, Interval. 2.10, Violin and Pianoforte Recital by Boris Linsky and Egbert Veen: Sonata in B Sharp Minor (Borghi); Serenade from Frasquita (Lehár); Les graces naturelles (Couperin-Flechte); Sicilienne (Paradis-Dushkin); Gavotte (Glick-Flesch). 2.40, Dress-making Lesson. 3.25, Popular Music on Gramophone Records. 3.40, Programme for Hospitals. 4.10, Song and Pianoforte Recital by Henriette van Broemen and Ety Niehorster: Des Fischers Liebesglück (Schubert); Der Nussbaum (Schumann); Träume (Wagner); Ständchen (R. Strauss); Elegy (Dupare); Au pays où se fait la guerre (Dupare); Mandoline (Debussy). 4.40, Programme for Children. 5.10, Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, Die schöne Galathee (Suppe); Selection from The Pearl Fishers (Bizet); Am stillen Herd (Wagner); Hofballtänze (Lanner); Elegy (Filipucci); Evening Festival in Havanna (Siede); Chinese Street Serenade (Siede); In the Shadows (Finck); Trepak (Bulgerian); Variations on 's kommt ein Vogel geflogen (Recktenwald); Gavotte Caprice (Bortkiewicz); Selection from Les cloches de Corneville (Planquette); March, Spring (Blon). In an interval at 6.10, Sports Talk. 7.5, Intermezzo. 7.10, Talk on Advertising. 7.40, Time and News. 7.45, Talk. 8.0, Requiem (Faure), by the Utrecht Municipal Orchestra, Choir, and Soloists. 8.55, Radio Play. 9.40, Concert of Light Music by Kovacs Lajos and his Orchestra. Soloist: Bob Scholte (Songs). In an interval at 10.40, News. 11.40 (approx.), Close Down.

HORBV.—See Stockholm.

HUIZEN
160 kc/s, 1,875 metres; 8.5 kW.—10.20 a.m. to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 10.20, Gramophone Records of Variety Music. 11.10, Religious Address. 11.40, Police Notes. 11.55, Con-

cert by the K.R.O. Orchestra, conducted by M. van 't Woud. 1.40 till Close Down. Programme of the Christian Radio Society (N.C.R.V.). 1.40, Handicraft Lesson. 2.40, Gramophone Records of Variety Music. 3.10 to 3.40, Interval. 3.40, Bible Reading. 4.40, Violin Recital; Sonata da camera (Nardini); On Wings of Song (Mende-Issohn); Gramophone Records; Amlustian Romance (Saracate); Polonaise in D (Wieniawsky). 5.25, Handicraft Lesson for Young People. 5.55, Talk. 6.25, Dress-making Lesson. 6.40, Police Notes. 6.55, Religious Notes. 7.10, Press Review. 7.40, Concert of Popular Music. 8.40, Talk. 9.10, Concert of Orchestral and Organ Music: Festival Overture (Leutner); Suite, Quintessenzen (Morena); Waltz, Tales from the Vienna Woods (Strauss); Potpourri, Hallo Hallo Hier Wien (Morena); The Mill in the Black Forest (Ellenberg); Donansagen (Fueik); Heil Europa (Blon); Fantasia, Dream Pictures (Lumbye). In an interval from 10.0 to 10.10, News. 10.40, Gramophone Concert of Popular Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS
1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements Guide, News, Financial Notes, and Racing Results. 8.10, Talk on Fashions. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert (cont'd.). 12 Midnight till Close Down, Programme in English by the I.B.C. H. K. Hiteheek announcing. 12 Midnight, Vocal and Orchestral Concert: Songs: (a) Vienna, City of my Dreams (Loekton); (b) I feel you near me; (c) Kathleen Mavourneen (Cranford); Grasshoppers' Dance (Bucalossi); Songs: (a) The Song of Songs (Moya); (b) A Pair of Blue Eyes; (c) Killarney (Balfe); The Wedding of the Rose (Jessel). 12.30 a.m. (Friday), Dance Music: Stevedore Stamp; Misty morning; The Diety Quilt; Saratoga Swing; I'm so in love with you; Washboards get together; Shout 'em Aunt Tillie; Kazoo. 12.57 a.m., I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOBICE.—See Prague.

LAHTI
167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.40, Sonata for Violin (Kumla). 7.5, Talk. 7.30, Concert by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG
635 kc/s, 473 metres; 60 kW.—12.50 p.m., Weather, Time, and News. 1.0, Concert conducted by Eysoldt. Soloist: Friedel Schröder (Soprano). In the interval at 2.0 (approx.), News. 2.30, Sponsored Programme with Gramophone Records. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Notes on the Broadcasts for Schools. 4.0, Educational Talk: Geography. 4.30, Concert of Modern German Chamber Music. Angela Litterski (Soprano), Martin H. Steinkrüger (Pianoforte), and Paul Richardtz (Violin); Pianoforte Solos (Haas): (a) Selection from Hausmärchen I, Op. 35; (b) Elegy No. 1 from Alte unnenbare Tage, Op. 42; Songs (Haas): (a) Eingang, and Schenken abends, from the Christlieder, Op. 74; (b) Leises Lied, and Ständchen, from the Heimliche Lieder der Nacht, Op. 54; Heimat—Eight Pieces for Violin and Pianoforte (Schmid); Pianoforte Solos (Reger): (a) Gavotte from Aus meinem Tagebuch; (b) Air from the Träume am Kamin, Op. 143; Songs from Schlichte Wiese, Op. 76 (Reger); (a) Mittag; (b) Maienmacht; (c) Mein Schätzlein; Suite in A Minor, Op. 108a, for Violin and Pianoforte (Reger). 5.50, Recitations. 6.0, Talk: Fritz Reuter's Westphalian Friend, Hermann Grashof. 6.25, French Conversation. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, News. 8.5, Radio Report from the Minister Recruiting Office (on Gramophone Records). 8.30, Brahms Concert by the Station Orchestra, conducted by Buschköter. Soloist: Edwin Fischer (Pianoforte); Pianoforte Concerto in B Flat; Symphony No. 2 in D. 10.5, News and Sports Notes. 10.30, Serenade and Dance Music, conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG
769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Weather and Time. 12.5 p.m., Song Recital on Gramophone Records. 1.0, News. 1.15, Concert of Operetta Music, on Gramophone Records, followed by News. 2.0, Film Review. 2.40, Zither Recital by Paul Renk. Serenade in G. Op. 65 (Haustein); Minnelied No. 4 (Albert); La Malinconia (Albert); Gavotte in A Minor, Op. 54 (Haustein). 3.0,

Handwork for Children. 3.35, Exchange Quotations and Market Prices. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen. Festicher Marsch (von Vignani); Overture, Il ritorno di Tobia (Haydn); Selection from The Merry Wives of Windsor (Nicola); Talk: Touring in the Romsberg District; Overture, Madlin (Reinecke); Two Intradas for Strings (Hussler); Seven Dances (Frischenhager); Overture, Der faule Hans (Ritter); Rigaudon in F Minor (Wachs); Carnaval a Paris (Swendson). In the interval, Reading of Thuringian Stories. 5.50, Economic Notes, Weather and Time. 6.0, Talk for Taxpayers. 6.10, Talk: Employees' Insurance. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Topical Talk. 8.10, Jerry and Bätely—a Play (Goethe) with Incidental Music by Erwin Dresel. 9.25, News. 9.35, Sonata for Cello. 10.50, News and Close Down.

LINZ.—See Vienna.

LJUBLJANA
522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, Italian Lesson. 7.30, The Letter Box. 8.0, Violin Recital by M. Ruppel. 8.45, Concert by a Vocal Quintet. 9.30, Accordion Recital by M. Pihli. 10.0, Weather and News. 10.15, Vocal Quintet Concert (cont'd.). 11.0 (approx.), Close Down.

LYONS
LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette. 8.30, Symphony Concert, conducted by Pierre Lorraine; Soloist: Yves Barnes (Baritone); Ballet russe (Luigini); Baritone Solo, Evocation (Blanc-Dauphin); Andante (Missa); Aria from The Magic Flute (Mozart); Orchestral Suite, Mugnette (Missa); Goodwill Day. Transmission—Message from the Children of Wales to the Children of other Lands; Turkish March (Mozart); Baritone Solo, La Procession (Franck); Violin Solo, The Rain (David); Baritone Solo (Schubert); In the Harbour of Port Said (Armandola). After the Concert, Light Music and News.

MADRID
UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Radio Journal, and Programme for Children. 9.15, News Bulletin and Political Review. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes, Time Signal, and Political Review. 10.45 (approx.), Spanish Celebrities before the Microphone—Laura Pinillos and Lino Rodriguez, followed by Violin Recital by Manuel Perez Diaz and Dance Music. 12.45 a.m. (Friday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA
1,137 kc/s, 263.8 metres; 11 kW.—6.30 p.m., German Transmission: Two Talks. 7.0, See Prague. 7.25, Programme of Silesian Folk Music. 8.0, See Prague. 10.15, See Brno. 11.0 (approx.), Close Down.

MOSCOW
TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—6.30 p.m., Symphony Concert from the Radio Theatre. 9.0, Weekly Review and Answers to Correspondence in French. 9.55, Time Signal. 10.5, News Bulletin.

MDTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH
563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert, conducted by Erich Kloss: Overture, Prinzess Goldschuh (Rust); Irnelin Rose (Wolf); Suite, Finnish Lyric (Palmgren); Gärten im Frühling (Niemann); Waltz, Frühlingsbotschaft (Fueik); Selection from Paganini (Lehár); Serenade, Anelli (Becco); March, Im Fluge der Zeit (Brückner). 5.45, Agricultural Talk. 6.5, Hansel and Gretel—Play (Wilhelm Busch) with Music by Rudolf Semler. 6.45, Time, Weather and Agricultural Report. 7.0, Transmission for all German Stations relayed from Berlin (Witzleben). 8.0, Recital of Brahms' Songs by a Vocal Quartet. 8.20 (from Nürnberg), A Soldier's Life—Humorous Programme. 9.15, Symphony Concert by the Station Orchestra, conducted by Hans Winter. Soloist: Richard Staab (Pianoforte). Symphonic Burlesque, Wolkenknuckelsheim (Beer-Walbrunn); Pianoforte Concerto in A (Liszt); Till Eulenspiegel's Merry Pranks (R. Strauss). 10.20, Time Signal, Weather Report, News and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO
277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s,

MAY 18th

THURSDAY

continued

447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres; 5.0 p.m., Concert of Popular Music by the Station Orchestra, conducted by Hugo Kramm. 6.0, German Lesson. 6.30, Divine Service. 7.0, Announcements, Weather and News. 7.30, Chopin Pianoforte Recital by Rolf Brandt Rantzen. 8.0, Time Signal. 8.1, Agricultural Talk. 8.30, Song Recital by Mme. Tibell Brekke. 9.0, Reading. 9.20, Sponsored Programme. 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15 (from Fredrikstad), Choral Concert. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Agricultural Report and Giornale radio. 8.20, Gramophone Records. In the interval at 8.30, Time and Announcements. 8.45, Popular Songs. 9.45, Nicolino and Nicoletta—One Act Comedy (Tiranti). After the Comedy, Songs. 10.55, News Bulletin.

PARIS

EFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Review. 7.0, Le Journal Parle. 8.30, Gramophone Concert. Part I—Mozart Programme: Concerto for Pianoforte and Orchestra; Sonata in C for Organ and Orchestra; Turkish March. Part II: Selection from Les Cloches de Corneville (Pluquette); Melodies from No, No, Nanette (Youmans); Du und du (Strauss); Pluie d'or (Waldteufel); In a Pagoda (Briatton); Morena (Silvestri); Potpourri of Marches (Ciere). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Le Journal Parle. 7.0, Programme for Children. 7.30, Light Music on Gramophone Records. 8.0, Agricultural Talk. 8.15, Interval. 8.30, Sponsored Programme. 8.45, Interval. 9.0, The Circle—Play (Somerset Maugham) adapted by M. de Carnehue. 11.0, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—12 Noon, Protestant Address: The First Page of the Bible. 12.30 p.m., Orchestral Concert: Request Programme: Overture, Figaro (Mozart); Romance in F for Violin (Beethoven); Gramophone Records: Songs from (a) Les Dragons de Villars (Maillart), (b) La Fille de Madame Angot (Lecocq), (c) La Mascotte (Audrath), (d) Monsieur Beaucaire (Messager); Selection from Werther (Massenet); Barcarolle, from The Tales of Hoffmann (Offenbach); Gramophone Records by Georges Cléopffer: (a) La Bonne Hôtesses, (b) Noces de campagne; Le Sabotier from Hans the Fute-Player (Ganne); Selection from Louise (Charpentier); Ballet égyptien (Luigini). In the intervals at 1.0, Exchange, News, and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Gramophone Records. 6.45, Legal Talk. 7.0, Talk: French Poetry after 1870—the Second Generation of Symbolists, 1900-1910. 7.20, Orchestral Concert: Anubade (Mounglet); Selection from Rhodopé (Ganne); Trois Airs de Ballet (Dubois). 7.45, Commercial Prices, News, and Review of the German Press. 8.0, Jeanne—Play (Duvernois). In the intervals at 8.30, News and Weather, at 8.40, Review by Christophe, and at 9.15, Press Review and News. 10.0, Gramophone Concert: Selection from Le Coq d'or (Rimsky-Korsakov); Aria from The Magic Flute (Mozart); Prelude and March from the Algerian Suite (Saint-Saëns).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30, Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 7.55, Care of the Garden, by Alfred C. Hottes. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours. 8.30, Radio Sky Pilots. 8.45, State Federation of Pennsylvania Women. 9.0, Teaberry Baseball Scores. 9.5, Thursday Special, from New York. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be Announced. 10.0, Teaberry Baseball Scores. 10.5, Programme to be Announced. 10.15, Dick Darling, from New York. 10.30, Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Programme to be Announced. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Vick's Song Weavers. 11.35, Riggs and Moke. 11.45 to 3.15 a.m. (Friday), New York Relay. 11.45, To day's News, by Lowell Thomas. 12 Midnight, Pep-sodent Amos 'n' Andy. 12.15 a.m., A. and P. Programme. 12.30, Concert Footlights. 12.45, Merle Thorpe Talks. 1.0, Captain Diamond's Adventures. 1.30, Rin Tin Tin Thrillers. 1.45, Thurston, the Magician. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Time Signal and Green Brothers' Musical Varieties.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW. 4.10 p.m., See Brno. 5.10, Talk on Economics. 5.20, See Brno. 5.50, Talk. 5.55, Gramophone Records. 6.5, Agricultural Talk. 6.15, Talk: The American Worker To-day. 6.25, News in German. 6.30, German Transmission: Review of New Books, and Agricultural Talk. 7.0, Chimes and News. 7.10, Advanced English Conversation. 7.25, See Moravaká-Ostrava. 8.0, Talk on the following Transmission. 8.15, Programme in memory of the First Broadcast from the Prague Station on May 18th, 1923: Ruzena Topinkova (Soprano), Josef Hasek (Violin), Emil Cernak (Cornet), and Frantisek Vozenilek (Cello). 8.45, Talk by Mr. E. Svoboda: How we began Ten Years Ago. 9.0, Time Signal. 9.2, Concert by the Station Orchestra, conducted by Prof. Karel B. Jirak: Festival Overture in C, Op. 70 (Foerster); Symphonic Poem, Vyschrad (Smetana); Symphonic Poem, Zaboji, Slavoj and Ludek (Filibich); Overture, Op. 67, The Hussites (Dvorak); Sokol March (Suk). 10.0 (in the interval), Time Signal. 10.10, News, Announcements, and Sports Notes. 10.25, Concert from Brno. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Geneva, 395 kc/s, 760 metres.—5.0 p.m., A Message to the Children of Wales from the Schoolchildren of French Switzerland. 7.0 (from Geneva), Talk. 7.30 (from Geneva), Weather, News, and Announcements. 8.0 (from Lausanne), L'Autre Fils—Comedy in Three Acts (Decourcelle). 9.50, News and Weather. 10.0 (from Lausanne), Concert of Popular Songs on Gramophone Records. 10.30, Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., English Lesson. 7.0, Weather Report. 7.5, Concert of Chamber Music. Soloist: Nina Karins (Songs). Trio for Pianoforte, Violin and Cello (Arensky); Songs (Duparc): (a) Soupir, (b) Le manoir de Rosemond, (c) Extase; Three Songs (Pierre Weill); Diversissement for Wind Orchestra (Bernard). 8.5, News. 8.20, Orchestral Concert, conducted by J. Medins. Midsommarvaka (Alfvén); Introduction to The Ruby (E. d'Albert); Selection from La Bohème (Puccini); Selection from The Czarevitch (Lehar). 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO; 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 p.m., Humorous Talk. 1.5 to 2.15, Concert of Variety Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Concert. Soloists: Nilde Pignatelli (Violin), Margherita Cossa (Soprano). Violin Solos: (a) Andante in E Flat (Muller), (b) Allegretto (Boccherini-Kreisler); Songs: (a) Aria from William Tell (Rossini), (b) Serenata Indiana (Castellmovo-Tedesco); Syncopated Music: Soprano Solos: (a) Aria from Melenis (Zandonani), (b) Giorno per giorno (Alfano), (c) Tuscan Song (Del Val le de Paz); Violin Solos: (a) Andante con moto (Casavola), (b) Presto (Clementi). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 7.10, Tourist Report. 7.20, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Records of Light Music. 8.30, Giornale Radio and Sports Notes. 8.45, Concert of Variety Music and Dance Music. In the interval, Talk on Literature and Art. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports. 12 Midnight to 3.0 a.m. (Friday), New York Relay. 12 Midnight, Fleischmann Hour, with Rudy Valler's Orchestra. 1.0 a.m., Capt. Henry's Show Bout. 2.0, Lucky Strike Hour, followed by Programme Résumé. 3.0 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10.20 a.m. (from Basle), Broadcast for Schools. 10.50 to 11.59, Interval. 11.59, Time Signal from Neuenburg Observatory and Weather. 12 Noon (from Basle), Cinema Organ Solos on Gramophone Records. 12.30 p.m., News Bulletin. 12.40 (from Basle), Concert by the Kreino Orchestra, conducted by Siegfried Kremlo. 1.25 (from Basle), Weather and Exchange. 1.30 to 5.0, Interval. 5.0 (from

Zürich), Orchestral Concert. 6.0 (from Berne), Popular Music on Gramophone Records. 6.30 (from Basle), Reading. 7.0 (from Basle), Time, Weather, and Traffic Report. 7.15 (approx.), Light Music on Gramophone Records. 7.30 (from Basle), Italian Opera Music on Gramophone Records. 8.0 (from Basle), Italian Lesson. 8.30, Concert by the Basle Mandoline Quartet. 9.0, Weather and News. 9.10 (from Basle), Chamber Music—Concert by the Benz Quartet. 9.55, (concert by the Swiss Radio Orchestra. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Talk: The Way to Peace. 5.30, Programme for Children. 5.45, Popular Music on Gramophone Records. 6.45, Elementary English Lesson, relayed from Jönköping, 1,490 kc/s, 201.3 metres. 7.15, Weather and News. 7.30, Talk: The Swedish Coast Now and in Past Times. 8.0, The Lysistrata—Play (Aristophanes), translated and arranged for Radio by Ivar Harrie and Hjalmar Gullberg. 9.30, A Visit with the Microphone. 9.45, Weather and News. 10.0, (from Boden), Military Band Concert, conducted by Einar Raberg. Marcia sinfonica (d'Orzi); Czardas from Der Geist des Wolewooden (Grossmann); Waltz, Moonlight on the Alster (Petras); Selection from La Gioconda (Ponchielli); Crescendo (Lasson); Potpourri, Välkommen i de gröna (Olsson); March (Sundgren). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Music. 12 Noon, Jazz Music, conducted by Roskam. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers. 2.0, Programme for Children. 3.0 to 4.15, Interval. 4.15, French Elocution Lesson. 4.30, Programme for Children, relayed from Bordeaux-Lafayette. 6.0, Talk in German: The French Renaissance. 6.15, Talk for Women: The Social Work of the Red Cross. 6.30, Orchestral Concert, conducted by Maurice de Villers; Overture, Gil Blas (Trémisot); Symphonic Poem, Fatum (Trémisot); Selection from La Gioconda (Ponchielli); Suite brève (Büsser); Golliwog's Cake Walk (Debussy). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German and Lottery Results. 8.30, Popular Music on Gramophone Records. 8.45, Concert by the Municipal Orchestra, relayed from the Orangery Restaurant; Conductor: E. G. Münch; Soloist: G. Drillon (Violin): Overture, Light Cavalry (Suppé); Waltz, Les sirènes (Waldteufel); Ballet Music from Ali-Baba (Cherubini); Overture, Les dragons de Villars (Maillart); Violin Solo: Aubade à Nimou (Lacombe); Gavotte (Lacombe); Orchestral Suite, Bouton d'or (Pierné). In an interval at 9.30 (approx.), Press Review in French. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg; 527 kc/s, 570 metres.—12 Noon, Concert of Viennese Operetta Music, relayed from Pforzheim; The Pforzheim Symphony Orchestra, conducted by Julius Schröder. 1.15 p.m., Time, News, Weather, and Programme Announcements. 1.30, Gramophone Concert of Viennese Waltzes; Wiener Blut (Joh. Strauss), Wiener Herzen (Translatent); Wiener Praterleben (Translatent); Wiener Madin (Ziehrer); The Blue Danube (Joh. Strauss); Wiener Zugvögel (Translatent); Wiener Frauen (Joh. Strauss); Wiener Bouhons (Joh. Strauss). 2.0, Programme arranged by the Post Office, with Gramophone Records. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 3.30, Programme for Young People: A Spring Ramble. 4.30, See Frankfurt. 5.50, Time, Weather, and Agricultural Notes. 6.0, Talk: The Family, the Nation, and the State. 6.25, Talk: The Alemanni and their Dominions. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Orchestral Concert, conducted by Otto Seyfert: Overture, Fra Diavolo (Auber); Selection from A Masked Ball (Verdi); Overture, Donna Junotta (Suppé); Waltz, Wo die Zitronen blühen (Joh. Strauss); Selection from Schön ist die Welt (Lehar); Waltz from Intermezzo (R. Strauss); A Comedy Overture (Reznicek). 9.15, Whitman 1933—Swabian Programme for Germans in all Parts of the World—The Baltic, Transylvania, the Banat, Carinthia, South America, and North America. 10.0, Time, News, Weather, and Programme Announcements. 10.20, Pianoforte Pieces, Op. 76 (Brahms), by Dagmar Benzing. 10.50 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

770 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—7.30 p.m., accordion Solos. 7.45, Orchestral Music: Entr'acte from Carmen (Bizet); Selection from Samson and Delilah (Saint-Saëns); Prelude to Werther (Massenet). 8.0, Light Music. 8.15, Programme by a Viennese Orchestra. 8.45, Extracts from Le Jongleur de Notre Dame—Opera (Massenet). 9.15, Music by a Symphony Orchestra. 9.45, Concert: Pleurez mes yeux, from Le Cid (Massenet); Aria from Faust (Gounod); Aria from The Fair Maid of Perth (Bizet); Military Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Orchestral Music. 11.15, Chansonnettes. 11.20 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Military Band Concert: Selection from San Toy; A Voyage in a Troopship; Piccolo Solo: La Grive; Ballad Memories; The Empire March. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Friday), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—10 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Concert of Variety Music. 6.15, Giornale Radio, Agricultural Report, and Dopplavoro Notes. 7.0, Time, Tourist Report, and Gramophone Records of Light Music. 7.20, Giornale Radio. 7.45, Popular Music on Gramophone Records. 8.0, Announcements, Giornale Radio, Weather, and Gramophone Records of Variety Music. 8.20, Introductory Talk on the following Transmission. 8.30, Germania—Opera in Three Acts (A. Franchetti). In the intervals, Talk and Literary Review.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 215.5 metres.—5.15 p.m., Concert of Music by Franz Mittler, played by the Prix Quartet. The Composer at the Pianoforte. Quartet in A Minor; Variations on a Childish Theme; Capriccio Opus 10; Spieluhr. 6.0, Theatre Review. 6.10, Talk: The Vienna Congress of the International Board of Trade. 6.35, Everyday Impressions. 7.0, Concert by the Oscar Jascha Orchestra. Overture, Josephine Guimayer (Knepler); Selection from Manon (Massenet); Waltz, Bei uns 'n'haus (Joh. Strauss); Song, Trammerschute (Loewe-Jascha); Selection from The Dance of the Dragonflies (Lehar); Das war die Zeit der Blüten (Sieczynski); Intermezzo, Pierrots' Liebeswerben (Filibich); Barataria March (Komzak). In the interval at 7.30, Time, Weather Forecast, Alpine Weather, and Programme Announcements. 8.15, Talk: The First International Flight over the Austrian Alps. 8.20, Topical Talk. 8.35, Talk: The Life and Achievements of the Germans in the East. 9.0, Concert of Music by Contemporary German Composers, by the Symphony Orchestra, conducted by Oswald Kabasta. Soloist: Christa Richter (Violin); Violin Concerto in B minor, Op. 34 (Pfitzner); Symphony in B minor, Op. 15 (Max Trapp). In an interval at 9.35 (approx.), News and Weather Forecast. 10.30, Market Prices. 10.35, Gramophone Concert of Light Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57, Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Popular Music on Gramophone Records. 12.30, Weather Report. 12.35, Twenty-seventh Concert for Schools by the Warsaw Philharmonic Orchestra, relayed from the Philharmonic. 2.0, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Light Music on Gramophone Records. 3.35, Review of Women's Newspapers. 3.50, Popular Music on Gramophone Records. 4.25, Intermediate French Lesson. 4.40, Talk. 5.0, Variety Music on Gramophone Records. 5.40, Topical Talk. 5.55, Programme Announcements. 6.0, Concert of Light Music and Dance Music. In the interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural Notes. 7.30, Reading. 7.45, Radio Journal. 8.0, Concert by the Station Orchestra, conducted by St. Nawrot; Soloist: St. Miller (Songs). In the interval, Sports Notes and Radio Journal. 9.30, Introductory Talk to the following Transmission. 9.35, Caesar and Cleopatra (Norwid), Music arranged by Nawrocki. 10.15, Dance Music. 10.55, Aviation Weather Report. 11.0, Dance Music from the Gastronomia.

ZURICH.—See Schweizerischer Landeseinder.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Gardening Talk. 7.15, Literary and Dramatic Talk. 7.30, Time Signal. 7.31, The Station Orchestra. 7.50, Soprano Solos by Violet Pearson. 8.0, The Station Orchestra. 8.10, Soprano Solos by Violet Pearson. 8.20, Lecture Recital by Grace O'Brien: "Dance Rhythm in Modern Music." 8.50, The Station Orchestra. 9.10, Opera Songs by W. G. McLaughlin. 9.30, The Station Orchestra. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

EAJ 1, 860 kc/s, 348.8 metres; 5 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Concert. 8.30, Exchange Quotations. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral. Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. 10.10, Concert by the Station Orchestra: March (Ackermans); Selection from Der Rosenkavalier (R. Strauss); Overture, Prince Igor (Borodin). 10.20, Modern Dance Music. 11.0, Vicent Diez de Tejada reads from his own works. 11.15, Orchestral Concert, relayed from the Café Espanol. In the interval at 12 Midnight, News. 1.0 a.m. (Saturday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—5.30 to 6.30 p.m., Popular Music on Gramophone Records. 8.0, Agricultural Notes. Tourist Talk, and Dopolaro Notes. 8.20, (Giornale Radio and Weather Forecast. 8.30, Time Signal and News. 8.45, Concert of Operatic Music; Soloists, M. de Santis Bruno (Soprano), Michele Fiore and D'Angelo (Bass); Carnival (Ragni); Bass Solo from L'Elisir d'amore (Donizetti); Selection from Lorelei (Catalani); Soprano Solo from Lamico Fritz (Mascagni); Bass Solo from The Barber of Seville (Rossini); Selection from La Gioconda (Ponchielli); Overture, Le Femme litigieuse (Candoni); Bass Solo from Don Pasquale (Donizetti); Soprano Solo from La Sonnambula (Bellini); Intermezzo from Act II of Adriana Lecocqeur (Cilea); Bass Solo from "The Secret Marriage" (Cimarosa); Soprano Solo from Carmen (Bizet); Selection from I Compagnoni (Ricetti). In the interval, Reading. 10.30, Popular Music on Gramophone Records. 10.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Light Music on Gramophone Records. 7.20, Talk. 8.0, Quintet for Clarinet, two Violins, Viola, and Cello, Op. 115 (Brahms). 8.30, A Radio Play. 9.15, Concerto for Cello (Saint-Saëns). 10.15, News, followed by Concert from the Ratnicki Dom.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Concert. After the Concert, Second Weather for Farmers. 12.55 p.m., Time Signal. 1.45, News. 2.0, Popular Music on Gramophone Records. 3.0, Talk for Girls. 3.30, Weather and Exchange. 3.45, Review of Periodicals. 4.0, Concert from Leipzig. 5.0, Educational Talk. 5.25, Topical Talk. 5.35, Song Recital by Else Hinkel: Widmung (Schumann); Meinhardt (Brahms); Wie Melodien zieht es (Brahms); Die Nacht (R. Strauss); Morgen (R. Strauss); Traum durch die Dämmerung (R. Strauss); Frühlingssonne (Trunk); Nachtgesang (Trunk). 6.0, A Poem. 6.5, Pianoforte Recital by Romauld Wikarski: Moment musical (Schubert); Scherzo (Schubert); Gavotte (Reger); Wut über den verstorbenen Groschen (Beethoven); Rondo alla turca (Mozart). 6.25, Talk: Roman Law and German Law. 6.50, Weather for Farmers and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, See Langenberg. 10.15, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Concert from Frankfurt. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Gossip over the Coffee cups—a Variety Programme with Eugen Rex. 6.30, Hints for the Week-end. 6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.5, Announcement. 8.10, Three Short Dialogues on Written and Spoken German. 8.30, The Path of Opera—a Musical Picture for Soloists, Choir and Orchestra (Hans Tessen-Mantred Gurlikt). 9.30, Tanzlied, Op. 83 (Hugo Hermann). by the Station Orchestra, conducted by Eugen Jochum. 10.0, Weather, News and Sports Notes. 10.15 (approx.). Dance Music, relayed from the Roof Garden of the Café Berlin. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BERMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

FRIDAY

MAY THE NINETEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL London Music Festival concert, from the Queen's Hall.
LONDON REGIONAL W. C. Pepper's White Coons, a concert party show.
MIDLAND REGIONAL Requests: Orchestral programme.
NORTH REGIONAL Ballad concert.
WEST REGIONAL "Gaffer and Gavotte," a West of England programme.
SCOTTISH REGIONAL "Fiction and Fact," a revue of contrasts.
BELFAST "Masquerade in Moonlight," a romance by H. W. McMullan.

ABROAD

BARI 8.45 p.m. Concert of operatic music.
BELGRADE 8 p.m. Brahms' Quintet, Op. 115.
BERLIN 8.30 p.m. Concert of operatic music.
(Witzleben)
BRUSSELS 9.5 p.m. Mendelssohn concert by the Station Orchestra.
(No. 2)
HEILSBURG 8.10 p.m. Rossini's and Verdi's "Othello," a comparison, by the Heilsberg Opera House Orchestra.
LANGENBERG 8.5 p.m. Operetta: "Love's Awakening," by Künneke.
OSLO 8.1 p.m. Symphony concert by the Philharmonic Orchestra.
PALERMO 8.45 p.m. Opera: "La Wally," by Catalini.
VIENNA 7 p.m. Song recital by Adelheid Armhold.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.30 p.m., News Bulletin. 7.40, Educational Report. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News Bulletin. 8.30, Vocal and Orchestral Concert.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.15 p.m., Recital of Czech Songs by Zofie Napravilová. 6.40, Sports Notes. 6.55, Talk for Women. 7.0, See Prague. 7.10, Concert by the Station Orchestra, conducted by F. Dyk; Soloist, Jan Polak (Violin); Violin Concerto in D (Paganini); Suite, Roma (Bizet). 8.10, See Brno. 10.10, See Prague. 10.25 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.10 p.m., Gramophone Concert of Variety Music. 1.45, Time, Weather, News and Exchange. 2.5, Gramophone Records of the Berlin Philharmonic Orchestra. Prelude to Lohengrin (Wagner); Hymn from Alessandro Stradella (Plotow); Persian March (Joh. Strauss); Prelude from the First L'Arlesienne Suite (Bizet); Presto Angus die, dona pacem from the Missa Solemnis (Beethoven); Adagio from the Moonlight Sonata (Beethoven); March Potpourri, Fridericiana. 2.45, Programme arranged by the Post Office with Gramophone Records. 3.10, Agricultural Prices. 3.40, Dialogue for Young People. 4.10, Concert by the Fritz Wollner Orchestra, relayed from the Vaterland Café. 5.10, Natural History Talk. 5.30, Agricultural Prices. 5.35 (approx.), Programme to be announced. 6.0, Concert by the Silesian Philharmonic Orchestra, conducted by Ernst Prade. Soloists: Albert Müller-Stahlberg (Cello); Comedy Overture (Reznicek); Cello Solo; Serenade, Op. 69 (Volkmann); German Forest Idyll (Niemann); Overture, Carnival in Rome (Joh. Strauss). 6.50, Weather for Farmers, News and Cattle Market Prices. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Symphony No. 4 in E Minor, Op. 98 (Brahms), by the Silesian Philharmonic Orchestra. 9.0, Announcements. 9.10, Gen Ostland wollen wir reiten—a Radio Sequence of Yesterday and Tomorrow. 10.10, Time, Weather, News, Sports Notes and Programme Announcements. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by Bakala: Festival March (Cui); Mozartiana (Tchaikovsky); Overture to a Marionette Play (Kricka); Ballet Music (Moor); Picturesque Intermezzo (Kocian); Serbian Dances

(Sistek). 4.55, Theatre Review. 5.5, See Prague. 6.5, Talk: Creative Art. 6.15, Talk for Workers. 6.25, German Transmission; News, Sports Notes, and Dramatic Programme. 7.0, See Prague. 7.10, Reading. 7.25, Concert by the Sapanice Village Orchestra. 7.55, Talk. 8.10, Marysha—Play of Moravian Village Life in Four Acts (Alois and Vilem Mstik). 10.10, See Prague. 10.25 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.30, Gramophone Records: Selection from Lakmé (Delibes); Selection from Hamlet (Thomas). 2.0, Broadcast for Schools. 5.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps; Symphony in C (Mozart); Petite Suite (Debussy); Ballet Music from Les Erynnies (Massenet). 6.0, Talk: The Motor Car and the Amateur Driver. 6.15, Gramophone Record: Elegy (Faure). 6.25, Trois Cents Marches—Radio Sketch (L. Steingens-Hovine). 6.45, Gramophone Concert. 7.15, Talk: Convalescence. 7.30, Legal Talk and Literary Review. 8.0, Concert by the Station Orchestra, conducted by Franz André; Soloist: Mile. Colon (Songs); Egyptian March (Strauss); Selection from The Merry Widow (Lehar); Song (a) Aria from Sappho (Massenet). (b) Song from Messaline (de Lara). (c) Melody (Libeau); Russian Songs and Dances (Shirman); Padilla Potpourri (Salabert). 8.45, Medical Talk. 9.0, Concert (cont'd.): Soloist: Mme. Saey (Songs); Estudiantina (Waldteufel); Potpourri (Moreau); Minuet (Bocherini); Tambourin (Rameau); Songs: Elsa's Dream (Wagner); The Lark (Granier); Mélodie des baisers (Massenet); Old French Songs (Broustet); Selection from La Mascotte (Andran); Danse des tulipes (Van Oost); Air de Ballet (de Tyeue); Norwegian Dances (Grieg). 10.0, Le Journal Parlé. 10.10, Wireless Notes. 10.25, Concert of Light Music on Gramophone Records. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. 2.0, Broadcast for Schools. 5.0, Concert of Light Music by the Station Orchestra, conducted by Franz André. 5.45, Pallieter Programme. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans: March (Berry); Melody (Jessel); Selection from Der Teufelsreiter (Kálmán); Selection from La Périchole (Offenbach); Tarantella (Solazzi); Song from One Hour with You (O. Straus); 1933 Radio Potpourri (André and Candrix). 7.15, Talk: The Part

played by Netherlanders in the Development of Medicine. 7.30, Le Journal Parlé. 8.0, Brahms Centenary Concert, by the Station Symphony Orchestra, conducted by J. Kumps, with Commentary by J. Horemans: Academic Festival Overture; First Movement from the Fourth Symphony, in E Minor; Songs on Gramophone Records: (a) Guten Abend, gute Nacht. (b) Feldeinsamkeit. (c) Wie bist du, meine Königin. 9.0, Announcements. 9.5, Mendelssohn Concert by the Station Symphony Orchestra, conducted by J. Kumps: Overture, Fingal's Cave; Selection from A Midsummer Night's Dream; Pianoforte Solos on Gramophone Records: (a) Scherzo, (b) Rondo capriccioso, (c) Spinning Song; First Movement from the Scottish Symphony; Overture, Niserestille und glückliche Fahrt. 10.0, Le Journal Parlé. 10.10, Gramophone Records: The Moonlight Sonata (Beethoven); Bonne Nuit (Van Remnes). 10.25, Dance Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiceano Orchestra. In an interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, Light Music on Gramophone Records. 8.0, Song Recital by Mlle. Stella Simionescu: Foletta (Marchesi); La Zingara (Donizetti); Aria from Les Huguenots (Meyerbeer); Aria from Dinorah (Meyerbeer); Song (Dragoi). 8.20, Symphony Concert by the Station Orchestra, conducted by Th. Rogalsky: Ballet Suite (Glinka-Mottl); Haffner Serenade (Mozart); Symphony No. 1 in C (Beethoven). In the interval at 9.0, Talk. 9.45, Radio Journal. 10.0, Talk: The Spas of Romania.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 6.40 p.m. to 12 Midnight.—5.0 p.m., Concert by the Laci Racz Cigány Band No. 36. 5.45, Shortband Lesson. 6.10, Humorous Programme. 6.40, The Hungarian Folk Song—Lecture Recital by Bela Bartok (on Gramophone Records). 7.25, Violin Recital by Sandor Vegh: Fugue from the Violin Sonata No. 5 (Bach); Andantino (Martini-Kreiser); La capricieuse (Elgar); La ronde des lutins (Bazzini); Valse caprice (Zsolt). 8.0, Marriages are Made in Heaven—Comedy in Three Acts (Csatho). 10.0, News Bulletin. 10.15 (approx.), Concert by the Bela Bodrics Cigány Band from the Café Patria. 11.30, Danco Music from the Café Patria. Soloist: Gyula Szatho. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.15 p.m., German for Schools. 12.45, String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0 to 3.0, Interval. 3.0, Concert by Mogens Hansen's Instrumental Ensemble; Soloist: Svend Eberlein (Songs). 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Talk: Hans Andersen's Works. 6.20, German Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Talk on Social Reform. 8.0, Chimes from the Town Hall. 8.5, Russian Song Recital by Karen Hjørth, with Cello and Piano forte Accompaniment. 8.20, Uncle Vanya—Play in Four Acts (Tchekov). 9.50, Original Theme and Variations, Op. 19, for Pianoforte (Tchaikovsky), played by Palmer Jensen. 10.5, Reading. 10.15, News. 10.30, Trio Concert: Alberto Bracny (Mandoline), Kai Mortensen (Mandola), and Gunnar Frederiksen (Lute); In the Moonlight (Mont); Barcarolle (Calace); Balgellüster (Meyer-Hellmann); Melody (Paderevsky); Serenade (Moszkowsky); Military Scherzo (Marrucelli); Hungarian Scene (Pietrapertosa). 11.0 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald, C. Danvers-Walker and B. McNabb Announcing. 5.30 p.m., Concert of Light Music for Southampton and Winchester Listeners: Orchestra, Reconciliation (Drigo); Song of the Flea (Mussorgsky); The King went forth to War (Koene-man); Poem (Fibich); Pianoforte Solo: Rondo Capriccioso (Mendelssohn); Il Bacio (Arditi); Villanelle; Pianoforte Solo: Minuet in G (Beethoven); On Wings of Song (Mendelssohn); Two eyes of Grey (McGeogh); Frühlingstimen (Joh. Strauss); Babes in Toyland (Herbert). 6.15, Special Request Programme for Bournemouth and Weymouth Listeners: Valse des Alouettes (Drigo); Song, Onaway, awake beloved (Cowen); Pomp and Circumstance (Elgar); Try a little tenderness (Woods); Parade of the Tin Soldiers (Jessel); Selection from H.M.S. Pinafore (Sullivan); Brother can you spare a Dime? (Harburg); I'm playing with Fire (Berlin); Grasshopper's Dance (Bucalossi); Silvered is the Raven Hair (Sullivan);

MAY 19th

FRIDAY

continued

Narcissus (Nevin). 7.0, Radio Gazette. 7.20, Local News. 7.30, Light Music on Gramophone Records. 7.45, Agricultural Notes. 8.0, Gramophone Records and News. 8.30, Concert, relayed from Le Havre. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music by the Beolians; Looking on the Bright Side; Marta; Please don't mention it; Shadows on the Window; Just Hummin' along; Long Ago; The King was in the Counting House; Don't tell a soul; When the rest of the Crowd goes Home; What makes you so adorable; By the Fireside; Moonlight on the River; Sing Brothers; Goodnight little girl. Goodnight. 11.0, A Half-hour with Wagner: Overture, Rienzi; Walther's Prize Song from The Mastersingers; Selection from Tannhäuser; Träume; Pilgrim's Chorus from Tannhäuser; Swan Chorus from Lohengrin; March from Tannhäuser. 11.30, Vocal Concert; Chorus, Come to the Fair (Eustache Martin); Song, Garden of Happiness (Haydn Wood); Demande et Réponse (Coleridge Taylor); Chorus, Ye Banks and Braes (Traditional); Poupée valsante (Poldini); Song, Rose in the Bud (Forster); Chorus, Bells of St. Mary's; Orchestra; Waltz, Très Jolie (Waldteufel). 12 Midnight, Club Concert for Godalming and Haslemere Listeners; Country Dance from the Nell Gwynn Suite (German); Song, Little Green Heaven; Chorus, You will remember Vienna; Song, A Mother's Kiss; Morris Dance from Henry VIII (German); Song, With You (Berlin); Song, Have a little faith in me (Warren); Cherry Ripe (Traditional); Song, Home (Richards); The Empire (Tulip); Introduction and Valse Lente from Coppélia (Delibes); Songs: (a) For you alone (Geel), (b) I hear a Thrush at Eve (Cudman); Tales from the Vienna Woods (Joh. Strauss). 1.0 a.m. (Saturday), Pianoforte Solos and Songs: Popular Melodies on a Piano (Ray); One Night alone with You (Jeffreys); Selection from The King of Jazz (Whiteman); Song, Lazy Louisiana Moon; Selection from Puttin' on the Ritz (Berlin); Song, Melancholy; More Popular Melodies (Ray). 1.30, Vocal Trios; Bubbling over with Love; Painting the Clouds with Sunshine; A Bench in the Park; Waltz, My Florence; Laughing at the Rain; A Pair of Blue Eyes; I'll always be true; Mazurka, Lido Lady. 2.0, Dance Music by the Beolians: On a little Balcony in Spain; Belle of Barcelona; The One Man Band; Fiesta; How's your Uncle; Carolina Moon; Pardon Madam; I'd like to find the Guy that wrote the Stein Song; Bathing in the Sunshine; Whistling in the Dark; Choo, Choo; You're twice as nice as that Girl in my Dreams; Sweet and Lovely; How about me? Goodnight. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., See Stuttgart. 5.50, Economic Notes. 6.25, Talk: Industry on the Trier Frontier and the Versailles Decree. 6.0, See Stuttgart. 6.50, Time Signal, Programme Announcements, Weather Report, and Economic Notes. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Recital of Pianoforte Duets. 8.30, Gramophone Concert of Popular Music. 9.0, A German Almanac. 9.10, See Breslau. 10.10, Time Signal, News, Weather Report, and Sports Notes. 10.45, Orchestral Concert, conducted by Dr. Reinhold Merzen: Overture, Dream Music and Ballet Music from Alcina (Handel); Overture, Die Grossfürstin (Flotow); Comedy Overture, Mariotta (Gade); Overture, Die Heideschlacht (Holstein); Overture, The Taming of the Shrew (Goetz); Waltz Potpourri (Petras); March Potpourri (Recktenwald). 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 259.9 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Variety Programme. 6.40, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0 (from Hanover), Brunswick—a Portrait of a National Socialist State. 9.40, Choral Concert relayed from the Christuskirche, Bremen; Soloists, Heinz Kosten (Organ), and Kurt Wassmann (Tenor); Tocatta in D Minor for Organ (Bach); Choir, Wende dich zu mir und sei mir gnädig (Palme); Tenor Solo, Allmacht (Schubert); Cantilene

from the Sonata No. 11 for Organ (Rheinberger); Choir, Sehnsucht nach dem Himmel (Rosenmüller); Tenor Solo from The Creation (Haydn); Agitato Solo from Sonata No. 11 for Organ (Rheinberger). 10.30, Time and News. 10.40, Topical Talk. 10.50 (from Kiel), Orchestral concert, conducted by Hans Düring; Overture, La Sirène (Auber); Hjortenkløbe (Grieg); An den Frühlings (Grieg); Selection from Le Bourgeois Gentilhomme (R. Strauss); Serenade (Kark); Geburtstagsständchen (Klose); Suite, Am Golf von Neapel (Ehlenberg); Waltz, Song from The Cousin from Nowhere (Künneke); Waltz, Transaktionen (Jos. Strauss); Die Fahne ruft (Siede).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 682 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert: Overture. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange Rates. 3.30, Programme for Children. 4.0, Talk for Women. 4.30, Concert from Leipzig. 5.45, Talk: The Population Question in Germany from a Political Point of View. 6.15, Agricultural Prices. 6.25, Pianoforte Recital by Ernst Rudolph: Moments musicaux, Op. 94, in C, A Flat, and E Minor (Schubert); Ländler, Op. 171 (Schubert); Kinderszenen, Op. 15 (Schumann). 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, News. 8.10, A Comparison of the Last Acts of Rossini's and Verdi's Versions of Othello; Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Soloists: Josef Poerner and Elisabeth Hallstein. Introductory Talk by Dr. Herbert Gerigk. 9.25, News Bulletin. 9.30, Josef Martin Bauer reads from his own works. 10.0, Weather, News, and Sports Notes. 10.15, Johann Friedrich Reichardt as a Violinist—Recital by Prof. Hermann Diener (Violin) and Prof. Josef Müller-Bhattau (Harpisichord). Introductory Talk. Music by Reichardt's Teachers: (a) Extracts from the Caprices (Benda), (b) Adagio from a Sonata (Veichtner); Sonata in E Flat for Violin (Reichardt); Sonata in B Flat for Violin and Harpsichord (Reichardt).

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Gramophone Records of Light Music. 12.10 p.m., Concert of Light Music by Kovace Lajos and his Orchestra. Songs by Bob Scholte. 1.40, Talk. 2.10, Concert by the Wireless Orchestra, conducted by Neo Treep: March (van Duinen); Overture, Die Frau Meisterin (Suppé); Ballet Suite from Sylvia (Delibes); Türkische Scharwache (Michaelis); Einzug des Schneekönigins (Noack); Light Music on Gramophone Records; Selection from Falstaff (Verdi); Frühlingsbotschaft (Fueick); Potpourri of Eysler's Music (Bruby). 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Trio Concert: Overture, La Fille de Madame Angot (Lecocq); Selection from a Suite (Piermé); Selection from L'Enfant prodige (Debussy); Souvenir (Drda); Poupée valsante (Poldini-Kreisler); Selection from Der Opernball (Heuberger); Danza esotica (Mascagni); La canzone della sorgente (Amadei); Torch Dance of the Brides of Kashmir (Rubinstein). 4.40, Programme for Children. 5.10, Concert of Light Music by De Notenkrakers. 5.55, Gramophone Records of Light Music. 6.10, Organ Recital: Round the World in Thirty Minutes. 6.40, Talk: An Address to the Jewish Refugees from Germany in Holland. 7.0, Concert by the Small Station Orchestra, conducted by de Groot: Melody (Gauwin-Daris); Serenade (Padilla); Song (Richards); In Holland (Kriensd); Selection from Carmen (Bizet); Selection from Le petit Duc (Lecocq). 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Talk. 8.10, Concert. 8.40, Talk. 9.10, Concert (contd.). 9.40, Religious News. 9.45, News. 9.55, Recitations. 10.25, Variety Music on Gramophone Records. 10.40 till Close Down, Programme of the V.A.R.A. Popular Concert on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

180 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer: Soloist: J. Mossel (Songs). 1.25 p.m., Interval. 1.40, Organ and Song Recital by G. Nieland and Mia van der Eynden. 2.40, Pianoforte Recital by W. Visser: Prelude, Choral and Fugue (Franck); Three Preludes (Chopin); Two Arabesques (Debussy); Chansonette (Scott); Serenade (Albeniz); Courante (Albeniz). In an interval at 3.0, Recitations. 3.35, Recitations.

4.0, Light Music on Gramophone Records. 4.10, Concert by the K.R.O. Orchestra, conducted by H. Hermans: Overture, Figaro (Mozart); Military Symphony (Haydn); Overture, The Italian Girl in Algiers (Rossini); Suite algérienne (Saint-Saëns); Canzonetta (Piermé); Selection from Carmen (Bizet); Turkish March (Musorgsky); Concert Waltz (Glazovov); Selection from Prince Igor (Borodin); Reverie (Vienny-temps); España (Chabrier). In the intervals at 4.40 and 5.40, Talks. 6.40, Police Notes. 6.55, Talk on Astronomy. 7.15, Popular Music on Gramophone Records. 7.40, Concert by the Harmonie Royale Orchestra and the Gero Male Voice Choir. In an interval at 8.10, News. 9.40, Concert by Dita Schmetterling and her Orchestra. In an interval at 10.10, News. 11.10, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements, Guide, News, Financial Notes, and Racing Results. 8.10, Esperanto Lesson. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert (contd.). 12 Midnight till Close Down, Programme in English by the I.B.C. 11. I. Hitchcock Announcing. 12 Midnight, Negro Songs; Nobody knows the trouble I've seen; I got a Home in dat Rock; Carry me back to Old Virginia; Orchestra: Uncle Pete; Every time I feel de spirit; Sometimes I feel like a Motherless Child; I know de Lord's laid his Hands on me; Way down yonder in the Cornfield; Suite Americana. 12.30 a.m. (Saturday), Dance Music: Dip your Brush in the Sunshine; Leave a Little for me; Let a little Pleasure interfere with Business; How do you do, Mr. Brown; Harlem Fuzz; How are you?; The Minor Drag; Let's all dance the Polka. 12.57 a.m., I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.0 p.m., Talk: Do Animals Suffer? 7.15, Announcements, followed by Light Music on Gramophone Records. 7.30, See Warsaw. 11.0, The Letter Box in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres. Programme in Swedish.—6.15 p.m., Talk. 6.35, Concert by the Station Orchestra, relayed from Helsinki. 7.5, Talk. 7.25, Songs by the Station Quartet. 7.45, Talk. 7.55, Concert by the Station Orchestra, conducted by Erkki Linna: Melody from Ein Herbststimmung (Kälman); Overture, William Tell (Rossini). 8.25, Recitations. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12.50 p.m., Weather, Time and News. 1.0, Concert conducted by Eysoldt. In the interval at 2.0, News. 2.30, Sponsored Programme with Gramophone Records. 3.30, Economic Notes and Time. 3.50, Talk for Young People. 4.35, Concert conducted by Wolf. Soloist: Eugen Hey (Songs to the Lute). 5.50, Readings. 6.0, Talk: The Biological Foundations for the Theory of Heredity. 6.25, English Conversation. 6.45, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations, Cologne Cathedral—Radio Sequence (H. Litzeler), relayed from Cologne. 8.0, News. 8.5, Love's Awakening—Operetta in Three Acts (Künneke). 10.15, News and Sports Report. 10.30, Serenade conducted by Wolf. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Concert of Light Music by the Crimmitschau Municipal Orchestra. In an interval at 1.0, News. After the Concert, News, 2.0, Notes on Art. 2.30, Weather and Time. 2.35, Spring, May and Sunshine—Gramophone Concert. 3.15, Programme for Country Women. 3.35, Economic Notes. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Soloist: Hans Diener von Schöberg (Pianoforte); Overture, Genevieve (Schumann); Concerto in B Flat for Pianoforte and Orchestra (Mozart); Symphonic Suite (Hans Hauss); (Extracts from the Small Serenade for Strings (Trunk); Overture, Susanna's Secret

(Wolf-Ferrari); Selection from The Veil of Pierrette (Dohnanyi). In an interval at 5.0, Book Review. 5.50, Economic Notes, Weather, and Time. 6.0, Talk: Saxony as a Frontierland. 6.20, Talk: The Feeding of Schoolchildren. 6.45, Reading. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Talk: The Intellectual Uplavay of the Age. 8.30, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffan: Soloist: Kurt Gudian (Guitar); Overture, L'Isola disabitata (Haydn); Guitar Solos: Prelude and Minuet (Bach); Kleine Ballade for Strings (Luo); Guitar Solos (Schubert): (a) Wiegand, (b) An den Mond, (c) Litanei; Guitar Solos: Etude and Rondo (Sor); Elegiac March (Rheinberger); Guitar Solos: (a) Minuet (Mozart), (b) Gavotte (Gluck); Serenade for Strings, Op. 20 (Elgar); Cradle Song (Ver-tea); Memories of the Alhambra (Torregia); March Potpourri, Alle mit uns (Reichert). 10.5, News. 10.10 (approx.), Concert of Wilhelm Berger's Music: Soloists: Charlotte Dauthe (Mezzo-Soprano) and Theodor Blumer (Pianoforte); Serenade in F for Two Flutes, Two Oboes, Two Clarinets, Four Horns, and Two Bassoons; Songs: (a) Ach, wer das doch könnte, Op. 30, No. 7 (b) Pflanzelied, Op. 88, No. 1; Pianoforte Solos: Romance and Impromptu, Op. 105; Folk Songs: (a) Kein Feuer, keine Kohle, (b) Es sieht ein Lind', (c) Gottvertrauen. 11.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, French Lesson. 7.30, Talk on geology. 8.0, Talk on Music. 8.30, Concert of Chamber Music. 9.30, Weather and News. 9.45, Light Music on Gramophone Records. 10.30 (approx.), Close Down.

LWOW

788 kc/s, 381 metres; 16 kW.—7.0 p.m., Literary Talk. 7.15, Miscellaneous Items. 7.30, See Warsaw. 12 Midnight, Close Down.

LYONS

LA DOUA; 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette. 8.30, La Belle Marinière—Play (Achiard). After the programme, News.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.5 metres; 2 kW.—9.15 p.m., News Bulletin and Political Review. 9.30 to 10.30, Interval. 10.30, Chinese, Time Signal and Political Review. 10.45 (approx.), Symphony Music on Gramophone Records. 12.45 a.m. (Saturday), News Bulletin and Programme Announcements for Listeners Abroad. 1.0, Chinese and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.25 p.m., Concert of Dance Music by the Station Orchestra, conducted by J. Plichta. 7.55, See Prague. 8.10, See Brno. 10.10, See Prague. 10.25 (approx.), Close Down.

MOSCOW

TRADES UNION; 230 kc/s, 1,304 metres; 100 kW.—6.30 p.m., Concert from the Conservatoire. 9.0, Weekly Review and Answers to Correspondence, in English. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUNLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., See Stuttgart. 5.45, Talk. 6.5, Talk: Bismarck's Work—The Foundation of the Empire. 6.25, Song Recital by Hanna Eschenbrücher (Soprano) and E. K. Haase (Baritone): Der verspätete Wanderer (Pfitzner); Das Alter (Pfitzner); In der Frühe (Wolf); Morgenhymne (Wolf); Weckruf (Pfitzner). 6.45, Time Signal, Weather Report and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Concert by the Station Orchestra, conducted by Karl List. Soloist: Gerda Heiler (Soprano). Overture, Titus (Mozart); Andante con moto from the Symphony in C (Schubert); Aria, Ah Perfido (Beethoven); Scherzo in G (Schumann); Donna Anna's Aria from Don Giovanni (Mozart); Eine Kleine Nachtmusik (Mozart). 9.5, Topical Talk. 9.20, Bavarian Flagg—Radio Sequence (Alfons von Czibulka). 10.20, Time Signal, Weather Report, News, Sports Notes and Traffic Report.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Mamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.15 p.m., Song and Violin Recital by M. Egil Nordstjå and Mlle. Helga Løkke. 6.0, French Lesson. 6.30, Talk. 7.0, Announcements. Weather and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Symphony Concert by the Philharmonic Orchestra, conducted by Oivind Fjeldstad and the Choir of the Workers' Society; Norwegian Artists' Carnival (Svendsen); Invitation to the Waltz (Weber); Rhapsody, Midtsommer-vaka (Alfvén); Overture, Tannhäuser (Wagner); Norwegian Rhapsody (Reiderson); The Captive (Schjær); Three Pieces (Grieg). 9.30, Agricultural Talk and Weather Forecast. 10.0, Topical Talk. 10.15, Talk. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Records. In the interval at 8.30, Time and Announcements. 8.45, La Wally Opera in Three Acts (Catalani). In the interval, Talk: Churches and Preachers in Palermo. After the Opera, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals on 2,650 metres at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Theatre Talk: Le Journal Parlé. 8.30, Musical and Literary Programme for Young People. 9.15, Symphony Concert, conducted by M. Plament; Violin Solo from Gipsy Love (Lehár); Slav Dances (Dvorák); Suite Funambulesque (Messager). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Talk. 7.10, Light Music on Gramophone Records. 7.55, Review of the Week. 8.0, Talk on Music. 8.15, Interval. 8.30, Concert of Music by Alfred Bruneau and Alexandre Georges. The Station Orchestra, conducted by M. Théodore Mathieu. Soloist, Mme. Marie Tissier (Songs). Extracts from L'Attaque du moulin (Bruneau); Romance for Horn (Bruneau); Symphonie Entr'acte from Messidor (Bruneau); Prelude to Nais Micoelin (Bruneau); Overture and Le Paradou dans la Vie, from La Fauté de L'Abbé Mouret (Bruneau); Les Chausons de Miarka (Alexandre Georges). 10.30 (approx.), Close Down.

PARIS

RADIO PARIS; Call CFR; 174 kc/s, 1,725 metres; 75 kW.—12 Noon, Jewish Talk. 12.30, Gramophone Concert. Overture, Don Pasquale (Donizetti); Aria from William Tell (Rossini); in the Steppes of Central Asia (Borodin); Song of the Flea (Mussorgsky); Scherzo-valse (Chabrier); Prelude (Pugnani-Kreisler); Turkish March (Mozart); Fantasia-Improvisation (Chopin); Forest Murmurs, from Siegfried (Wagner); Petite Suite (Debussy); Invitation en voyage (Duparc); Scherzade (Rimsky-Korsakov). In the intervals at 1.0, Exchange, News, and Weather; and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Report. 6.30, Gramophone Records: Cadet March (Souza); First Waltz (Durand); Extase (Ganne); Jazz dans la nuit (Ronsseil); Hawaii; Inch'alla (Padilla). 6.50, Insurance Societies' Report. 7.0, Talk. 7.20, Gramophone Concert: Overture, William Tell (Rossini); Moment musical (Schubert); The Flight of the Bumble Bee (Rimsky-Korsakov); First Norwegian Dance (Grieg). 7.45, Commercial Prices and News. 8.0, Talk: Famous Romantic Actors—Paul Mounet. 8.30, News and Weather. 8.40, Les Cloches de Corneville—Opératta (Planquette), relayed from the Théâtre de la Porte St. Martin. In the interval, Gastro-nomic Review.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W8XK.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 7.45, Utility Hall Programme. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. S. Lappin. 8.30, John Dunlap, Tenor. 8.45, Programme to be announced. 9.0, Teaberry Baseball Scores. 9.5, Hotel Cosmopolitan Orchestra, from New York. 9.15, S.A.I. Musicales (Carnegie Tech Chapter). 9.30, Weather Report. 9.31, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, Muskingum College Music Clubs. 10.15, Dick Daring. 10.30, The Singing Lady from New York. 10.45, Little Orphan Annie. 11.0, Programme to be announced. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Re-

MAY 19th

FRIDAY

continued

port. 11.30, Vick's Song Weavers. 11.35, Riggs and Moke. 11.45, To-day's News. by Lowell Thomas, from New York. 12.0 (Midnight), Peppodent Amos 'n' Andy, from New York. 12.15 a.m. (Saturday), A & P Programme. 12.30 to 3.15, New York Relay. 12.30, Five Star Theatre Charlie Chan. 1.0, Nestlé's Programme. 1.30, Adventures in Health. 1.45, Howard Thurston, the Magician. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Time Signal and Music is my Hobby.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.55 p.m., Theatre Notes and Programme Announcements. 6.0, Physical Training Report. 6.15, Light Music on Gramophone Records. 6.30, Talk: The Foundations of Modern Poland. 6.45, Talk on Polish Topography. 7.0, Miscellaneous Items and News. 7.28, Time Signal. 7.30 to 10.40, See Warsaw. 10.40, Time Signal, Sports, and Police Notes. 10.45, See Warsaw. 10.50, Announcements. 11.0, Dance Music from the Esplanade Café. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Brno. 4.55, Talk on Religious Art. 5.5, Concert by the Ondricek Quartet: Movement from the Second String Quartet, Op. 3 (Dvorak); String Quintet in E Flat, Op. 97 (Dvorak). 6.5, Market Prices. 6.15, Talk: The Workers of America during the Crisis. 6.25, News in German. 6.30, German Transmission: Talk on Patriotism. 7.0, Time and News. 7.10, Russian Information. 7.25, See Moravská-Ostrava. 7.55, Talk on Housing Questions. 8.10, See Brno. In the intervals at 9.0 and 10.0, Time Signals. 10.10, News, Announcements, and Sports Notes. 10.25 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; GENÈVE, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Talk. 7.30 (from Lausanne), Weather. Answers to Correspondence, and Announcements. 8.0 (from Geneva), Talk. 8.35 (from Geneva), Concert, relayed from the Conservatoire; Mme. Ysabelle Naret (Harpischord), Mlle. Germaine Naville (Harpischord), and M. Pépin (Flute); Concerto in F for Harpischord (Bach); Sonata for Two Harpischords (F. Bach); Sonata for Flute and Harpischord (Handel); Concerto in C Minor for Two Harpischords (Bach). 10.0, News and Weather. 10.10 (from Geneva), Talk: The Work of the League of Nations. 10.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.15 p.m., Songs and Duets from Operettas by Vera Frenovics and Arturs Briedlids. 6.40, Latvian Lesson. 7.0, Weather Report. 7.15, Symphony Concert by the Station Orchestra, conducted by J. Medins; Fifth Symphony (Tchaikovsky); Concerto in F Minor for Pianoforte (Glazunov); Dance from Prince Igor (Borodin); Overture, Easter (Rimsky-Korsakov). In the interval at 8.0, News. 9.0, Weather and News. 9.30, Dance Music. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—4.45 p.m., Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Vocal and Instrumental Concert. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the International Institute of Agriculture (in Spanish, German and French). 7.10, Tourist Report. 7.20, Giornale Radio. 7.30, Sports Notes. 8.0, Time and Announcements. 8.5, Gramophone Records of Light Music. 8.15, Song Recital by Margherita de Aentis (Soprano). 8.30, Talk on Ariosto and Reading. 9.0, Symphony Concert, conducted by Attilio Pirelli. 10.0 (approx.), Dialogue: Lost Illusions. 10.15, Variety Concert: Symphonic Poem, Il canto della palude (Adriana Mikeseina); Finale from Iris (Mascagni); La Reginetta—Comedy in One Act (Luigi Chiarelli); Gipsy Dance from The Fair Maid of Perth (Bizet). 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—8.0 p.m., Biblical Drama. 8.15 to 8.45, New York Relay. 8.15, Moore Triangle Club. 8.30, Echoes of Erin. 8.45 to 9.0 (approx.), Stock Reports. 11.45, Stock Reports. 12 Midnight, Cities Service Orchestra, from New York. 12.30 a.m. (Saturday), WGY Farm Programme. 1.0 to 3.0 (approx.), New York

Relay. 1.0, Best Foods Musical Country Store. 1.30, Pond's Programme. 2.0, Chevrolet Programme. 2.30, Richfield Country Club, followed by Programme Résumé. 3.0 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASEL, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuenburg Observatory and Weather. 12.5 p.m. (from Zürich), Concert by the Swiss Radio Orchestra. 12.30, News Bulletin. 12.40 (from Zürich), Concert (contd.). 1.25 (from Zürich), Exchange, Time, and Weather. 1.30 to 5.0, Interval. 5.0 (from Zürich), Programme for Children. 5.30 (from Zürich), Orchestral Concert. 6.30 (from Berne), Talk: From Author to Publisher—the Making of a Book. 7.0 (from Berne), Time, Weather, Market Prices, Tourist Report, and Sports Notes. 7.20 (from Berne), Programme to be announced. 8.0 (from Berne), Famous Songs. 9.0, Weather and News. 9.10 (from Berne), Programme to be announced. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hårby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.25 p.m., Swedish Scout Report. 5.25, Folk Music, relayed from Uppsala, 662 kc/s (453.2 metres). 5.45, Reading. 6.15, Popular Music on Gramophone Records. 7.15, Weather and News. 7.30, Legal Talk. 8.0, Songs to the Lute by Ake Claesson. 8.20, Variety Programme. 9.15, Talk: Finland in the Power of the Czars. 9.45, Weather and News. 10.0, Orchestral Concert of Light Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Wagner Concert on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Extracts from La Mascotte—Opératta (Mudran) on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Literary Talk: Chateaubriand. 5.0, Orchestral Concert, conducted by Roskam; March (Ellenberg); Waltz, Tales from the Vienna Woods (Joh. Strauss); Overture, Rakoczy (Kéler-Béla); Selection from La Traviata (Verdi); Pianoforte Solo; Piedmontese Dance (Sinigaglia); Selection from The Count of Luxembourg (Lehár). 6.0, Trio Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Topical Talk in German. 7.15, Popular Music on Gramophone Records. 7.30, Time and News. 7.45, Variety Music on Gramophone Records. 8.15, Press Review in German, Lottery Results and Announcements. 8.30, Concert by the Radio Orchestra and the Union Choral Choir: Academic Festival Overture (Brahms); Choir: Liebeslieder (Brahms); Orchestral Suite, Dolly (Faure); Choir: Madrigal (Faure); Petite suite (Debussy); Choir: (a) Dieu! qu'il fait bon regarder (Debussy), (b) Le soir (Weckerlin). In an interval at 9.30 (approx.), Press Review. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.15 p.m., Time, News, Weather, and Programme Announcements. 1.30, Concert from Langenberg. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0 to 3.45, Interval. 3.45 (from Karlsruhe), Talk: Sunday Excursions. 4.0, In der Heimat—A Radio Sequence from Poems by Eichendorff, set to Music by Selmann, Franz, and Pfizner; Hilde Kefer-Binhardt (Songs); Heinz Luthenthal (Elocutionist), and Wilhelm Locks (Pianoforte). 4.20, Concert by the Station Orchestra, conducted by Gustav Göhrlich; Soloist, Martha Weber-Neubeck (Soprano); Part II: Overture, Albin (Flotow); Aria from Figaro (Mozart); Overture, The Italian Girl in Algiers (Rossini); Aria from Mignon (Thomas); Selection from The Pearl Fishers (Bizet); Seguidilla, from Carmen (Bizet); Part III: Old Dance Music. 5.45, Time, Weather, and Agricultural Notes. 6.0, Medical Talk. 6.25, Talk: Changes in German Law. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Reading of War Stories. 8.20, Symphony Concert, conducted by Ferdinand Drost; Soloist, Otto Sonnen (Pianoforte); Concerto for Pianoforte and Orchestra (Schumann); Symphony No. 7 in A, Op. 92 (Beethoven). 9.20, The Widow of Ephesus—Comedy (Lessing). 10.20, Time, News, Programme Announcements, and Sports Report. 10.45, See Frankfurt. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmission irregular owing to fire.—7.30 p.m., Chansonnettes. 7.45, Accordion Solos. 8.0, Orchestral Music. 8.30, Opera Music: Aïrs from (a) La Favorita (Donizetti); (b) Hamlet (Thomas); and (c) La Dame blanche (Boïeldieu). 8.45, Extracts from The Fire Bird—Ballet (Stravinsky). 9.15, Military Music. 9.30, Concert by a Viennese Orchestra. 10.0, Popular Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Operatta Music. 11.15, Organ Solos. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown—Constable announcing. 11.30, Concert: Choo, Choo; Leonard Henry lets himself go; Medley of Popular Hits; Cuban Love Song; Trees; The Wayside Shrine; An Old Violin. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Saturday), Dance Music. 12.15, Vocal Tangos. 12.30, Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—6.35 p.m. Lill Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—6.35 p.m., Giornale Radio, Agricultural Report, and Dopolavoro Notes. 7.0, Time Signal, Report of the Royal Geographical Society and Light Music on Gramophone Records. 7.20, Giornale Radio. 7.45, Popular Music on Gramophone Records. 8.0, Announcements, Giornale Radio, Weather, and Gramophone Records. 8.30, See Rome. 8.45, Popular Music on Gramophone Records. 9.0, Symphony Concert, conducted by Attilio Pirelli; Overture, Der Teufel als Hydraulicus (Schubert); Symphony in C Minor (Parelli); Chiaroscuro (Rocca); Ballet Suite (Grétry-Mottl); Good Friday Magic (Wagner); Overture, Semiramide (Rossini). In the interval, Talk. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.25 p.m., Tourist Talk. 5.40, Talk: Through Lower Austria. 5.55, Sports Review. 6.5, A Quarter of an Hour's Entertainment. 6.20, Talk: Life in Budapest Sixty Years ago and To-day. 6.45, Talk: The Universal German Catholic Day, 1933. 7.0, Song Recital by Adelheid Arnhold (Soprano); Arias from Floridante (Handel); (a) Alma mia, (b) Amor commanda; Songs (Schubert); (a) Im Abendrot, (b) Sulieka, (c) Auf dem wasser zur singen, (d) Seligkeit; Songs (Brahms); (a) Die Mainacht, (b) Feldeinsamkeit, (c) Ständchen, (d) Botschaft; Songs (Richard Strauss); (a) Traum durch die Dämmerung, (b) Wiegendorf, (c) Norwegian Folk Song. 7.40 (from Innsbruck), Radio Report on the First Day International Flight over the Austrian Alps (on Gramophone Records). 8.0, Time, Weather Forecast, and Programme Announcements. 8.10, The Lovers—Comedy in Three Acts (Goldoni) German Translation by Lola Lorne. 10.0, News, Weather Forecast, and Announcements. 10.15, Dance Music by the David Mathé Orchestra, relayed from Hühners Kursalon.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 12.0 p.m., Programme Announcements. 12.10, Popular Music on Gramophone Records. 1.20, Weather. 1.25, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Aviation Report and Anti-Gas Drill. 3.30, Talk on Maritime and Colonial Affairs. 3.35, Light Music on Gramophone Records. 4.25, Review of Periodicals. 4.40, Talk on Hygiene. 5.0, Concert by a Police Band, conducted by A. Sielski; Overture, Fra Diavola (Auber); Selection from The Circus Princess (Kálmán); Melody (Katski); Aïrs from Tannhäuser (Wagner); (a) The Pilgrims' Chorus, (b) Oh, Star of Eve; Mazurka (Levandovskij); March, Venice (Fabiani). 5.55, Programme Announcements. 6.0, Concert of Light Music from the Café Adriane. In an interval, News. 7.0, Miscellaneous Items. 7.20, Polish and Foreign Press Review, relayed from Wilno, 533 kc/s, 563 metres.—7.30, Reading. 7.45, Radio Journal. 8.0, Talk on Music. 8.15, Symphony Concert by the Warsaw Philharmonic Orchestra. In the interval, Reading. 10.40, Sports Notes. 10.45, Radio Journal. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music from the Maison Fouquier.

ZÜRICH.—See Schweizerischer Landeseender.

ATHLONE

725 kc/s, 413 metres; 60 kW. and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.45, News. 7.0, Health Talk. 7.15, Talk in Gaelic. 7.30, Time Signal. 7.31, Prof. R. O'Dwyer with the Station Orchestra in a Programme of his own Compositions. 8.0, Soprano Solos by M. C. Campling. 8.15, Violin Solos by R. Kiernan. 8.35, The Emer Comedy Company. 9.5, Bass Solos by Irvine Lynch. 9.15, The Station Orchestra. 9.35, Bass Solos by Irvine Lynch. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA

(EAJ1), 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Programme for Children. 8.0, Talk and Request Gramophone Concert. 8.30, Exchange Quotations and Catalan Grammar Lesson. 9.0, Light Music on Gramophone Records, followed by News. 10.0, Chimes from the Cathedral. Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Concert by the Station Orchestra: Manhattan March (Souza); Waltz, Estudiantina (Waldteufel); Andante from the Violin Concerto No. 3 (Saint-Saëns); Pavane (Ganne). 10.30, See Madrid (EAJ7). In the interval at 12 Midnight, News.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—5.30 p.m., Programme for Children. 6.0 to 6.30, Popular Music on Gramophone Records. 8.0, Agricultural Notes, Tourist Report, and Dopolavoro Notes. 8.20, Giornale Radio, Weather Report, and Sports Notes. 8.30, Time Signal and Announcements. 8.45, Aida—Opera (Verdi) on Gramophone Records. In the interval, Talk, Book Review, and Artistic Notes. After the Opera, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.30 p.m., Concert by the Station Orchestra: Overture (Jenko); Potpourri, Belgrade by Night (Sedlacek); Serbian Dance (Frajt); Ballet Suite, The Swan Lake (Tchaikovsky); Selection from The Bird Fancier (Zeller). 6.55, Time and Programme Announcements. 7.0, Wireless Talk. 7.30, Light Music on Gramophone Records. 7.50, Folk Songs by the Jeka Quartet. 8.30, Cavalleria rusticana—Opera (Mascagni), on Gramophone Records, with Introductory Talk. 10.0 (approx.), News, followed by Relay of Foreign Stations.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—12 Noon, Opening of the Thirty-ninth Travelling Exhibition of the German Agricultural Society. 12.55, Time Signal. 1.45, News. 2.0, Variety Music on Gramophone Records. 3.0, Handwork for Children. 3.30, Weather and Exchange. 3.45, Carl von Bremen reads from his own Works. 4.30, See Hamburg. 5.0, Weekly Review. 5.30, Talk: The Salzweidel Jubilee Celebrations. 6.0, A Poem. 6.5, Italian Song Recital by Ilarvedo Fellicioni, Nina (Pergolesi); Amarilli (Caccini); Giunetta (Sibella); Vorrei morire (Tosti); Aria from The Barber of Seville (Rossini); E canta il grillo (Billi); Aria from L'Arlesiana (Cilea). 6.30, Talk: The Dramatist Otto Brues. 6.50, Weather for Farmers and Announcements. 7.0, Transmission for all German Stations. Concert by the Station Orchestra, conducted by Herbert Windt and the Station Speaking Choir, conducted by Werner Pleister. Part I.—Recital of Miners', Peasant and Soldier Songs. Wir Bergleute haueu feiu; Glück auf! Der Steiger kommt; Im Märzen der Bauer; Wir pflügen und wir streuen; Nach Ostland woll'n wir reiten; Wenn alle miten werden. Part II.—Symphonie der Arbeit, for Speaking Choir and Orchestra (Words by Hans Jürgen Nierentz, Music by Herbert Windt). 8.0, Wireless Cabaret, relayed from the Zoological Gardens. 8.30, Sergeants' Bulls—a Barrack-room Programme. 10.0, Weather, News and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Serenade relayed from Munich. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Concert by the Union Orchestra and the Con Brio Mandoline Orchestra: Tannenberg-Defiliermarsch (Gudohr); Waltz, Children of Spring (Waldteufel); March No. 328 (Strauss); Rhapsody on a Bavarian Folk Melody (Pfitzinger); March (Lindemann); Sereuata lombarda (Graziani); Tamo mazurka (Alfieri); Careioffola (di Capua); Rheinisch Song Potpourri (Hannemann); Sanssouci-Festspiel-Ouverture (Kark); Apollo-Marsch (Neumann); Pattinglia Romana (Seosozza); Liebeslegende (Bece); Waltz, Primo hacio (Sartor); Friedensfeier-Ouverture (Nehi); Selection from The Bird Fancier (Zeller); March, Barbrossas Erwachen (Reckling). 5.40, The Différance of Motor Sports in Germany—Discussion between Dr. Wesemann and Edward Voltz and the Racing Motorists Manfred von Brauchitsch and Fritz Wiese. 6.10, Reading from Die Dithmarscher (Adolf Bartels). 6.40, The Witzleben Station informs its Listeners. . . 6.45, Topical Talk. 7.0, Transmission for all German Stations

SATURDAY

MAY THE TWENTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL W. C. Pepper's White Coons, a concert party show.
LONDON REGIONAL "The Bottle Imp," a play from the story by R. L. Stevenson.
MIDLAND REGIONAL Musical comedies, orchestral concert.
NORTH REGIONAL Orchestral concert.
WEST REGIONAL Instrumental and vocal concert.
SCOTTISH REGIONAL Massed church choirs at the Edinburgh Musical (Competitions) Festival.
BELFAST "Ireland on Record," a feature programme.

ABROAD

BERLIN (Witzleben) 8.10 p.m. "From the Vienna Prater," for soloists, choir, and orchestra.
BRESLAU 8 p.m. Operetta: "The Merry Widow," by Lehar.
BUCHAREST 8 p.m. Concert of operetta and light music.
LAHTI 7.5 p.m. Operetta: "Der Orlov," by Granichstädt.
PALERMO 8.45 p.m. Operetta: "Acqua Cheta," by Pietri.
ROME 8.45 p.m. Symphony concert, conducted by Victor de Sabata.
TURIN 8.45 p.m. Operetta: "Fior di Neve," by Giuseppe Blanc.
VIENNA 8 p.m. Operetta: "Der Fremdenführer," by Ziehrer.

relayed from Berlin (Deutschlandsender). 8.5, Announcement. 8.10, The Vienna Prater—a Musical Picture Sheet for Soloists, Choir and Orchestra; The Station Orchestra, the Walters' Dance Band, Dietrichs Schrammel Quartet, the Station Choir, and Soloists; Elsa Koehmann, Peppi Zampa, Bernhard Bötel, and Theo Lucas. In the interval, Songs by Berlin Chorus. 10.0, Weather, News and Sports Notes. 10.15 (approx.), Dance Music, relayed from the Eden Hotel. 12.30 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

985 kc/s, 304 metres; 13 kW.—7.40 p.m., Sports Talk. 7.45, Talk on Esperanto. 8.0, News, Exchange, Market Prices and Lottery Results. 8.5, English Lesson. 8.20, News Bulletin. 8.30, Monsieur le Directeur—Play in Three Acts (Bisson).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by J. Odchazel. 5.10, See Prague. 5.20, Talk. 5.35, Programme for Children. 6.35, Light Music on Gramophone Records. 6.40, Talk for Housewives. 6.55, Report. 7.0, See Prague. 7.25, Talk on the following Transmission. 7.30, Mataj—Opera (Jan Rosticky), relayed from the Slovak National Theatre. 10.0, See Prague. 10.45, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BRMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.10 p.m., Gramophone Concert of Popular Music. 1.45, Time, Weather, News, and Exchange. 2.5, Variety Music on Gramophone Records. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.40, Film Review. 4.0, Programme to be announced. 4.30, See Hamburg. 5.30, Book Review. 5.50, Programme Announcements. 6.0, Programme to be announced. 6.30, Talk on the Silesian Monument on the Zoblen. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, The Merry Widow—Operetta (Lehar), arranged for Radio. 10.0, Time, Weather, News, Sports Notes, and Programme Announcements. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—6.25 p.m., German Transmission: News and Arias from Die Feen (Wagner), by M. Hornege (Soprano), O. Ruepp (Bass) and F. Kugler (Tenor). 7.0, See Prague. 7.25, Students' Spring Festival, relayed from a Theatre. 8.30, Concert by the Moravian Teachers' Choir, conducted by Professor Ferdinand Vach, relayed from the Stadlum. 9.30, See Prague. 10.45, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Records: Act III of Manon (Massenet). 4.45, Talk: The Industrial Situation in Belgium, in May, 1933. 5.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 6.0, Talk: Charleroi. 6.15, Light Music on Gramophone Records. 7.15, Talk: The New Road Laws. 7.30, Le Journal Parlé. 8.0, Gramophone Records: Radetzky March (Joh. Strauss); Elegy (Massenet); Four German Dances (Alzart). 8.15, Mort des Fleurs—Radio Play (Francis André). 8.40, Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist: M. Wigy (Violin); Turkish March (Ellenberg); Rapsodie dalmatienne (de Bouck); Violin Solo: Canzonetta (d'Ambrosio); Selection from Hamlet (Thomas); Impromptu for Piano-forte (Brenta); Chanson sans Paroles (Tchaikovsky); Potpourri (Manfred). 9.30, Reading of Poems dedicated to Paris. 9.45, Gramophone Records: Air from The Tales of Hoffmann (Offenbach); Vielle Histoire (Marie-Chauvet); Sous la fenêtré (Thomé); Waltz from Mireille (Gounod); Jungle Drums (Kötter). 10.0, Le Journal Parlé. 10.10, Dance Music on Gramophone Records. 10.30, Concert by Max Alexis and his Orchestra, relayed from l'Antienne Belgique.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. 4.45, Reading. 5.0, Concert by the Radio Orchestra, conducted by C. Walpot; March (Schlögel); Overture, Zampa (Hérold); Waltz, An Evening in Madrid (Fahrbach); Romantic Suite (Armandola); Chanson d'amour (Caudael); Selection from Miss Decima (Audran); Caprice italien (Tchaikovsky). 6.0, Popular Gramophone Records. 6.15, Talk: Cromwell. 6.30, Light Music on Gramophone Records. 7.15, Talk: Belgium and the Crisis—the Banks and Credit. 7.30, Agricultural and Horticultural Review. 8.0, Concert by the Station Orchestra, conducted by Charles Walpot; March, Stars and Stripes (Souza); Overture,

Lysistrata (Lincke); Songs by Mme. Veldya; Selection from Il Trovatore (Verdi); Songs by M. Goétel; Polka, Cock and Hen (Paradis). 8.45, Reading. 9.0, Concert (contd.); Potpourri of Waltzes (Dobrecht); Songs by Mme. Veldya; Polka for Flute and Two Cornets (Maquet); Selection from The Merry Widow (Lehar); Songs by M. Goétel; Selection from Ou with the Show (Nicholls). 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse. 11.30, Dance Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Jazz Music by Sigismund Seidmann. In the interval at 6.0, Radio Journal. 7.0, Educational Talk. 7.40, Light Music on Gramophone Records. 8.0, Concert by the Station Orchestra: Overture, The Merry Wives of Windsor (Nicola); Second Suite from L'Arlesienne (Bizet); Selection from Madame Butterfly (Puccini); Selection from Les Cloches de Corneville (Planquette); Potpourri, Wiesner Spaziergänge (Komzak). 8.45, Dramatic Programme. 9.10, Concert by the Station Orchestra (contd.); Waltz, Natusänger (Ziehrer); Second Arabesque (Debussy); Habanera (Chabrier); Canzonetta from the Romantic Concerto for Violin (Godard); Festival March (Naprawnik). 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 6.30 till Close Down.—5.0 p.m., Concert of Operetta Music by the Opera House Orchestra, conducted by Zsigmond Vincze; Selection from The Gipsy Baron (Joh. Strauss); Selection from Fische Geister (Ziehrer); Selection from Kussverbot (Vincze); Selection from The Count of Luxemburg (Lehar); Selection from Lysistrata (Lincke); Selection from Orpheus in the Underworld (Offenbach). 6.0, Answers to Correspondence. 6.30, Concert by the Lajos Racz Gypsy Band. 7.10, Review of Foreign Politics. 7.30, Turandot—Opera in Three Acts (Puccini), relayed from the Royal Hungarian Opera House. In the interval, News. After the programme, Weather and Variety Music on Gramophone Records. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, conducted by Max Skalka, relayed from the Hotel d'Angleterre. 2.0 to 2.30, Interval. 2.30, Gramophone Concert. 3.0, Programme for Children. 3.30, Concert of Light Music by Louis Prells' Instrumental Ensemble. In the interval, Reading. 5.40, Exchange and Fish Market Prices. 5.50, Talk: Arienne—an Evening at the Comédie Française in 1729. 6.20, French Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Chimes from the Town Hall. 8.2, Concert of Modern Swedish Music by the Station Orchestra, conducted by Emil Reesen; Rhapsody on Swedish Folk Melodies (Lindberg); Suite No. 5, Barocco (Atterberg); Symphonie Poem in Round Form, Gask (Westberg). 8.40, Wanderings in South Leland—Talk, Songs, and Instrumental Music. 9.50, Saxophone Solos by Otto Banner Jansen; Hjena (Pré); Si vous l'aviez compris (Denza); Londonderry Air (Connar-Morris); What a Perfect Combination (Ruby and Akst). 10.5, News. 10.20, Orchestral Concert, conducted by Emil Reesen; Spanish Concert Overture, A Summer Night in Madrid (Glinka); Waltz, A Day in Seville (Waldteufel); Oriental Suite (Popy); Yesterthoughts (Herbert); Badinage (Herbert); On the Road to the Alhambra (Turina); Marcha reale italia (Gabetti). 11.0, Dance Music relayed from the Lodger Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.15 a.m. (Sunday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. T. St. A. Ronald, C. Danvers-Waller and B. McNabb Announcing. 5.30, Concert for Tunbridge Wells and Isle of Thanet Listeners. Classical Selection (arr. Ewing); One Fine Day, from Madame Butterfly (Puccini); Autumn Leaves (Vogelin); Old Spanish Song (Aubert); Violin Solo, Au Mois d'Avril (Adlington); Violin Solo, Fandango (Godovsky); Träume (Wagner); Waltz Song from La Bohème (Puccini); Violin Solos: (a) La Chasse (Carlier); (b) The Bee, Shepherd's Hay (Grainger). Let's put out the Lights (Hupfeld); More Classical Memories (arr. Ewing). 6.15, Concert for Dover and Folkstone Listeners. Intermezzo Selection (arr. Ancliffe); Vienna, Vienna (Foss). Songs: (a) Brothers of the Empire (Helmore); (b) My Sword and I (Byng). Valencia (Padilla); The Woman in the Shoe. Songs: (a) Eleanor (Manley); (b) The Drum Major (Newton). In the Night (Tate); The Volunteer Organist (Lamb). Song, Route Marching (McCull).

MAY 20th

SATURDAY

continued

Gold and Silver (Lehar). 7.0, Radio Gazette. 7.20, Local News. 7.30, The Listeners' Half-Hour and News. 8.45, Cabaret Programme. 11.0 p.m. till Close Down. Programme in English by the I.B.C. 11.0 p.m., Club Concert for Croydon and Thornton Heath Listeners. Gipsy Moon (Borogov); In the Gloaming; Xylophone Solo, Looping the Loop (Gaston); Two Eyes of Grey; Reconciliation; Sally in our Alley; If it wasn't for the Houses in between; Trees; Xylophone Solo, Marionette (Gaston); When it's Sleepy Time down South; Babes in Toyland (Herbert); Kitty, my love, will you marry me?; Love is like that; Lazy Pete (Kernsten). 12 Midnight, Variety Concert. Mason's Apron; I've got one Arm round Mary; She's too good for me; Silvery Moonbeams; You've got to laugh at Care; The Jilted Dutchman; The Police Station. 12.30 a.m. (Sunday), Popular Songs. Go Home and tell your Mother (McHugh); Crying for the Carolines (Warren); Leatin' (Stendale Bennett); When you wore a Gingham Gown (Gilbert); Bye Bye Blues; Wasn't it nice? (Seymour); Say a little Prayer for me (Nicholls); Old New England Moon. 1.0, Accordion Solos. Blue Bells (Benton); La Java de Doudome (Padilla); Marche Joyeuse (Cuvellier); Medley of English Airs; Prince Charlie (Beaton); The Skater's Waltz (Waldteufel); Annette (Phillips); Medley of Scottish Airs. 1.30, Popular Songs. The Night you sang Sweet Genevieve; That dear old song; Forget-me-not, High Society Blues; We live and we love; Little Boy Blue; My Old Irish Cottage. 2.0, Dance Music by the Decolans. Lights of Paris; It always starts to Rain; It happened in Monterey; Just a little closer; Linda; I don't mind walking in the Rain; Little Painted Doll; Got the Bench, got the Park; The Waltz you saved for me; Smile, darn ya, Smile; Carry On; My Cradle in the Desert; With my Guitar and you; Lazy Day. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLensburg.—See Hamburg.

Florence.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., See Munich. 5.50, Economic Notes. 6.0, Talk; Mau and his Traces on the German Landscape. 6.25, Topical Talk. 6.50, Time Signal, Programme Announcements. Weather Report, and Economic Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Richard Benz talks about his latest book. 8.15, A Wedding in the Hampelmann Household—Radio Play with Music. 10.15, Time, News, Weather, and Sports Notes. 10.45, See Munich. 12 Midnight, Close Down.

Fredrikstad.—See Oslo.

Freiburg.—See Stuttgart.

Geneva.—See Radio-Suisse Romande.

Genoa.—See Turin.

Gleiwitz.—See Breslau.

Goteborg.—See Stockholm.

Graz.—See Vienna.

Hamar.—See Oslo.

HAMBURG

Jail ha (in Morse), 805 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.30 p.m. (from Bremen). Concert, relayed from the Limer Europa; Overture, Chai Romano (Kotelbey); Waltz, Traume auf dem Ozean (Gundz); Serenade, Es flirtert die Liebe (Lindemann); Tom the Rhymer (Loewe); Suite, A Mediterranean Cruise (Jalowiez); Intermezzo, Violetta (Rust); Melodies (V. Herbert). 5.30, Hamburg, Bremen and Lubeck—Report on Events in the Senate and House of Burgesses of the Hanseatic Free Cities. 6.0 (from Hanover). Literary and Musical Programme in Dialect. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). The German Navy. 8.0, See Munich. 10.0, Time and News. 10.20, Topical Talk. 10.30, Dance Music, relayed from Berlin (Witzleben).

Hanover.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW., and Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilken. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange Rates. 3.30 (from Danzig), Handwork for Children. 4.0, Concert relayed from Berlin (Witzleben). In the interval at 5.0 (approx.), Road Report for East Prussia. 5.40, Two East Prussian Legends. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.20, Talk: The Reorganisation of the German Educational System. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.10, A Little of Everything—Bunter Abend. 10.10,

Weather, News and Sports Notes. 10.20 (approx.), Dance Music relayed from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 5.40 p.m.).—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40 Concert by the Small Station Orchestra conducted by H. de Groot. 12.10 p.m., Organ Recital by J. Jong. 12.40, Concert (continued). 1.10, Musical Programme by MM. Presser and Rab. 1.40, Interval. 1.55, Light Music on Gramophone Records. 2.30, Talk. 2.50, Concert by the Amsterdam Chamber Orchestra, conducted by D. Kiekens. 4.10, Talk. 4.30, Concert of Popular Music. 5.20, Literary Talk. 5.40, Violin Recital by M. H. Wiggelaar. Selection from The Tales of Hoffmann (Offenbach). Serenade (McCarthy). Indian Love Call (Friml-Wiggelaar). Selection from The Student Prince (Rombreg-Kreisler); Estrellita (Ponce-Heifetz). 6.10, Talk. 6.40, Concert by a Children's Choir. 7.10, Talk. 7.25, Light Music on Gramophone Records. 7.35, Announcements and News. 7.40, Concert by De Fliedruiters, conducted by H. Eisler. 7.55, Talk. 8.5, Concert (continued). 8.20, Song Recital by Mlle. Fientje de la Mar. 8.40, Recitations. 9.0, Concert by the Station Orchestra, conducted by H. de Groot. Overture, Pique Dame (Suppe). Tableaux de Ballet (Langini). Polish Dance (Scharwenka). Potpourri, Besuch bei Millöcker (Morena). Selection from The Bird Fancier (Zeller). 9.40, Song Recital (continued). 10.0, News. 10.10, Concert (continued). Maxim Murch (Lehar). Scheherazade (Schuldtich). Chants d'antime (Waldteufel). Selection from Die Meistersinger von Berlin (Lincke). Servus Wien (Dostal). 10.40, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

Horby.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 till Close Down, Programme of the Christian Radio Society (K.R.O.). 11.55 a.m., Concert by the KRO Sextet. In the interval, Gramophone Records and News. 1.25, Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Light Music on Gramophone Records. 4.40, Concert by the KRO Boys. Soloist, J. Mossel (Songs). Weiss du was, lieber Franz? (Lubé). Ein kleines Haus (Glan). Wenn ich Sonntags in mein Kino geh' (Heymann). March, Freiheitsjubel (Blankenburg). Im sonnigen Süden (Bode-walt Lampe). Plegaria de mi Corazon (Freiburg). Potpourri of Waltzes (Brecht). Irgendwo (Heymann). Zehn Minuten Schlager (Schneider). In the interval at 4.55, Esperanto Lesson. 6.0, Press Review. 6.20, Concert (continued). In's blanc Leben (Erwin). Im Gasthaus zum Goldenen Stern (Rotter). Millöcker Potpourri (Morena). Pnszta-Sagen (Naef). 6.40, Police Notes. 6.55, Talk. 7.15, Popular Music on Gramophone Records. 7.25, Sports Talk. 7.40, Concert of Popular Music by the KRO Orchestra, and a Male Voice Double Quartet. March, The Liberty Bell (Sonsa). Selection from Die Bajadere (Kálnok). Songs: (a) March, Neerlandia (Blöklund). (b) Am Abend (Terke). (c), Dance (Otto). In an interval, News. 8.30, Accordion Recital by the Two Cavellis. 9.50, Orchestral Concert (continued). March, San Lorenzo (de Silva). Ballet Music from La Source (Delibes). Songs: (a) Hilde au den Arbeit (Blöklund). (b) Mein Himmel auf der Erde. (Prill). (c) Sailors' Song (Siczynski). 9.20, Accordion Recital (cont.). 9.40, Orchestral Concert (cont.). Selection from La Vie Parisienne (Offenbach). Three Songs, French Comedy Overture (Keler-Bela). Melody (Montano). Waltz, Gold and Silver (Lehar). Hungarian March, Attila (Fuchs). In an interval at 10.10, News. 10.40, Gramophone Records of Popular Music. 11.40, Close Down.

Innsbruck.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements' Guide. News, Financial Notes and Racing Results. 8.10, Tourist Talk. 8.30, Radio Concert. 9.0, News Bulletin. 12.0 Midnight till Close Down, Programme in English by the I.B.C., H. K. Hitchcock announcing. 12.0 Midnight, Variety Music. Selection from The Cat and the Fiddle (Kern). Snuggled on your Shoulder (Lombardo). Daddy wouldn't buy me a bow-wow (Tabrar). When we're alone (Jason). You're gonna be young (Nicholls). Selection from Bow Bells (Sullivan). Concentratim'. Reaching for someone (Donaldson). The King's Horses (Graham). Blaze Away (Holzmann). Little Annie Rooney (Nolan). Georgia on my Mind (Carmichael). Ain't misbehavin'

(Donaldson). Father Rhine March (Porschmann). Daisy Bell (Dacre). Whistling Waltz. 12.57 a.m. (Sunday), I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

Kalundborg.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.30, See Warsaw. 11.35, Dance Music.

Kiel.—See Hamburg.

Klagenfurt.—See Vienna.

Kosice.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.35, Musical Programme. 6.55, Variety Items. 7.5, Der Orlov—Operetta (Bruno Granischstädt), relayed from Kausan Näyttämö. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Eysoldt. In the interval at 2.0 (approx.), News. 2.30 to 3.0, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Talk: Touring in the Lahn District. 4.10, English Reading. 4.30, Concert conducted by Wolf. Soloist, Otto Wetzel (Pianoforte). Invitation to the Dance (Weber); Selection from Madame Butterfly (Puccini); Delirium-Walzer (Strauss); Pianoforte Solos (Grieg): (a) Norwegian Dance. (b) Sie tanzt. (c) Springtanz. (d) Waltz Impromptu; Selection from Where the Lark Sings (Lehar). 5.50, Talk: People and their Callings: The Postman. 6.15, The World on Gramophone Records; Bulgaria. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.5, Variety Programme, relayed from Munich. 10.20, News and Sports Report. 10.45, See Munich. 12 Midnight, Close Down.

Lausanne.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m. Gramophone Records of Peasant Orchestras. In an interval, Wireless Talk. After the Concert. News. 2.0, Instrumental Concert on Gramophone Records; Harpsichord: (a) Minuet from Don Giovanni (Mozart). (b) Le tambourin (Rameau). (c) Le coucou (Daquin); Harp: Am Springbrunnen (Zabel); Mandoline and Lute Orchestra: (a) Rocco Minuet (Leiss). (b) Loin du bal (Gillet). (c) Russian Mazurka (Ganne). 2.35, Talk on Wireless. 2.45, Programme for Children. 3.30, Radio Report on the International Dog Show at Leipzig. 3.45, Economic Notes. 4.0, Concert, relayed from Berlin (Witzleben). In the interval at 5.0, Talk on Music. 6.0, German for Germans—Saxon Dialect. 6.20, A Modern Dictionary. 6.30, Zerst—A Study (Wilhelm van Kempen), in Connection with the Zerst Musical Festival on the 24th and 25th of May. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Munich. 10.5, News. 10.10 (approx.), Spring Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Larghetto and Scherzo from the Spring Symphony in B Flat, Op. 38 (Schumann); Pianoforte Solo, Was die Schwalbe sang (Draesecke); Pastoral (Palmgren); Waldstille und Eiferreigen, Op. 11 (Rhode); Ein Märchen (Nicolé); Waltz, Frühlingsstimmen (Joh. Strauss). 12 Midnight (approx.), Close Down.

Linz.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Talk on Ethnology. 6.30, English Lesson. 7.0, Educational Programme. 7.30, Talk on Philosophy. 8.0, Variety Programme. 9.30, Weather and News. 10.0, Quintet Concert. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette. 8.30, Operetta Programme, relayed from Paris (Ecole Supérieure), 671 kc/s (447.1 metres). After the Programme, News.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—7.0 p.m., Concert of Popular Music. 8.15, Talk. 8.30, Light Music. 9.0 to 11.30, Interval. 11.30, Programme relayed from Madrid (EAJ7). After the Programme, Radio Chronicle. 1.0 a.m. (approx.), Sunday, Close Down.

MADRID

UNION RADIO; Call EAJ7; 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Radio Journal, Medical Talk, and Request Gramophone Records. 9.15, News Bulletin. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes and Time Signal. 10.35 (approx.), Madame Butterfly—Opera (Puccini), on Gramophone Records. 12.45 a.m. (Sunday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Schrammel Music. 7.0, See Prague. 8.30, See Brno. 9.30, See Prague. 10.45, Concert by the Station Orchestra, conducted by V. Musil. Selection from The Czarevitch (Lehar); Wedgwood Blue (Kotelbey); Waltz (Kubin); Tango (Tichy); Polka (Tichy); Foxtrot (Kaper-Jurmann); March (Fuchs). 11.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.30 p.m., Concert from the Radio Theatre. 9.0, Talk in French: in a Food Factory. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

Muhlacker.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserlautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m. (from Nürnberg), Military Band Concert. 5.45, Programme for Young People. 6.25 (from Nürnberg), Recital by a Vocal Quartet. 6.45, Wireless Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Bunter Abend. Part I: Variety Programme by an Accordion Band, the Small Station Orchestra and a Soloist; Part II: Bei der Wirtin zum weissblauen Krauzerl—Short Operetta (Willy Richardt). Part III: Old Waltzes, played by the Small Station Orchestra, conducted by Erich Kloss. 10.20, Time Signal, Weather Report, News and Sports Notes. 10.48, Serenade by the Quirin Huber Orchestra. 12 Midnight, Close Down.

NAPLES.—See Rome.

Notodden.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.30 p.m., Variety Music on Gramophone Records. 5.15, Programme for Children. 6.15, Hardanger Fiddle and Song Recital of Norwegian Music. 6.45, Talk on Economics. 7.0, Announcements, Weather and News. 7.30, Talk: Music in Sweden. 8.0, Time Signal. 8.2, Concert by the Station Orchestra, conducted by Hugo Krampi; March (Blankenburg); Overture, La Dame Blanche (Boieldieu); Suite, Aus aller Herren Länder (Moszkowsky); Piece (Alfven); Marionettes (Dreyer); The Nightingale in the Lilac Bush (Krome); Liebestraum (Liszt); Minuet (Bocherini); Melody (Hacker-Gröndahl); Oriental Suite (Leopold); Waltz (MacKenzie); Luxustelegramme (Holländer). 9.38, Announcements, Weather and News. 10.0, Topical Talk. 10.15, Reading. 10.45, Dance Music on Gramophone Records. 12.0 Midnight (approx.), Close Down.

Ostersund.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Report, and Giornale Radio. 8.20, Sports Notes. 8.25, Gramophone Records. In the interval at 8.30, Time and Announcements. 8.45, Acqua cheta—Operetta in Three Acts (Pietri). In the intervals, Review of New Books and Announcements. After the Operetta, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Talk on Music, with Illustrations. 7.0, Le Journal Parlé. 8.30, Pianoforte Recital by Marie-Antoinette Pradier, with Commentary. English, Spanish and German Harpsichord Music. Prelude-Musette (Purcell); Sonata (William Byrd); Sonatas (Albeniz); Gigue (Hassler); Melody (Ph. E. Bach); Rondo (F. W. Rust); Prestissimo (J. Ch. Bach). 9.0, Concert by the Firmin Touche Quartet. Quartet in D. Op. 45 (Albert Roussel); Quartet: From out my Life (Smetana). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé and Foreign Press Review. 7.5, Light Music on Gramophone Records. 7.30, Answers to Correspondents. 7.35, Sponsored Concert. 8.0, Review of the Week. 8.5, Theatre Review. 8.15, Interval. 8.30, Concert of Chamber Music. Soloist, Mlle. Levy (Violin). 9.0, Interval.

MAY 20th

SATURDAY

continued

9.10, Dance Music by the Sonora-Radio Orchestra. 11.0, News. 11.5, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PARIS

RADIO PARIS; Call CFR; 174 kc/s, 1,725 metres; 75 kW.—12 Noon, Concert by the Radio Paris Orchestra: Moldavian Dance (Ruzigade); Cadet-Rousselle (Fouadain); Cavalier Potpourri; Highlanders' Parade (Chauvet); Swedish Songs and Dances (Page); Egyptian Serenade, Andir (Linke); Melody; Neapolitan Souvenirs (Cerré); Spanish Suite (Acenes); La Voix des Cloches (Lugini); Ländler (Weckorlin); Norwegian Scenes (Matt); Le Berry (Fouadain). In the intervals at 1.0, Exchange, News, and Weather; and at 1.30, Exchange, 2.0, Exchange, 3.0, Programme for Children, 3.45, Exchange Quotations and Market Prices, 6.10, Agricultural Talk, 6.30, Concert by the Radio Paris Orchestra: March from Casanova (Linke); Foxrot (Siede); One-step (Beckand-Rio); Lieder der Liebesnacht (Linke); Rumba, Cuban Night (Margutti); One-step, Peron (Vila); Waltz-Intermezzo, The White Roses (Weckorlin); Tango (Eisele), 7.0, Talk on Science, 7.20, Dance Music by the Radio Paris Orchestra, 7.45, Commercial Prices, News, and Review of the Latin Press, 8.0, The Different Quarters of Paris—La Chapelle, Programme arranged by Francis Carco, 8.30, News and Weather, 8.45, Revue by Morris, with the Collaboration of Gisèle Parry, 9.15, Press Review and News, 9.30, Light Music on Gramophone Records.

PITTSBURGH

WESTINGHOUSE ELECTRIC (WKKA), 980 kc/s, 306 metres; 25 kW.—7.30 p.m., Radio Debut, 8.0, Radio Troubadours, from New York, 8.30, Wealth of Harmony, from New York, 9.0, Teaberry Baseball scores, 9.5, Dance Masters, from New York, 9.30, Concert Favourites, from New York, 9.55, Teaberry Baseball Scores, 10.0, The United States Government in Pittsburgh—Federal Probation System, by G. G. O'Brien, 10.15, Hotel Sherman Orchestra, from New York, 10.30, Behind the Law—Tales of the Pennsylvania State Police, 10.45, Little Orphan Annie, from New York, 11.0, Hotel Lexington Orchestra, from New York, 11.15, Time Signal, 11.16, Weather Report, 11.17, Teaberry Sport Review, 11.22, Press News Reeler, 11.29, Temperature Report, 11.30, A Récroé by Bill and Alex of the Downtown Y.M.C.A., 11.45, Jack Pettis and his Orchestra, 11.59, Time Signal, 12 Midnight, American Taxpayers' League, from New York, 12.15 a.m. (Sunday), The Town-end Murder Mystery, from New York, 12.30, Atkinson String Ensemble, 12.45, Honey and Old-Fashioned Quartet, 1.0, Joint Commission in Emergency in Education, from New York, 1.15, Programme to be announced, 3.0, Time Signal and Gilbert and Sullivan Goss, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.55 p.m., Theatre Notes and Programme Announcements, 6.0, Divine Service, relayed from Czeszochowa, 7.0, Miscellaneous Items and News, 7.28, Time Signal, 7.30 to 10.0, See Warsaw, 10.0, Time Signal, Sports and Police Notes, 10.5, Chopin Recital by Holesaw Kom, 10.40, Announcements, 10.50, Dance Music from the Café Polonia, 11.50 (approx.) Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava, 5.10, Talk on Economics, 5.20, Czech Lesson for Germans and German Lesson for Czechs, 5.50, Light Music on Gramophone Records, 6.5, Agricultural Talk, 6.15, Tourist Talk for Workers, 6.25, News in German, 6.30, German Transmission, Talk: Young People without Chances for the Future, Walter Seid reads from his own works, 7.0, Time and News, 7.10, Talk: The Sun as a Benefactor and a Destroyer, 7.25, A Relay from Music Halls and Places of Entertainment in Prague, 8.30, See Brno. In the interval at 9.0, Time Signal, 9.30, Brass Band Concert, 10.0, Time Signal, 10.2, News, Announcements and Sports Notes, 10.15, Brass Band Concert (contd.), 10.45, See Moravská Ostrava, 11.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Geneva, 395 kc/s, 760 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory, 12.30 p.m., News Bulletin and Weather Forecast, 12.40 (from Geneva), Light Music on Gramophone Records, 1.0 (from Geneva),

Financial Notes, 1.10 (from Geneva), Popular Music on Gramophone Records, 2.0 to 3.28, Interval, 3.28, Time Signal from Neuchâtel Observatory, 3.30 (from Geneva), Popular Concert, 5.30 (from Berne), Report on the International Match—Switzerland v. England, 7.30 (from Geneva), Weather, News, and Announcements, 8.0 (from Geneva), Popular Concert, 9.0 (from Lausanne), Concert of Slav Music by a Russian Orchestra and Mme. Talalay (Songs), 9.50, News and Weather Forecast, 10.0, Dance Music, relayed from Le Pernoquet Montreux, 11.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., Agricultural Talk, 6.30, French Lesson, 6.58, Weather Report, 7.0, Duets from Operas, by Irma Kahnis (Soprano) and A. Kaitans (Baritone), 7.25, Concert by the Ryon Music Society on its Hundred and Twenty-Fifth Anniversary, National Anthem; Overture, Egmont (Beethoven); Elegiac Melodies (Grieg); (a) Herzwunden, (b) Letzter Frühling; March from Sigurd Jorsalfar (Grieg), 8.0, News Bulletin, 8.20, Concert (contd.), Popular German Songs played on Trumpets a hundred and twenty-five years old and repeated on Modern Wind Instruments, 9.0, Weather and News, 9.20, Dance Music, 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 369 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert, 4.30, Children's Radio Review, 4.45, Report of the Royal Geographical Society, and Giornale Radio, 5.5, Exchange and Announcements, 5.15, Reading, 5.30 to 6.15, Orchestral Concert: Lucia e Lelio (Gramantieri); Hungarian Caprice (Ferraris); A Night in Vienna (May); Selection from La donna perduta (Pietri); Cordoba (Albeniz); In the Desert (Palerini); Humoresque (Rachmaninov); Ragazze d'oggi (Mascheroni), 6.40 (Naples), Shipping and Sports Notes, 6.50, Agricultural and Dopolavoro Notes, 7.0, Tourist Report, 7.10, Lesson in Morse, 7.20, Giornale Radio, 8.0, Time, Announcements, and Gramophone Records of Light Music, 8.15, Song Recital by Vera Madia Pozzioli (Soprano), 8.30, Giornale Radio and Sports Notes, 8.45, Symphony Concert, conducted by Victor de Sabata, In the interval, Monologue, 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports, 12 Midnight to 3.0 a.m. (Sunday), New York Relay, 12 Midnight, Kaitenmeyer's Kindergarten, 12.30 a.m., The Economic World To-day, 1.0, Band of Famous Brands, 1.15, Zora Layman and her Debonairs, 1.30, Neighbours—Dramatic Sketch, 2.0, B. A. Rolfe and his Terraplane Orchestra, 3.0, Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuenburg Observatory and Weather, 12.5 p.m. (from Berne), Popular Music on Gramophone Records, 12.30, News Bulletin, 12.40 (from Berne), Concert, 1.25 (from Berne), Weather, Exchange and Time Signal, 1.30 (from Berne), Answers to Correspondence, 1.45 (from Basle), Review of New Books, 2.15 (from Basle), Light Music on Gramophone Records, 2.45 (from Basle), Talk: Modern Physical Culture, 3.15 (from Basle), Ballet Music on Gramophone Records, 3.30 to 5.0, Interval, 5.0 (from Basle), Accordion Music, 5.30 (from Berne), Report on the International Football Match, England v. Switzerland, 7.30 (from Basle), Time, Weather and Market Prices, 7.40 (from Basle), Newly released Gramophone Records, 8.0 (from Basle), Astronomical Talk: Comets which have ceased to exist, 8.10, Jazz on Gramophone Records, 8.30, Everyday Life, Radio Sequence (Dr. Paul Meyer and Werner Hausmann), 9.0, Weather and News, 9.10 (from Basle), The Windows are open, Spring is here Bunter Abend, 10.15 (from

Basle), Old and New Dance Music on Gramophone Records, 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Concert of Light Music; Soloist, Maj Jern (Songs), 5.5, Variety Programme, 6.0, Popular Music on Gramophone Records, 7.0, The Practical Corner, 7.15, Weather and News, 7.30, Cabaret, 8.30, Talk on Xoumady, 9.0, Old Time Dance Music, 9.45, Weather and News, 10.0, Dance Music, 11.0 (approx.), Close Down.

STRASBOURG

863 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Classical Music on Gramophone Records, 12.45 p.m., News, 1.0, Time and Exchange, 1.5, Variety Music on Gramophone Records, 2.0, Legal Talk in German, 2.15, Popular Music on Gramophone Records, 3.15 to 3.45, Interval, 3.45, Talk on Music: Wagner's Dramatic Tendencies, 4.0, Wagner Concert, conducted by Maurice de Villers; Overture, The Flying Dutchman; Selection from Renzi; Overture, Tannhäuser; Two Arias from Tannhäuser; March and Bridal Chorus from Lohengrin; After the Concert, Suite, Scherzade (Rimsky-Korsakov), 6.0, Tourist Talk, 6.15, French Lesson, 6.30, Light Music on Gramophone Records, 7.15, Gardening Talk in German, 7.30, Time and News, 7.45, Light Music on Gramophone Records, 8.15, Press Review in German, Lottery Results, and Announcements, 8.30, Alsatian Evening, 10.0, Press Review in French, 10.5, Orchestral Concert, conducted by Jaquet, relayed from the Café Moll, Soloist; Jaquet (Violin), Overture, Il Soraglio (Mozart); Waltz, Morgenblätter (Joh. Strauss); La Bayanaise, for Violin and Piano (Saint-Saëns); Ballet Music from Les deux Pigeons (Messager); Si mes vœux avaient des ailes (Hahn); Selection from The Land of Smiles (Lehar), 11.0, Dance Music from the Savoy, 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 332 kc/s, 360.5 metres; 60 kW. and Freiburg, 527 kc/s, 570 metres.—1.0 p.m. (from Mannheim), Recital of Drinking Songs by Alfred Fährbach (Tenor); Rheinlied (Dhemeyer); Was ist Wein (Seewald); Weinlied (Eysler); Meine Pfalz (Koch); Am Rhein beim Wein (Ried), 1.30, Concert from Langenberg, 2.30, Time, News, Weather and Programme Announcements, 2.45, Soprano and Tenor Song Recital by Elli Buob and Hermann Lingor; Aria from The Girl of the German West (Puccini); Duet from Martha (Maillart); Aria from The Hermit's Bell (Maillart), 3.30, Programme for Children, relayed from Frankfurt, 4.30, See Munich, 5.45, Time and Sports Report, 6.0, Talk: The Destiny and Mission of Germans on the Frontiers and Abroad, 6.25, Talk: Graphic Art of the Romantic Period, 6.50, Time and News, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender), 8.0, Light Music on Gramophone Records, 8.15, See Frankfurt, 10.15, Time, News, Weather and Programme Announcements, 10.45, See Munich, 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire, 7.30 p.m., Opera Music, 7.45, Cello Solos, 8.0, Military Music and Accordion Solos, 8.30, Concert by a Symphony Orchestra, 9.0, Extracts from Herodias—Opera (Massenet), followed by Light Music, 10.0, Music by an Argentine Orchestra, 10.15, North African News, 10.30, Concert for Listeners in Morocco, 11.0, Popular Music, 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing, 11.30, The Lighter Side of Life: Cheerful little Earle; Ragtime Memories; Laughing Susan and the Saxophone; I'm Milly, the Messy old Mermaid; Handsome Gigolo; Oh, how he looks at me; Close your Eyes; All through the Night, 11.57, I.B.C. Goodnight Melody, 12 Midnight, Weather and Announcements, 12.5 a.m., Orchestral Music, 12.15, Military Music, 12.30, Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 500 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Dance Music on Gramophone Records, 6.35, Giornale Radio, Announcements, and Agricultural Report and Dopolavoro Notes, 7.0, Time, Tourist Report and Songs on Gramophone Records, 7.20, Giornale Radio, 7.45, Popular Music on Gramophone Records, 8.0, Announcements, Giornale Radio, Weather, and Popular Music on Gramophone Records, 8.30, Talk: Events and Problems, 8.5, Fior di neve—Operetta in Three Acts (Giusseppe Blanc), In the intervals, Book Review, Announcements, and Giornale Radio, After the Operetta (from Florence), Dance Music Relay.

VATICAN CITY

15,120 kc/s, 19.83 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 1 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages, 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 62 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.0 p.m., Concert conducted by Alois Dostal, relayed from Bad Hall, Overture, Light Cavalry (Suppe), Waltz, Wine, Woman and Song (Joh. Strauss), Selection from La Juvie (Hakvay-Schneider), Die Post kommt (Eilenberg), Potpourri, Für meine Freunde (Komzak), March, Kurkurmissär Purtscher (Postal), 6.0, Talk: Experiences as a Guest of an Indian Maharajah, 6.25, Talk: World Events of the Month, 6.50, Concert by the Tautonhayn Quartet, Tautens-Marsch (Suppe), Gavotte, Die Taufenschlägerin (Komzak), Polka Mazurka, Frühlingsschritt an Pauline (Schramm), Ländler, Styrian Dances (Lanner), Waltz Intermezzo, Rebengeister (Tautonhayn), Nur ein Traum, from Der Feldregler (Müllbacher), The Queen's Song, from The Queen's Kerehief (Joh. Strauss), Cake Walk (Klein), Polka from Der Jotnar (Müller), 7.25, The Maxim, 7.30, Time, Weather, Sports Notes and Programme Announcements, 7.40 (from Graz), Radio Report on the Second Day of the First International Flight over the Austrian Alps (on Gramophone Records), 8.0, Der Freudenführer, Operetta in Three Acts (Ziehrer), In an interval a, 9.45 (approx.), News, Weather and Announcements, 10.15, Dance Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57, Time Signal and Fanfare from St. Mary's Church, Cracow, 12.5 p.m., Programme Announcements, 12.10, Weather, 1.15, Broadcast for Schools, relayed from Lwów, 788 kc/s (381 metres), 1.55, Interval, 3.10, Announcements, 3.15, Economic Notes, 3.25, Answers to Military Correspondence, 3.35, Reading, relayed from Cracow, 959 kc/s (312.8 metres), 4.0, Popular Music on Gramophone Records, 4.40, Reading, relayed from Wilno, 533 kc/s (563 metres), 5.0, Popular Music on Gramophone Records, 5.35, News, 5.40, Topical Talk, 5.55, Programme Announcements, 6.0, Divine Service, relayed from Czeszochowa, 7.0, Miscellaneous Items, 7.20, Agricultural Notes, 7.30, Topical Talk, 7.45, Radio Journal, 8.0, Concert of Popular Music by the Radio Orchestra, conducted by St. Naylor; soloists: T. Falczewski (Songs) and A. Misulowicz and T. Kwieciński (Saxophone); Overture, Silvera (Silvery); Danse fantastique (Cabella), Three Songs; Suite (Percey-Elliott); Saxophone Duets; (a) Foxrot (Misulowicz), (b) Boston (Kwiecinski); Waltz, Gold and Silver (Lehar); Mazurka (Ostman); Three Songs Ballet Music from Faust (Gounod), Three Saxophone Duets; Cigany March (Fajenczi); Melody (Karaskinski); March, The Spring (Naryeslovski); March, On the Bank of the Mississippi (Fucik), In the interval, Sports Notes and Radio Journal, 10.5, Chopin Pianoforte Recital by B. Kon, Polonaise in E Flat Minor, Op. 26; Fantasia in F Minor, Op. 49; Nocturne in C Minor, Op. 4; Polonaise in A Flat, Op. 53, 10.40, Reading, 10.55, Aviation Weather Report and Police Report, 11.0, Dance Music from the Podega, In an interval at 11.30, News for Members of the Polish Polar Expedition, relayed from Lwów, 788 kc/s (381 metres).

ZURICH.—See Schweizerischer Landesender.

Printed for the Publishers, ILIFFE & SONS LTD., Dorset House, Stamford Street, London, S.E.1, by The Cornwall Press Ltd., Paris Garden, Stanford Street, London, S.E.1, Colonial and Foreign Agents:

UNITED STATES—The International News Co., 131, Varick Street, New York. FRANCE—W. H. Smith & Son, 248, Rue Rivoli, Paris; Hachette et Cie., Rue Réaumur, Paris. BELGIUM—W. H. Smith and Son, 71-75, Boulevard Adolphe Max, Brussels. INDIA—A. H. Wheeler & Co., Bombay, Allahabad and Calcutta. SOUTH AFRICA—Central News Agency, Ltd. AUSTRALIA—Gordon & Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania). CANADA—The American News Co., Ltd., Toronto, Winnipeg, Vancouver, Montreal, Ottawa, St. John, Halifax, Hamilton, Gordon & Gotch, Ltd., Toronto; Imperial News Co., Toronto, Montreal, Winnipeg, Vancouver, Victoria. NEW ZEALAND—Gordon & Gotch, Ltd., Wellington, Auckland, Christchurch and Dunedin.



MANY MORE RADIO HOURS

PER BATTERY !

fit

PERTRIX
NON SAL-AMMONIAC

H.T. BATTERIES

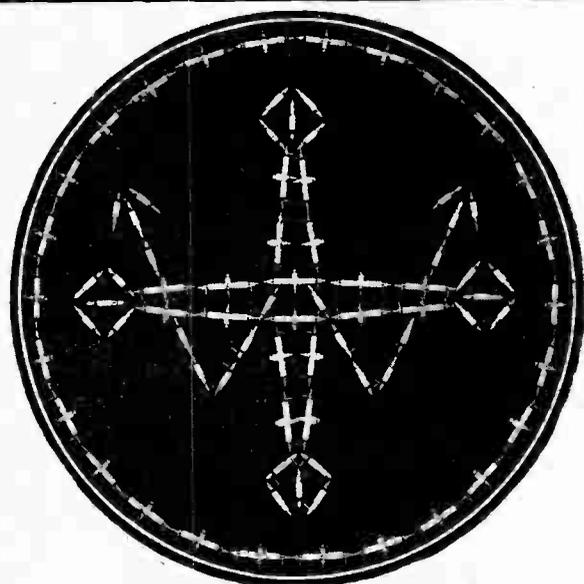
Month after month Pertrix H.T. Batteries continue to give that generous output of steady current so vital to the true tonal rendering of speech and music. The results are certainly amazing—yet the reasons are not far to seek. Pertrix Batteries are constructed of entirely different materials from those used for all other batteries. Pertrix zincs do not corrode, because there is no sal-ammoniac; this means no deterioration when the battery is out of use. Pertrix have immense recuperative powers—for while inactive they build up their power for the next day's radio. Fit Pertrix: next time—they give service until the last ounce of power is out!

REMEMBER NON SAL-AMMONIAC MEANS EXTRA LIFE!

BRITANNIA BATTERIES LTD.,

233 Shaftesbury Avenue,
London, W.C.2
Works: Redditch, Worcs.

GET YOURS NOW!



FIT THE WESTECTOR IN YOUR SET

and get pure detection with no distortion and consequently better quality. Its use also means a saving in current, as the Westector contains neither anode nor filament. Write to-day for particulars of the new metal detector.



WESTECTOR
TYPE W2
HIGH-FREQUENCY
METAL DETECTOR

IT'S A WESTINGHOUSE PRODUCT!

THE WESTINGHOUSE BRAKE & SAXBY SIGNAL CO., LTD.,
82, YORK ROAD, KING'S CROSS, LONDON.



Power Amplifiers and P.A. Equipment

for Fetes, Sports Grounds, Restaurants, Public Halls, etc. Powerful output with purity of reproduction. B.S.R. Equipment is moderate in price and gives trouble-free operation.

"... a very high standard in reproduction ... undoubtedly in a class apart" — WIRELESS WORLD.

A 120 watt B.S.R. Amplifier has been installed on Blackburn Greyhound Racing Stadium. The Directors have expressed their entire satisfaction at what they described as a perfect and unqualified success.

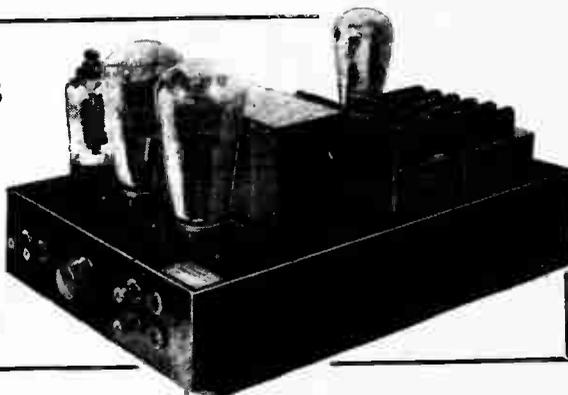
BIRMINGHAM SOUND REPRODUCERS, LTD.,
CLAREMONT WORKS, OLD HILL, STAFFS.

Phone: Cradley Heath 6370.

Grams: Electronic, Old Hill.

STANDARD AMPLIFIERS
from 25 to 120 WATTS.

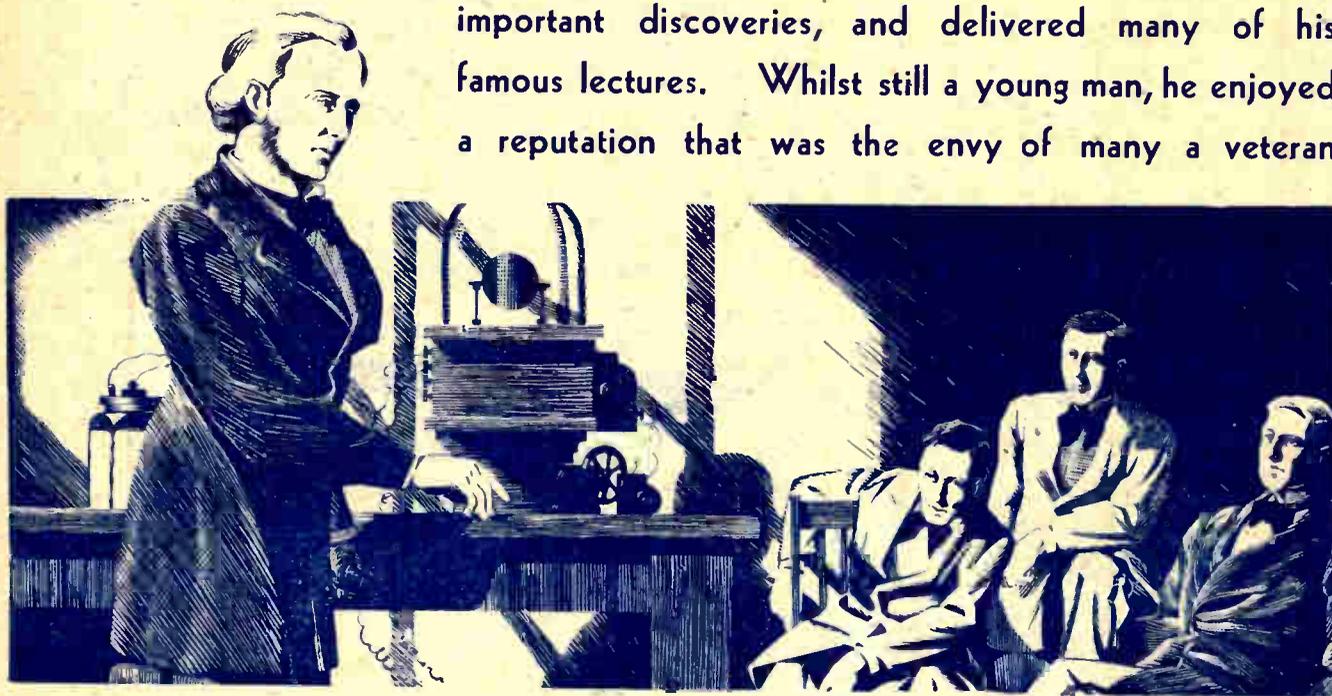
You will eventually instal B.S.R.
Do so NOW.



Parallels of History No. 1

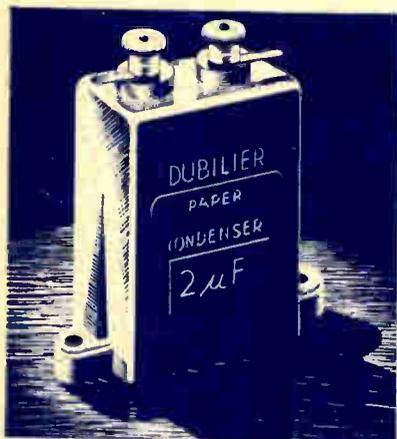
LORD KELVIN

It was in a badly lit, disused wine cellar that Kelvin first began his scientific research. Converted into a laboratory, it was here that he made many of his important discoveries, and delivered many of his famous lectures. Whilst still a young man, he enjoyed a reputation that was the envy of many a veteran



scientist, a reputation that was earned, not by reason of his intellectual gifts alone, but because of his amazing capacity for tireless research.

The same might also be said of the Dubilier Condenser Company. Their present prominent position is due not to resting on laurels won many years ago, but to consistent and untiring research through 21 years of successful trading. The result of this research is seen in the high standard of dependability for which Dubilier Condensers and Resistances are to-day famous the world over.



DUBILIER CONDENSER CO.
(1925) LTD.,

DUCON WORKS, VICTORIA RD.,
NORTH ACTON, W.3

DUBILIER CONDENSERS

4^D

The Wireless World

THE PRACTICAL RADIO JOURNAL

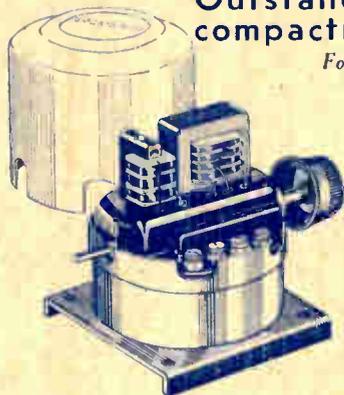
with

Complete Foreign Programmes

Friday, May 19th, 1933

COLVERN FERROCART COILS

Outstanding selectivity compactness & efficiency



Following Types now available

Type F1, F2. Input Band-pass filter. Constant selectivity, ganging unaffected by variation in aerial reactance, symmetrical resonance curve.

Type F3. Auto transformer intervalve coupling with reaction, ganging perfectly maintained on both wave ranges by transfer of tapping point in correct turns ratio, practically constant reaction.

Price: Types F1, F2, F3, mounted on sub-base, ganged wave change switches, 50/- per set.

Made under licence from the Patents—Hans Vogt.

COLVERN LTD., ROMFORD, ESSEX.
London Wholesale Depot: 150, King's Cross Road, W.C.1

H.T. for ever for 1/- a year

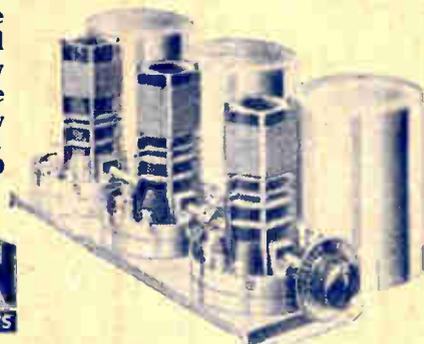
POWER UNITS

Write to: E. K. Cole, Ltd., Dept. W 9, Ekco Works, Southend-on-Sea.

TELSEN SUPERHET COILS

TYPE No. S.330

Specified for the W. W. Monodial Super Battery Receiver. The ideal coils for any superhet circuit. **25/6**



Announcement of the TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

WHATEVER THE RECEIVER USE

T.C.C.
ALL-BRITISH
CONDENSERS

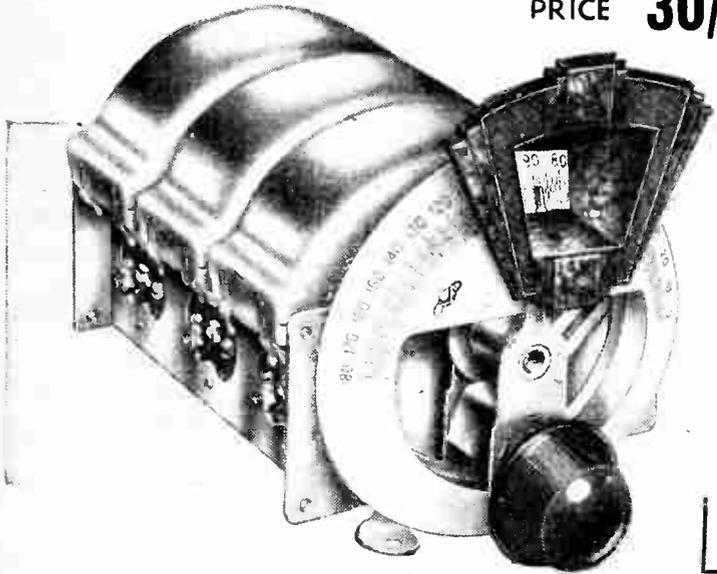
AND BE SURE



The Telegraph Condenser Co., Ltd., Wales Farm Road, N. Acton, London. W.3

- ★ **MATCHING ACCURATE** to within $\frac{1}{2}$ to 1% or 1 mmfd. whichever is the greater.
- ★ **TRIMMERS** conveniently operated from top. Adjustment constant under all conditions.
- ★ **ACCURATE SPACING** of vanes obtained by precision machine assembly. This entirely eliminates the possibility of error.
- ★ **STRONG SPRING JOURNAL BEARINGS** gives absolute freedom from shake or end-play.

WITH DRIVE
PRICE **30/6**





FOUR STAR FEATURES of **POLAR STAR** CONDENSERS

... and four reasons why the Polar Star 3-gang Condenser was specified for the famous "W.W. Class 'B' Ferrocart Receiver"—why leading set designers specify Polar—and, equally important, why you should use Polar. Write for special leaflet.

**POLAR
STAR
3-GANG**
without Drive.

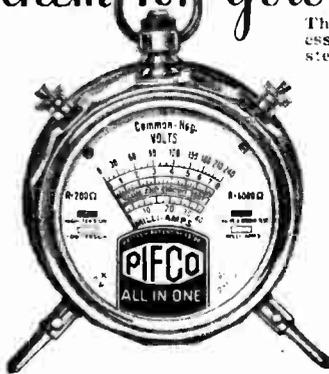
3 X.0005 **25/6**

WINGROVE & ROGERS LTD.
188-9, STRAND, W.C.2.

Telephone: Temple Bar 2244. Works: Old Swan, Liverpool.
♥ 2888

DON'T HAVE RADIO TROUBLES

**The DOCTOR
OF RADIO**
will solve
them for you



The PIFCO Radiometer is as essential to the radio owner as a stethoscope is to the doctor. It diagnoses instantly the cause of any trouble, however abstruse. This amazing instrument ensures a new standard of radio reception by locating trouble in all its stages. Ask to see it demonstrated at your radio dealer's or electrician's. If any difficulty, send P.O. direct to—

PIFCO LTD.,
High Street, MANCHESTER
or 150 Charing Cross Road,
London, W.C.2.

*De Luxe Model for Electric
Receivers, Mains Units and
Battery Sets.*

£2 : 2 : 0

12/6 Standard Model "All-in-One" Radiometer for Battery Sets only, as shown here. **PIFCO ALL IN ONE RADIOMETER**

MONODIAL

CONSTRUCTORS FIT
DAVENSET
MAINS COMPONENTS

If you desire unprecedented results, be sure to use one of the new DAVENSET Class A Transformers, incorporating **SCREENED PRIMARY & SCREENED SECONDARIES.**

The Special Chokes for this set are also available at reasonable prices compatible with their high quality.

For the 2.5 watt Power Chassis. List No. 22.

Price **45/-**

For the 5 watt Power Chassis. List No. 23.

Price **62/6**

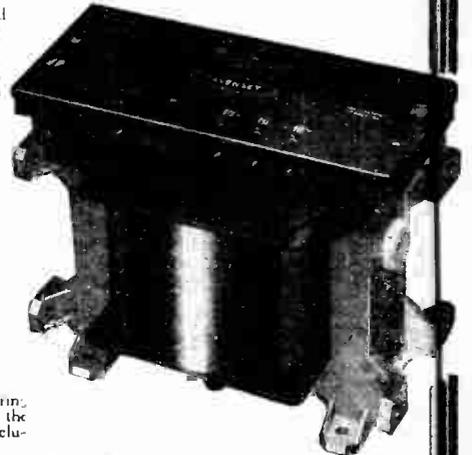
Transformers and Chokes bearing the name DAVENSET are the finest made, and worthy of inclusion in such a set.

FREE Write for the booklet "Mains Transformers and Power Smoothing Chokes for Radio and Industrial Purposes," which illustrates and describes these high-grade products.

REMEMBER We build to your own specification, when required.

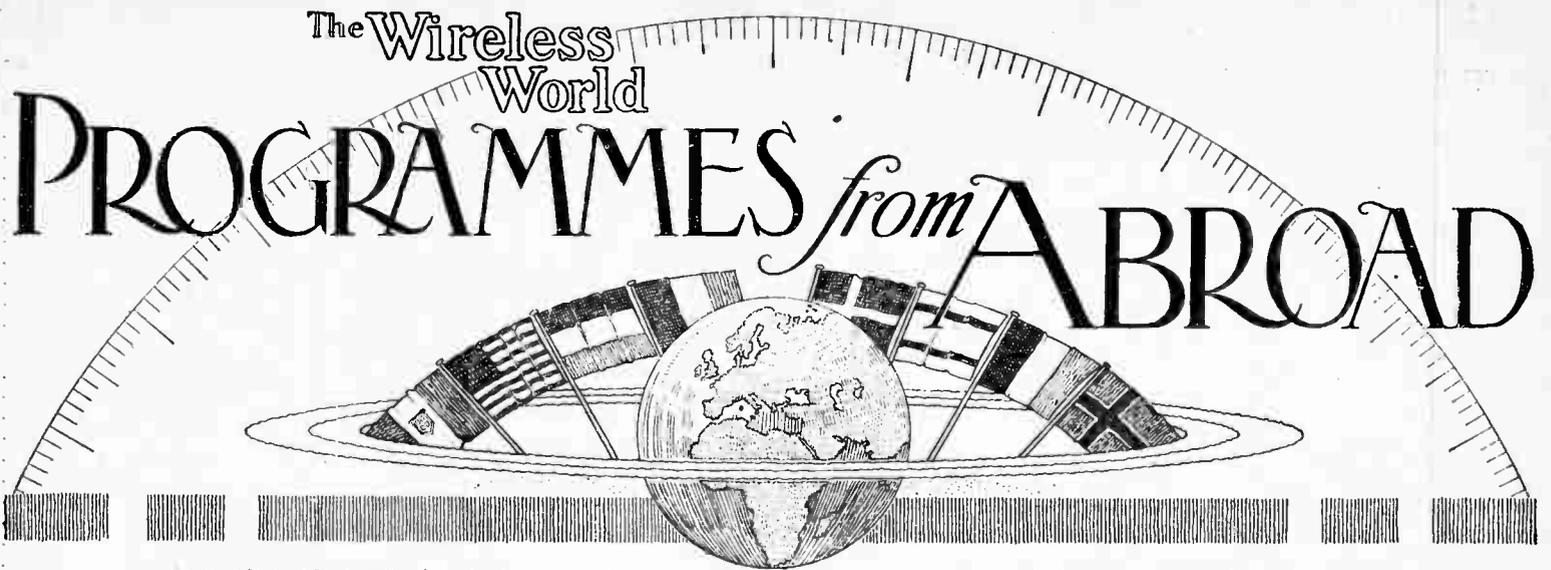
PARTRIDGE, WILSON & CO.
Dept. 29, Davenset Works, Leicester.

Scottish Branch: 200, St. Vincent Street, Glasgow, C.2.



ΦA

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania) ..		453.2	662	0.25	Agen (France) ..	
1875	160	8.5	Huizen (Holland) ..		453.2	662	7	Milan (<i>Experimental Relays Rome</i>) ..	
1796	167	40	Lahti (Finland) ..		450.3	666	20	Madona (Latvia) ..	
1725	174	75	Radio Paris, C.F.R. ..		447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.);	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. <i>Stn. D.F.A. on 31.38 m.</i>)					Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (<i>relays Oslo</i>).	
1554.4	193	30	Daventry National ..		441.2	680	50	Rome, IRO, (S.-W. <i>Station, 2 RO on 25.4 m.</i>)	
1538	195	7	Ankara (Angora) (Turkey) ..		435.4	689	55	Stockholm, SASA (Sweden) ..	
1481	202.5	100	Moscow, RVI (Old Komintern) (Russia) ..		430.4	697	2.5	Belgrade (Yugoslavia) ..	
1446	207.5	13	Eiffel Tower, P.L., Paris ..		424.3	707	2	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>)	
1412	212.5	120	Warsaw I (Poland) ..		424.3	707	100	Moscow, Imini Stalina (Russia) ..	
1380	217.5	100	Novosibirsk, RV6 (Russia) ..		419.5	715	1.5	Berlin, No. 1, Witzleben (Germany) ..	
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>)		416.4	720.5	5	Rabat (Morocco) ..	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia) ..		413	725	60	Athlone (Irish Free State) ..	
1275	235	0.5	Tunis-Kasbah (Tunisia) ..		408.7	734	16	Katowitz (Poland) ..	
1230	244	0.6	Boden (Sweden). (<i>Relays Stockholm</i>)		403.8	743	25	Sottens (Radio Suisse Romande) (<i>Switzerland</i>)	
1200	250	5	Stamboul (Turkey) ..		398.9	752	25	Midland Regional. (Daventry)	
1200	250	21	Reykjavik (Iceland) ..		394.2	761	12	Bucharest (Roumania) ..	
1190	252	200	Luxembourg (<i>Testing</i>) ..		389.6	770	120	Leipzig (Germany) ..	
1170	256	25	Tashkent, RV11 (Russia) ..		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)		385.1	779	10	Stalino, RV26 (Russia) ..	
1117	268.5	40	Moscow, Popoff RV58 (Russia) ..		381	788	16	Lwow (Lemberg) (Poland) ..	
1083	277	60	Oslo (Norway) ..		376.4	797	50	Scottish Regional (Falkirk) ..	
1071	280	35	Tiflis, RV7 (Russia) ..		372.2	806	1.5	Hamburg (Germany) ..	
1035	290	36	Kiev, RV9 (Russia) ..		370.1	810.5	0.8	Radio, L.L. Paris	
1000	300	100	Moscow (Russia) (S.-W. <i>Stn. on 50 m.</i>)		368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.);	
938	320	20	Kharkov, RV4 (Russia) ..					Galicja EAJ4 (0.2 kW.) (Spain); Bolzano	
857	350	100	Leningrad (Russia) ..					(1.0 kW.) (Italy); Helsinki (10 kW.) (Fin-	
840	357	18.5	Budapest (Hungary) ..					land) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.)	
825	363.6	50	Sverdlovsk, RV5 (Russia) ..		368.1	815	0.7	(Russia).	
770	389	0.6	Ostersund (Sweden). (<i>Relays Stockholm</i>)					Fredriksstad (Norway). (<i>Relays Oslo</i>)	
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>)		364.1	824	1	Bergen (Norway) ..	
720	416.6	20	Moscow, RV2 (Experimental) (Russia) ..		363.6	825	13	Algiers (Algeria) ..	
690	434.6	1.5	Oulu (Uleaborg) (Finland) ..		360.6	832	60	Mühlacker (Stuttgart) (Germany) ..	
630	441.2	0.6	Lausanne (Switzerland). (<i>Relays Sottens</i>)		355.9	843	50	London Regional (Brookmans Park) ..	
678.7	442	15	Monte Ceneri (Switzerland). (<i>Testing</i>)		352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>)	
574.7	522	7	Ljubljana (Yugoslavia) ..		348.8	860	7.6	Barcelona, EAJ1 (Spain) ..	
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>)		348.8	860	10	Leningrad, RV70 (Russia) ..	
588.1	528	2	Grenoble (France) ..		345.2	869	11.5	Strasbourg, PTT (France) ..	
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>)		341.7	878	35	Brno (Brunn) (Czechoslovakia) ..	
563	533	16	Wilno (Poland). (<i>Relay Station</i>)		338.2	887	15	Brussels II, Velthem (Belgium). (<i>In Flemish</i>)	
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>)		335	896	5	Cadiz (Spain) ..	
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>)		334.4	897	1.9	Poznan (Poland) ..	
558.6	537	1	Tampere (Finland). (<i>Relays Helsinki</i>)		331.5	905	50	Milan (Italy). (<i>Relays Turin</i>)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary) ..		323.2	914	60	Poste Parisien (France) ..	
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>)		325	923	60	Breslau (Germany) ..	
537.6	558	3	Palermo (Italy) ..		321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>)	
533	563	60	Munich (Germany) ..		318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>)	
525	571	15	Riga (Latvia) ..		318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>) ..	
517	580	15	Vienna (Rosenhügel) (Austria) ..		315.8	950	1.6	Marseilles, PTT (France) ..	
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>)		312.8	959	0.7	Radio Vitus (Paris). (S.-W. <i>Stn. on 43.75 m.</i>)	
500.8	599	20	Florence, IPI (Italy). (<i>Relays Turin</i>)		312.8	959	1.7	Cracow (Poland) ..	
495.8	605	1.2	Trondheim (Norway) ..		312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>) ..	
488.6	614	120	Prague, No. 1 (Czechoslovakia) ..		309.9	968	1	Cardiff ..	
480	625	50	North Regional (Manchester) ..		309.9	968	50	West Regional (Washford Cross) ..	
472.4	635	60	Langenberg (Germany) ..		307	977	0.75	Zagreb (Yugoslavia) ..	
465.8	644	1.5	Lyons la Doua, PTT (France) ..		304	986	13	Bordeaux Lafayette, PTT (France) ..	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).		301.5	995	50	North National (Manchester) ..	
			San Sebastian, EAJ8 (0.6 kW.); Pori		298.8	1004	11	Tallinn (Estonia) ..	
			(1.0 kW.) (Finland); Danzig (0.5 kW.)		296.1	1013	20	Hilversum (Holland). (<i>7 P.W. before 4.40 p.m.</i>)	
			(<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.)		293.5	1022	0.7	Limoges, PTT (France) ..	
			(Austria) (<i>relays Vienna</i>); Porsgrund		293.5	1022	2.6	Kosice (Czechoslovakia) ..	
			(0.7 kW.) (<i>relays Oslo</i>); Tromsø (0.1 kW.)		291	1031	10	Viiuri (Viborg) (Finland). (<i>Relays Helsinki</i>)	
			Bodø (0.5 kW.) (Norway); Upsala		288.3	1040	50	Scottish National (Falkirk) ..	
			(0.15 kW.) (Sweden) (<i>relays Stockholm</i>).		288.3	1010	1	Bournemouth (<i>Relay Station</i>) ..	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, Kc, kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Table with columns: Metres, Kc, Call Sign, Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

MAY THE TWENTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Orchestral and Military Band concert, from Bournemouth.
LONDON REGIONAL Service from Streatham Methodist Church; Chamber music.
MIDLAND REGIONAL Service from the Cathedral, Birmingham, conducted by Bishop A. Hamilton Baynes.
NORTH REGIONAL Service from St. Sylvester's Roman Catholic Church, Liverpool.
WEST REGIONAL Concert from the Park Hall, Carliff.
BELFAST Evensong from St. James's Parish Church, Belfast.

ABROAD

BORDEAUX LAFAYETTE BUDAPEST 9.0 p.m. Concert from the Casino, Vicky.
HILVERSUM 8.15 p.m. Operetta: "Lustige Husaren," by Emmerich Farkas.
LEIPZIG 8.40 p.m. Beethoven's Second Symphony, conducted by W. Mengelberg, from Amsterdam.
MUNICH 11.30 a.m. Bach Cantata: "Was willst du dich betriiben" (Relayed by other German Stations).
OSLO 8.50 p.m. Act 3 of "Siegfried" (Wagner), from the National Theatre.
PRAGUE 10.15 p.m. Act 3 of "Tales of Hoffmann," by Offenbach.
SOTTENS 6.0 p.m. Opera: "The Betrothal by Lanternlight," by Offenbach.
STRASBOURG 3.30 p.m. Opera: "Madame Butterfly" (Puccini), from Lausanne.
STOCKHOLM 3.30 p.m. Oratorio: "The Seasons" (Haydn), relayed from Lille.
VIENNA 8.0 p.m. Operetta: "Countess Maritza," by Kalman.
 12.45 p.m. Brahms' Symphony, No. 1, in C Minor (Op. 68), conducted by Furtwängler.

ATHLONE
 725 kc/s, 413 metres; 60 kW., and Cork, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Annie Fagan's Instrumental Trio. 8.50, Birtbright-Play (T. C. Murray), by the Dublin Repertory Company. 9.50, Contralto Solos by Betty Byrne. 10.10, Instrumental Trio. 10.30, Bass-Baritone Solos by M. O'C. Maguire. 10.50, Instrumental Trio. 11.0, Time, News, Weather, and Close Down.

BARCELONA
 860 kc/s, 348.8 metres; 8 kW.—2.0 p.m., Variety Music on Gramophone Records. 2.30 (in an interval), Theatre Notes. 3.0, Film Review. 3.5 (approx.), Concert by the Station Sextet. 4.0, Programme for Hospitals and Benevolent Institutions, with Gramophone Records. 5.0 to 6.30, Interval. 6.30, Agricultural Talk in Catalan. 7.0, Concert of Light Music. 7.30, Baritone Song Recital. 8.0, Orchestral Concert with Tenor Solos. 9.0, Dance Music from the Hollywood Bar. 10.0, Extracts from an Opera on Gramophone Records. 11.45, Chess Lesson. 12 Midnight (approx.), Close Down.

BARI
 1,112 kc/s, 269.8 metres; 20 kW.—10.45 a.m., Agricultural Report. 11.5, Sacred Music from the Church of San Domenico. 11.30, Bible Reading. 1.0 p.m., Giornale radio. 1.10 to 2.15, Variety Music on Gramophone Records. In the intervals at 1.55, Weather, and at 2.0, Time and Announcements. 5.30 to 6.30, Popular Music on Gramophone Records. 8.0, Sports Notes and Giornale radio. 8.30, Time and Announcements. 8.45 (approx.), Concert of Operetta Music and Songs. Soloists: M. Montanari (Tenor) and Clara Demetri (Soprano). Fantasia, Mascheronide (Mascheroni); Tenor Solo, Fanciulle belle (D'Anzi); Soprano Solo, Piccolo bar (D'Armand); Astrakan, suol d'amore (Moleli); Tenor Song (Stolz); Soprano Solo, Pallida Mari (Stocchetti); Il signore del tassametro (Randegger); Tenor Solo, Canto all luna (Fragna); Soprano Solo, Addio bambine (Mascheroni); Potpourri Bixiana (Bixio); Soprano Solo, Non ritornate rondini (Billi); Mountain Serenade (Blanc); Soprano Solo, Sotto l'ombrello (Mascheroni); Tenor Solo, Sperduti nel blu (Borilla); Funiculifunicula (De Aceo); Soprano Solo, Carillon (Tagliaberi); Tenor Solo, Catarinette (Ravasi). 10.30, Variety Music on Gramophone Records. 10.55, News Bulletin.

BASLE—See Schweizerischer Landessender.

BELGRADE
 430.4 metres; 2.5 kW.—4.30 p.m., Orchestral Concert. 6.55, Time and Programme Announcements. 7.0, Violin Recital. 7.45, A Radio Play. 8.15, Orchestral Concert with Xylophone Solos. 9.15, Sports Notes. 9.30, Recital of Russian Folk Songs. 10.10, News, followed by Cigany Music from the Patrosacka Zadruga Restaurant.

BERLIN
DEUTSCHLANDSENDER; 183.5 kc/s, 1.635 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, See Breslau. In the interval at 12.55, Time Signal. 2.0, Herybert Menzel reads from his own Works. 2.30, Talk: A Visit to an Arab Worker in the Hottest Town in the World. 3.0, Radio Play for Children. 3.45, See Berlin (Witzleben). In an interval at 4.0, Report on Davis Cup Match, Germany v. Holland, with Gramophone Interludes. 5.15, A Dialogue: Social Welfare and National Socialism. 5.30, Recital of Opera Arias, by Carl Spetter; Aria from Figaro; Micaela's Aria from Carmen (Bizet); Mimi's Aria from La Boheme (Puccini); Elsa's Dream from Lohengrin (Wagner); Elizabeth's Prayer, from Tannhauser (Wagner). 6.10, Talk: Ecclesiastical Leadership. 6.30, Songs as Instrumental Music—Gramophone Concert. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Paul Lincke Concert, conducted by the Composer. Soloists: Lotte Werkmeister and Theo Lucas (Songs); Apollomarsch; Overture, Frau Luna; Song, Am schönen Rhein denk ich dein; Waltz, Verschmälte Liebe; Song, Ach die böse Liebe; Geburtstagsständchen; Duet, Onkel Fichte mit der Nichte; Waltz, O, Frühling wie bist du so schön; Duet, Fritzi und der Fritze; Overture, Im Reiche des Indra; Song, Es gibt ja so viel nette Mädchen; Serenade, Anina; Song, Ach, wenn das meine Mädchen wüßte; Siamesische Wachtparade; Duet, Das ist der außer von Berlin; Potpourri, Laßt den Kopf nicht hangen. 10.0, Weather, News, and Sports Notes. 10.20, Dance Music from Kroll's Festsaal. In the interval at 10.45, Weather Report for Shipping. 11.0, Light Music and Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN
 715 kc/s, 419.5 metres; 1.5 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Concert from Breslau. 2.0 p.m., Pro-

gramme for Garden City Dwellers—Talks. 3.0, Programme for Young People. 3.45, Radio Report of the ADAC International Motor Races, from the AVUS. In the interval at 4.0, Radio Report of the Davis Cup Match, Germany v. Holland. Gramophone Music throughout the Programme. 5.15, Radio Report of the Procession of Blind Men's Dogs in the Lustgarten. 5.25, Programme arranged by the Berlin Branch of the Society for the Protection of Animals, relayed from the Landesausstellungen Park. 6.15, Report on International Affairs. 6.30, Talk by Captain Helmut Lorenz: My Last Journey in my U-boat. 6.50, Announcements. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Report from Berlin Castle. 9.15, Berlin All Week—Radio Report from Berlin Castle. Concert by the Berlin Philharmonic Orchestra, conducted by Erich Kleiber. 10.0, News, followed by Light Music and Dance Music. 12 Midnight (approx.), Close Down.

BEROMUNSTER—See Schweizerischer Landessender.

BODEN—See Stockholms.

BODO—See Oslo.

BORDEAUX-LAFAYETTE
 966 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.45, Sports Notes. 8.0, Talk for Ex-Servicemen. 8.15, Lottery Results. 8.30, Gramophone Records of Light Music. 9.0, Concert relayed from the Casino, Vichy.

BRATISLAVA
 1,076 kc/s, 279 metres; 14 kW.—12.5 p.m., Radio Report from the Castle of Orava. 12.55, See Brno. 1.30, Agricultural Talk. 1.45 to 1.50, Hydrographic Report. 4.0, Relay from Námestov. 7.0, See Prague. 8.55, See Brno. 9.15, See Prague. 11.0 (approx.), Close Down.

BREMEN—See Hamburg.

BRESLAU
 923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Orchestral Concert, conducted by Franz Marszałek. 2.9 p.m., News. 2.25, Agricultural Notes. 2.40, Talk on Chess. 2.55, Programme for Children. 3.30, Songs of Young Silesia, with Concert by Leo Klaka (Baritone), with G. Bad Salzbrunn. In the interval from 4.50 to 5.10, Radio Report from Bad Salzbrunn and Bad Charlottenbrunn. 6.0, Weather and Sunday

Sports Results. 6.15, Brahms Recital by Nora Wallacek (Pianoforte); Sonata, Op. 1, in C; Ballads, Op. 10, Nos. 3 and 7.0, Transmission for all German Stations, Annaberg. Radio Play (Kurt Eggers), on the Twelfth Anniversary of the Storming of Annaberg. 8.0, Concert by the Silesian Philharmonic Orchestra, conducted by Hermann Behr. Soloist: Oly Sierpina (Soprano); Overture and the Countess' Aria from Figaro (Mozart); Sinfonia concertante for Violin, Cello, Oboe, Bassoon, and Orchestra, Op. 84 (Haydn); Agatha's Aria from Der Freischütz (Weber); Overture, Peter Schmitt (Weber); Overture, William Tell (Rossini); Aria from Hans Heiling (Marschner); German Dances (Schubert); Overture, The Merry Wives of Windsor (Nicolai); Persian March (Joh. Strauss). In an interval from 9.0 to 9.20, News. 10.10, Second News. 10.30, Programme from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO
 878 kc/s, 342 metres; 35 kW.—12.35 p.m., Military Band Concert. 1.30 to 1.45, Agricultural Report. 4.0, See Moravská Ostrava. 5.30, A Sketch. 6.0, German Transmission: Dances of the Nations, by the Station Orchestra, conducted by F. Weidlich. 7.0, See Prague. 7.30, Concert of Modern Music by the Station Orchestra, conducted by B. Bakala. 8.10, Programme from Prague. 8.55, Recital of Yaroslav Yezek's songs. 9.15, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)
 I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert conducted by A. Felleman, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by Mieke's Club Jazz Attraction. In the interval at 1.30, La Noce à Eugène—Sketch (André Blandin). 5.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 5.30, Football Results. 6.0, Gramophone Records of Popular Music. 6.30, Recital by Mme. Tourovetz. 7.0, Gramophone Records (contd.). 7.15, Religious Address. 7.30, Music Review. 8.0, Extracts from Mirella—Opera (Gounod). 8.30, Vasco da Gama—Sketch (Marcel Lefevre). 8.50, Mirella (contd.). 9.20, Tambourin chinois (Kreisler) on Gramophone Records. 9.25, Mirella (contd.). 9.40, Spanish Serenade, Cadiz (Albéniz), on Gramophone Records. 9.45, Mirella (contd.). 10.0, Le Journal Parlé. 10.10, Mirella (contd.). 10.25, Concert, relayed from the Ancienne Belgique.

BRUSSELS (No. 2)
 N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by Mieke's Club Jazz Attraction, conducted by

Ludo Langlois. 1.0 p.m., Le Journal Parlé. 1.10, Concert conducted by André Felleman, relayed from the Grand Hotel, Antwerp. 5.0, Concert by the Radio Orchestra, conducted by Franz André. In the interval at 5.30, Sports Notes. 6.0, Gramophone Records: Tocata (Böckmann); Petite Suite (Debussy-Busser); Miniature Suite (Coates); Tocata (Gigout). 6.30, Concert by the Station Orchestra, conducted by P. Legmans. 7.15, Religious Address. 7.30, Music Review by Jof Van Durme. 8.0, Concert by the Radio Orchestra, conducted by Franz André. Soloists: Mme. Lambert and M. Tolkowsky (Songs). Russian Folk Dances (Bullerian and Tehtakovsky); The Volga Boatman; Waltz, The Blue Danube (Joh. Strauss). 8.45, Recitations. 9.0, Concert (contd.): Songs from: (a) A Waltz Dream (O. Strauss), (b) Lilac Time (Schubert), (c) Show Boat (Kern); Negro Spirituals; Jazz Potpourri (Candry). 10.0, Le Journal Parlé. 10.10, Dance Music from the St. Sauveur Palais de Danse. 11.30, Light Music on Gramophone Records.

BUCHAREST
 761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Jean Marco Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, Light Music on Gramophone Records. 8.0, Song Recital by Aurel Alexandresco. 8.30, Concert by the Radio Orchestra. In the interval at 9.0, Talk. 9.45, Radio Journal.

BUDAPEST
 545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 8.15 p.m. till Close Down.—11.0 a.m., Catholic Service, followed by Report of the Opening of the New Relay Station at Pecs. 2.0 p.m., Gramophone Concert of Variety Music. 3.0, Agricultural Talk. 3.45, Orchestral Concert conducted by F. Fridl: Selection from Faust (Gounod); Viora (Szabados); The Nutcracker Suite (Tchaikovsky); Violin Solo from Sylvia (Delibes); Waltz Intermezzo from Nalla (Delibes). 4.50, Talk: The Century Old Cinematograph. 5.15, Concert by the Inre Magyar Gypsy Band. 6.15, A Dialogue. 6.50, Pianoforte Recital: Organ Tocata in C (Bach-Busoni); Bénédiction de Dieu dans la Solitude (Liszt); Caprice in B Minor (Dohnányi); Allegro barbaro (Bartok). 7.30, Recitation: Spring in Budapest. 8.0, Sports Notes. 8.15, Lustige Husaren—a Hungarian Operetta (Emmerich Farkas). 10.15, Sports and Racing Results, followed by News and Dance Music from the Lupa-park.

CASSEL—See Frankfurt.

COPENHAGEN
 1,067 kc/s, 281 metres; 0.75 kW., and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—11.30 a.m., Weather and News. 12 Noon, Town Hall Chimes. 12.2 p.m., Concert by Louis Prell's Instrumental Ensemble. 1.30, Talk in English: Basic English. 1.50, Talk in German. 2.10, Reading in French. 2.30, Trio Concert of Accordion Music. 3.0, Concert by the Radio Orchestra, conducted by Emil Reesen. Soloist: Anna Hagen (Songs). Overture, Peter Schmitt (Weber); Blind Man's Bull Suite and Waltz from Gretta Green (Gairaud); Spanish Serenade (Glazunov); Lyric Suite (Grieg); Melody from Napoli (Niels Gade); Prelude to Weyland the Smith (Fini Henriques); Modern Danish Songs; Marche parisienne (Ganne); Waltz (Lammer); Finale from the London Symphony in D (Haydn); Selection from Madame Butterfly (Puccini); Overture, The Bartered Bride (Smetana). 5.0 (also relayed by Skamleback on 31.51 metres), Divine Service from the Christiansborg Castle Church. 6.20, Talk: Synagogues in Copenhagen. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Impressions of a Journey to Russia. 8.0, Town Hall Chimes. 8.1, Recital of Modern Pianoforte Music. 8.15, The Hansen Family—a Humorous Episode (Jens Lecher). 8.30, Lortzing Concert by the Radio Orchestra, conducted by Lanny Gröndahl. Soloist: Einar Nörby (Songs). Overture, Aria and Ballet Music from Czar and Carpenter; Overture, The Armorer; Aria from The Armorer; Selection from Der Wildschütz; Overture, Die beiden Schützen. 9.20, A Visit to the Circus—Radio Report. 9.50, Trio in C. Op. 74, for Two Violins and Viola (Dvorák). 10.10, News. 10.20, Concert of Scandinavian Music by the Radio Orchestra, conducted by Lanny Gröndahl. In the interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Monday), Close Down.

CORK—See Athlone.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP
 1,328 kc/s, 225.9 metres; 10 kW.—4.0 to 8.0 p.m., Programme in English by the I.B.C. 4.0, The Nursery Corner. 5.0, Songs of the West Country: The Fly on the Turnmote (arr. Wheatly); Up from Somerset (Sauderson) Orchestra; Torch Dance from Henry VIII (German); Drake goes West (Sander-

MAY 21st

SUNDAY

continued

son); Young Tom o' Devon (Russell); Orchestra: Merry-makers' Dance from Nell Gwynn (German); Floral Dance (Moss); Devonshire Cream and Cider (Sanderson). 5.30, Octet Concert: Slav Dance (Dvorak); Sans Souci (von Blon); Goliwog's Cake Walk (Debussy); Loin du Bal (Gillet); Twilight on the Waters (Squire); Extase (Ganne); Humoresque (Dvorak); Serenade in C (Tchaikovsky). 6.0, Club Concert for Belfast Listeners: Shamrockland (arr. Stodden); Songs: (a) Come back to Erin (Claribel); (b) Biddy Mulligan; Selection from Maritana (Wallace); Song: Down by the Liffey-side; Believe me, if all those endearing Young Charms; The dear little Shamrock (Cherry); In a Monastery Garden (Kettelbey); Songs: (a) Father O'Flynn (Stanford); (b) Molly Bawn; Waldemere March; Love's Old Sweet Song (Molloy); Medley of Irish Airs (arr. Stodden). 7.0, Opera Music: One fine Day, from Madame Butterfly (Puccini); Songs: (a) Cortigiani vil razza, from Rigoletto (Verdi); (b) Mephistopheles' Serenade (Gounod); Selection from I Pagliacci (Leoncavallo); Songs: (a) Toreador Song from Carmen (Bizet); (b) Anvil Chorus from Il Trovatore (Verdi); (c) O Star of Eve from Tannhäuser (Puccini). 7.30, Special Club Concert for Members at St. John's College, Southsea: The Gladiators' March (Souza); Serenade (Heykens); In a Chinese Temple Garden (Kettelbey); Potpourri of Waltzes (Ancliffe); Lazy Pete (Kernsten); Bells across the Meadow (Kettelbey); The Skaters' Waltz (Waldteufel); Marche lorraine (Ganne). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down, Programme in English by the I.B.C.: Dance Music: Jack-in-the-Box; Her Name is Mary; The Knave of Diamonds; Hyde Park Corner; Drifting and Dreaming; Love Tales; Look what you've done; Lover of my Dreams. 9.30, Concert. Orchestra: Liebesfreud (Kreisler); Baritone Solo: The Toy-maker's Song (Glass); Song: A Boy and Girl were dancing (Gordon); Mandoline Band: Napolitana (Meisel); Contralto Solo: On the Banks of Allan Water (Horn); Duet: The Keys of Heaven (Broadwood); Tenor Solo: Violets (Wright); Orchestral Selection from Love Me To-night. 10.0, Negro Songs: Down South; I got Shoes; Carry me back to Old Virginia; 'Way down upon the Swance River; Choir: Swing low sweet Chariot; Orchestra: From the Canabrake; I wanna be ready; Tone de bell; Plantation Song Medley. 10.30, Concert: Selection from Wild Violets: Let me give my Happiness to you; Farewell to Arms; Hold up your hands; Under my Umbrella; And so I married the Girl; Sylvia; I wake up smiling. 11.0, Orchestral and Vocal Concert: Selection from La belle Hélène (Offenbach); Songs: (a) I give my Heart (Mackeben); (b) The Night was made for Love (Kern); Dance of the Clowns (Shutana); Mignionette (Friml); Songs: (a) Air from The Dubarry (Müllacker-Mackeben); (b) A New Love is Old (Harcach); Roses from the South (Strauss). 11.30, Military Band Concert: Amoretzentanz (Gungl); Suite from La Source (Delibes); Valse des Alouettes (Brigo); The Wedding of the Rose (Jessel); Wood Nymphs (Coates); Hobonoko (Reeves); Old Panama (Alford). 12 Midnight, Club Concert for Belfast Listeners: Shamrockland (arr. Stodden); Songs: (a) Come back to Erin (Claribel); (b) Biddy Mulligan; Selection from Maritana (Wallace); Song: Down by the Liffey-side; Believe me if all those endearing young Charms; The dear little Shamrock (Cherry); In a Monastery Garden (Kettelbey); Songs: (a) Father O'Flynn (Stanford); (b) Molly Bawn; Waldemere March; Love's Old Sweet Song (Molloy); Medley of Irish Airs (arr. Stodden). 1.0 a.m. (Monday), Vocal Duets: Jovial Jasper (Green); Parking in the Moonlight (Tobias); In the Mountains of the Pine (Tait); Orchestra: Musical Comedy Switch (arr. Hall); Living a Life of Dreams (Rubey); The Waltz you saved for me (Wayne); Pasadena Rose (Kennedy). 1.30, Concert of National Dances: Medley of Scottish Reels; Reel, Hason's Apron; Highland Schottische; Jig, Rakes of Clonmel; Scotch Reels; Prince Charlie (Beaton); Medley of Irish Jigs; Blue Bells (Beaton); March, The Return of Johnnie. 2.0, Dance Music by the Deolians: Round the bend of the Road; Balloons; How can you say "No"?; Have you ever been lonely?; Standing on the Corner; Sittin' in the Dark; A Boy and Girl were Dancing; Isn't it romantic?; Dreaming; Mimi; Wanderer; Southern Serenade; The Wise Old Owl said "Hoo"; So ashamed. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 246.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Gramophone Concert. 1.0 p.m., See Langenberg. 2.0, Agricultural Notes. 2.30, Programme for Farmers. 3.0, Programme for Children. 3.45, Radio Report of the A.D.A.C. International Automobile Races from the Avus. Commentators: Eduard Dietze, Eduard Voigt, Hans Stück, and Paul Markwald. In the intervals, Gramophone Music. 5.15, Concert. 6.0, Talk: Poachers. 6.25, Kaczmarek Zwo—Humorous Barrack-room Programme in Song and Verse. 6.50, Sports

Notes. 7.0, Transmission for all German Stations, relayed from Breslau. 6.50, Sports Notes. 8.0, See Leipzig. 10.0, Humorous Programme. 10.20, Time, News, Weather, and Sports Notes. 10.45, Serenade from Munich. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres, and Kiel, 1,292 kc/s, 232.2 metres.—12 Noon, Orchestral Concert, conducted by Horst Platen. In an interval at 12.55 p.m., Time and Weather. 2.0, Young Hitlerites' Programme, relayed from the Harbour—Music and Addresses. 3.0, In Praise of May—Musical and Literary Programme. 4.0 (from Kiel), Concert by the Neumünster Choir, relayed from the Tivoli. 4.30 (from Kiel), Tischlein deck' dich—Marionette Play in Seven Acts (Carl Iyovski). 5.30 (from Kiel), Military Band Concert, conducted by G. Richter. 6.30 (from Hanover), Talk. 6.40, Neo-Romantic Song Recital by Mara Duve. 7.10, Sports Notes. 7.25, Weather. 7.30 (from Hanover), Concert of Folk Songs by Karl Högbe, by the Göttinger Male Voice Choir. 8.0, Concert by the Station Orchestra, conducted by José Eibenschütz. Soloist: Dr. Brückner (Violin); Kleist-Overture (Wetz); Violin Concerto in D (Paganini); Burlesque Die Bremer Stadtmusikanten, from Aus deutschen Märcchen (Reifner); Suite from Der Rosenkavalier (R. Strauss); Overture, Fatintza (Suppé); Small Radio March for Wood Wind, Violins and Violas (Eibenschütz); Selection from Gipsy Love (Lehár); Waltz from Prince Methuselah (Joh. Strauss). In an interval, Announcements. 10.0, Time, Weather, Announcements, Sports Notes and Police Report. 10.10, Radio Report on the A.D.A.C. International Automobile Race, relayed from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon (from Danzig), Concert by the Danzig Municipal Theatre Orchestra, conducted by G. E. Lessing; Overture, Le Lac des Fées (Auber); Wiegand (Schubert); Minuet (Dostal); Piedmont Serenade (Leopold); Waltz Intermezzo Traum der Nacht (Schmalstiel); First Suite from L'Arlesienne (Bizet); Idyll, Frühling am Mühlbach (Zimmer); Overture, The Hermit's Bell (Maillart); Barcarolle, Moonlight in Venice (Braz); Waltz, My Dream (Waldteufel); Dreaming (Vieuxtemps); Die kleinen Soldaten (Marks); Potpourri, Round the Globe (Yoshitomo); March, Regiment von Hinderssen (Paul). 2.0 p.m., Talk on Chess. 2.30, Programme for Young People. 2.55, Talk: Contemporary Painters of East Prussia. 3.15, Concert by the Königsberg Male Voice Choir. 3.45, Radio Report from Berlin (Witzleben). 5.15, Concert by the Station Orchestra, conducted by Eugen Wilcken. Sports Notes in the interval. 6.25, Talk: Marienwerder Cathedral. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Sports Notes. 8.10 (approx.), Concert from Stuttgart. 10.0, News, followed by Light Music and Dance Music from Berlin (Witzleben). In the interval: Gramophone Report of the Königsberg Spring Race Meeting. 12 Midnight, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—12.10 to 4.40 p.m., Programme of the Allgemeine Vereinigung Radio Omroep (A.V.R.O.). 12.10, Orchestral Concert conducted by Nico Treep. 1.40, Weekly Book Talk. 2.10, Concert by a Mandoline Band. 2.40, Military Band Concert: Overture, Le Carnaval romain (Berlioz); Andante from the Fifth Symphony (Tchaikovsky); L'Apprenti Sorcier (Dukas); Gramophone Music: Military March (van Leeuwen); Overture, Euryanthe (Weber); Norwegian Artists' Carnival (Svendsen); Selection from Tosca (Puccini). 4.10, Gramophone Music. In the interval, Sports Results. 4.40, Programme of the Workers' Radio Society (V.A.R.A.): Programme for Children. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Book Review. 6.25, Religious Programme. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time, Weather and News. 7.55, Concert by the Station Orchestra, conducted by Nico Treep. Soloists: Helen van Vliet (Soprano) and Bert van Bloem (Tenor). March from

The Merry Widow (Lehár); Two Tenor Solos from Lillae Time (Schubert-Berté); Duet from Toni aus Wien (Stefan); Soprano Solos from (a) The Czarevitch (Lehár), and (b) A Kiss in Spring (Kálmán); Tenor Solos: (a) Song from The Land of Smiles (Lehár), (b) Schösser die im Monde liegen (Lincke); Duet: Will dir die Welt zu Füßen legen (Abraham); Dort rauscht der Wienerwald (Strauss-Korngold); Duet from Countess Maritza (Kálmán). 8.40, Symphony No. 2 in D (Beethoven) relayed from the Concertgebouw, Amsterdam. The Concertgebouw Orchestra, conducted by Willem Mengelberg. 9.20, Reading. 9.40, Concert by Kovacs Lajos and his Orchestra. 10.40, Gramophone Concert. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—8.10 a.m., Religious Programme by the Catholic Radio Society (K.R.O.). 9.10 to 11.55 a.m., Programme of the Christian Radio Society (N.C.R.V.): Divine Service from Apeldoorn, followed by Sacred Music. 11.55 to 4.40 p.m., K.R.O. Programme. 11.55, Concert by the K.R.O. Boys. 12.40, Literary Talk. 12.55, Concert (contd.). 1.40, Religious Address. 2.10, Benediction relayed from the Lourdes Grotto in Valkenburg. 4.40 to 7.25, N.C.R.V. Programme. 4.40, Divine Service from Veenedaal, followed by Sacred Music from Gramophone Records. 6.25, Studio Service. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk. 7.50, Football Report. 7.55, Orchestral Concert, conducted by J. Gerritsen. Soloist: Ilse Möller-Gerlach (Songs). 8.40, News. 8.45, Songs by Ilse Möller-Gerlach. 8.55, Gramophone Music. 9.10, Songs (contd.). 9.20, Gramophone Music. 9.35, Concert (contd.). 9.55, News. 10.0, Concert (contd.). 10.20, Choral Epilogue. 10.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements Guide and Variety Programme. 8.45, News. 9.0, A Batons rompus—Radio Play (Marie). 10.30 till Close Down, Programme in English by the I.B.C., H. K. Hitchcock announcing. 10.30, Violin Recital and Orchestral Music: Roses from the South (Strauss); Violin Solos: (a) Le Balcon (St. Denis); (b) Souvenir (Drdla); Melody (Strauss); Melody (Fétras); Waltz, Estudiantina (Waldteufel); Waltz, Dolores (Waldteufel); Wiener Zugvögel (Transtaur). 11.0, Orchestral and Vocal Concert: Wiener Bonbon (Joh. Strauss); Songs: (a) The Yeoman of England, from Merrie England (German); (b) Largo al Factotum, from The Barber of Seville (Rossini); Melody (Strauss); A Jovial Monk am I (Audran); To-morrow, from The Salt Water Ballads (Keel); Ho, Jolly Jenkin (Sullivan); Waltz, Trés jolie (Waldteufel). 11.27, I.B.C. Good-night Melody. 11.30 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.10 p.m., Concert by the Station Orchestra, conducted by Erkki Linko: Selection from La Juive (Halévy); Waltz from Faust (Gounod); Marche militaire (Saint-Saëns). 6.45, History Talk. 7.15, Song Recital. 7.40, Recitations. 8.0, The Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12.5 p.m., The World on Gramophone Records—Bulgaria. 12.35, Reading of Modern German Literature. 1.0, Concert, conducted by Eysoldt. 2.30, Talk on Chess. 2.50, Agricultural Talk. 3.15, Talk on Music. 3.45, Talk: The Liturgical Movement in Protestantism. 4.5, Talk: Tales from the Trenches. 4.30, Radio Report from Berlin (Witzleben). In the interval, Gramophone Records of Popular Music. 5.15, Choral and Orchestral Concert. 6.0, Talk: Towns of the Rhineland and Westphalia—Zulphich. 6.30, Aus dem Grossen Kriege—Play in One Act (Heinrich von Stein). 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Sports Notes. 8.10, Concert by the Station Orchestra, conducted by Kühn. Soloists: Kläre Hansen (Soprano) and Josef Schönmeyer (Tenor). Overture, The Merry Wives of Windsor (Nicolaï); Hungarian Rhapsody, No. 1 (Liszt); Waltz from Hansel and Gretel (Humperdinck); Duet from The Valkyries (Wagner); Military March (R. Strauss); Tenor Solos (R. Strauss): (a) Ich trage meine Minne, (b) Heimliche Aufferdung; Waltz from Der Rosenkavalier (R. Strauss); Songs for Soprano: (a) Ständchen (R. Strauss); (b) Liebesfeier (Weingartner); Overture, Waldmeister (Joh. Strauss); Waltz, Alt-Wien (Kremser),

10.15, News and Sports Notes. 10.4 (approx.), Report of the International Boxing Match, Germany v. Italy, relayed from Ferrara. 10.45, Serenade and Dance Music. 12.0 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and Dresden, 319 metres.—11.30 a.m., Transmission for all German Stations: Wast willst du dich betriben—Cantata (Bach) by the Gewandhaus Orchestra, the Choir of St. Thomas' Church and Soloists. 12 Noon, Concert Relay. 1.30 p.m., Gramophone Report on the Unveiling of the Wagner Memorial at Gaupa. 2.0, Weather Report and Time Signal. 2.5, Programme Announcements. 2.25, Agricultural Notes. 2.40, Little-known Music by Famous Composers—Pianoforte Duets by Hilde Knopf and Willy Eickemeyer. 3.20, The Fox in the Henhouse—Radio Play (Robert Overweg). 4.30, Concert of Choral Music, relayed from Bad Schmiedberg. 5.15, Talk: The German and his Landscape. 5.40, Concert of Wedding Music, by the Symphony Orchestra, conducted by Eilmar Weber. 7.0, Radio Reports: (a) The First Round of the German Football Championship, (b) The A.D.A.C. International Automobile Races on the Avus Course. 8.0, Das Liebesverbot—Opera in Two Acts (Wagner), relayed from the New Theatre. 10.5, News. 10.15, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

LINZ.—See Vienna.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—5.15 p.m., Tourist Report, relayed from Nérises-Bains. After the Relay, Programme relayed from Paris (Ecole Supérieure), 671 kc/s, 447.1 metres. 8.30, Tourist Report, relayed from Montluçon. 9.0, Concert relayed from the Casino, Vichy. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Popular Concert. In the interval at 11.45, Humorous Talk. 12.40 a.m. (Monday), Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topics Review. 12.30 p.m., Concert by the Madrid Municipal Band, conducted by M. Villa. 3.0, Chimes, Time Signal, Amusement Guide, and Concert of Popular Music. 5.0 to 8.0, Interval. 8.0, Chimes, Announcements, Radio Journal, and Dance Music relayed from the Ritz Hotel. 9.30 to 10.30, Interval. 10.30, Chimes, Time Signal, and Scientific Talk. 10.45 (approx.), Pianoforte and Song Recital by Enriqueta Garreta and Francisco Arganza. After the Recital, Dance Music. 1.0 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—4.0 p.m., Concert by the Station Orchestra, conducted by J. Plichta. 5.30, See Prague. 8.55, Pianoforte Recital by Arnost Immerglück. 9.15, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION 230 kc/s, 1,304 metres; 100 kW.—5.30 p.m., Red Army Hour. 6.30, Concert. 9.0, News Bulletin. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUNLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, Orchestral Concert. 1.5 p.m., Time, Weather and Programme Announcements. 1.15, Concert of Light Music. 2.30, Talk: The National Revolution. 3.0, Concert by the National Socialist Symphony Orchestra, relayed from Passau Cathedral. 4.30, Reading. 4.45, Concert, conducted by Ulrich Kloss. 6.45, Talk: Naulia and Cherab. 6.5, Organ Recital. 6.45, Weather and Sports Notes. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Musical Miniatures—Concert by the Small Station Orchestra. Soloist: Ingo Baker (Violin). 8.40, Talk on the following transmission. 8.50, Third Act of Siegfried—Opera (Wagner), from the National Theatre. 9.20, Time, Weather, News and Sports Notes. 10.45, Programme to be announced.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—10.15 a.m., News and Road Report. 10.50, Chimes and Divine Service from the Castle Chapel. 5.0 p.m., Gramophone Music. 6.0, Talk: Recent Excavations in Greenland.

MAY 21st

SUNDAY

continued

6.30, Recitations. 7.0, Parliamentary Notes. 7.15, Weather and News. 7.30, Trio Music. 8.0, Time. 8.1, Provincial Programme, relayed from Bergen, 824 kc/s, 364 metres. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Act III of The Tales of Hoffmann Operetta (Offenbach), by the Station Orchestra, Choir and Soloists. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Religious Address. 10.40, Sacred Music. 11.0, Agricultural Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music. In the interval at 1.30, Time, Announcements and Weather. 5.30 to 6.30, Gramophone Concert of Popular Music. 8.0, Dopplavoro Notes and Giornale Radio. 8.20, Sports Notes. 8.25, Light Music on Gramophone Records. In the interval at 8.30, Time and Announcements. 8.45, Symphony Concert, conducted by Armando La Rosa Parodi, with a Talk by G. Longo. After the Concert, Variety Music on Gramophone Records. 10.55, News.

PARIS

1,445.7 metres; 13 kW. Time Signals on 2,650 metres at 10.25 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—1.0 p.m., News Bulletin. 1.15, Weather Report. 1.30, Concert by Jean Ibas and his Orchestra. 6.45, Le Journal Parlé. 7.55, Programme for Children. 8.25, News Bulletin. 8.30, Gramophone Concert. Part I: Wagner and Liszt Music. Part II: Variety Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 914 kc/s, 328.2 metres; 60 kW.—9.15 a.m., Music for Tambourines and Bugles. 9.35, Press Review. 9.45, Bible Reading. 10.0, News. 10.5, Sponsored Concerts. 11.40, Popular Music on Gramophone Records. 12 Noon, Interval. 12.15 p.m., Sound Film Music. 12.45, Sponsored Programme. 12.50, Half an Hour of Fantasy, by Paul Weill. 1.20, Interval. 1.30, Sponsored Programme. 2.0 to 6.45, No Transmission. 6.45, Le Journal Parlé. 7.0, Sports Notes. 7.15, Light Music on Gramophone Records. 7.30, Catholic Review. 8.0, Song Recital by Hugues Guénod. 8.15, Interval. 8.30, Musical Programme by Enrico di Mazzei and Mme. Gina d'Espagnos: Tu ch'ai le penne, Amor ch'attendi (Caccini); O del mio dolce amor (Gluck); Plaisir d'amour (Martini); Se l'aura spira (Frescobaldi); Duets from Act I of La Bohème (Puccini).

9.0, Interval. 9.15, Open the Door—Play in One Act (Jean Renouard). 9.45, Variety Music on Gramophone Records. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 12 Noon, Religious Address by the Rev. Father Lhander. 12.20 p.m., Gloria from the Mass in D (Beethoven). 12.30, Bilboquet. 12.45, Press Review, News and Weather. 1.0, Gramophone Concert. 2.0 to 2.30, Programme in English by the I.B.C. Mr. T. St. A. Ronald announcing. Light Music. Signature Tune; Pink Elephants; Blue Ridge Moon; Under my Umbrella; Black Eyes; Old Father Thames; Smiling Through; When my Little Pomeranian; A Tree was a Tree; Signature Tune. 2.30, Gramophone Concert of Light Music. 3.0 to 3.30, Programme in English by the I.B.C. 3.0, Popular Melodies. March of the Giants (Finck); Selection from Stand up and Sing (Clarke and Ellis); Two-Step: Yip-laddy-lay (Cobb and Flynn); By Special Request: Selection from Cavalcade (Coward); Waltz from the Merry Widow (Lehar); Selection from Iolanthe (Sullivan). 3.30 to 5.0, Interval. 5.0 to 6.0, Programme in English by the I.B.C. S. H. C. Williams announcing. 5.0, Tea-time Variety Hour. 6.0 to 6.30, Interval. 6.30 to 7.0, Programme in English by the I.B.C. Mr. T. St. A. Ronald announcing. Light Music; Signature Tune; Look what I've got; And so I married the girl; A Broken Rosary; I'm nuts about Muttis; Signature Tune. 7.0, Variety Concert. 8.0, Musical Hall Programme. In the intervals at 8.30, News, Sports Notes and Weather, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.0 p.m., Monarch Mystery Tenor, from New York. 7.15, The Boys of Wynecastle. 7.30, The North-Western Chronicle, from New York. 8.0, National Opera Concert, from New York. 9.0, Programme to be announced. 9.15, Symphonette, from New York. 9.30, Vesper Services, from Shadyside Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Soprano Solos by Lois Miller. 11.15,

Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Programme to be announced. 11.45, Dick Daring, from New York. 12 Midnight, Time Signal, and Jack Pettis and his Orchestra. 12.30 to 3.0 a.m. (Monday), New York Relay. 12.30 a.m., Great Moments in History. 1.0, Reisenfeld's Viennese Programme. 2.0, Will Rogers, with Orchestra. 2.30, Walter Winchell. 2.45, Pickens Sisters. 3.0, Time Signal and Popular Melodies by Will Ryshanek.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—11.0 a.m., Concert by the Station Orchestra, conducted by Robert Broek: Festival Overture in C (Smetana); Military Divertissement (Mozart); Serenade, Op. 36 (Novak); Symphonic Poem, The Ballad of Blanik (Janacek). 12 Noon, Chinese. 12.5 p.m., See Bratislava. 12.35, See Brno. 1.30, Agricultural Report. 1.45 to 1.55, Talk. 4.0, See Moravská-Ostrava. 5.30, Talk. 5.45, Variety Music on Gramophone Records. 6.0, German Transmission: The Betrothal by Lanternlight—Opera in One Act (Offenbach). After the Programme, News. 7.0, Ueche Kropal—Farce. 7.30, Bagpipe Music. 7.55, Military Band Concert, relayed from the Kralovska Ohora. 8.55, See Brno. In the interval at 9.0, Time Signal. 9.15, Variety Programme with Gramophone Records, Songs, and Pianoforte Solos. 10.0, Time Signal. 10.1, News Bulletin. 10.20, Dance Music on Two Pianofortes. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—10.0 a.m. (from Lausanne), Protestant Service. 11.15 (from Lausanne), Concert by the Small Station Orchestra, conducted by M. Moser, or Relay of a Talk. 12.30 p.m., News and Weather. 12.43 (from Lausanne), Gramophone Music. 2.0 to 3.30, Interval. 3.30 (from Lausanne), Madame Butterfly Opera in Two Acts (Puccini), sung in Italian. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Religious Address. 7.30 (from Lausanne), Sports Results, News and Announcements. 8.0, Concert by the Station Orchestra. 9.0 (from Lausanne), Recital by Mme. Flore Gabella (Songs), Mme. Maggy Gayrath-Debrauneson (Pianoforte), and M. Defrancesco (Flute). 9.50, News and Weather. 10.0 (from Lausanne), Violin

Duets by the Desarzens Brothers. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 690 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2R0, 11,810 kc/s, 25.4 metres.—10.10 a.m., News, Sports Notes and Amusement Guide. 10.30, Agricultural Talk. 10.45, Bible Reading. 11.0 to 12 Noon, See Turin. 12.30 p.m., Concert of Variety Music. 1.30 to 2.30, See Turin. 3.45 (Naples), Programme for Children, followed by Weather and Sports Notes. 4.0, Orchestral Concert. 4.45, Sports Notes. 5.0 to 6.15, Soprano, Tenor and Cello Recital. Sports Notes in the interval. 7.30, Football Report, Dopplavoro Notes and News. 8.0, Time and Announcements. 8.15, Song Recital by Elena Choi (Soprano). 8.30, Sports Notes. 9.45, Concert. In the intervals, Talk and Announcements. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.0 to 8.45 p.m. (approx.). New York Relay. 7.0, Wayne King's Orchestra. 7.30, Hour of Worship. 8.0, Musical Programme. 8.15, Wildroot Institute. 8.30, Temple of Song. 11.45, Horse Sense Philosophy. 12 Midnight till Close Down, New York Relay. 12 Midnight, Chase and Sanborn Hour. 1.0 a.m. (Monday), Manhattan Merry-go-round. 1.30, American Album of Familiar Music. 2.0, Current Government, by David Lawrence. 2.15, High-lights and Shadows. 2.45, Sunday at Seth Parkers and Programme Resume. 3.0 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW. Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—10.0 a.m. (from Zürich), Protestant Service. 10.45 (from Zürich), Chamber Music Concert by the East Swiss Radio Society. 12 Noon (from Zürich), Gramophone Music. 12.28 p.m., Time and Weather. 12.30, News Bulletin. 12.40 (from Zürich), Concert of Viennese Folk Music by the Swiss Radio Orchestra. 1.30 (from Zürich), Agricultural Programme. 2.30 to 5.0, Interval. 5.0 (from Zürich), Gramophone Music. 6.0 (from Zürich), Le médecin malgré lui—Comedy (Molière). 7.15 (from Zürich), Time and Sports Notes. 7.20 (from Zürich), Concert by the Swiss Radio Orchestra. 8.0 (from Zürich), Talk and Reading (Emil

THE MAINS RADIO DEVELOPMENT COMPANY of Nos. 4 and 6 Muswell Hill Road, N.6, hereby express their REGRET at having inadvertently offered for sale certain Transformers as "PARAFEED" Transformers manufactured by Radio Instruments Limited, but which it now transpires are not manufactured by them and are in fact of a quality inferior to their well-known "PARAFEED" Transformers. They, The Mains Radio Development Company, have accordingly undertaken to discontinue the use of the name "Parafeed" except as applied to the article bearing that name exclusively manufactured by RADIO INSTRUMENTS LTD.

DATED this ninth day of May 1933.

For and on behalf of THE MAINS RADIO DEVELOPMENT COMPANY

(sgd.) GORDON F. GEORGESON,

Proprietor.



THE ONLY VALVE WITH A TRIPLE-COATED NEODYMIUM FILAMENT

4/6

that gives PIX valves long life, long range, loud signals with a pure natural brilliancy of tone. Never before has such a valve masterpiece been sold at such a low price. Every valve is tested and guaranteed and is made in our own valve factory in London.

GUARANTEE.

Every PIX valve carries the usual guarantee. Try one to-day and if it is not better than its equivalent valve in your set we will refund your money immediately. Write for leaflet giving characteristics and comparison tables.

BRITISH MADE IN LONDON

PIX VALVES

2 & 4 VOLT TYPES.	
H.F., DET., R.C. or L.F.	4/6
POWER	6/6
SUPER POWER	8/6
SCREENED GRID	11/6
FIXODE	11/6
ALL MAINS (4 Volt).	
H.F., DET., L.F., R.C. or POWER	11/6
SCREENED GRID	15/6
FULL WAVE RECTIFIER	8/6

CUT OUT THE LOCAL AND GET BERLIN

LOUD, CLEAR, UNDISTORTED, AND OTHER FOREIGN STATIONS—Just fix a PIX

Enjoy foreign concerts while your local station is working or when being 'Swamped' or interfered with by a powerful station. A PIX works equally well on a crystal, battery or oil mains set. Ask your local dealer or send postal order NOW.



Follow the lead of over a million listeners—Get a PIX to-day from your local dealer or direct from us.

POST FREE

OVER A MILLION AERIALS LEAD TO A PIX

WIRELESS DIRECTION FINDING

and DIRECTIONAL
RECEPTION

(1927)

By R. KEEN, B.Eng. (Hons.)

Second Edition

THIS volume deals with the principles of the subject and the constructional details of direction-finding installations, and includes some information concerning aircraft equipment. It describes the principles of Direction and Position Finding in such a way that the subject may be grasped easily by engineers tackling this field of wireless work for the first time. Numerous photographs and diagrams are included.

Price 21/- net. By post 21/9

From leading booksellers or
direct from the Publishers:

ILIFFE & SONS LIMITED
Dorset House, Stamford Street, London, S.E.1

w.w.68

RADIO DATA CHARTS

A SERIES OF ABACS

providing most of the essential
Data required in Receiver Design.

By R. T. BEATTY, M.A., B.E., D.Sc.

"Radio Data Charts" provide designers of wireless apparatus with a ready and convenient means of solving problems without having recourse to complicated formulæ and mathematics.

By the use of the charts it is possible to tackle all the more familiar problems in radio receiver design; including, for example, finding the relationship between inductance capacity and frequency, and working out the design of high frequency transformers. All keen amateurs will appreciate this helpful book.

Price 4/6 net. By post 4/10

From all leading booksellers or direct from the publishers.

Published from the Offices of
"THE WIRELESS WORLD"

Dorset House, Stamford Street, London, S.E.1

W.W.93

MAY 21st

SUNDAY

continued

Ermatingers) for Professor Ermatingers' Sixtieth Birthday. 8.30, Concert by the Swiss Radio Orchestra. 9.0, News Bulletin. 9.10 (from Zürich), Swabian Programme. 10.15 (from Zürich), Sports Notes. 10.20 (approx.). (Close Down.)

SOTTENS.—See Radio Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden. 244 kc/s, 1,229.5 metres; Göteborg. 932 kc/s, 322 metres; Hörby. 1,166 kc/s, 257 metres; Motala. 221.5 kc/s, 1,354.4 metres; Östersund 389 kc/s, 770 metres; and Sundsvall. 554 kc/s, 542 metres.—11.0 a.m., Divine Service Relay. 12.45 p.m., Weather and Ice Report. 12.55, Time. 1.20, Sports Talk. 2.30, Gramophone Music. 3.30, Talk. 4.6 (from Sundsvall), Choral Concert, conducted by Linus Kirvall. 4.30, Programme for Children. 5.0, Weather. 5.5, Pianoforte Recital by Hilding Domellöf. 5.30, Readings. 6.0, Evensong, relayed from Karlstad. 1,382 kc/s, 217 metres. 7.15, Weather and News. 7.35, Talk. 8.0, Comtesse Maritza—Opereita in Three Acts (Kalmán). 9.45, Weather and News. 10.0, Light Orchestral Concert. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—9.30 a.m., Orchestral Concert, conducted by Maurice de Villers. 10.45, Protestant Service in German. 11.30, Catholic Service in German. 12 Noon, Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal and Light Music on Gramophone Records. 1.15, Radio Report from Evaux-les-Bains. 1.30, Dance Music on Gramophone Records. 3.0 to 3.30, Interval. 3.30, The Seasons—Oratorio (Haydn), relayed from Lille. 1,130 kc/s, 265.4 metres. 5.30, Light Music on Gramophone Records. 6.0, Medical Talk in German. 6.15, Sports Notes in French. 6.30, Orchestral Concert, conducted by Maurice de Villers. 7.30, Time Signal, News, and Sports Results. 7.45, Gramophone Concert. 8.15, Press Review in German. Lottery Results, and News. 8.30, In the Heart of Alsace—May Programme, relayed from the Convent of St. Odile; Chimes, Divine Service, Talk, Sacred Music, and Folk Songs. 9.45, Press Review and Light Music on Gramophone Records. 11.30, Dance Music from the Savoy Dance Hall. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—11.30 a.m., Transmission for all German Stations, relayed from Leipzig. 12 Noon, (from Karlsruhe), National Demonstration for Richard Wagner in front of the Baden Theatre in Karlsruhe. Choral and Orchestral Concert, conducted by Hugo Rudolph. Richard Wagner's Fanfares for Trumpets and Kettle Drums; Kaisermarsch; Choir: Wach auf, from Die Meistersinger (arranged for Male Voice Choir by Hugo Rahner); Address by Christian Lorenz, President of the Bayreuth Association; Choir: Ehrt eure deutschen Meister, from Die Meistersinger (arranged for Male Voice Choir by Hugo Rahner); Deutschlandlied. 12.45 p.m., Radio Report on the International Motor Cycle Races in Hockenheim. 1.0, Topical Talk. 1.15, Gramophone Concert. 2.0, Gramophone Concert of Light Music. 2.45, Agricultural Talk. 3.15, Choral Concert, relayed from Badenweiler. 4.0 See Berlin (Witzleben). 5.15, See Frankfurt. 6.0, Sports Notes. 6.15, Beautiful Italy—Talk with Gramophone Records. 7.0, Transmission for all German Stations, relayed from Breslau. 8.0, Concert by the Württemberg Symphony Orchestra, conducted by Ferdinand Drost. Soloists: Gerda Hansi (Soprano), Brunnhild Mikesch (Soprano), Richard Bitterauf (Baritone), Hermann Lingor (Tenor), and Leo Hantz (Guitar). 10.0, Time and News. 10.45, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—6.30 to 7.0 p.m., Programme in English by the I.B.C. W. Brown-Constable announcing. Dance Music; Selection from Congress Dances; My Heart's to let; Freddy the Freshman; Puss, Puss, Puss; I'm playing with Fire; Someone to care for; Can't do without Love; Round about Sundown. 7.15, News and Racing Results. 7.25, Local News. 7.30, Popular Songs. 7.45, Accordion Solos. 8.0, Hunting Horn Choruses. 8.15, Opéra-Comique Songs. 8.30, Instrumental Music. 8.45, Arias from Operas. 9.0, Melodies from Le chemin du paradis (Heymann). 9.20, Viennese Music. 9.30, Balalaika Music and Russian Songs. 9.45, Orchestral Music. 10.15, North African News. 10.30 to 11.30, Programme in English by the I.B.C. 10.30, Dance Music; Jolly Good Company; My Old Dutch; Down the Lane to Home Sweet Home; Angels guard three; Memories by the Fireside; Danny Boy; Around the Corner; Good-bye. 11.0, Variety Programme: Sketch, Evening in the

Village Inn; Songs: (a) I'm one of the Ruins Cromwell knocked about a bit, (b) Sometimes I'm happy; Grandma and the Weather Announcer; Selection from Wonder Bar (Katacher); Negro Spiritual, Bye and Bye; Selection from Say it with Songs. 11.27, I.B.C. Good-night Melody. 11.30, Dance Music. 12.0 Midnight, Weather and Announcements. 12.5 a.m. (Monday), Songs from Sound Films. 12.15, Accordion Solos. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.00 a.m., See Turin. 9.55, Mass from the Cathedral of San Giusto. 11.0, Religious Address. 11.20 to 11.40, Agricultural Talk. 12.30 p.m. (approx.), Lill (Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres, and Florence, 599 kc/s, 500.8 metres.—9.40 a.m., Giornale Radio. 9.55 to 10.40, Interval. 10.40, Agricultural Talk. 11.0, Mass from the Church of the Annunciation, Florence. 12 Noon to 12.15 p.m., Bible Reading. 12.30, Concert of Variety Music. In the interval at 1.0, Time and Announcements. 1.30 to 2.30, Orchestral Concert, conducted by Ugo Tansini. 4.0, Variety Concert. In the interval Sports Notes. 6.15 to 6.30, Giornale Radio and Football Report. 7.0, Time and Dopplavoro Notes. 7.10, Gramophone Records of Variety Music. 8.0, Announcements, Giornale Radio and Sports Notes. 8.20, Talk on the following Transmission. 8.30, Siberia—Opera in Three Acts (Giordano). In the intervals, Talk and Theatre Notes. Giornale Radio after the Opera.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—11.30 a.m., Concert of Light Music by the Andre Hummer Orchestra. 12.45 p.m., Symphony No. 1 in C Minor, Op. 68 (Brahms) by the Vienna Philharmonic Orchestra, conducted by Furtwängler, relayed from the Music Society's Hall. 2.30, Time and Programme Announcements. 2.35, Talk: Through Zululand and Natal by Car. 3.0, Report of an Old Viennese Procession, from the Rosenhügel to the Hauptplatz—relayed from Mauer. 3.30, Chamber Music: String Quartet in A Minor, Op. 132 (Beethoven); Chaconne for String Quartet (Purcell). 4.30, Review of Books on Children. 4.55, Concert of Light Music by the Karl Pausperl Orchestra. 6.25, Talk: A Gramophone Trip through Central Spain. 7.0, Paula von Preradovic reads Extracts from her own Works, with Introductory Talk by Erwin Raimalter. 7.30, Time, Sports Notes, and Programme Announcements. 7.40, Talk: The First International Austrian Flight Over the Alps, 1933—The Third Day. 8.0, Talk: The Battle of Aspern. 8.30, Song Recital by Dr. Emil Schipper: Aria from Iphigenie in Aulis (Gluck); Two Songs (Beethoven): (a) In questa tomba oscura, (b) Die Ehre Gottes; Three Songs (Schumann): (a) Dichters Genesung, (c) Mein altes Ross, (c) Die beiden Grenadiere; Two Songs (Richard Trunk): (a) Die Stadt, (b) Unter Blüten; Hans Sachs' Monologue from The Mastersingers (Wagner). 9.10, Bunter Abend. The Josef Holzer Orchestra, the Opus-Quartet, the Vienna Boys' Choir, and Otto Schülhoff (Pianoforte). 10.30, News and Weather. 10.45, Dance Music from Mübners Parkhotel.

WARSAW

212.5 kc/s, 1,411 metres.—11.57 a.m., Time and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Weather Forecast. 12.15, Concert by the Warsaw Philharmonic Orchestra, conducted by Wilkomirski. Soloist: Umberto Macnez (Tenor): Overture, Iphigenie in Aulis (Gluck); Arias from: (a) The Force of Destiny (Verdi), (b) La Gioconda (Ponchielli), (c) Don Pasquale (Donizetti), (d) Salvatore Rosa (Gomez); Symphony No. 5 (Beethoven). In the interval, Announcements. 2.0, Veterinary Talk. 2.20, Baritone Song Recital by Lusznaj. 2.40, Agricultural Talk. 3.0, Weather for Farmers. 3.5, Concert by a Mandoline Band. 4.0, Programme for Young People. 4.25, Popular Music on Gramophone Records. 4.45, Talk relayed from Wilno, 533 kc/s, 563 metres. 5.0, Pianoforte Recital: Andante con Variazioni (Haydn); Toccata in C (Bach-Busoni); Four Preludes (Debussy); Three Dances (Wojtowicz). 5.55, Programme Announcements. 6.0, Dance Music. In the intervals, News. 7.0, Miscellaneous Items. 7.25, Dramatic Programme. 8.0, Concert of Popular Music by the Station Orchestra, conducted by Oziminski. Soloist: E. Mossakowski (Baritone). In the interval, Sports Notes. 10.0, Variety Programme. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music Relay.

ZURICH.—See Schweizerischer Landessender.

MONDAY

MAY THE TWENTY-SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Variety programme. "Tis of Aucassin and Nicolette," a mediæval romance.
- LONDON REGIONAL** Opera: "Aida" (Verdi), relayed from Covent Garden.
- MIDLAND REGIONAL** Music of Italy, orchestral concert.
- WEST REGIONAL** Orchestral concert from the National Museum of Wales.
- SCOTTISH REGIONAL** Orchestral and instrumental concerts.
- BELFAST** Light orchestral concert.

ABROAD

- BERLIN (Deutschland-sender)** 7.0 p.m. Wagner Concert, conducted by Max von Schillings (relayed by other German Stations).
- BRESLAU** 8.30 p.m. Acts 2 and 3 of "The Valkyries" (Wagner), from the Municipal Theatre.
- BRUSSELS (No. 2)** 8.0 p.m. Mozart and Wagner Concert.
- BUCHAREST** 8.30 p.m. Oratorio: "The Seasons" (Haydn), relayed from Szeged.
- BUDAPEST** 8.0 p.m. Wagner Concert.
- EIFFEL TOWER** 7.50 p.m. Opera: "La Juive," by Halévy, from the Opéra.
- HAMBURG** 9.10 p.m. Extracts from Opera: "Die Nibelungen," by Wagner.
- LANGENBERG** 9.5 p.m. Wagner's Third Symphony, conducted by Buschkötter.
- STRASBOURG** 9.35 p.m. Operetta: "La Périchole," by Offenbach.
- WARSAW** 8.0 p.m. Operetta: "Light Cavalry," by Suppé.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.0, News, Exchange, and Market Prices. 7.5, Talk: Bordeaux a Hundred Years ago. 7.20, Lottery Results. 7.25, Talk on Hygiene. 7.40, Charades and News Bulletin. 7.50, La Juive—Opera (Halévy), relayed from the Opera House, Paris.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by F. Dyk; Soloist: Rudolf Maendzinski (Pianoforte); Overture, William Tell (Rossini); Grand Fantasia, Op. 15, Der Wanderer for Pianoforte and Orchestra (Schubert-Liszt); Czech Suite, Op. 39 (Dvorak). 5.10, See Prague. 5.50, Two Sonatas (Brahms) for Violin and Pianoforte: (a) Sonata in G, Op. 78, (b) Sonata in A, Op. 100. 6.45, Talk for Housewives. 7.0 till Close Down, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1184 kc/s, 253 metres.—1.5 p.m., Weather for Farmers, followed by Gramophone Concert of Serenades. 1.45, Time and News. 2.5, Gramophone Concert of Waltzes. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Market Prices. 3.40, Review of Books. 4.0, Orchestral Concert conducted by Frau Marszałek; Overture, La Sirène (Auber); Waltz, Phantasiesbilder (Jos. Strauss); Fantasia on Gounod's Music (Rhode); In the Circus (Mraczek); Old Russian Dance Pictures (Génius); Intermezzo from Nalka (Delibes); Waltz, Münchener Kindl (Kozzaky); Music for a Punch and Judy Show (Gabriel-Marie); Ballet Music from Rosamund (Schubert); Altmeister Berlioz (Romann-Wehan); Overture, The Gipsy Baron (Joh. Strauss). In an interval at 5.20, Market Prices. 6.0, Technical Talk. 6.25, Talk: Germany's Struggle for Equality. 6.50, Weather, News and Market Prices. 7.0, Transmission for all German Stations relayed from Berlin (Deutschlandsender). 8.0, Topical Report. 8.30, Second and Third Acts of The Valkyries—Opera (Wagner), relayed from the Municipal Theatre. In an interval at 10.0, Second News. 11.30, Wireless Technical Talk. 11.40, Talk: A May Expedition into the Frontierland. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.0 to 10.15 p.m., See Prague.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report, and Light Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, Travel Talk on Chile. 7.30, Concert by the Caledonian Male Voice Choir. 8.0, Clarinet Solos by P. Ryan. 8.10, The Station Orchestra. 8.30, Soprano Solos by Mollie Phillips. 8.50, Clarinet Solos by P. Ryan. 9.0, Baritone Solos by J. Rice. 9.15, Folk Music from the Nations, by the Station Orchestra. 9.30, Folk Songs by Erni Ritter (Soprano). 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA

860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Station Trio. 7.30, Concert by the Vilalta Quintet, relayed from the Café de la Rambla. 8.0, Request Gramophone Records. 8.20, Sports Notes. 8.30, Exchange and Talk in Catalan. 9.0, Request Gramophone Records and News. 10.0, Chimes from the Cathedral, Weather, and Exchange. 10.5, Humorous Review of the Week's Events in Verse. 10.15, Sardanas, by the Colsa Barcelona. 11.0, Song Recital by Enriquet Nogue. 11.30, Radio Gazette in Catalan. 12 Midnight, News Bulletin. 12.5 a.m. (Tuesday), Concert of Catalonian Music, by the Station Orchestra. After the Concert, Gramophone Dance Music. 1.0 (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Popolare Announcements. 8.20, Giornale Radio and Press Review. 8.30, Time and Announcements. 8.40 (approx.), Giuseppe Milé Concert, conducted by the Composer. Part I: La baronessa di Carini—Lyric Drama in One Act; Part II: Soloists: Lea Tamburello Milé (Soprano) and Bianca Bianchi (Mezzo-Soprano). Intermezzo and Drinking Chorus from Le coefore; Dance from Ilgenia in Anlid; Lament and Finale from I Sette a Tebe; Chorus and Dance from Il ceclope. Part III: Symphonic Intermezzo and Act III of Dafni—Opera. Talk in the interval. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Gramophone Concert of Variety Music. 8.0, Programme relayed from Zagreb, 977 kc/s, 307 metres. 10.0, News, followed by Cigány Music from the Rudinean Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert. 3.0, Handwork for Women; Embroidering Summer Dresses. 3.30, Weather and Exchange. 3.45, Review of Books. 4.0, See Breslau. 5.0, Talk: National Education. 5.35, Concert of Folk Music for Zither. 6.0, A Poem. 6.5, Talk: The Reorganisation of the German Theatre. 6.30, Talk: Wagner and Germans. 7.0, Transmission for all German Stations: Richard Wagner Concert by the Berlin Wireless Orchestra, conducted by Max von Schillings; Soloist, Wilhelm Kade; Prelude to the Third Act of Lohengrin; Aria from The Flying Dutchman; Aria from The Mastersingers; Bachaude from Tannhäuser; Wotan's Farewell and Fire Magic from The Valkyries; Prelude to Tristan and Isolde. 8.0, Peasant Honour. 8.30, Concert from Frankfurt. 10.15, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—3.55 p.m., Concert of Chamber Music; Serenata for Flute, String Quartet and Pianoforte (Ernst Raters); Silhouettes for two Violins and Pianoforte (Paul Jnon). Spitzweg-Ständchen for Flute and String Quartet (Martin Gambke); Chamber Music in One Movement on a Silesian Folk Song for Pianoforte Quintet (Kurt Schubert). 5.30, Dialogue: Prehistoric Religions. 6.0, Chamber Music (continued); Serenade for String Quartet (Hans Lange); Andante for Flute, Violin and Viola (Kurt Adam); Variations on the Beresina Lied—for two Violins and Viola (Otto Siegl); Adagio and Rondo for Pianoforte Quartet (Schubert). 6.30, Talk on Wagner. 6.40, The Witzleben Station informs its listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations relayed from Berlin (Deutschlandsender). 8.5, Announcements. 8.10, Talk, Wagner and the Wesendonk House. 8.25, The Fourteen Years (arr. Dr. Wolfgang Herrmann). 9.5, Sixth Symphony in A (Anton Bruckner), by the Berlin Philharmonic Orchestra, conducted by Eugen Jochim. 10.10, News, followed by Dance Music. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

Tochstenbach; Angel's Serenade (Braga); Nocturne (Boulanger); Two Songs; Tes yeux (Bonincontro); Melody (Strauss-Grünfeld); Two Songs; Melody (Lehár); Gipsy Song, Mon bateau (Drigo); Liberty March (Latann). 7.15, Talk on Electricity. 7.20, Educational Talk. 7.30, Variety Items. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps; Part I: Mozart: Symphony in D; Serenade; Ballet, Les Petits Riens. 8.45, Talk: Birds and Aeroplanes. 9.0, Concert (continued); Part II, Wagner: Overture, Tannhäuser; Songs by Mme. Lauwers-Vanommerich: (a) Schmerzen, (b) Elsa's Dream, from Lohengrin; Selection from Lohengrin; Songs by Mme. Lauwers-Vanommerich: (a) Träume, (b) Senta's Ballad from The Flying Dutchman; The Ride of the Valkyries; Overture, The Flying Dutchman. 10.0, Le Journal Parlé. 10.10, Old and Modern Dance Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Military Band Concert. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 8.0, Light Music on Gramophone Records. 8.0, Wagner Festival Concert, by the Station Orchestra, Soloists: Mme. Steinblich (Songs), Gabriel Popesco (Songs) and Mlle. Nadia Chehap (Pianoforte). Introductory Talk. Monologue from Act I of Tristan and Isolde; Siegfried Idyll; Five Songs; Sonata for Tristan and Isolde; Albumblatt; Hans Sachs' Monologue and the Apotheosis of Hans Sachs, from Act III of The Mastersingers. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 8.30 p.m. to 12 Midnight.—5.45 p.m., Song Recital by Hilda Sasko; Aria from Lucia di Lammermoor (Donizetti); Solveig's Song (Grieg); Aria from Dimorah (Meyerbeer); Villanella (Dell'Acqua). 6.15, Talk. 6.45, Concert by the Karl Toll Cigány Band. 7.50, Exchange. 8.0, Reading. 8.30, The Seasons—Oratorio (Haydn), relayed from Szeged. 10.30, News, followed by Cigány Music from the Café Emke.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Town Hall Chimes. 12.2 to 2.0 p.m., Concert of Light Music from the Hotel d'Angleterre. 3.0, Reading in Zealand Dialect. 3.20, Talk for the Housewife. 3.30, Concert by the Teddy Petersen Orchestra, relayed from the Wivex Restaurant. 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Talk: The Mole. 6.20, English Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk. 8.0, Town Hall Chimes. 8.1, Concert of Ballet Music by the Radio Orchestra, conducted by Emil Reesen; Dance from Don Juan (Gluck); Ballet Music from Faust (Gounod); Chinese Dance and Trepak from the Nutcracker Ballet (Tchaikovsky); Dance from Lazy John (Nedbal); Mazurka from Coppélia (Delibes). 8.40, Recital of Songs, with Introductory Talk. 9.40, Recital of Old Italian Cello Music; Sonata in F (B. Mareello); Sonata in D (Locatelli). 10.10, News. 10.25, Concert of Old Danish Music by the Radio Orchestra, conducted by Emil Reesen; Overture, Jacob von Thyloe (Kjell Köiker); Suite from Keiserens nye Klæder (Finn Hoffding). 11.0, Dance Music from the Nimb Restaurant. In the interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Tuesday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Talk on Motoring Accidents. 7.15, Miscellaneous Announcements and News. 7.30, See Warsaw. 12 Midnight (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FEICAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. Announcers: T. St. Ronald, C. Danvers-Walker and B. McNabb. 5.30, Concert of Light Music for Hastings and Eastbourne Listeners: The Rose Beetle goes a-wooing (Armandola); On Wings of Song (Mendelssohn); Songs: (a) At Dawning (Cudman), (b) Lily of Laguna (Leslie Stuart), (c) My lovely Celia (arr. Lane Wilson); Siciliana Serenata (Schmalstich); Poem (Fibich); Songs: (a) A Bachelor Gay (Tate), (b) Comin' through the Rye (arr. Smart), (c) If I were King (Coslow); Wedgwood Blue (Kettelberg); The Grasshopper's Dance (Bucalossi). 6.15, Military Band Concert for Chichester and Bognor Listeners: The Passing of the Regiment; Policeman's Holiday (Ewing); Selection from Iolanthe (Sullivan); Parade of the Tin Soldiers (Jessel); Amorettenzänze (Gungl); Wood Nymphs (Coates); Valse des alouettes (Drigo); Regimental Marches; Valse triste (Sibelius); Scottish Patrol (Williams); Prelude (Järnefeldt). 7.0 to 10.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Extracts from The Barber of Seville—Opera (Rossini), on Gramophone Records. 2.0, Broadcast for Schools. 5.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps; Overture, William Tell (Rossini); Intermezzo, Overture, William Tell (Rossini); (Mascagni); from Cavalleria rusticana to the Waltz; Zabava (Gilson); Invitation to the Waltz (Weber); Piece for Cello and Pianoforte; Le Cygne (Saint-Saëns); Piece (Schumann); Petite suite (Debuxois); Nursery (Inglbrecht). 6.0, Talk on Esthetics. 6.15, Ballet Music from Marout (Rabaud). 6.30, Concert: Trio for Piano, Violin and Viola (Jos. Jongen); (a) Prelude, (b) Variation, (c) Finale; Légende naïve (Aquarelle) (Jos. Jongen); Foxtrot (Emile Chantmont); Smdowner (Emile Chantmont); Burlesque Modern Dance for Violin and Piano (Emile Chantmont). 7.15, Talk: What is a 'Frades' Union? 7.30, Film Review. 8.0, Gala Concert by the Radio Orchestra, conducted by Charles Walpot, and the Station Vocal Quartet; Soloists: Mme. Guyla (Songs), M. Lens (Songs), M. Gason (Saxophone), and M. Benders (Pianoforte); Overture, Iris Fledermans (Joh. Strauss); Suppé Potpourri (Michaelov); Musquette for Pianoforte and Orchestra (Poot); Aria from La Traviata (Verdi); Suite, Four Ways (Coates); Flower Song from Carmen (Bizet); Fünf Uhr Tee (bei Stolz (Dostal); Saxophone Solos: (a) Gitane (Kreisler), (b) Waltz Caprice, Vanity (Wiedsoeft); Song, with Orchestral accompaniment: Frühlingsstimmen (Joh. Strauss); Piece for Two Pianofortes and Chorus; Lying in the Hay (Mireille); Airs from Manon (Massenet). In the interval, Wailoon Programme: Monologues, Sketches, and Gramophone Records. 10.0, Le Journal Parlé. 10.10, Gramophone Concert of Popular Music.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, La princesse jaunie (Saint-Saëns); Waltz (J. Strauss); Gipsy Romance (Boldi); Selection from Die Bajadere (Kühn); Pianoforte Solo, Waltz (Moszkovsky); Serenade (Leoncavallo); Selection from Yes (Yvain). 2.0, Broadcast for Schools. 5.0, Concert by the Small station Orchestra, conducted by P. Leemans; Overture, Carmen Festium (Gilson); Petite Suite (Büsser); Intermezzo and Baccarolle from The Tales of Hoffmann (Offenbach); Andante from the Spanish Symphony (Lalo); Esquisses flamandes (Brusselsmans). 5.45, Programme for Children. 6.30, Gramophone Concert, with Songs by Mlle.

MAY 22nd

MONDAY

continued

by the Ibcollans: After To-night we say Goodbye; Goodbye Blues; Goodbye; Same old Moon; Rock your Cares away; Where is this Lady?; A Bedtime Story; Tell me To-night; Silver Hair and Heart of Gold; Yes, Mr. Brown; Song of the Bells; Take a Spot of Happiness; She was only Somebody's Daughter; Happy-go-lucky you; Marching along Together. 11.0, Orchestral Concert: Overture, Morning Noon and Night (Suppé); Under Heaven's Blue (Payan); Barcarolle (Waldteufel); By the Sleepy Lagoon (Coates); Pale Volga Moon (O'Hagan); By the Swanee River (Myddleton); Gipsy Moon (Borjanov); The Song of the Nightingale (Albott). 11.30, The Studio Chorus, with Orchestra: Overture, 1914; The Rogue Song; The Bells of St. Mary's; Up in the Clouds; Orchestra: Me and the Man in the Moon (Monaco); Do, do, do; Come to the Fair; Orchestral Selection of Songs. 12 Midnight, Club Concert for Ballymena Listeners: St. Patrick's Day March (Brace); Songs: (a) Love's Pleading, (b) Danny Boy (arr. Weatherley); Piccolo Solo: Deep Blue Sea (Breuer); Song: Malone's Christening; Violin Solos: (a) Boys at the Lough, (b) Tom Clark's Reel; Song: Tell me To-night; The Mad Major; Songs: (a) O'Donnell Aboon (Traditional), (b) Mavourneen Deelish (Traditional); Piccolo Solo: Sylvia Scherzo (La Thiére); Songs (Lehar): (a) Patiently Smiling, (b) You are my Heart's Delight; Cupid's Army (Siever). 1.0 a.m. (Tuesday), Accordion Music: Selection of Songs: All Change for happiness (Johns); Duet, The Blue Danube (Joh. Strauss); Selection from Carmen (Bizet); Duet: Marine March; Moma Lisa (Carter); La Javanette (Bozi); Song Medley. 1.30, Popular Songs: Down Sunny-side Lane; For You; Heutzelts; Selection from Viktoria and her Hussar; There's something in your Eyes Cherie; Many Happy Returns of the Day; When you wore a Gingham Gown. 2.0, Dance Music by the Ibcollans: Sheltered by the Stars; Just a little Home for the Old Folks; You've got me in the Palm of your Hand; Fit as a Fiddle; Roll on Kentucky Moon; I can't believe it's true; Her name is Mary; Willow weep for me; My Romance; Look what you've done; Pu-leeze Mr. Henningway; On a Dreamy Afternoon; Till to-morrow; Moonlight on the River. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW., and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.25, English Lesson, 6.50, Time, Programme Announcements, 7.0, Weather and Economic Notes, 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Talk on Wagner as a Young Man, with extracts from his Works. 8.30, Concert by the Station Orchestra; Romance (Grieg); Minuet (Elgar); In Hammerbach (Elgar); Neapolitan Song (d'Ambrosio); Waltz, Op. 37 No. 3 (d'Ambrosio); Overture, Mariazell (Fueck); Nixenwälder (Bayer); March from The Bird Fancier (Zeller); Potpourri of Viennese Songs (Drescher); March, Echtes Wiener Blut (Komzak); Overture, Berlin, wie es weint und lacht (Conrad); March, In Treue fest (Grimp); Waltz, Ach, ich bin dir so gut (André); Pittch-Marsh (F. Wagner). 10.15, Time, News, Weather and Sports Notes. 10.45, Serenade from Stuttgart. 12 Midnight, Close Down.

FREIDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Gall ha (in Morse); 806 kc/s, 372 metres; 1.5 kW., relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—2.10 p.m., Gramophone Concert: The Month of May in Music; March, Frühlingsmarsch (von Blom); Potpourri of Folk Songs (Markgraf); Polka, Maiglöckchen (Nothofer); May Song (Granchstädt); Hungarian Song, Flowers at Whitenside (Kekay); Flowers in the Wood (Kistennacher); The first May Flowers (Darras); March, In the lovely meadows (Albott); Waltz, May Flowers (Rixner); Mazurka, Maiglöckchen (Dittreich); Heimateklänge (Krone); Waltz, Im Zeichen des Frühlings (Lehar). 6.0, Book Review: The New Edition of Gregorinus. 6.25, Topical Talk. 6.40, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Talk by E. G. Kolbenheyer: The National Revolution and the Renaissance of German Intellect. 8.40, Variety Concert by the Station Male Voice Quartet. 9.10, Extracts from Die Nibelungen—Opera (Wagner) 10.10, Time, Weather, Announcements, Sports Notes and Police Report. 10.30 (from

Kiel). Concert by the Kiel Orchestra of Unemployed Musicians. Conductor, Hans Döring. March, Hand in Hand (Blom); Selection from Don Pasquale (Donizetti); Old Dances (Vood); Ein Morgen in Sanssouci (Kockert); Selection from Casanova (Lincke); Rosenstaude (Lindsay-Thiemer); Mazurka, Marietta (Müllbeker); Waltz, Hofballtänzer (Lauer); March, Sonnenadler (Blankenburg).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW., relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert: Intermezzo from the Ballet Naïfa (Delibes); Rondo from the Hafner Serenade (Mozart); Tenor Solo from the Third Act of Alessandro Stradella (Flotow); Die heilige Barke (Niemann); Fest in Garten (Niemann); Soprano and Tenor Duets: (a) Wenn zwei sich lieben (Lehar), (b) Wer uns getraut (Strauss); Silesian Folk-song; Silesian Dances; Potpourri, Echoes of the World (Zimmer); In Mainz auf der Brücke (Rathke); In der Lüneburger Heide (Krone); Soprano Solos: (a) Barcarolle (Waldteufel), (b) Aliy; Potpourri, The Merry Widow (Lehar); Arrur, March No. 2. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Exchange Quotations. 3.30, Programme for Young People. 4.0, Talk: An Old East Prussian Country Wedding. 4.20, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Lurline (Wallace); Suite No. 1 (de Michel); Selection from Hansel and Gretel (Humperdinck); Hungarian Dances Nos. 6 and 3 (Brahms); Selection from Der Mann mit den drei Frauen (Lehar); Selection from La Gioconda (Ponchielli). In the interval at 5.0, Technical Talk. 5.45 (from Danzig), Talk: Danzig and East Pomerania. 6.15, Market Prices. 6.30, See Berlin (Deutschlandsender). 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.5, Variety Programme by the Small Station Orchestra, conducted by Eugen Wilcken, and the Schmidt-Harmonists. 9.30, Elementary English Lesson. 10.15, Weather, News, and Sports Notes.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW., (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down, Programme of the Allgemeine Vereingende Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Music by the Rentmeester Ensemble. In the interval, Programme by the Three Synopators. 1.55 to 2.10 p.m., Interval. 2.10, Cello Recital by Miep Meder. 2.40, Gramophone Music. 3.40, Pianoforte Recital by Annie de Ridder. 4.10, Talk, with Gramophone Illustrations: Dutch Artists. 5.10, Concert by Kovacs Lajos and his Band; Soloist: Hilde Jager (Songs). In the interval at 6.10, Weekly Book Talk. 7.10, Tourist Talk: The French Mountains. 7.40, Weather and News. 7.45, Concert by the Wireless Orchestra, conducted by Albert van Raalte; Soloist: Hélène Cals (soprano); Overture, Rosamund (Schubert); Soprano Solos: (a) Mia speranza adorata (Mozart), (b) Wiegenlied (Schubert); Herzwunden (Grieg); Letzer Frühling (Grieg); Suite No. II from L'Arlesienne (Bizet). 8.40, The Smith Brothers. 9.0, Concert (contd.); Invitation to the Waltz (Weber); Soprano Solos: (a) Aria from Le billet de loterie (Isouard), (b) Il Bacio (Arditi); Pas des fleurs, from Naïfa (Delibes); Waltz, Wiener Blut (Joh. Strauss). 9.40, Gramophone Music. 10.0, Concert by Cornelius Codolban and his Orchestra, relayed from the Carlton Hotel, Amsterdam. 10.25, Gramophone Music. 10.40, Weather and News. 10.50, Concert from the Carlton Hotel (contd.). 11.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW., Programme of the Christian Radio Society (N.C.R.V.). 12.10 p.m., Organ Recital from Amsterd. 1.40, Gramophone Concert of Sacred Music. 2.25, Talk on Cooking. 2.55, Dress-making Lessons. 3.40, Religious Programme. 4.40, Gramophone Records of Variety Music. 4.55, Accordion and Xylophone Recital. In the interval, Gramophone Records. 6.10, Programme arranged by the Department of Buildings and Roads. 6.40, Police Notes. 6.55, News. 7.10, Answers to Correspondence. 8.10, Concert by the Utrecht Ladies' Choir. 8.40, Talk. 9.10, Concert by the Station Orchestra, conducted by Piet van den Hurk. In the intervals, Gramophone Records. 9.40 (in the interval). News. 10.55, Gramophone Concert: Selection from The Bartered Bride (Smetana); Scherzo capriccioso (Dvorák); Grieg Potpourri; Intermezzo from Cavalleria rusticana (Mascagni); Organ Solo: Andante sostenuto in C Sharp Minor, Op. 40, No. 1 (Hans Fahrmann); Organ Solo: Lento assai in D flat, Op. 40, No. 6 (Hans Fahrmann); Two Hymns. 11.40 (approx.). Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements Guide, News, Financial Notes, and Racing Results. 8.15, Sports Talk. 8.30, Talk. 9.0, Weather Forecast and News. 9.15, Dramatic Programme. 12 Midnight till Close Down, Programme in English by the I.B.C.: H. K. Hitchcock announcing. 12 Midnight, Songs in Russian, and Orchestral Music: Saschinka (Schirrmann); Songs: (a) Song of the Volga Boatmen (Traditional), (b) Serenade from Don Juan (Tchaikovsky); Shining Moon (Traditional); Songs: (a) Song of the Flea (Mussorgsky), (b) Song of the Viking Guest (Riutsky-Korsakov), (c) The Town of Kazan (Mussorgsky); Potpourri of Russian Melodies (Schirrmann). 12.30 a.m. (Tuesday), Dance Music: Love will find a way; Put a little Springtime; Butterflies in the Rain; I'm one of the Lads from Valencia; Sweetheart; My Heart's to let; Can't we meet again? When you've fallen in love. 12.57, I.B.C. Goodnight Melody. 1.0 (approx.). Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Announcements, followed by Gramophone Music. 7.25, Announcements. 7.30, See Warsaw. 10.0, Answers to Technical Correspondence.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.0 p.m., Time Signal, Weather and News. 7.30, Divine Service Relay. 8.0, Announcements. 8.15, Evening Concert. 8.40, Talk. 9.0, Trio in C Minor (Beethoven). 9.30, Talk on Biology. 9.50, Concert: Selection from Carmen (Bizet); Bal Costumé (Rubinstein). 10.30 (approx.). Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Agricultural Report. 6.25, Talk. 6.50, Cello Recital by Yrjö Selin: Sonata in G (Sammarini-Salmon); Sicilienne (Paradies); Rondo (Bocherini); Spanish Dance (Granados); Le Filense (Popper). 7.20, Talk. 7.40, Grieg Concert by the Station Orchestra, conducted by Erkki Linko. 8.0, Humorous Programme. 8.15, Concert of Finnish Music by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Eysoldt: Waltz, Wo die Zitronen blühen (Strauss); Overture, In der Welt (Blodek); Suite from Friedemann Bach (Geissler); Barlesque (Foot); Kleine Serenade (Grünfeld); Malerische Ständchen (Graener); Selection from The Barber of Bagdad (Cornelius); Song, The Lost Chord (Sullivan); Potpourri, Leháriana (Geiger). In the interval at 2.0, News. 2.30, Meat Market Prices. 3.30, Exchange and Time Signal. 3.50, Programme for Young People. 4.30, Concert by the Peter Quartet. Soloist: Margarete Paft (Contralto). Second String Quartet, Op. 5 (Schiffmann); Seven Songs (Hugo Wolf); (a) Gesegnet sei, (b) Das verlassene Mägdelein, (c) Blumenrausch, (d) Der Gärtner, (e) Anakreons Grab, (f) In der Frühe, (g) Er ist's; String Quartet in E Minor (Beethoven). 5.50, Talk: The Aims of the Modern Woman: The Right to Work. 6.5, Talk: The Reconstruction of the German Theatre. 6.30, The Rhenish Inhabitants of East Germany. 6.50, Weather, Time, Exchange, and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, News Bulletin. 8.10 to 9.5, See Berlin (Witzleben). 9.5, Third Symphony in D Minor (Bruckner) by the Station Orchestra, conducted by Büschkötter. 10.15, News and Sports Notes. 10.30, Serenade, conducted by Wolf. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Predecessors of Wagner—Gramophone Concert. 1.0, News Bulletin. 1.15, Successors of Wagner—Gramophone Concert. News after the Programme. 2.10, Art and Film Review. 2.30, Programme for Women. 3.0, Song Recital by Elfriede Götzke (Soprano). 3.15 to 3.35, Interval. 3.35, Economic Notes. 4.0, Talk: German Literature in the Eighteenth Century—Johann Christoph Gottsched. 4.20, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Prelude to Selirin and Getrande (Graener); Extracts from the Traumpfelsuite (Reznick); Extracts from the Japanese Suite (Niemann); Lagenwälder, from Eine Nacht in Venedig (Joh. Strauss); Salut d'amour (Elgar); Hungarian Rhapsody (Reinold); Overture, Undine (Lortzing); Allegretto quasi Andantino, Op. 164 (Schubert); Intermezzo, Gang durch den Märchenwald (Meyer-Helmund). Talk in the interval. 6.5, See

Berlin (Deutschlandsender). 6.25, Talk on Wireless Legal Questions. 6.45, Programme to be announced. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Instrumental Concert, with Introductory Talk and Commentary on the Nature and Development of the Various Instruments; Fritz Kirms (Violin), Richard Ländler (Viola and Viola d'amore), Christian Klug (Cello and Viola da Gamba), Erich Nahler (Double Bass), Margarete Stahl (Harp), Walter Goetze (Lute and Guitar), Ferdinand Kollmanek (Zither), and Franz Vogel (Mandoline). 9.0, News Bulletin. 9.10, Lustiges Dreieckliander—Radio Sequence in Two Parts (Schmiedel and Freyberg). 10.10, News Bulletin. 10.30 (approx.). Concert by the Leipzig Symphony Orchestra, conducted by Theodor Bärner: Prelude, An mein deutsches Land, Op. 48 (Zilcher); Tone Poem, Meergruss (von Schilling); Tone Poem, Jugend, Op. 19 (Ehrenberg); Symphonic Poem, Ophéus (Liszt); Goethe Festival March (Liszt). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, Esperanto Lesson. 7.30, Serbo-Croatian Lesson. 8.0, Programme from Zagreb, 977 kc/s, 307 metres. 10.0, Weather, News, and Light Music on Gramophone Records.

LOWO

788 kc/s, 381 metres; 16 kW.—7.0 p.m., History Talk. 7.15, Miscellaneous Items. 7.30, See Warsaw. 10.0, Talk on Films. 10.15, Song Recital by Artur Lewkowicz (Baritone). 10.30, Light Music and Dance Music from Warsaw. In an interval at 10.55, News, Aviation Weather Report, and Police Notes. 11.30 (approx.). Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 7.50, La Juive—Opera (Halévy), relayed from Paris. After the Opera, News Bulletin.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Concert of Popular Music. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Tuesday), Sports and Bull-fighting Notes. 12.40, Light Music. 1.0 (approx.). Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Radio Journal, and Request Gramophone Records. 9.15, News Bulletin. 9.30 (approx.). Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.0 p.m., See Prague. 7.25, Concert by a Zither Trio. 7.45, Talk: Life in the Depths of the Ocean. 8.0, Military Band Concert. 9.0, See Prague. 10.15 (approx.). Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 160 kW.—6.30 p.m., Literary and Musical Programme relayed from the Radio Theatre. 9.0, News Bulletin. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

MOTALE.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW., relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres. 4.30 p.m., Military Band Concert: Hymn and Triumphal March from Aida (Verdi); Overture, Zampa (Herold); Selection from Tieland (d'Albert); Kaiser-Walzer (Joh. Strauss); Intermezzo, Am Lagerfeuer (Siede); March, Für Vaterland und Freiheit (Blankenburg). 5.45, Talk on Wagner. 6.5, Talk: German Ideas of Statesmanship—The Building up of the Bismarck Empire. 6.25, Talk. 6.45, Time, Weather and Agricultural Prices. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Talk by the Station Manager, Richard Kolb. 8.20, Concert conducted by Erich Kloss: Overture, Le Brasseur de Preston (Lami); Rondino (Beethoven); Selection from Li-Tai-Pe (Frankenstein); Pavane and Waltz from the Sleeping Beauty suite (Tchaikovsky); Petite Suite (Debussy); Dreaming (Sassula); Gavotte Caprice (Lortkiewicz); Lyric Suite (Grieg). 9.15, Recital of Bavarian Ballads. 9.35, Concert of Music by Georg Caspar Schirrmann: Overture, Alceste; Aria for Soprano, two Flutes and Harpsichord from Salomon; Aria for Soprano and Harpsichord from Leonilde; Recitative and Aria for Tenor, Strings and Harpsichord from Das zerstörte Troja; Drinking Song for Baritone and Harpsichord from Clélie; Aria for Baritone, two Oboes and Harpsichord from Clélie; Recitative and Arioso from Alceste; Aria for Tenor, Cello, Strings and Harpsichord from Alceste; Recitative for Baritone, two Bassoons, Strings and Harpsichord from Ludwig der Fromme;

MAY 22nd

MONDAY

continued

Musette for Baritone, Orchestra and Harpsichord from Ludwig der Fromme; Overture, Ludwig der Fromme. 10.20, Time, Weather, News and Sports Notes. 10.45, Concert of Bavarian Schrammel Music by the Station Choir, conducted by Eduard Zengerk.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres, and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Chamber Music by the Station Ensemble. 6.0, German Lesson. 6.30, Song Recital by Olvin Lunde (Baritone). 7.0, Announcements, Weather and News. 7.30, Talk. 8.0, Time Signal. 8.1, Concert of Instrumental Music. Mme. Hildegun Reuter (Pianoforte), M. P. Wang (Flute), and M. Gunnar Kundsén (Violin). Three Pieces for Flute and Pianoforte: (a) Sonata No. 2 in F Flat (Bach), (b) Romance, Op. 34, No. 3 (Widor), (c) Spirale (Donjon); Pianoforte Solos: (a) Ballad No. 10 (Brahms), (b) Prelude in C Sharp Minor, Op. 32 (Rachmaninov), (c) Suite (Grieg), (d) Variations on a German Melody (Chopin); Violin Solos: (a) Aria (Roger), (b) Nocturne in D, Op. 27 (Chopin-Sarasate), (c) Tango (Elman), (d) Souvenir de Moscou (Wieniawsky). 9.10, Political Review. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Gramophone Concert. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time, Announcements, and Light Music on Gramophone Records. 8.45 Variety Concert. 9.45, One-Act Comedy. 10.0, Dance Music. 10.55, News.

PARIS

277 kc/s, 1,083 metres; 60 kW. Relayed by Eiffel Tower, Call FLE, 207.5 kc/s, 1,446.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Moulins—Tourist Propaganda Programme, Radio Report, Interview with Local Celebrities, Music by La Schola de Moulins and Chimes. 9.35, Arts III, IV, and V of La Juive—Opera (Halévy), relayed from the Opera, Paris.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 20 kW.—6.45 p.m., Le Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Variety Music on Gramophone Records. 8.0, Scientific Talk. 8.5, Talk on the Motor-Car. 8.15, Interval. 8.30, Concert of Popular Songs. 9.0, Interval. 9.15, Sponsored Concert. 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Concert of Opera and Ballet Music by the Station Orchestra. Overture, Russian and Ludmilla (Glinka); Selection from L'étoile du nord (Meyerbeer); Three Airs from Marouf (Rabaud), on Gramophone Records. Selection from Patrie (Paladilhe). 1.0, Exchange, News and Weather. 1.15, Pianoforte Recital by Suzanne Teynier-Bettelle. Les tricoteuses (Cooperin); Les cyclopes (Rameau); Petite berceuse (de la Preste); Etude (Pech); Orientale (Albeniz); Ballad in A Flat (Chopin). 1.30, Exchange. 1.35, Orchestral Concert (contd.). Alastian Dances (Levadé); Selection from Izeyl (Piercé). 6.10, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Film Review. 7.0, Review of New Books. 7.20, Orchestral Concert. 7.45, Commercial Prices and News. 8.0, Un châtiment—Play in One Act (Truffler and Chenu) after the Novel by Paul Bourget. In the intervals at 8.30, News and Weather, and at 8.40, Review by Paul Reboux, and at 9.45, Gramophone Records. 11.15 (approx.), Close Down.

PITTSBURGH

WESTINGHOUSE ELECTRIC, (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.45, Human Values. 9.0, Teaberry Baseball Scores. 9.5, Programme to be Announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Folk Songs by Lois Miller. 10.0, Teaberry Baseball Scores. 10.5, Programme to be Announced. 10.15, Dick Daring, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Hotel McAlpin Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sports Review. 11.22, Press News-Reeler. 11.29, Temperature Report. 11.30 to 1.30 a.m. (Tuesday), New York Relay. 11.30, Tastyest Jesters. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n'

Andy. 12.15 a.m. (Tuesday), Townsend Murder Mystery. 12.30, Five Star Theatre—Marx Brothers. 1.0, Cliquot Club Eskimos. 1.30, Programme to be Announced. 1.45 to 3.0, New York Relay. 1.45, Phil Cook and the Ingram Shavers. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Time Signal and KDKA Players.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 336 metres; 1.9 kW.—6.20 p.m., Talk for Soldiers. 7.5, Miscellaneous Announcements and News. 7.25, Time Signal. 7.30, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.15 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava. 5.10, Shorthand Lesson. 5.30, Programme for Children. 5.50, Variety Music on Gramophone Records. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk: The Economic Crisis. 7.0, Chimes. 7.1, News Bulletin. 7.10, Elementary English Lesson. 7.25, Song Recital by Anna Zborilova-Rackova. 7.45, Medical Talk. 8.0, See Moravská-Ostrava. 8.45, Talk. 9.0, Time Signal. 9.1, Concert by the Station Orchestra, conducted by O. Parik. Soloists: Professor Emil Mikelka (Pianoforte), Comedy Overture (Kovarovic); Pianoforte Concerto in F Minor, Op. 21, No. 2 (Chopin); Symphonic Fantasia, Francesca da Rimini, Op. 32 (Tchaikovsky). 10.0, Time Signal. 10.1, News Bulletin. 10.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.30 p.m. (from Lausanne) Weather News and Announcements. 8.0 (from Geneva), Extracts from Esther—Tragedy in Three Acts (Racine) with Music by Moreau, by Pupils of the Secondary Schools for Girls and the Station Orchestra. 9.25 (from Lausanne), Choral Concert. 9.50, News and Weather. 10.0 (from Lausanne), Gramophone Music. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.30 p.m., Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.30, Reading. 11.0, Concert of Popular Music by the Station Quartet, and Songs.

RUKJAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1 to 2.15 p.m., Radio Report of the Cycle Tour of Italy, followed by Gramophone Records of Variety Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.0, Radio Report of the Cycle Tour of Italy. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Song and Violin Recital by Orelia Parisini (Soprano), Gino Corti (Bass), Vittoria Sensi (Baritone), and Maria Flori (Violin); Duets from Silvano (Mascagni) and Madame Butterfly (Puccini); Songs by Verdi and Gomez; Violin Music by Corelli, Chabrier, and Wieniawski. 6.40, (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.10, Tourist Report. 7.20, Giornale Radio. 8.0, Time, Announcements, and Summary of the Day's Results of the Cycle Tour of Italy. 8.15, Song Recital by Margherita Cossa (Soprano). 8.30, Giornale Radio and Sports Notes. 8.45, Concert of Light Music. In the interval, Talk. After the Concert, Dance Music. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 p.m., Book News by Levere Fuller. 8.15 to 9.0 (approx.), New York Relay. 8.15, Salon Concert Ensemble. 8.30, Three Seapans. 8.45, Lady Next Door. 11.45, Stock Reports. 12 Midnight to 1.30 a.m. (Tuesday), New York Relay. 12 Midnight, Socoyland Sketch. 12.30 a.m., National Opera Concert. 12.45, Band of Famous Brands. 1.0, A. & P. Gipsies. 1.30, WGY Players—One Man's Family. 2.0, Contended Programme, from New York. 2.30, National Radio Forum from New York, followed by Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Bern, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Basle), Gramophone Records of Bird Songs. 12.30

p.m., News Bulletin. 12.40 (from Basle), Which piece was that?—Musical Guessing Competition. 1.25 (from Basle) Exchange, Time and Weather. 1.45 to 5.0, Interval. 5.0 (from Zürich), Fashion Talk for Women. 5.30 (from Bern), Gramophone Dance Music. 6.0 (from Bern), Gramophone Records of Famous Violinists. 6.30 (from Zürich), Otto Zarek reads from his Novel, Theater um Maria Thul. 7.0, Time and Weather. 7.5 (from Zürich), Gramophone Music. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Concert by the Swiss Radio Orchestra. 9.0, Weather and News. 9.10 (from Zürich), Gustav Adolf Programme. 10.15 (approx.), Close Down.

SOTTENS.—See Radio Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m. (from Göteborg), Provincial Programme. 5.55, Gramophone Music. 6.55, Parliamentary Notes. 7.15, Weather and News. 7.35, Recital by Ossián Frumeris (Songs) and Gunnar Ahlberg (Pianoforte). Three Songs (Peterson-Berger); Pianoforte Solos: Lyrische Stückchen (Grieg); Two Songs (Sinding). 8.0 (from Göteborg), Discussion on Co-operation between the Middle Classes. In the interval at 9.45, Weather and News. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert. 12.45 p.m., News. 1.0, Time Signal and Exchange Quotations. 1.5, Gramophone Records. 1.15, Radio Report of a Hunt in the Tronc Forest, relayed from Hérisson. 1.30, Light Music on Gramophone Records. 2.0 to 4.0, Interval. 4.0, Concert, relayed from Paris (Radio Coloniale), 25.2 metres, 11,905 kc/s, Pianoforte and Cello Recital by Mlle. Gols and M. Seres. 5.0, Orchestral Concert, conducted by M. Roskam; Overture, Grieg (Lincke); Waltz, Blue Diamonds (Witz); Two Melodies (Tosti); (a) Ideale, (b) serenata; Selection from La Tosca (Puccini-Bergho); Réve (d'Ambrosio); Cello Solo by M. Roskam; Le Cygne (Saint-Saëns); Ballet Suite (Poppy). 6.0, Talk on the Cinema. 6.15, Talk in German: Figures in Alsatian History—G. Daniel Arnold. 6.30, Orchestral Concert, conducted by Maurice de Villars; soloist: M. Gressire (Violin); The Surprise Symphony (Haydn); Overture, Figaro (Mozart); Les Petits Riens (Mozart); Violin Solo: Romance in G (Beethoven); Overture, Fidelio (Beethoven); Marches Militaires (Schubert). 7.30, Time Signal and News. 7.45, Russian Dance Music on Gramophone Records: Dances from Prince Igor (Borodin); Contradance (Napawmik); Sérénade Nocturne (Kedroff); Tri Piesni (Dobrowen); Kol Slavenj (Bortnjansky). 8.15, Press Review in German, Lottery Results, and News. 8.30, Radio Report of a Journey to Moulins in Central France, Chimes from the Town Clock, and Choral Concert of Old Bourbon Folk Songs. 9.30, Press Review in French. 9.35 (approx.), La Périehole—Opérette (Offenbach); The Station Orchestra, conducted by Maurice de Villars, and Soloists. 11.0, Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 827 kc/s, 570 metres.—1.30 p.m., Concert from Langenberg. 2.0 to 2.15 p.m., Programme arranged by the Post Office, with Gramophone Records. 2.30, Spanish Lesson. 3.0 to 3.30, Elementary English Lesson. 4.0, Songs to Poems by Adalbert von Chamisso—Recital by Emma Mayer (Contralto). Dolores—Cycle (A. Jensen). 4.30, Concert from Frankfurt. 5.50, Time and Announcements. 6.0, Talk: Germany—Her Leaders and Notabilities—Adolf Hitler. 6.25, See Frankfurt. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Frankfurt. 9.0, For Whitsun, 1933—Programme of Swabian Literature and Music, with Introductory Talk. 10.15, Time and News. 10.35, Talk on Chess. 10.45, Serenade. 11.5, Serenade. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire. 6.30 p.m., Spanish Caprice for Orchestra (Rimsky-Korsakov). 6.45, Popular Songs. 7.0, Argentine Music. 7.15, News, Exchange, Market Prices and Announcements. 7.25, Local News. 7.30, Instrumental Music. 7.45, Songs from Opéra-Comique. 8.0, Viennese Music. 8.30, Sound Film Songs. 8.45, Violin Solos. 9.0, Extracts from Aida—Opera (Verdi). 9.30, Orchestral Concert: Norwegian Dance (Grieg); Mimet in G (Beethoven); Overture, Idomeneus (Mozart); Selection from Schwanda the Piper (Weinberger); Minuet (Schubert). 10.0, Bal Musette. 10.15, North African News. 10.30, Concert for Listeners

In Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Dance Music: I'll never be the same; I'm playing with Fire; As long as Love lives on; Here it is—Monday; When anybody plays or sings; We'll always be Sweethearts; Every Woman thinks she wants to wander; One Hour with you.—11.57, I.B.C. Goodnight Melody.—12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Concert of Variety Music. 6.35, Giornale Radio, Agricultural and Dopolavoro Notes. 7.0, Time and Tourist Report. 7.5 (approx.), Recital of Songs on Gramophone Records: Canzone della giovinezza (de Angelis); Marielita (Simi-Neri); Danziamo Jenny (de Angelis); Pardon (Celani-Gaslieri). 7.20, Giornale Radio. 7.45, Gramophone Records of Light Music. 8.0, Announcements, Report on the Cycle Tour of Italy, Giornale Radio, Weather, and Gramophone Records of Operatic Music. 8.45, Talk. 9.0, Concert of Chamber Music. 10.0, Comedy in One Act, followed by Gramophone Records of Variety Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 20 kW. Relayed by Graz, 851 kc/s, 352 metres; Innsbruck, 1,055 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 246 metres; and Salzburg, 1,373 kc/s, 218 metres.—Transmits at intervals from 6.30 p.m., Talk on the Austrian Countryside—the Gaisberg. 6.55, English Lesson. 7.15, Time, Weather, and Programme Announcements. 7.25, Relay from the State Opera House. In an interval at 9.45, News and Weather. 10.35, Announcements. 10.45, Gramophone Concert. Waltz, from The Arabian Nights (Joh. Strauss); Song from Frederica (Lehár); German Dances (Schubert); Selection from Coppelia (Delibes); The Merry-makers' Carnival.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Police Press Review. 11.50, Aviation Weather Report. 11.57, Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Light Music on Gramophone Records. 1.20, Weather Forecast. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Road Report. 3.35, Answers to Correspondence. 3.50, Popular Music on Gramophone Records. 4.25, Elementary French Lesson. 4.40, Talk on Economics. 5.0, Concert: Pianoforte Solos: (a) Theme with Variations in D (Mozart), (b) Toccata in G (Bach); Songs: (a) Aria from Sigismund Augustus (Jotyko), (b) Sérénade (Gounod), (c) Le Printemps (Gounod); Pianoforte Solos: (a) Polonaise brillante in E (Weber), (b) Etude (Henselt), (c) Etude in E (Scriabin), (d) Night (Glazunov); Songs: (a) L'oiseau des Champs (Gretchaninov), (b) Arietta from Richard Coeur de Lion (Gretry), (c) Aria from Gianni Schicchi (Puccini). 5.55, Programme Announcements. 6.0, Dance Music from a Café. News in the interval. 7.0, Miscellaneous Items. 7.20, Agricultural Report. 7.30, Topical Talk. 7.45, Radio Journal. 8.0, Light Cavalry—Opérette in Two Acts (Suppé). In the intervals, Sports Notes and Radio Journal. 10.0, Answers to Correspondence and Technical Queries. 10.15, Light Music. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—5.55 p.m., Programme Announcements. 6.0, Dance Music on Gramophone Records. 6.40, Talk in Lithuanian: The Rebellion of 1863. 6.55, Miscellaneous Announcements. 7.0, Daily Reading. 7.10, Miscellaneous Announcements. 7.15, Programme to be announced. 7.30, Talk on Cyprian Kamil Norwid—Poet, on the Fiftieth Anniversary of his death. 7.30, See Warsaw. 12 Midnight (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.40 p.m., Announcements. 8.0, Early Works of Famous Composers—Pianoforte Recital by Antonia Geiger-Eichhorn. Pianoforte Sonata, Op. 1 (Wagner); Variations on the Name Aberg, Op. 1 (Schumann); Pianoforte Sonata in C Op. 1 (Brahms); Rondo, Op. 1 (Chopin). 8.45, Concert of Yugoslavian Music by the Station Quartet. 10.0, News and Weather Report. 10.10, Dance Music. 11.0, (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

TUESDAY

MAY THE TWENTY-THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Opera: "La Bohème" (Puccini), from Covent Garden.
- LONDON REGIONAL** Recital of Brahms' organ works. "Tickets, Please," a revue.
- MIDLAND REGIONAL** Choral programme and orchestral concert.
- NORTH REGIONAL** Concert from the Houldsworth Hall, Manchester.
- WEST REGIONAL** "Western Tour," some musical comedies which have visited the West.
- SCOTTISH REGIONAL** Band concert.
- BELFAST** Relay of variety programme from the Empire Theatre, Belfast.
- ABROAD**
- BERO-MUNSTER** 8.15 p.m. Opera: "The Barber of Bagdad" (Cornelius), from Berne.
- BUDAPEST** 8.30 p.m. Concert of English Music by the Orchestra of the Royal Academy of Music.
- HUIZEN** 7.40 p.m. Oratorio: "Elijah," by Mendelssohn.
- MUNICH** 9.20 p.m. Symphony Concert.
- PRAGUE** 7.0 p.m. Opera: "Tannhäuser" (Wagner), from the National Theatre.
- ROME** 8.45 p.m. Opera: "Siberia," by Giordano.
- STOCKHOLM** 8.0 p.m. Contemporary Swedish Music; the Composers conducting.
- VIENNA** 9.0 p.m. Mahler's Sixth Symphony in A.

ATHLONE
725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report and Light Music on Gramophone Records. 6.0, Programme for Children. 6.40, News and British Market Report. 7.0, Gaelic Reading. 7.15, Monologues by Hilda Knowles. 7.30, Time Signal. 7.31, The Station Orchestra. 7.45, Tenor Solos by H. Whitehouse. 8.0, Sketch by Mary O'Hea and Company. 8.30, The Station Orchestra. 8.45, Soprano Solos by Mamie Dingle. 9.0, Uilleann Pipes by S. MacAonghusa. 9.15, Station Orchestra. 9.45, Sponsored Programme. 10.45, Time, News, Weather Report and Close Down.

BARCELONA
860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Station Trio: Concerto No. 2 (Cooperin); Chanson de mai (Daudois); Bereuse (Rimsky-Korsakov); Selection from Intermezzo (R. Strauss). 8.0, Request Gramophone Records. 8.15, Catalan Grammar Lesson. 8.45, Exchange and Talk on the History of Art. 9.0, Request Gramophone Records and News. In the interval at 9.15, Talk on Football. 10.0, Chimes from the Cathedral, Messages for Seamen, Exchange and Market Prices. 10.5, Sponsored Programme. 10.30, La Cara de Dios—Play in Three Acts (Arnieche), Music by Chapt. In the interval at 12 Midnight, News. 1.0 a.m. (Wednesday), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk, and Populavoro Announcements. 8.20, Giornale Radio and Press Review. 8.30, Time and Announcements. 8.40 (approx.), Concert by the Bari Mandoline Quartet: Overture, Le trame deluse (Cimarosa); Liuto gentile (Gargano); Spleen (Amadei); Selection from Ernani (Verdi); Overture, Flora (Anelli); Serenata, C'era la luna (De Martino); Adagio cantabile, from the Pathetic Sonata (Beethoven); Seduzione (Amadei). In the interval, Talk on Wine. 10.30, Light Music on Gramophone Records. 10.55, News Bulletin.

BASLE—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—7.0 p.m., Yugoslav Song Recital by Kycenja Pinterovic. 7.30, Talk. 8.0, See Ljubljana. 10.0, Relay of Foreign Stations.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert. 3.0, Programme for Young People. 3.30, Weather and Exchange. 3.45, Dramatic Programme: (a) Der traurige Mönch (Lenau), Music by Liszt; (b) Der Gott und die Bayadere (Goethe), Music by Prince Louis Ferdinand of Bavaria. 4.0, See Leipzig. 5.0, Talks for Women. 5.25, Topical Talk. 5.35, Song Recital by Hans Joachim Andersen. Four Songs (Richard Trunk); (a) An die Liebe; (b) Die Stadt; (c) In stiller Dämmerung; (d) In der Nacht; Four Songs (Justus Hermann Wetzel); (e) Alpenpass; (f) In Danzig; (g) Der Reisehecher; (d) Weg zur Geliebten. 6.0, A Poem. 6.5, Cello Recital: The Argentine Sonata in A Minor (Schubert); Minuet (Haydn); Intermezzo (Granados); Allegro spiritoso (Smetilka). 6.30, Political Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations—Programme to be announced. 8.0, See Hamburg. 9.0, Topical Talk. 9.10, See Breslau. 10.0, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Concert from Hamburg. 12 Midnight, Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.20 p.m., Heinrich Sattler Song Recital by Isa Berger (Soprano), Margarete Schreiber-Sattler (Mezzo-Soprano) and Elsie Hartwig (Contralto). Introductory Talk by Prof. Paul Graener: Hoffnung auf Gott; Sonntagssied; Lied der Vögelin; Herbstmorgen; Murrehuder Bach; Wanderlied; Blauer Himmel Vaterlandslied. 6.40, The Witzleben Station informs its Listeners... 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, Announcement. 8.10, Introductory Talk to the following Transmission. 8.20, Berlin Art Week—Part Relay of a Concert by the Prussian Academy of Arts from the Singakademie. The Station Orchestra conducted by Eugen Jochum. Soloist: Käte Henemann (Pianoforte); Concerto in A Minor, Op. 72, for Pianoforte and Orchestra (Paul Graener), conducted by the Composer; Concerto, Op. 38, for Orchestra (Hindemith). 9.0, Variety Concert: Gertrud Runge (Soprano), Erwin Hartung (Tenor), Willy Glahe and Partner (Accordion Duets) and Gerhard Hoffmann's Band. 10.15, Weather, News and Sports Notes. 10.45 (approx.), Radio Report on the European Police Boxing Championship from the Sportpalast. After the Report, Concert from Hamburg. 12 Midnight, Close Down.

BERNE—See Schweizerischer Landessender.
BEROMUNSTER—See Schweizerischer Landessender.
BODEN—See Stockholm.
BODO—See Oslo.

BORDEAUX-LAFAYETTE
986 kc/s, 304 metres; 13 kW.—7.30 p.m., News and Exchange. 7.40, Talk for Women. 7.55, Lottery Results. 8.0, Topical Talk. 8.15, News. 8.30, Programme to be announced.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—7.25 p.m., Pianoforte Recital by Anna Kafendova-Zochova; Pianoforte Suite (Kandara); Prelude and Fugue in D Minor (Bach). 7.50, Reading. 8.0, Programme from Prague. 10.15, Concert by the Station Orchestra, conducted by E. Dyk. 11.0 (approx.), Close Down.

BREMEN—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—1.5 p.m., Weather, followed by Gramophone Concert of German Music. 1.45, Time and News. 2.5, Gramophone Concert of Marches from Opera. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Market Prices. 3.40, Programme for Children. 4.10, Pianoforte Sonata in C Minor (Schubert). 4.40, Review of Books. 5.0, Orchestral Concert conducted by Franz Marszalek: Overture, Zampa (Hérold); An der schönen grünen Narenta (Komzak); Berceuse (Hjinsky); Barcarolle (Arensky); Grieg Reminiscences (Urbach); Dance Suite (Kochmann). In an interval at 5.30, Market Prices. 6.0, Topical Talk. 6.25, Reading from the Works of Henry von Heiseker, with Introductory Talk. 6.50, Weather and News. 7.0, Transmission for all German Stations relayed from Berlin (Deutschlandsender). 8.0, Die lange Jule—Drama (Carl Hauptmann) arranged for Radio. 9.0, First General News. 9.10, Folk Songs of Germans Abroad—Choral and Orchestral Concert. 10.10, Second News. 10.30, Political Press Review. 10.55, Talk: The Plight of the Provincial Theatre. 11.10, Concert from Hamburg. 12 Midnight (approx.), Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—7.45 p.m., Programme from Prague. 8.40, In the Waiting-Room—a Radio Play. 9.0, Programme from Prague. 10.15, See Bratislava. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert of Opera Music. 12.20 p.m., Clarinet Solos. 12.35, Viennese Music: Selection from Light Cavalry (Suppé); Waltz from The Merry Peasant (Fall); Waltz from The Count of Luxembourg (Lehár); Overture, The Gipsy Baron (Strauss). 1.0, Le Journal Parlé. 1.10, Liszt Concert by the Small Station Orchestra, conducted by Leemans; Hungarian

March; Rhapsody No. 2; Liebestraum. 1.30, Concert of Old Dances. 5.0, Beethoven Concert by the Station Orchestra, conducted by Meulemans: Overture, Die Geschöpfe des Prometheus; Symphony in D. 5.30, Programme for Children. 6.5, Literary Review. 6.15, Organ Recital of Sacred Music: Prelude and Fugue in B Minor (Bach); Two Chorals (Karg Elert); (a) O Hühnerherz aller Bande; (b) Wie schon leuchtet uns der Morgenstern; In dir ist Freude (Bach); Cantabile (Frank); Prelude (Corelli); Adagio (Bach); Finale from the First Symphony (Gulmunt). 6.45, Programme arranged by J. O. C. 7.15, Talk by M. Pauwels: The Euclydean Letter Rerum Novarum. 7.30, Review for Women and Notes on Art. 8.0, Concert of Belgian Music by the Radio Orchestra, conducted by F. André. 8.35, Sacred Music: Pontifical March; Hymn. 8.45, Talk. 9.0, Concert by the Symphony Orchestra, conducted by Meulemans. Soloists: Mme. Laure Bergé (Songs). Part I—Beethoven Music: Overture, Egmont; Song (Beethoven); March from The Ruins of Athens. Part II—Songs: (a) Ewige Liebe (Brahms); (b) Traum durch die Dämmerung (R. Strauss); (c) Heimliche Anferderung (R. Strauss); Finale from The Dusk of the Gods (Wagner). 10.0, Le Journal Parlé. 10.10, Request Gramophone Records. 10.40, Gramophone Records: Nicolette (Ravel); Lisette d'Indy; Toccata in F (Bach). 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)
N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by Pierre Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Popular Music on Gramophone Records. 5.0, Concert by the Radio Orchestra, conducted by Franz André: Overture, Zampa (Hérold); Stolz Potpourri (Dostad); Ballet Music from William Tell (Rossini); Selection from Véronique (Messager); Ballet Music from Coppelia (Delibes); Hungarian Dances (Brahms). 5.45, Programme for Children. 6.30, Concert by the Station Orchestra, conducted by P. Leemans: Cortège oriental (Leemans); Russian Dance No. 4 (Bullerian); Violin Solo, Hymn to the Sun, from The Golden Cockerel (Rimsky-Korsakov); Gramophone Records; Selection from Le Petit Duc (Lecocq); Gramophone Record: International Suite (Tchaikovsky). 7.15, Talk. 7.30, Tourist Talk. 8.0, Hotchpotch—Variety Programme by Mme. Julia Belloy-Van Troyen and M. Bertal (Songs), Albert Remes (Humorist), the Sarov Dramatic Club, the Station Symphony Orchestra, conducted by Arthur Meulemans, and the Radio Orchestra, conducted by Franz André. 10.0, Le Journal Parlé. 10.10, Gramophone Dance Music: Foxtrot, There's something in your Eyes Madame; Jolly Good Company; I would not change you for the World; Waltz, Girl of a Million

Dreams; Foxtrot, Paradise and you; Slow Foxtrot, Minnie the Moocher; Foxtrot, Sugar o'Mine; Tango, Sangre; Waltz, I'll believe in Love; Foxtrot, Mona Lisa; Tango, Tell me I'm forgiven; Foxtrot, By the Fireside; Waltz, Flor des Alpes; Foxtrot, Got the Bench, got the Park; Waltz, Amoureuse; Two step, Tereo fino.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Mezi Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, Light Music on Gramophone Records. 8.0, Concert by the Radio Orchestra; Soloist, M. Theodoru (Violin): Overture, The Merry Wives of Windsor (Nicolai); Second Suite from L'Arlesienne (Bizet); Selection from Madame Butterfly (Puccini); Selection from Les Cloches de Corneville (Planquette); Potpourri, Wiener Spaziergänge (Komzak). 8.45, Dramatic Programme. 9.15, Concert (contd.); Rondolletto (Böhaci); Waltz, Natursänger (Ziehrer); Second Arlesienne (Debussy); Habanera (Chabrier); Ganymetia from the Romantic Concerto for Violin (Godard); Festival March (Naprynik). 9.45, Radio Journal. 10.0, Talk: Sinaia and the Royal Castle of Péléscu.

BUDAPEST
545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 7.40 p.m. to 12 Midnight.—5.0 p.m., Gramophone Concert of Variety Music. 6.0, French Lesson. 6.30, Violin Recital by Johann Konez; Third Scene from the Czardas (Hubay); Rondo (Mozart); Andantino (Nardini); Minuet (Veracini); Etude No. 9 (Paganini); Spanish Dance (Sarasate). 7.0, Talk on India. 7.30, Exchange. 7.40, Bunter Abend. 8.30, Concert of English Music by the Orchestra of the Royal Academy of Music, conducted by Paul Kerby. Soloist: Dorothea Humphreys (Songs). Introductory Talk by Prof. Eugen Hubay. Suite for String Orchestra (Purcell); Dido's Song from Dido and Aeneas (Purcell); The Fifth Symphony (Boyce); Suite from The Beggar's Opera (Gay-Pernsch); Concert Overture, Cockaigne (Egar); Enigma—Variations for Orchestra (Egar); March (Egar). 10.30, News, followed by Cigany Music from the Hotel Britannia.

CASSEL—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW., and Malundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Town Hall Chimes. 12.2 to 2.0 p.m., Concert from the Bellevue Strandhøte. 3.0, Concert by Carl Byrdahl's Instrumental Ensemble. Soloist: Ellen Jannæs (Songs). Comedy Overture, Hokus Pokus (Leuschner); Waltz, Wiener Frauen (Joh. Strauss); Selection from Norma (Bellini); Two Pieces from Per Svinaherda (K. Atterberg); Tarantella from Masaniello (Auber); Songs; Ballet Suite (O. Gyldenmark); Waltz from Lysistrata (Lincke); Song (Fini Henriques); Two Pieces (Czibulka); (a) Hearts and Flowers; (b) Serenade, To Thee; Tango (Henrik Kalkar); Petite Romance (Knuud Brandt); Alexandramarch (Th. Poulsen). 5.0, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Talk. 6.20, German Lesson. 6.55, Weather and News. 7.0, News. 7.15, Time Signal. 7.30, Talk: Colonisation and Irrigation. 8.0, Town Hall Chimes. 8.1, Beethoven takes a Holiday—Radio Play with Music in Three Acts (Emma Schiller), followed by the Pastoral Symphony in F (Beethoven). 9.40, Reading. 10.0, Recital of Danish Folk Melodies. 10.20, News. 10.35, Folk Dances from Other Lands—Concert by the Radio Orchestra, conducted by Fritz Mahler; Scottish Dance (Henry Cowell); Indian Dance (Frederic Jacobi); Maros zekertänze (Kodaly). 11.5, Dance Music from the Wivex Restaurant. In an interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Wednesday), Close Down.

CORK—See Athlone.

CRACOW
959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Talk on Old Cracow. 7.15, Miscellaneous Announcements and News. 7.30, See Warsaw. 11.0, Popular Music on Gramophone Records. 12 Midnight, Faufare from the Tower of St. Mary's Church.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECCAMP
1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the B.C.C., T. St. A. Ronald, C. Danvers-Walker and B. McNabb announcing. 5.30, Concert of Light Music for Torquay and Exeter Listeners: Waldteufel Memories (arr. Fink); Reconciliation (Drigo); Songs: (a) Try a little Tenderness (Woods); (b) Somebody, somewhere, someday (Rappe); Babes in Toyland (Herbert); Violin Solos: (a) Because (d'Harletot); (b) The Song of Songs (Moya); The Clock and the Dresden Figures (Ketschey); Songs: (a) Memories of Devon (Evans); (b) I pitch my Lonely Caravan at Night (Coates); Poupée valse (Polini); The Skaters' Waltz (Waldteufel). 6.15, Pianoforte Recital and Song for Plymouth and Devonport Listeners: Rattle of Spring (Sinding); Under the Palm Trees (Allenz); The First Waltz (Durand); Songs: (a) The Sun God (James); (b) I am Fate (Hamm-

MAY 23rd

TUESDAY

continued

blen); Arabesque (Debussy); Spanish Dance, No. 5 (Granados); Prelude (Rachmaninov); Songs: (a) If I were (Henry), (b) Invictus (Humb); Waltz in E flat (Moskowsky); Roméo capriccioso (Mendelssohn). 7.0, Programme in French. 10.0 till Close Down. Programme in English by the I.B.C. 10.0, Dance Music by the Incallians: Speedway Sam; The Old Kitchen Kettle; Dance of the Cuckoos; At Eventide; Same Old Moon; I've gone and lost my little Yo Yo; Through that Open Window; The Gag Song; The Sun has got his Hat on; Let me be your Carmen for To-night; Singing in the Moonlight; Let that be a Lesson to you; Strangers; It's that extra little Something; Paradise. 11.0, Concert: Wiener But (Strauss); Song, The Bonnie Banks o' Loch Lomond; Choir, Call'er O'n (Gray); Gems of Robbie Burns (arr. Beaton); Song, Shetland Lullaby (arr. Geach); Choir, Three Fishers went sailing (Kingsley); Song, McLeod's Galley (Kennedy-Fraser); The Gay Gordons (arr. Beaton). 11.30, Songs; Kitty my Love, will you marry me? Life's desire; Little Boy Blue; Orchestra; Potpourri of Famous Songs; Song of my Heart; Love is like that; Just an Old Refrain. 12.0 Midnight, Club Concert for Downpatrick, Banbridge, and Drumore Listeners: General Mulcahy March (Bruse); Songs: (a) At the End of an Irish Lane, (b) Cuban Love Song; Accordion Solo, The Minstrel Boy; Songs: (a) I know of Two Bright Eyes, (b) Beneath thy Window, (c) Phil the Fluter's Ball (French); Handsaw Solos: (a) When I'm dreaming, (b) Someone like you; Songs: (a) My Irish Song of Songs, (b) The Lass from County Mayo; Accordion Solo: Restless Fingers; Song, Sigh no more; Irish National March (Bruse). 1.0 a.m. (Wednesday), Hawaiian Band Music; My South Sea Home (Camellio); Hawaiian Hotel (Traditional); Whistling Waltz (Reeves); Julien (Donata); Mari Girl (Libarino); Kilima (Traditional); Duet, Kamschamola (Traditional); Aloma (Bowers). 1.30, Songs: Little Things in Life (Berlin); I am the Words (de Sylva); Just because I lost my Heart (Gilbert); Orchestra: Selection from The Cat and the Fiddle; Reaching for the Moon (Berlin); Little White Lies (Donahson); To-day I feel so happy (Carter). 2.0, Dance Music by the Incallians: Three's a Crowd; You're my Everything; Sweethearts Forever; Ooh! that Kiss; Let's all dance the Polka; I'm forgetting myself; Marching along together; I guess I'll have to change my Plan; Sweet Muelacha; How deep is the Ocean; Pu-leze Mr. Hemmingway; What would happen to me? Love is the Sweetest Thing; I wonder how the Old Folks are to-night. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLensburg.—See Hamburg. FLOrence.—See Turin. FRANKFURT 259.3 metres; 17 kW.; and Cassel, 245.9 metres; and Trier, 259.3 metres.—6.0 p.m., Talk: Wardrobe Fever. 6.25, Talk: The German Theatre. 6.50, Time, Programme Announcements, Weather, and Economic Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the winners of the Frankfurt Radio Singing Competition of April 25th, 1933. 9.0, Lorraine Programme. 9.20, Symphony in C Sharp Minor after the Quartet, Op. 36 (Pfitzner); The Station Orchestra, conducted by the Composer. 10.20, Time, News, Weather and Sports Notes. 10.45, See Stuttgart. FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Die Torgauer Heide—Play (Otto Ludwig). 6.45, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the Hamburg Philharmonic Orchestra, conducted by Adolf Seikora: Soloists, Erna Kroll-Lange and E. Jaksehtat (Songs); Overture on a Thuringian Song (Lassen); Susanne's Aria from Act III of Figaro (Mozart); Norwegian Rhapsody No. 1 (Halvorsen); Two Symphonic Tone Poems (Schultz-Biesantz): (a) Der Glückstroner, (b) Humorous March; Duet from Act II of The Merry Wives of Windsor (Nicolai); Selection from Der Obersteiger (Zeller); Overture, Die schöne Galathée (Suppé); Eva's Entry Song from Eva (Lehár); Waltz, Du und Du, from Die Fledermaus (Joh. Strauss); Basil's Song from Act I of The Count of Luxembourg (Lehár); Selection from The Merry Widow (Lehár); March, Semper vivum (Larcher). 10.0, Time, Weather, Announcements, Sports Notes and Police Report. 10.20, Topical Talk. 10.30, Concert by a Symphony Orchestra of Unemployed Musicians; Conductor,

Otto Ebel von Sosen: Comedy Overture (Lincke); Musikanten-Suite (Geister); Selection from The Gipsy Baron (Joh. Strauss); Swabian Peasant Waltz (Krome); Schön ist so ein Ringelspiel (Leopold); Hurra, wir lieben (Inwald); Old Vienna in Song and Dance (Pachernegg); Es liegt eine Krone im grünen Rhein (Pachernegg); Hurra, die Musik kommt (Zimmer); Katzbach-Marsch (Becker). HANOVER.—See Hamburg.

HEILSBURG 1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Lortzing Music. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Music. 3.0, Exchange. 3.30, Programme for Children. 4.0 (from Danzig), Police Band Concert: March, Soldatenehre (Albort); Overture, Der Königsleutnant (Titl); Potpourri of Johann Strauss Waltzes (E. Strauss); Potpourri, The Immortal Verdi (Rhoide); Prelude to Lohengrin (Wagner); Fantasia on Ich hatte einst ein schönes Vaterland (Albort); Warmbrunner Festmarsch 1932 (Willi Pischel); Overture, Migration (Thomas); Deutschland, blühe neu auf (Meyer-Helmann); A Summer's Day in Norway (Willmer); Potpourri, Aus der Woche (Thiele); Feuerwehrgalopp (Hertel). 5.30, Songs to the Lute. 6.0, A Review of Books on the Youth Movement. 6.15, Market Prices. 6.25, Talk for Workers. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.5, Gubernator Caeli Programme on the Three Hundred and Ninetieth Anniversary of the Death of Copernicus (Martin Bormann). 9.10, News. 9.20, Violin and Harpsichord Recital by Prof. Hermann Diener (Violin) and Dr. Müller-Blattau, Johann Friedrich Reichardt, with Introductory Talk. Part I: His Teachers: (a) Caprices (Franz Beinda), (b) Adagio from a Sonata (F. A. Veichtner). Part II: Reichardt's Music: (a) Sonata in E flat for Violin, (b) Sonata in B flat for Violin and Harpsichord. 10.0 (approx.), News.

HILVERSUM 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down. Programme of the Algemeene Vereeniging Radio Ormroep (A.V.R.O.). 11.40, Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep. 1.55 to 2.10, Interval. 2.10, Gramophone Music. 2.40, Fashion Talk for Women. 3.40, Violin Recital by Boris Linsky, Hindu Song (Rimsky-Korsakov); Syncopation (Kreisler); Tango (Albéniz); Spanish Dance (Granados); Mitternachtsglocken (Heuberger); Schön Rosmarin (Kreisler); Liebesfreund (Kreisler). 4.10, Concert by a Children's Choir. 4.40, Fairy Tales for Children. 5.10, Talk for Young People arranged by the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Gramophone Music. 6.10, Talk on Liberia, arranged by the V.P.R.O. 6.40, Gramophone Music. 7.10, Tourist Talk: Norway. 7.40, Time, Weather and News. 7.45, Organ Recital by Pierre Palla, relayed from the Kurhaus, Scheveningen. Soloists: Henk Viskil (Songs) and Jan Sevenster (Saxophone). 8.40, Do you know why?—Detective Mysteries (P. van Veer); No. 1, The Stolen Documents. 8.55, Concert by Kovacs Lajos and his Band and the A.V.R.O. Girls. We're a Couple of Soldiers; Let's all sing like the Birds sing; Waltz from The Girl in the Taxi (Gilbert); Stolz Potpourri (Dostal); Campana e sera (Bill-Palla); Malvaje; Schön ist das Leben (Heymann). 9.40, Gramophone Music. 9.55, Concert (cont'd.). Hyde Park Corner; El und que me Lieste; Du wärst für mich die Frau gewesen (Weinberger); The Old Kitchen Kettle; You're dancing on my Heart; Tränen in der Gasse (Kasper-Jurmann); Will dich lieben (Spoliansky); Schön war's Lieblich (Grothe); A Boy and a Girl were dancing; Old Father Thames; The River Rhine; Träume mein Baby. 10.40, News Bulletin. 10.50, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm. HUIZEN 1,875 metres; 8.5 kW. Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m.—Concert by the Station Orchestra, conducted by M. Gerritsen. Overture, Ten Maids and no Man (Suppé); Kirzes am Rhein (Driesssen); Parisian Life (Petras); Three Woodland Dances (Haines). 12.40, Gramophone Music. 12.55, Concert (cont'd.). Semper fidelis (Songs); Selection from The Merry Peasant (Fall); Waltz, Carnovales-Botschafter (Strauss); Berceuse de Jocelyn (Godard). 1.25, Interval. 1.40, Programme for Women. 2.40, Gramophone Music. 3.40, Organ Recital by A. Driesssen. 6.40, Police Notes. 6.55, Talk: Iceland. 7.15, Gramophone Music. 7.25, Talk. 7.40, Elijah-Oratorio (Mendelssohn). In the interval at 8.55 (approx.), News and Gramophone Music. 10.40, News. 10.45, Gramophone Music. 11.40 (approx.), Close Down. INNSBRUCK.—See Vienna.

JUAN-LES-PINS 1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusements Guide, News, Financial Notes and Racing Results. 8.10, Agricultural Talk. 8.20, The Listeners' Quarter of an Hour. 8.35, Radio Concert. 9.0, Weather and News. 9.15, Radio Concert (cont'd.). 12 Midnight till Close Down. Programme in English by the I.B.C. H. K. Hirschbeck announcing. 12 Midnight, Concert of Trios and Songs: Serenata No. 2 (Toselli); Old Vienna Moon (Lebert); Song without Words (Tchaikovsky); Songs: (a) Trees (Rasbach), (b) The Song of Songs (Moya); Play, fiddle, play (Lawrence); Kisses in the Dark (Michele); Adios (Fernandez). 12.30 a.m. (Wednesday), Songs and Orchestral Music. Songs: (a) Sleep on (Offenbach), (b) All my Life (Gibbons), (c) My Man (Adams); The Skaters' Waltz (Waldteufel); Songs: (a) I give my Heart (Müllbeker), (b) By the Fireside (Comelly), (c) Goodbye (Tosti); Waltz, The Blue Danube (Joh. Strauss). 12.57, I.B.C. Goodnight Melody. 1.0 (approx.), Close Down. KALUNDBORG.—See Copenhagen.

KAUNAS 155 kc/s, 1,935 metres; 7 kW.—7.30 p.m., Divine Service Relay. 8.0, Announcements. 8.15, Evening Concert. 8.50, Talk: The Problem of Modern Physics. 9.10, Popular Programme. 9.30, Talk. 9.50, Concert: Overture, Hamlet (Gade); Melody (Byford); Wedding Scenes (Smetana). 10.30 (approx.), Close Down. KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LAHTI 167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.40, Song Recital by Hannes Lehtonen. 7.5, Talk. 7.30, Concert by the Station Orchestra, conducted by Erkki Linko. Soloist: Vaino Arjava (Violin). Symphony No. 1 in C (Beethoven); First Movement from the Concerto for Violin (Tchaikovsky); Hymn to the Sun, from The Golden Cockerel (Rimsky-Korsakov); Overture, Oberon (Weber). 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG 635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf. Soloist: Elfriede Rheindorf (Contralto). March, Regimentskameraden (Füsser); Overture, Berlin wie es weht und lecht (Conradi); Waltz, Frühlingszauber (Füsser); Overture, Frau Meisterin (Suppé); Three Songs (Reger); (a) Waldesumkeit, (b) Glückes genug, (c) Das Dorf; Romantic Suite, Schloss Durande (Niemann); Spanish Dance (Sarasate); Selection from Faust (Gounod); Waltz, An des Rheines grünen Ufern (Doster); Potpourri, Contrasts (Lobrecht); March Potpourri, Achtung Wir gehn voran (Recktenwald). In the interval at 2.0, News. 2.30 to 2.45, Sponsored Programme with Gramophone Records. 3.0, Programme for Children. 3.30, Exchange and Time Signal. 3.50, Notes on the Broadcasts to Schools. 4.0, Talk on the Teaching of Mathematics. 4.30, See Munich. 5.50, Ruhland—Two Poems (Otto Wohlgenuth). 6.5, Talk for Taxpayers. 6.15, Italian Lesson. 6.45, Weather, Time, Exchange, and Sports Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News Bulletin. 8.5, Concert by the Münster Municipal Orchestra, conducted by Wolf. Soloist: Herbert Alsen (Bass). Part I: Mozart, Overture and Sarastro's Aria from The Magic Flute; Three Movements from the Ballet Music to Idomeneo. Part II: Weber, Overture and Caspar's Aria from Der Freischütz; Ballet Music from Die drei Pintos; Overture, Oberon. Part III: Lortzing, Overture, Der Wildschütz; Song from Der Waffenschmidt; Clog Dance from Czar and Carpenter; Selection from Undine. In the interval at 9.5, Talk: The V.D.A.—A Popular Movement. 10.5, News and Sports Notes, followed by Silent Night. LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG 769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, Concert of Sacred Music on Gramophone Records. 1.0 p.m., News. 1.15, Concert Dances on Gramophone Records. After the Concert, News. 2.10, Talk: The Possibilities and Limits of Surgery. 3.35, Economic Notes. 4.0, Concert by the Station Orchestra, Conductor, Theodor Blümer. Soloist, Walter Mayer (Baritone). Part I: Music from German Operas: Overture and Arias from Don Giovanni (Mozart); Selection from Der Waffenschmidt (Lortzing); Song from Czar and Carpenter (Lortzing); Recitative and Aria from Der Wildschütz (Lortzing); Selection from Martha (Flotow); Overture, Peter Schmolz (Weber); Talk. Part II: Light Music: Spanish Dance, Op. 5, No. 3 (Fielitz); Valse triste (Sibelius); Tarantela napoletana (Martucci); Mazurka,

Aus dem Wiener Wald (Strauss); Gallop, Prestissimo (Waldteufel); Waltz from Der arme Jonathan (Müllbeker). 5.50, News, Weather, and Time. 6.0, Radio Report from the Leipzig Voluntary Labour Service Camp. 6.45, Programme Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the Dresdner Instrumental Ensemble: Three Movements from the Novelletten, Op. 29 (Gade); Divertimento in G for Two Violins and Cello (Mozart); German Dances (Schubert); Two Movements from Märchenbilder (Schumann); Ein kurioser Kaffeekeksch. Op. 32 (Weiss); Waltz, Evening Star (Lanner). 9.0, News. 9.15, Frederick at Leuthen—Play (Bernhard). 10.30, News. 10.35, Concert of Contemporary Music by the Symphony Orchestra, conducted by Hilmar Weber, Soloist, Erwin Kindscher (Violin). Overture, Hamlet (Woyrsch); Violin Concerto, Op. 50 (Sieg); Variations on the Folk Song Morgenrot, Morgenrot (Müller). 11.30, Close Down.

LINZ.—See Vienna. LJUBLJANA 522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, German Lesson. 7.30, Programme to be announced. 8.0, Talk on Music. 8.30, Chamber Music. 9.30, Weather and News. 10.0, Quintet Concert.

LWOW 788 kc/s, 381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.30, See Warsaw. 10.45, Gramophone Music. 10.55, See Warsaw. 11.30 (approx.), Close Down.

LYONS LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Programme to be announced. After the Programme, News.

MADRID ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Concert of Popular Music. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Wednesday), Talk. 1.0 (approx.), Close Down.

MADRID UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Times, Exchange, Radio Journal and Request Gramophone Records. 8.30, Talk by Joaquin Espana Cantos and Gramophone Records (cont'd.). 9.15, News and Political Review. 9.30 to 10.0, Interval. 10.0, Linguophone English Lesson. 10.30, Chimes, Time, and Political Review. 10.45 (approx.), Spanish Artists before the Microphone—Irene Lopez Heredia and Mariano Asquerino. 11.30, Relay from a Theatre. 12.45 a.m. (Wednesday), News. 1.0, Chimes and Close Down.

MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA 1,137 kc/s, 263.8 metres; 11 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by J. Plichta. Part I—Overture, Der Bettelstudent (Müllbeker); Suite (Gabriel Marie). Part II—Tzsch Dance Music. 5.10, See Prague. 5.50, Gramophone Music. 6.0, Talk. 6.15, Talk for Brno. 6.50, See Prague. 10.45 (approx.), Close Down.

MOSCOW TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—5.30 p.m., Dance Music. 9.0, News Bulletin. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm. MUHLACKER.—See Stuttgart.

MUNICH 563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern. 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert conducted by Erich Kloss. Overture, Le Roi fu dit (Delibes); Prelude and Fugue from Le Déluge (Saint-Saëns); Selection from Tannhäuser (Wagner); Suite, Perlen der Liebe (Jos. Strauss); Suite, In den Bergen (Kasper-Schmid); Berceuse (Cui); Suite mignonne (Sibelius); Heroischer Marsch (Schubert). 5.45, Talk: The History of Bavarian Towns. 6.45 (from Nürnberg), Talk: German Soldiers in North American Pay. 6.25, Music, Grave and Gay—Gramophone Medley. 6.45, Time, Weather, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Fantasia in C for Pianoforte (Schumann); by Emmy Braun. 8.25, Die Schule der Welt—A Comedy (Frederick the Great). 9.5, Dialogue on Bavarian Writers. 9.20, Symphony Concert by the Station Choir and Orchestra, conducted by Hans Winter; Overture, Coriolanus (Beethoven); Symphony in E flat (Mozart); German Psalm for Mixed Choir and Orchestra (Wedig). 10.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome. NOTODDEN.—See Oslo.

MAY 23rd

TUESDAY

continued

OSLO 277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres, and Rjukan, 671 kc/s, 447.1 metres.—12.15 p.m., Radio Report on the Sailing of s.s. Bergensfjord for America. 6.0, Light Orchestral Concert, relayed from Trondheim, 605 kc/s (495.8 metres). 6.0, Programme for Housewives. 6.45, Accordion Solos. 7.0, Announcements, Weather and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Concert by the Station Orchestra. 9.30, Talk on Amateur Photography. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by a Cornet Octet. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Notes, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time and Announcements. 8.45, Concert of Opera Music, conducted by F. Russo. In the intervals, Talk and Announcements. 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signal (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Concert of French Music.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Sponsored Concert with Gramophone Records. 8.0, Film Review. 8.5, Talk on the Circus. 9.15, Interval. 9.30, Orchestral Concert; Soloists: Mme. Roessen-Champion (Harpichord), Henry Merekel (Violin), and Jean Doyen (Pianoforte); Concerto for Piano-forte and Orchestra (Ravel); Melodies (Debussy); Norwegian Fantasia for Violin and Orchestra (Lalo); Melodies (Lalo); Concerto in F for Harpsichord and Orchestra (Haydn); Melody (Haydn); Introduction, Sarabande, and Toccata for Harpsichord and Orchestra (Roessen-Champion); Marche militaire from Suite algérienne (Saint-Saëns). 10.30, News.

PARIS

RADIO PARIS, Call GFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Concert by the Kretzley Orchestra; Opéra-Comique Music: Overture, Le Roi d'Yvetot (Adam); Selection from Les Dragons de Villars (Maillart); Overture, Mirella (Gounod); Selection from Mignon (Thomas); Serenade from L'Amant jaloux (Grétry); Aria, Mon cœur soupire, from Figaro (Mozart). 1.0 p.m., Exchange, News and Weather. 1.5, Extracts from Frasquita—Operetta (Lehar). 1.30, Exchange. 1.35, Concert by the Kretzley Orchestra (contd.): Classical and Romantic Music; Overture, Eginott (Beethoven); Albnblatt (Schumann); Clarinet Solo, Adagio (Wagner); Overture, Fingal's Cave (Mendelssohn). 2.0, Market Prices, and Announcements. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Market Prices, Weather, Agricultural Report, and Exchange. 6.35 (approx.), Advanced English Lesson. 6.50, Theatre Notes. 7.5, Talk on Art. 7.20, Concert of Modern French Music by the Kretzley Orchestra; Suite Persane (Tournier); Recueillement (Gallon); Violin Solos: (a) Vitrail (Defosse), (b) Sabor de España (Defosse); Traversée heureuse (F. Schmitt); Marche joyeuse (Chabrier). 7.45, Review of the Anglo-Saxon Press, Commercial Prices, and News. 8.0, Variety Programme arranged by Paul Weill. 8.30, News and Weather. 8.40, Review by Paul Seize. 8.45, Papa—Play (de Flers and Caillavet). 9.15 (in the interval), News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W3XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, Congress of Clubs Period. 9.0, Teaberry Baseball Scores. 9.5, Meredith Wilson Orchestra, from New York. 9.15, Selma Brandt (Pianist). 9.30, Weather Report. 9.31, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5 to 10.45, New York Relay. 10.5, Harold Stokes Orchestra. 10.15, Dick Durkin. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Village Barn Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Riggs and Moke. 11.45 to 2.59 a.m. (Wednesday), New York Relay. 11.45, To-day's News, by Lowell Thomas. 12 Midnight, Popsident Amos 'n' Andy. 12.15 a.m., National Advisory Council on Radio in Education. 12.45, Irene Bordini and Emil Coleman. 1.0, Eno Crime Clues. 1.30, Adventures in Health. 1.45, From the Composer to you with Herman

Hupfield. 2.0, Willard Robison's Deep River Orchestra. 2.30, Tune Detective. 2.45, Pickens Sisters. 2.59, Time Signal. 3.0, Household Musical Memories, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.20 p.m., Talk on Children's Week. 6.35, Topical Talk. 6.50, Miscellaneous Announcements and News. 7.10, Book Review. 7.28, Time Signal. 7.30, See Warsaw. 8.0, Military Band Concert. 9.0, Baritone Song Recital by Kajetan Kopeczynski. 9.25, Pianoforte Recital by Zygmunt Lisicki: Three Ballads (Schumann); Pianoforte Solos (Schubert-Liszt): (a) Der Müller und der Bach, (b) Die Forelle, (c) Der Lindenbaum, (d) Der Erlkönig. In an interval, News from Warsaw. 10.0, See Warsaw. 10.15, Time Signal, Sports and Police Notes. 10.30, Dance Music from the Esplanade Café. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Moravská-Ostrava. 5.10, Talk on Economics. 5.20, Czech Lesson for Germans and German Lesson for Czechs. 5.50, Gramophone Music. 6.5, Market Prices. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: News and Song and Pianoforte Recital by Traute Wolf and Dorothea Ruzitschka: Songs (Schumann): (a) Marienwärdchen, (b) Ständchen, (c) Die wandelnde Glocke: Songs (Brahms): (a) Der Reiter, (b) Wie komm ich denn zur Tür herein, (c) Schwesterlein; Pianoforte Solos: Extracts from Bunter Blätter (Schumann). 6.50, Talk on the following Transmission. 7.0, Tannhäuser—Opera in Three Acts (Wagner), relayed from the National Theatre, for the 120th Anniversary of Wagner's Birth. In the intervals at 9.0 and 10.0, Time Signals. 10.30, News Bulletin. 10.45 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.: and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Geneva), New Gramophone Records. 7.30 (from Geneva), Weather, News, and Answers to Correspondence. 8.0 (from Lausanne), Talk on Music. 8.10 (from Lausanne), Trio Music. 8.55 (from Lausanne), A Childhood Friend—Comedy in One Act (Edmond See). 9.50, News and Weather. 10.0 (from Lausanne), Firzel, the Well-known Singer, in Songs from his Repertoire. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.30 p.m., Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.30, Reading. 11.0, Pianoforte Recital by Emil Thoroddsen. 11.15, Recitations. 11.35, Quartet in F Minor, Op. 52 (Beethoven) on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 60 kW. Relayed by Naples, 941 kc/s, 319 metres; and ZRO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Gramophone Concert from Turin. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Orchestral Concert: Reminiscences of Seville (Nissim); Signora Felicita (Moletti); Nicaragua (Maraziti); Serenata (Culotta); Selection from Madam Butterfly (Puccini); Melody (May); Capriccioso (Bucelli); Sveglia (Orselli). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Giornale Radio. 8.0, Time, Announcements and Report on the Cycle Tour of Italy. 8.15, Talk on Astronomy. 8.30, Light Music on Gramophone Records. 8.45, Siberia—Opera in Three Acts (Giordano). In the intervals, Theatre Talk and Theatre Notes. Giornale Radio after the Opera.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports and Baseball Scores. 12 Midnight till Close Down. New York Relay. 12 Midnight, Blackstone Plantation. 12.30 a.m. (Wednesday), Wayne King's Orchestra. 1.0, Ben Bernie's Blue Ribbon Orchestra. 1.30, Ed Wynn and the Fire Chief Band. 2.0, Lives at Stako. 2.30, Walter Damrosch Symphony Concert and Programme Resumé. 3.0 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and

Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Nouchâtel Observatory and Weather. 12 Noon (from Zürich), Orchestral Concert. 12.30 p.m., News Bulletin. 12.40 (from Zürich), Concert (contd.). 1.25 (from Zürich), Exchange, Time and Weather. 1.45 to 5.0, Interval. 5.0 (from Zürich), Concert of Light Music by the Swiss Radio Orchestra. 5.30 (from Basle), Gramophone Records of Operetta Music by Johann Strauss and Paul Abraham. 6.30 (from Berne), Talk. 6.55 (from Berne), Gramophone Music. 7.0 (from Berne), Time, Weather and Notes on the Broadcasts for Schools. 7.10, Concert of Light Music. 7.45 (from Berne), A May Evening at Lake Thun—Radio Report on Life in the Lake Thun District. 8.15 (from Berne), The Barber of Bagdad—Opera (Cornelius). In the intervals at 9.10, Weather and News. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 532 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Concert of Light Music relayed from Falun, 977 kc/s, 307 metres. 5.45, Gramophone Music. 6.45, French Lesson, relayed from Malmö, 1,301 kc/s, 231 metres. 7.30, Talk: The Swedish Coast. 8.0, Concert of Contemporary Swedish Music, the Composers conducting. Soloist: Anders de Wahl (Speaking Voice). First Movement from the Symphony No. 1 in C Sharp Minor, August Strindberg's In Memoriam (Raugström); Adagio from the Symphony, Op. 20 (Wiklund); Scherzo and Finale from the Symphony No. 3 in E (Alfvén); Raujana—Poem for Speaking Voice (Rabindranath Tagore), with Orchestral Accompaniment (Schildknecht); First Movement from the Symphony, Alles endet was entsteht (Berg); Andante from the Symphony No. 2 in F (Altenberg). 9.45, Weather and News. 10.0, Cabaret Programme. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Light Music on Gramophone Records. 12 Noon, Orchestral Concert, conducted by Maurice de Villers: Ballet from Faust (Gounod); Ballet from Sylvia (Delibes); Ballet from Manon (Massenet); Overture, Stradella (Flotow); Waltz, Etiole Polaire (Waldteufel); Dance of the Hours, from La Gioconda (Ponchielli); Selection from Ariadne auf Naxos (R. Strauss); Pianoforte Solo, Jardins sous la pluie (Debussy); Byzantine Suite (Grame). In the interval at 12.45 p.m., News, Time and Exchange Quotations. 2.0 to 4.0, Interval. 4.0, Quintet Concert, relayed from Paris (Radio Colonne), 11,905 kc/s, 25.2 metres. 4.45, Talk: The Town of Le Quincy. 5.0, Dance Music by the Orchestra, conducted by M. Roskam. 6.0, Talk on History. 6.15, Talk: Problems of the Day. 6.30, Chamber Music: Pianoforte and Violin Sonata in G (Beethoven); Melodies (Spörck); Petites Histories (Monteclair). 7.30, Time Signal and News. 7.45, Alsatian Music on Gramophone Records. 8.15, Press Review in German and Lottery Results. 8.30, Programme relayed from Paris. After the Transmission, Press Review in French.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Concert from Langenberg. 2.0, Programme arranged by the Post Office, with Gramophone Records. 2.30 to 3.0, Advanced English Lesson. 3.30, Talk: Flowers. 4.0, Talk for Women. 4.30, See Munich. 5.45, Time and Announcements. 6.0, Geheimnis der Landschaft—Radio Sequence (Hans Trichmann) on the Fiftieth Birthday of Ewald Banse. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, See Leipzig. 8.40, Reminiscences of the Great War. 9.0, Programme relayed from Berlin (Witzleben).—10.10, Time and News. 10.45, Dark is Life and dark is Death—a Sequence from Poems by Li-Tai-Po for two Voices (arr. Wilhelm Locks); Era Passbänder, Emil Hess (Recitations), and Wilhelm Locks (Organ). 11.15 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—6.30 p.m., Songs from Operetta. 6.45, Ballet Music from The Three-cornered Hat (Falla). 7.0, Arias from Opera. 7.15, News, Racing Results, Exchange, and Market Prices. 7.25, Local News. 7.30, Accordion Solos. 7.45, Military Music. 8.0, Arias from Opera. 8.15, Instrumental Solos. 8.30, Baladika Music and Russian Songs. 8.45, Song from Sound Films. 9.0, Concert by the Toulouse Symphony Orchestra, conducted by M. Tartanac. Light Music in the interval. 10.0, Accordion Music. 10.15, North African

News. 10.30, Concert for Listeners in Morocco. 11.0, Choral Music. 11.15, Dance Music. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, Songs from Operettas. Old Vienna Moon; The Desert Song; The Blue Danube; Bitter Sweet; Voices of Spring; You will remember Vienna. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 (Wednesday), Orchestral Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 p.m., till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—5.15 to 6.0 p.m., Dance Music from the Savoia, Milan. 6.35, Giornale Radio and Agricultural and Dopplavoro Notes. 7.0, Time and Report of the Royal Geographical Society. 7.5 (approx.), Songs on Gramophone Records. 7.20, Giornale Radio. 7.45, Popular Music on Gramophone Records. 8.0, Announcements, Report on the Cycle Tour of Italy, Giornale Radio, Weather and Gramophone Records of Variety Music. 9.0, Variety Programme. 10.0, Talk. 10.15, Dance Music. 11.0, Giornale Radio and Close Down.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in English. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 642 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—6.5 p.m., Talk: Milk in the Household. 6.30, French Lesson. 7.0, Concert of Light Music: March, Frohe Zukunft (Ludwig Payr); Overture, Die drei Wünsche (Ziehrer); Waltz, Klänge aus der Favorita (Karl Engelhardt); Ballet Suite from Tatjana (Lehar). 7.30, Time and Announcements. 7.35, Concert (contd.): Melody (Josef Mayer-Aichhorn); Potpourri, Von Wien durch die Welt (Hrabý); Souvenir d'amour (Wacek); Schlagerrezept (Karl Danberg); Waltz, Frühlingsgrüsse (Josef Eber); Viennese Song, Es singen die Vögelin ganz anders in Wien (Ganglberger); Phänken-Marsch (Schieder). 8.15, Talk with Experiments: The Heart Beat regarded as an Electrical Vibration. 8.45, Topical Talk. 9.0, Symphony in A Minor, No. 6 (Gustav Mahler), by the Vienna Symphony Orchestra, conducted by Dr. Anton Webern. 10.30, News. 10.45, Dance Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Polish Press Review. 11.50, Aviation Weather Report. 11.57, Time and Entour from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Records of Light Music. 12.20, Weather Report. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Aviation Report and Anti-Gas Drill. 3.30, Announcements. 3.35, Review of New Books. 3.50, Light Music on Gramophone Records. 4.25, Talk for Teachers. 4.40, Talk on Gardening. 5.0, Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by W. Biedrzycki; Soloist, A. Teitelbaum (Pianoforte); Overture, Cseron (Weber); Concerto in A Minor for Piano-forte (Grieg); Suite from Raymond (Glazunov). 5.55, Programme Announcements. 6.0, Light Music from a Café. 7.0, Miscellaneous Items. 7.20, Agricultural Report. 7.30, Talk: Melodrama and Musical Comedy. 7.45, Radio Journal. 8.0, Concert by the Station Orchestra, conducted by J. Dworakowski; Soloist, J. Oziminski (Violin); Overture, Ascano in Alba (Mozart); Selection from The Pearl Fishers (Bizet); Serenata (Amadei); Parade des enbopoints (Aubert); Violin Solo, Suite, Mosaic (Halvorsen); Waltz, Ange d'amour (Waldteufel); Selection from The Queen of Spades (Tchaikovsky); Potpourri, Papa Offenbach (Morena); Violin Solos: (a) Atlantique (b) Papillon (Andrewski); (c) Fantasia on Gounod's Faust (Wienski); Song without Words (Mendelssohn); The Forge in the Forest (Michealis-Hohenstein); Selection from Coppelia (Delibes); Cadet March (Sousa). In the interval, Sports Notes and Radio Journal. 10.0, Reading. 10.15, Song Recital. 10.45, Light Music on Gramophone Records. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music Relay.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.30 p.m., Announcements. 7.50, Talk on the following Transmission. 8.0, Programme to be announced. In an interval, News and Weather. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landeseender.

The Wireless World

THE
PRACTICAL RADIO
JOURNAL
23rd Year of Publication

No. 716.

FRIDAY, MAY 19TH, 1933.

VOL. XXXII. No. 20.

Proprietors: ILIFFE & SONS LTD.

Editor:
HUGH S. POCOCK.

Editorial,
Advertising and Publishing Offices:
DORSET HOUSE, STAMFORD STREET,
LONDON, S.E.1.

Telephone: Hop 3333 (50 lines).
Telegrams: "Ethaworld, Watloo, London."

COVENTRY: Hertford Street.

Telegrams: "Cyclist, Coventry." Telephone: 5210 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.

Telegrams: "Autopress, Birmingham." Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester." Telephone: Blackfriars 4412 (4 lines).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND
CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other
countries abroad, £1 3s. 10d. per annum.

*As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.*

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp. I—XXIV	
Editorial Comment	351
H.T. for the Car Set	352
Unbiased	354
The Double Diode Triode	355
News of the Week	357
Practical Hints and Tips	358
Laboratory Tests	360
Ferranti Class "B" Band-Pass Four	361
Broadcast Brevities	362
Letters to the Editor	364
More About the Calkin Valves	365
Readers' Problems	366

EDITORIAL COMMENT

Location of the Speaker

The Case for a Separate Unit

ON many occasions in the past we have questioned the advisability of the slavish adoption on the part of manufacturers of the common arrangement of incorporating the loud speaker in the same cabinet with the receiver itself. As a matter of *their* convenience, this arrangement has a good deal to commend it, but from the *listener's* point of view there are very strong arguments which can be put forward to support a departure from this policy in favour of the separation of the speaker from the set.

Where the speaker is housed with the set designers are confronted with a serious problem in trying to stop the vibrations set up by the speaker from influencing the valves, and the higher the efficiency of the set the greater is the risk that this trouble will develop.

In discussing this subject in January 1932, we urged that manufacturers should consider the advantages of a design where the speaker could be located in some position other than that chosen for the set, and we said it must very frequently happen that the user wishes to place his speaker in some particular position in his room but that this position might be, and very often would be, a most inconvenient spot for the set as a whole.

But our recommendation at that time did not bear much fruit as manufacturers were so firmly rooted in the idea of self-contained models, and we recollect that one manufacturer, in particular, expressed the view that to follow such a proposal would be a distinctly retrograde step. Whether or not such a view is justifiable may shortly be put to the test, for American designers are now freely discussing separation of the speaker from the receiver as likely to prove an out-

standing attraction for their sets of next season, whilst still enabling the dimensions of the set itself to be kept down without the inevitable impairing of quality which results from confining the dimensions of the speaker within fine limits. The idea is heralded in America just now as if something entirely new had just been thought of and no doubt salesmen will find plenty of points to bring home to the public the advantages of the new style radio sets.

A well-known authority in America, discussing this subject recently, has stated "Clearly the loud speaker must be separated from the set, equipped with sufficient baffle area and placed, inconspicuously perhaps, in some other part of the room." And again, "the very advantage of tuning and adjusting volume and tone from the point in the room where the listener will sit is of great importance."

West Regional

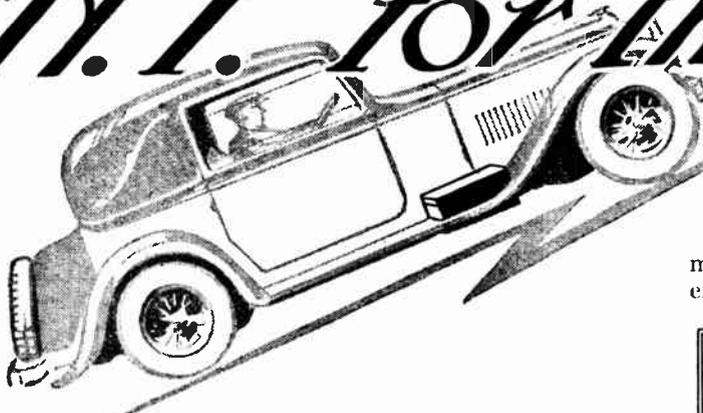
A Technical Achievement

WE congratulate the B.B.C. on the completion of the West Regional station, which is located at Washford Cross, a few miles from Minehead, in Somerset.

The station is built to practically the same plan as Brookman's Park and constitutes the last of the regional transmitters as originally planned in the Regional Scheme.

West Regional and Brookman's Park are destined to share a common wavelength of 261.5 metres for the transmission of the National programme, and it is expected that tests will be started about June 1st. If these stations of high power and comparatively close proximity can be linked successfully it will indeed be a technical achievement of first-rate importance to broadcasting. We wish the engineers every success in their tests.

H.T. for the Car Set

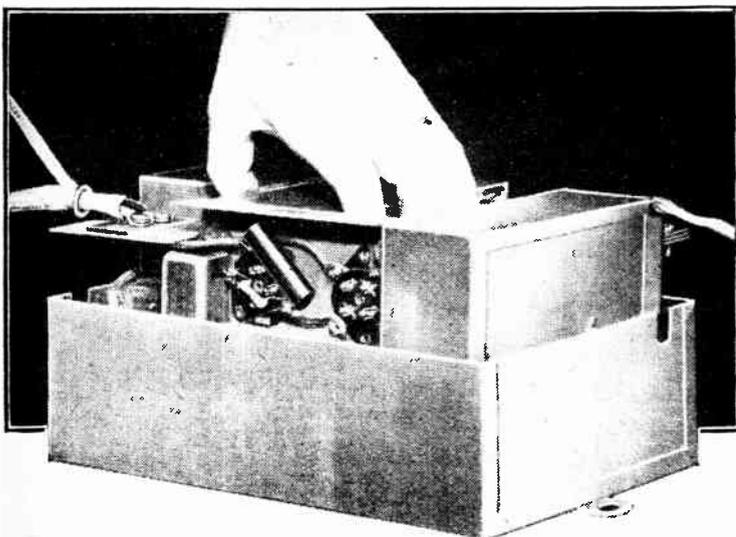


Stepping-up the Starter Battery Voltage

By A. DINSDALE

THE "Tuned Vibratory Transformer" was used during the war to obtain a high voltage from an L.T. accumulator battery. Now an American correspondent describes a modernised and improved device of this nature which operates from the car battery and gives a liberal supply of H.T. current for the receiver.

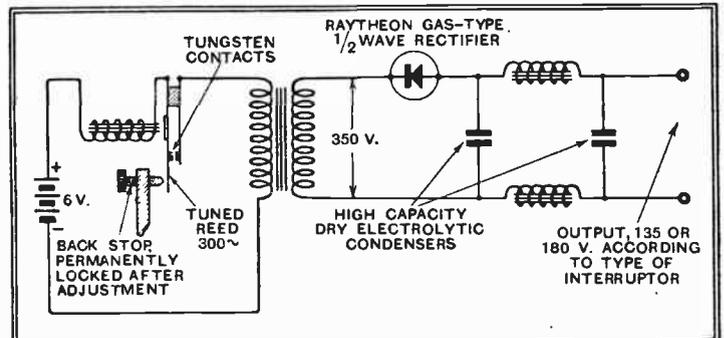
TWO years ago, in an effort to introduce an innovation in their respective industries, American radio and automobile firms got together and proceeded to introduce radio sets into motor cars. The early sets, as may well be imagined, were scarcely "a joy for ever"; in fact, they are known to have caused many headaches for those who produced them. And this is not to be wondered at, for engineers who for years had been fighting to perfect the all-mains receiver



The American Elkonode H.T. Unit is easily removed from its metal case. Power is derived from a 6-volt car battery.

suddenly found themselves called upon to dig out the long-forgotten technique of the battery-operated receiver. In addition, interference from car ignition and other sources had to be tackled and eliminated.

The situation to-day is that it is estimated that 175,000 automobile radio sets were in operation last year, and the trade expects to sell 200,000 more this season. At recent automobile



Schematic circuit diagram, showing the separate interruptor unit.

shows in various parts of the United States automobile manufacturers found that one out of every ten car buyers is interested in "auto radio." There are at least twenty-four motor car radio sets on the market, made by leading radio manufacturers. Some of these sets can be adapted for motor-boat use, some are dual-purpose, and some are designed almost exclusively for motor boats. Sixteen leading car manufacturers now build aerials into their current models as standard equipment.

It is noteworthy that the public, in taking an interest in this new development, has become so accustomed to good-quality reception that it has demanded equally good reception in its motor car, taking no interest whatever in the difficulties involved. Thus, manufacturers have been forced to supply good-quality reproduction and simple, trouble-free operation in quick time, in order to satisfy the market. Sets make use of from four to eight valves, with a dynamic speaker of the permanent-magnet type fitted under the dashboard. Operating controls are often mounted on the steering column. These consist of a key-operated switch for turning on the set, and two small knobs, one for tuning and one for volume control.

The car or boat battery provides the L.T. power for these sets. It may be noted here that American cars still use 6-volt batteries almost exclusively. The H.T. supply has, up to now, been supplied from H.T. batteries—and that is the weakest link in the chain.

Eliminating the Short-lived H.T. Battery

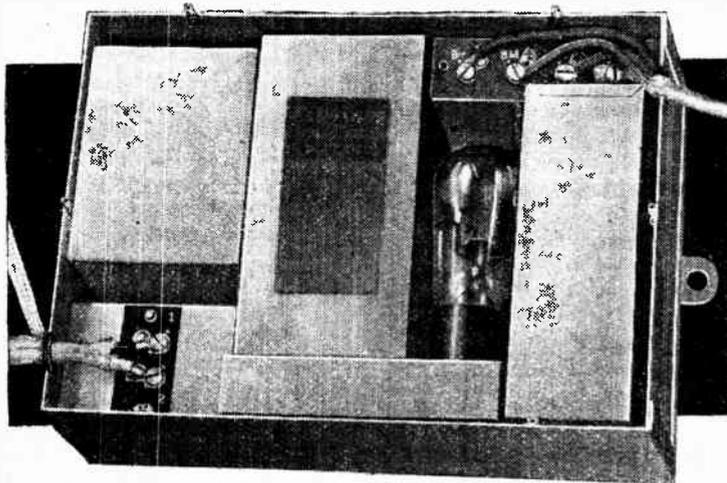
When automobile radio began to be introduced two years ago the Elkon organisation, makers of metal rectifiers, turned its attention to the problem of eliminating the expensive and short-lived H.T. battery. The final result is an eliminator which consists essentially of an H.T. transformer, the primary of which is supplied by the car battery through a mechanical interruptor; the output of the secondary is rectified, smoothed, and fed to the radio receiver. The unit, which measures 10in. x 7in. x 3½in., is enclosed in a sturdy steel case, cadmium plated to prevent rusting. It may be fitted in any convenient position anywhere in the car—under the bonnet, under the chassis, under or behind seats, in the dickey or luggage compartment. Armoured input and output leads of ample length are supplied, and with the armoured covering adequately earthed at every point of contact with the frame of the car the position of the unit is immaterial.

H.T. for the Car Set—

Within the outer casing of the device are mounted the various units which comprise it, these units also being enclosed in cadmium-plated steel cases, thus following out the American "shield within a shield" policy of radio receiver design. The vibrator is of simple but sturdy design, and consists of a single magnet coil and a tuned reed vibrator with tungsten points. The reed is carefully tuned to a vibration frequency of 300 cycles exactly, and when finally set up all adjustments are permanently locked up immovably. The vibrator has a guaranteed life of 2,000 hours without adjustment. When it finally wears out the manufacturers recommend its replacement at a cost of nearly \$5. To facilitate replacement, the connections to the vibrator emerge from the case in the form of standard valve legs, so that the unit plugs into a valve socket.

Replaceable Interruptor

The pulsating output current of the transformer (which is also a separate unit) has a voltage of 350, and is fed to a standard Raytheon filamentless, gas-type, half-wave rectifier. Thus, ordinary driving or heavy road shocks can cause no rectifier damage. The output of the rectifier is then fed to the final unit, a well-built and generous filter system which completely eliminates ripple, noise, and any radio frequency (ignition) disturbances from the plate supply circuits. High-capacity, dry electrolytic condensers form part of the smoothing circuit.



Interior of the unit, showing principal components. Top left : transformer ; centre : interruptor unit and rectifier ; right : smoothing equipment.

The heart of the device is, of course, the interruptor, and this largely determines the permissible D.C. output voltages and current. Also, it determines the eliminator load on the car battery. In the interests of economy and flexibility, therefore, the manufacturers supply six types of interruptor, any one of which may be plugged into the eliminator without changing the other units. The characteristics of these six types are as follows:—

	Watts Output.	Amps. Input.	180 Volts at mA.	135 Volts at mA.
Type 1	2.2	1.1	12	16
Type 2	2.7	1.2	15	20
Type 3	3.6	1.5	20	27
Type 4	4.5	1.8	25	33
Type 5	5.4	2.1	30	40
Type 6	6.3	2.45	35	46

Thus, for any given receiver, it is only necessary to select the appropriate interruptor. Because of the bulk and expense of H.T. batteries, most auto radio manufacturers have restricted themselves to 135-volt valves. Only a few of the more progressive have gone in for 180-volt valves. With this new eliminator available, however, it is likely that higher voltage valves, with

consequent increased output power from the receiver, will shortly be used, although a great deal of volume is not necessary within the confines of a motor car.

Connected to the shielded input cable is a small relay placed in series with the receiver filament circuits. Thus the eliminator is switched on or off automatically with the receiver.

Interference Suppressors

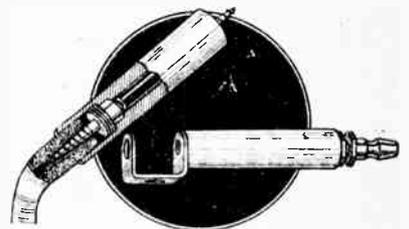
The market price of the unit in America is \$20, which is a reasonable price to pay for freedom from the H.T. battery nuisance. It is interesting to note that the unit is suitable for use on aircraft and for low-power transmitters; it should prove an especial boon to those whose homes are not yet provided with electrical supply mains.

Various types of interference have, of course, been encountered in the operation of radio sets in motor cars, but all these have been successfully overcome. The principal source of trouble, the ignition system, has been rendered completely harmless by the insertion in each H.T. lead, as close to the sparking-plug as possible, of a simple resistance. The value of this resistance is too insignificant to cause any appreciable H.T. voltage drop, and yet it is sufficiently high to kill completely any H.F. oscillations set up by the spark; without the resistance the spark-plug leads form oscillatory circuits which radiate H.F. energy.

Another annoying type of interference is similar to, and as difficult to locate, as our old friend "body rattle." It is usually indicated by "bumps" and "pops" in the loud speaker as the car moves, especially when travelling over a rough road. This type of interference is usually eliminated by thoroughly tightening all parts of the chassis and body. In some extreme cases it will be necessary to earth parts of the body that are "free" or "floating"—i.e., metal parts that are not in good electrical connection with other parts of the chassis.

A Simple Code

The interruptor itself is silent in operation, even when the car is stationary, for its case is generously lined with sound-proofing material. Electrical interference from this source will not be experienced so long as all leads are thoroughly shielded, including the aerial lead-in up to within a few inches of the aerial.



Although "car wireless" has not yet made much headway in this country interference suppressors for the ignition equipment are already available. These special Erie resistors are encased in porcelain tubes.

It is interesting to note that the cars of many American broadcasting station officials are radio equipped, so that they may at all times be in touch with their stations. Some stations have developed special codes for communicating with their executives in an emergency, when all other means of communication fail to locate them. For example, when all is well, station WOR will identify itself simply as "WOR—Newark." When the Chief Engineer is wanted in a hurry and nobody knows where he is the identification is changed to "WOR—Newark, New Jersey." And when the Station Manager is wanted the announcement reads "WOR—the Bamberger Broadcasting Service in Newark, New Jersey." When one of the engineering department executives of the Columbia Broadcasting System is badly wanted, the System's key station, instead of identifying itself simply as "WABC—New York," will announce "This is Station WABC, in the City of New York." These code announcements never fail to bring the wanted person to the 'phone within a matter of seconds, or maybe a few minutes if he is out on the road and has to find a 'phone.

Yachting enthusiasts find a radio set not only entertaining but also valuable, in that it enables them to receive weather reports, and since dry H.T. batteries do not thrive in a moist, salty atmosphere, an eliminator is a highly welcome substitute.

UNBIASED

BY FREE GRID

Sealed Lips

YOU will probably remember that the other week I gave you an account of how I sat in a talking theatre and heard the running commentary from the screen *via* a radio receiver and the usual talkie amplifier. Interest was added by a large map of the course thrown on the screen, and I expressed the hope that something similar would be done in the case of the Derby and similar important outside broadcasts.

I am now told that the whole thing is illegal, as it was a deliberate flouting of the B.B.C.'s oft-repeated warning that outside broadcasts must not be communicated to the public.

A large number of readers have written asking me the name of the cinema, but in the interests of humanity I cannot reveal it, as the powers that be are waiting to pounce on the unfortunate manager of the place with an outsize in summonses. I myself have been harassed, cajoled and brow-beaten by the authorities in an endeavour to get the name of the place from me, but my lips are sealed.

My Noisy Flat

FOLLOWING the prevailing fashion, I have recently taken up my abode in one of the many palatial flats which are now springing up everywhere. But I have bitterly repented my move, and am negotiating for a return to my old haunts.

The main trouble is the confounded noise of the traffic coming up from the London streets—so different from the peace and quietness of the sylvan retreat to which I have been accustomed. The



Against my midriff.

first morning I found the noise too nerve-racking even for the dictation of correspondence. No matter how loudly I bawled I was unable to make the light of intelligence dawn in the eyes of my female secretary.

With that grain of resourcefulness which never entirely deserts me I took a taxi across London to the "W.W." laboratories, and, with the aid of one or two minions who live and have their being there, was able to sling together a

passable amplifier which I interposed between a microphone and a pair of headphones clamped on my secretary's head.

Alas for my lack of foresight; the noise was amplified as much as my speech. I was compelled, therefore, to resort to my old trick of holding the microphone against my midriff. The noise problem is now solved. As a matter of fact I have mounted a very flat microphone on a special belt which presses against my midriff next to my skin, the connecting lead coming down my trouser leg.

The idea is not an entire success, however, as I find that when dictating letters I can no longer follow my custom of pacing up and down the room without constantly tripping over the lead. This necessitates the repeated readjustment of the microphone position, and much loss of time results, it being obviously necessary for my secretary to retire during this process. Frankly, I can see nothing to relieve the situation but a dignified withdrawal to the country, there to link my microphone to my secretary's headphones via the Post Office land lines, or, alternatively, to equip myself with a short-wave transmitter.

A Chance for the Government

OVER a year ago I expressed the opinion that television (or radioscopy, as I prefer to call it, being strictly brought up to prefer all-Greek words and to eschew Latin and Greek hybrids) would never make headway while the present system of moving mechanical parts was persisted in. Since that date several eminent authorities have endorsed my opinion.

It almost seems as though the whole business ought to be handed over to radio amateurs, who might be able to put the same sort of jerk into it that they did in the matter of broadcasting in 1922 and in short-wave pioneering during the decade following. Government departments and commercial interests, hovering over the work of amateurs like vultures, as they have done in the past, could then follow their custom of swooping down and taking all the credit, as is their wont, and then radioscopy would take its place on an equal footing with its twin sister, radiophony.

Hanky-panky at Pangbourne

IT so happened that the other day I was on a hiking tour in the neighbourhood whence the B.B.C. nightingale broadcasts emanate, and, happening to turn into a local hostelry for refreshment, I had the

good fortune to drop into a seat next to an ancient rustic who looked as though he might be a companionable conversationalist.

After I had caused his tankard to be refilled he began to give me the current gossip of the hamlet in the broadest "Berkshire." It was not until he touched upon the subject of the nightingale broadcasts, however, that I really began to sit up and take notice. Hastily calling for his tankard to be replenished once more, I began judiciously to pump him, and soon learnt some interesting but hitherto unpublished facts concerning the B.B.C.'s activities in the neighbourhood.

The clock which we have heard chiming in so appropriately during the broadcasts is not situated in the old village church, nor is its striking spontaneous, as we have been led to believe. The striking of the



Had typed out the dope.

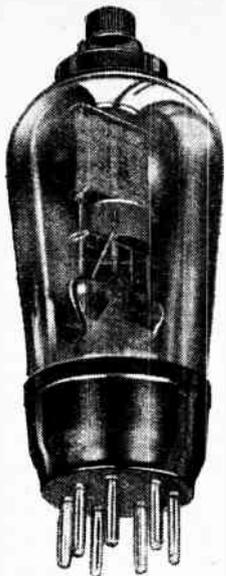
hour actually emanates from a long dis-used clock over certain stables, the B.B.C. engineers prodding it into unwonted activity for the occasion. Another fact which I learned from my rustic friend was that a whole day had been devoted by the B.B.C. myrmidons in trying to induce the oldest inhabitant to say his little piece in front of the "mike."

They had typed out the dope for the old man to read in order to avoid any "technical hitch" which might result from an impromptu performance. Unfortunately, however, it was found that he and punctuation were strangers to each other, and it was thought that lack of intelligibility might lead listeners into the wicked belief that they were hearing a captive nightingale, languishing in some foreign zoo. In the end, therefore, the B.B.C. callously discarded him and the little stronghold of rustic histrionics which he was endeavouring to uphold.

With a bitter pang, born of regret that such an unfortunate state of affairs should exist in such a lovely part of the country where, as Heber puts it, "Every prospect pleases and only man is vile," I left the "Nightingale and Needle" and wandered off sadly but steadily into the night.

The Double Diode Triode

Practical Data for the New Osram MHD4 Valve



THERE is no doubt that the double diode triode, in the same way as the "variable mu" of two years ago, introduces a new phase in set design. Without the "variable mu" the double diode triode would have an extremely limited field of usefulness; without the double diode triode the full advantages of the "variable mu" are not realised. The two valves together form a complementary combination with fascinating possibilities particularly in the direction of automatic volume control.

By C. N. SMYTH, B.Sc., and J. STEWART, M.A., B.Sc.

Technical Staff, The General Electric Co., Ltd.

THE use of the double diode triode¹ as a means of providing automatic volume control has recently been described, and it is the purpose of this article to give practical operating data for the first British example of this new type of multiple valve. As the various circuits for quiet, amplified and delayed A.V.C. have already been given, it remains to put forward the detecting and amplifying aspects of the valve.

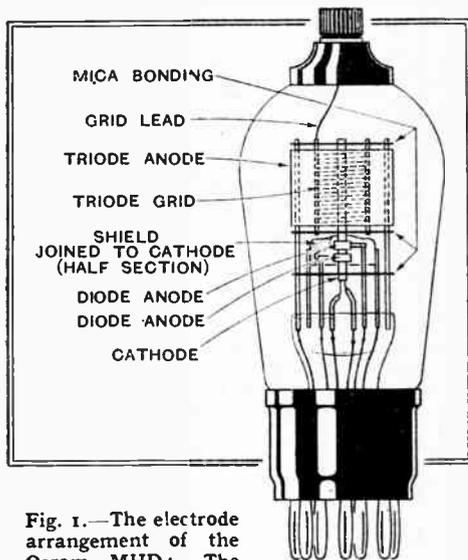


Fig. 1.—The electrode arrangement of the Osram MHD4. The grid connection of the triode is at the top of the bulb and the other electrodes are brought out to a 7-pin base now standardised for multiple valves.

The general layout and construction are shown in Fig. 1. It is seen to consist of a normal triode with the grid connected to a terminal on top of the bulb, and small auxiliary anodes placed round the lower end of the cathode. These auxiliary anodes are very carefully screened from the grid and anode of the associated triode in order to keep the capacities between the two sets of electrodes as small as possible. If this is not done H.F. voltages or high audio frequencies may be passed through the

valve and cause loss of efficiency or bad quality reproduction.

The screening is obtained by shrouding the small anode with a metal cover and, additionally, by taking the grid out at the top of the bulb and thus having no grid lead within the pinch of the valve. In order to accommodate the increased number of electrode connections in the MHD4—as the new valve is called—the new type of seven-pin base which has been standardised in this country for multiple valves will be employed.

The characteristics of the valve are shown in Fig. 2, average values being as follows: The amplification factor is 40, the A.C. resistance 16,600 ohms, and the mutual conductance 2.4 mA/volts, these constants being measured at an anode voltage of 100 and zero grid volts.

The use of a diode followed by a triode, thus separating the functions of detection and amplification, is now well known. The advantages of this scheme over other forms of rectifier are threefold. First, the input impedance of the diode rectify-

ing circuit is high, secondly, the diode provides nearly perfect rectification, and thirdly, no high-frequency voltages are passed on to the triode amplifying valve. Thus it is able to handle a much larger input than a similar triode used as a grid detector.

The Osram MHD4 comprises diode and triode elements in the same bulb, thus giving increased convenience and decreased cost with no loss in efficiency. Two separate diode anodes are provided in order to render possible full-wave rectification or various different types of A.V.C. circuits.

The advantages of diode detection in giving a linear response are well known. It is not, however, commonly realised that

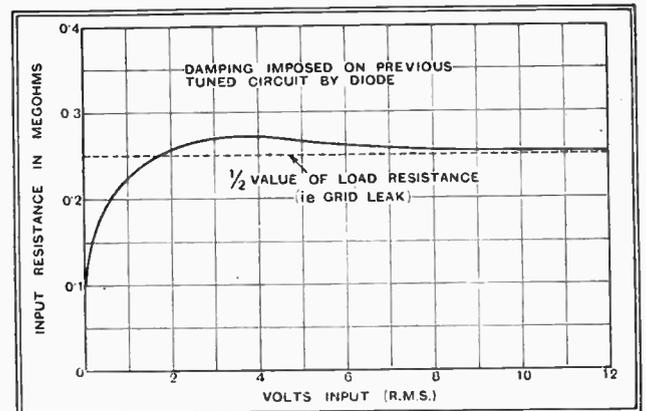


Fig. 3.—Damping imposed on preceding tuned circuit by one diode.

a diode detector imposes very little damping on the preceding tuned circuit. In fact, in this respect, diode detection has only one rival—an anode-bend screen-grid detector. This latter rectifier is only of practical utility when it is of the self-biased type, and even then it is non-linear for small inputs.

Fig. 3 shows the effective input shunt resistance of one diode of an MHD4 valve, measured by the damping produced on a tuned circuit connected across the input. In this case the load resistance (corresponding to the grid leak in the case of a triode valve) was 0.5 megohm, and it will be seen that, except for very small inputs, the damping produced by the diode valve is approximately 0.25 megohm for a diode load resistance of 0.5 megohm. It can be shown theoretically that, for large inputs, the effective input resistance of a diode rectifier circuit is one-half the value of the load resistance.

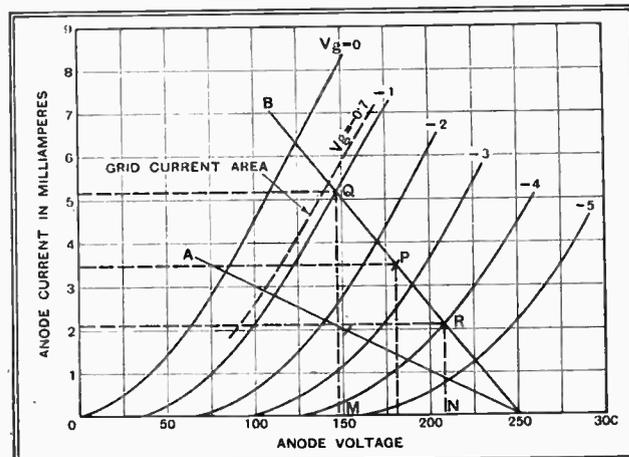


Fig. 2.—Anode volts/anode current characteristics for the MHD4 valve. Two load lines have been drawn (A) for 50,000 ohms and (B) for 20,000 ohms.

¹ See article entitled "Automatic Volume Control," *The Wireless World*, February 17th, 1933.

The Double Diode Triode—

The effective input resistance of the MHD4 valve does not at any time fall below 70,000 ohms, and only reaches this minimum value for very small inputs.

Figs. 4 and 5 give the rectifier characteristics of an MHD4 valve operated as a

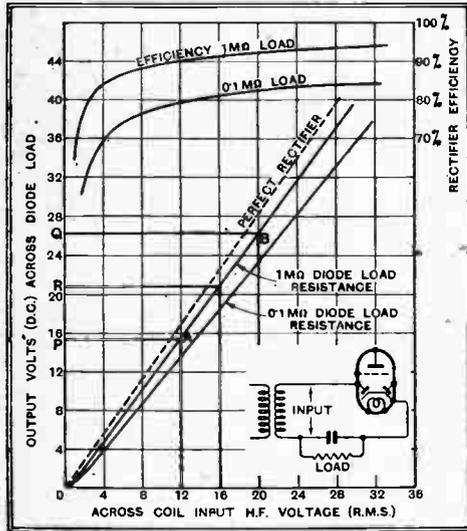


Fig. 4—Rectifier characteristics of the MHD4 valve operated in a half-wave circuit.

half-wave rectifier and as a full-wave rectifier, using either one diode or two diodes in parallel. As an example in the use of these curves, consider a single diode rectifier with a 1 megohm load resistance and an H.F. input of 16 volts carrier, modulated 25 per cent. Thus the H.F. input swings between the voltages 12 and 20, and the working point moves between A and B, giving a peak L.F. output developed across the load resistance ($\frac{1}{2}$ voltage PQ) of 5.4 volts. The D.C. bias available for A.V.C. purposes is represented by the point R, or 20.8 volts. It will be seen that greater efficiency and linearity are to be obtained when using a 1 megohm load resistance, but this gain is only obtained at the expense of some high-note loss, owing to the larger time-constant of the load resistance condenser combination. The use of

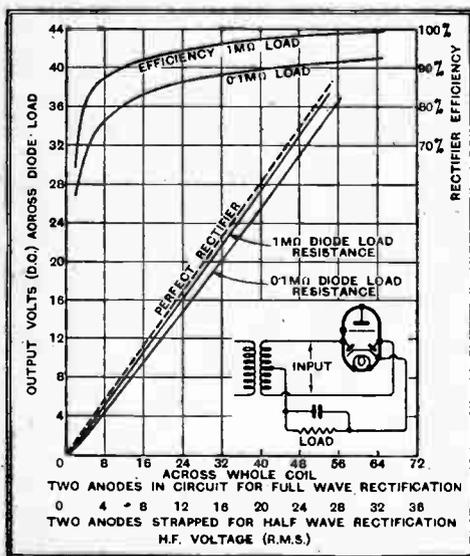


Fig. 5.—Rectifier characteristics when both diodes are used.

an 0.5 megohm load resistance is recommended with the MHD4.

Leaving the question of rectification behind, we have to consider the most effective way of utilising the triode of the MHD4 in order to obtain faithful reproduction and the necessary overall sensitivity, together with any A.V.C. action which may be required.

Amplified A.V.C.

To obtain this performance the following three factors must be carefully considered: the value of the anode load resistance, the value of the auto-biasing resistance, and the output obtainable from the valve. The signal-handling capacity of the valve must not be forgotten, and special attention must be paid to this point if amplified automatic volume control is to be used. These points can be determined directly from the anode voltage/anode current characteristics of the valve which are shown in Fig. 2 for several values of grid voltage. Two load lines have been drawn (A) for a 50,000 ohm resistance load and (B) for a 20,000 ohm load, assuming an H.T. supply of 250 volts in each case.

Taking line (B) as an example, it can be seen that a grid bias of 2.5 volts will bring the working point of the valve to P. If a 1.5 volt peak value audio frequency is applied to the grid, the grid potential will vary from Q to R, and the voltage across the output load from M to N. This represents 62 volts; therefore the output will be 31 volts peak.

In the case of the 50,000-ohm load the maximum output becomes 37 volts peak.

If amplified A.V.C. is being employed no biasing resistance is required, for the grid bias on the triode is supplied by the rectified radio-frequency signal, and is, in fact, approximately equal to the peak value of the signal applied to the detector. In practice, the bias will vary from 0.7 volts to 5 volts, and if distortion is to be prevented care must be taken to ensure that anode-bend rectification does not take place. This may occur with large signals unless the D.C. voltage across the load resistance in the anode circuit is more than 2.5 times that required for full A.V.C. action. This point is illustrated in Fig. 6, which shows the relation between grid volts and anode

current with a 20,000 ohm load resistance in the anode circuit. If appreciable distortion is to be prevented the grid must not be allowed to run more negative than point R on the curves. The steady bias on the valve should not exceed the value corresponding to R, or, if it does, care must then be taken not to apply too large an audio-frequency signal to the grid.

For large signals sufficient output is obtainable to drive a pentode (PT4 or MPT4), or even a power triode (PX4) directly off the MHD4 by means of resistance coupling, but

if the set is not very sensitive or has not a very large range of A.V.C. control, then it may be advisable to employ a parallel-fed transformer coupling. A suitable circuit for this is shown in Fig. 7. When simple A.V.C. is employed the audio frequency voltage obtained across the anode resistance is ample to load a PX4 fully without a transformer coupling, due to the higher radio-frequency amplification which is employed in this type of set. From the foregoing it will be seen that the MHD4 has fascinating possibilities.

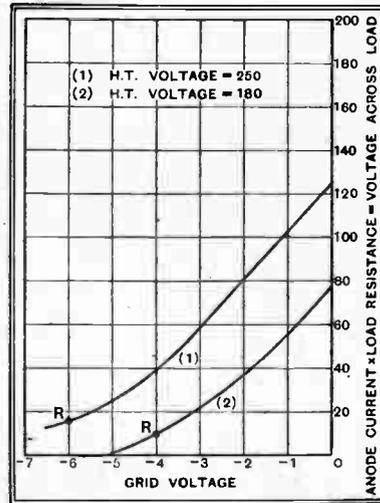


Fig. 6.—Graph showing variation of voltage across anode load resistance with change of grid voltage. Curve (1) is taken at 250 volts H.T. and curve (2) at 180 volts.

Matching R. & A. Reproducers

REALISING the importance of correct matching between the loud speaker and the valve in the output stage of a receiving set Reproducers & Amplifiers, Ltd., of Frederick Street, Wolverhampton, have just issued an informative leaflet in which full particulars of all the output valves in common use are set out in tabular form. In addition, the correct

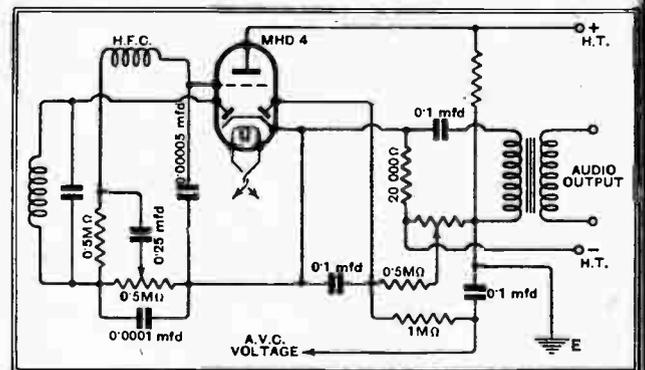


Fig. 7.—The double diode triode may be coupled to the output valve of the receiver by means of a parallel-fed transformer when the range of A.V.C. control is not very large.

transformer ratio or, alternatively, appropriate tapings on the output transformer are given for the three principal moving coil loud speakers manufactured by the company, namely, the "Bantam," "Challenger," and "Victor" units.

All owners of R. & A. loud speakers should find this leaflet of great value, and copies may be obtained from the above address on receipt of a 1½d. stamp to cover postage.

News of the Week.

Events of the Week in Brief Review.

Still They Come

JUGOSLAVIA has two new broadcasting stations "on the stocks." One at Uszkub is nearing completion, and work is beginning on the new station in Spalatao, Dalmatia.

More Kilowatts

THAT Spain has no intention of falling behind in the race for broadcast power is evident from an announcement by the Spanish Ministry of the Interior, which states that a new 100-kW broadcasting station is to be erected shortly in Madrid. It will be entirely under State control.

Queer Calculations

NOW that the licensing of French radio receivers is about to take place, the officials are trying to estimate the number of receivers in the country. The most conservative calculation has been 350,000—a figure that is laughed at by the majority of wireless traders, who consider that a million would be nearer the mark. This atmosphere of doubt shows how nebulous and chaotic radio conditions are in France.

New Hitler Move?

IT is rumoured that the entire German broadcasting system will shortly be taken over by the new Ministry for Propaganda. At present the service is controlled by the Post Office and the various State Governments.

"That-will-doodle-do"

CONNOISSEURS of the fowl run have declared that the cock-crow used as an identification signal by the Czechoslovakian stations denotes a bird long past its prime, so the broadcasting authorities have recorded the note of a young cockerel.

To Oblige the Ships

MONTE CENERI, the Italian speaking regional station at Tessin, Switzerland, has changed its wavelength from 680 to 720 metres. The station, which has been testing for the last month, has interfered with ships' stations when working on the original wavelength.

The Highest Mast

VIENNA'S new 100-kW transmitter at Bisamberg will have Europe's highest aerial mast, even exceeding in height the famous Eiffel Tower which is 1,000 feet high. The mast itself constitutes

60 kW from Lyons

LISTEN for loud signals from Lyons la Doua on 465.8 metres. We learn that the new 60 kW transmitter is nearing completion, and that tests will begin in the very near future.

New German Interval Signals

MUNICH now whiles away the intervals with the "Song of the Bells" from Wagner's "Parsifal." Breslau initiated a new interval signal on May 1st consisting of the first bars of the well-known "Hohenfriedberger-Marsch."

The Useful Super-Het

FROM our contemporary *Le Petit Nicois*—

First Friend: "Oh, a super-heterodyne, with push pull amplifier. That must have cost you a lot?"

Second Friend: "On the contrary, I have saved money; it has enabled me to buy the neighbouring house at half price."

"Ultra Shorts" from the Crystal Palace

FIVE - METRE transmissions will emanate for the first time from the North Tower of the Crystal Palace, Norwood, on Sunday next, May 21st, when Mr. L. H. Thomas (G6QB) begins regular tests with a power of 10 watts.

The North Tower is 550 feet high, and commands a view over eight counties. It should thus make an ideal jumping-off point for "optical" waves.

The British Radio Annual

THE British Radio Institution has just issued Volume II of the British Radio Annual, comprising a number of interesting papers dealing with various phases of wireless, which have been written by members of the Institution. The subjects covered include "The Electrical Condition of the Upper Atmosphere," "Considerations in Antenna Design," "Selectivity," "Weather Forecasting by Atmospheric," and "Echo Sounding." The Hon. Secretary of the Institution is Mr. J. D. Fox, 25, Kingswood Drive, Kings Park, Glasgow, S.4.

An "Autocar" Offer

IN its issue this week our associated journal, *The Autocar*, makes an announcement of great interest to all motorists. Briefly, *The Autocar* is offering at a purely nominal cost to all its readers a complete Bartholomew map of the whole country divided into twenty sections.

Each section is drawn to a scale of eight miles to an inch, is printed in colours, with main roads in red, and with mileages between towns clearly marked.

These maps are of the highest quality. A sample section is included in every copy of *The Autocar* printed this week. Full particulars regarding this offer will be found in this week's issue.



TWENTY-NINE YEARS AFTER. Sir Ambrose Fleming photographed last week with a Catkin valve and his original "Fleming valve" of 1904.

For Blind Listeners

BLIND listeners in Germany are to have the benefit of a special radio newspaper, printed in Braille, which is to be regularly published by the State.

Propaganda Banned

RUSSIAN broadcast programmes are tabooed in the German radio papers. The broadcasting authorities have just issued a request that all German journals should abstain from giving publicity to items broadcast from foreign stations in the German language for propaganda purposes.

Marconiphone Model 254

IN connection with the review of this receiver in last week's issue it should be noted that the price in radio gramophone form is 32 guineas, not 24 guineas as stated.

18-Centimetre Telephony

THE 18-centimetre wavelength transmitter and receiver illustrated on page 307 of our issue of April 28th was used in a demonstration by International Telephone and Telegraph Laboratories in conjunction with Les Laboratoires L.M.T. of Paris.

"Practical Short Wave Reception"

THE author of this article in our issue of May 5th regrets an error in the diagrams of Figs. 2 and 3. These should be shown with an aperiodic aerial winding, and not a direct coupled circuit.

In the same article, on page 317, lines 38 and 39, the words "oscillator" and "signal" should be interchanged.

Class "B" Ferrocort

READERS interested in *The Wireless World* Class "B" Ferrocort receiver described in our issue of April 7th last should note that a complete reprint of the constructional article is issued in handy form by the City Accumulator Co., Ltd., 4, Surrey Street, Strand, London, W.C.2, from whom copies can be obtained, free and post free.



THE GRANITE CITY TEST. This Catkin valve did the double journey by post between London and Aberdeen. At the end of its travels it was tested on a standard receiver in *The Wireless World* Laboratories and functioned perfectly.

U.S. Asks for King's Speech

THE World Broadcasting System, an American organisation which is establishing a "library" of electrical transcriptions of broadcast speeches for the U.S. National Museum, has asked the British Museum to send a copy of the recording of King George's Empire Speech last Christmas. In return the British Museum is offered a transcription of President Roosevelt's inauguration address.

the aerial, and the uppermost parts operate on the telescopic principle for rough tuning purposes. The station is to open on Sunday, May 28th, using a wavelength of 507.2 metres.

Wide-awake Japan

JAPAN has just celebrated her eighth anniversary of the founding of the broadcasting system. Tremendous advances have been made in the last two or three years, as can be gauged from the fact that the number of licence-holders has been doubled since 1930, and now stands at 1,400,000. Of these 600,000 are in Tokio.

PRACTICAL HINTS AND TIPS

SOME of the latest screened cable for aerial down-leads has remarkably low capacity, but even so, its use will generally result in the addition of several hundred micro-microfarads to the aerial capacity. Of this extra capacity, a proportion—but, in a modern set, usually only a small one—will inevitably re-appear across the tuned input circuit of the receiver.

Screened Aerial Down-leads

The moral of this is that, after fitting a screened down-lead, the aerial circuit of a "ganged" set should always be re-trimmed; less trimming capacity than originally will be required, and so the adjusting screw must be turned in an anti-clockwise direction.

A GOOD deal of experimental work in Class "B" amplification is being carried out, and it has already been found out that the circuits originally put forward do not by any means represent the only possible methods of application. Where it is desired, modifications may be introduced in various ways without impairing results. For instance,

Class "B" Conversions

the circuit reproduced in Fig. 1 may suggest possibilities to those who are faced with the problem of adapting the new system to an existing set.

The diagram is prepared on the assumption that the original output valve will be converted to act as a driver; it emanates from the Technical Department of the Cossor valve concern, which has done a great deal of development work both with regard to the Class "B" valve itself and to methods of using it.

In the diagram a resistance of 50,000 ohms is shown as being connected in shunt with the L.F. transformer primary; in addition, there is a stopping resistance in series with the L.F. grid. One or other of these resistances will generally be necessary, but both of them will seldom be required.

At first sight the 0.02-mfd. tone cor-

Simplified Aids to Better Reception

rector condenser across the driver transformer secondary may appear to be on the large side; its capacity is subject to alteration in some cases, but the value given will seldom be excessive where a transformer with a step-down ratio is employed.

The purpose of the pair of 0.005-mfd. condensers in shunt with each half of the output transformer primary is to prevent parasitic oscillations in this stage.

A NUMBER of mains transformers made a year or two ago were provided with a 7.5-volt centre-tapped wiring for feeding the filament of a power rectifying valve consuming $2\frac{1}{2}$ amps. These valves are no longer in common use, but it does not follow that for this reason the transformer is valueless. In many cases, one-half of the 7.5-volt winding may be used to supply a modern 4-volt rectifying valve, particularly of the type consuming 1 amp.

Old-type Mains Transformers

Although the voltage existing between the centre tap and either end of the winding amounts theoretically to 3.75 volts, this figure is often exceeded, at any rate

IT has already been stated that the fitting of a gramophone pick-up to a "straight" set will almost always necessitate a readjustment of the trimming condenser which controls the tuned circuit immediately preceding the detector. The same applies to most superheterodynes, but as the tuned I.F. couplings are not fitted with auxiliary trimmers, the readjustment must be effected by means of the semi-variable condensers which are usually shunted across the windings. The only condenser that will need adjustment is that which tunes the secondary of the I.F. transformer preceding the detector valve.

Superheterodyne Radio-gramophones

It may be added that these remarks do not apply to sets which include anode bend detection; in such cases the pick-up is usually connected to the low-potential end of the detector grid circuit.

REPAIRS to the windings of a defective L.F. transformer are usually beyond the scope of the amateur, and if the manufacturer is unable to put matters right, the component must usually be scrapped. But before discarding it, it is

Broken-down Transformers

always worth while to remove the external protecting shroud, and to make sure that the fault is not due to a defective connection between the leading-out wires and the inner ends of the terminals. Such faults are by no means uncommon, and they are usually quite easy to repair. It is also worth while to examine the joint between the heavy leading out wire and the finer wire of the winding proper.

A HOT electric soldering iron, if laid carelessly on the bench or table between jobs, may cause more or less serious damage, and it is wise to provide a stand or other form of support which will keep the business end of it well clear of woodwork, etc. A bracket, shaped more or less as shown in the accompanying sketch, serves this purpose admirably; it may be attached to the wall plug base as shown, or even to the wall.

Workshop Hints

For constructing this bracket, sheet aluminium was originally employed. Almost any metal will do, but the use of a substance of high heat conductivity (and, incidentally, enough surface area)

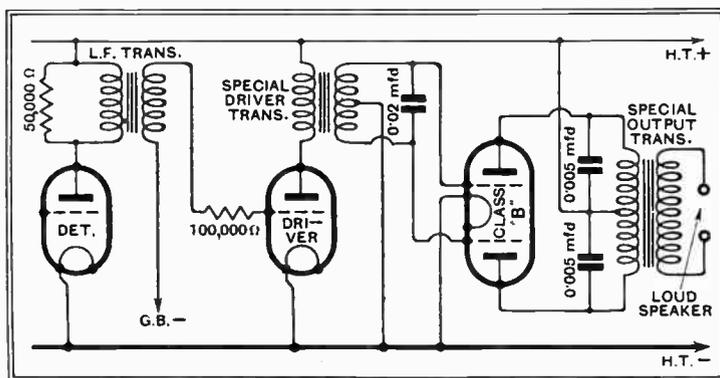


Fig. 1.—Skeleton diagram showing tone-correction devices, etc., for Class "B" amplification. Decoupling may be added where necessary.

under light loads, and if the precaution of using short and heavy leads be observed, sufficient voltage will usually be available.

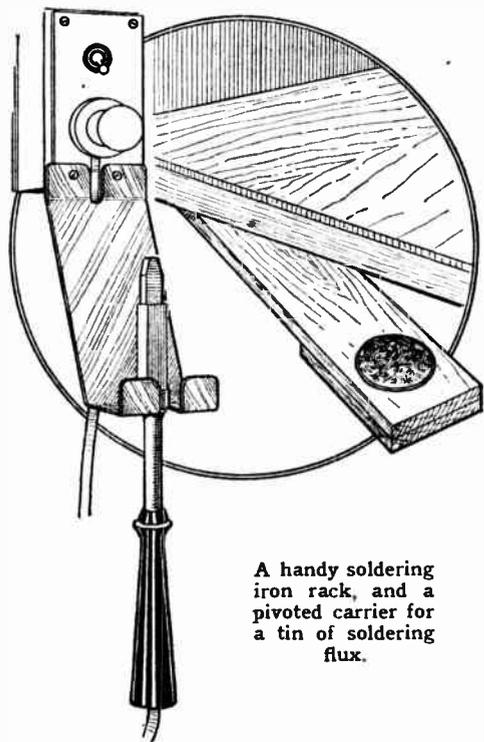
The fact that the centre tap can no longer be used as the rectifier output connection when this scheme is adopted need not be a deterrent. Almost always the connection may be made to either end of the rectifier filament without increasing hum.

Practical Hints and Tips—

helps to maintain an even temperature when the iron is out of use, but with current switched on, for long periods.

One of the advantages of a bracket mounted in this way is that accidental burning of the leads is rendered almost impossible.

Soldering flux can seldom be found when wanted; after a long search, the



A handy soldering iron rack, and a pivoted carrier for a tin of soldering flux.

open flux tin has, on more than one occasion, been found adhering firmly to the elbow of the would-be user's jacket! This and other messy possibilities are avoided by fitting a holder on the under side of the bench in the manner illustrated. The board in which a hole is cut as a receptacle for the tin is arranged to pivot on a screw, so that it may be swung out of the way when not required.

IN experimental work involving a layout of gear spreading over a considerable area, it is convenient to have an earth wire running under the edge of the bench to which various parts of the apparatus may be connected by crocodile clips.

For the Experimental Bench

Experience shows that a solid wire sooner or later gets stretched or accidentally broken and it will be found that a flexible spiral valence rod, as sold by the one-price stores, is neater and more permanent. With this arrangement it is also possible to dispense with the use of crocodile clips, for by pulling out the spiral slightly the ends of the earth leads may be effectively nipped between adjacent turns.

It may be asked whether the inductance of the spiral wire is likely to be detrimental. This can be safely neglected on all but ultra-short wavelengths as the diameter of the turns is only of the order of 2 mm.

ALMOST everyone knows by now that the anode current consumed by a Class "B" or Q.P.P. output stage depends on the extent of modulation of the incoming carrier wave. During programme intervals, when modulation is not

Payment by Results

taking place, current is almost negligible. Although it is a natural corollary of the foregoing, it does not seem to be always appreciated that anode current consumption is also influenced by signal strength; by "turning down the wick," the amount of H.T. energy consumed for reproduction of a given programme will be much less than

when it is reproduced at full blast. In a fairly modern set, the economy effected by reducing signal strength will be two-fold, as with a variable-mu H.F. stage the current of this valve will also be reduced.

When utmost economy is needed, provision might also be made for simultaneously applying rather more negative bias to the driver valve as well when volume is reduced. From the point of view of quality, this would be quite permissible, as with artificially weakened signals less than the maximum output is needed from this valve. Perhaps, however, this is carrying economy too far, as the saving would be small, and hardly worth while.

PARMEKO 25-WATT AMPLIFIER KIT

Two-stage A.C. Power Amplifier for Home Construction

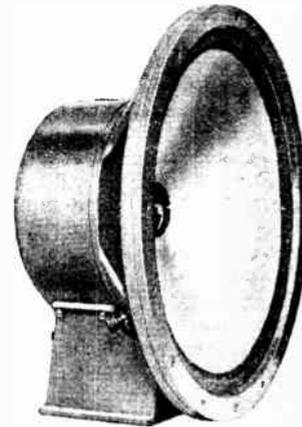
THE name "Parmeko" has for long been associated with high-class public address equipment, and now, in order to meet the demand for a moderate-priced power amplifier, Partridge and Mee, Ltd., Percy Road, Aylestone Park, Leicester, have introduced a 25-watt unit in kit form. It is A.C. operated and will deliver about six watts undistorted power output, this being sufficient to operate several moving-coil loud speakers at full volume. Two stages are employed; the circuit consists of an input volume control, a Mazda AC/HL valve transformer coupled to a Marconi PX25 and a choke capacity output filter. Interposed between the L.F. transformer and the output valve is a small unit consisting of an H.F. choke, a resistance and a grid leak, its function being a parasitic oscillation suppressor.

In the Parmeko amplifier the input volume control has a resistance of 500,000 ohms, a somewhat higher value than usual, but it is fitted so that when following the detector valve of a wireless receiver it can be used as a variable grid leak in a resistance- or choke-capacity inter-valve coupling.

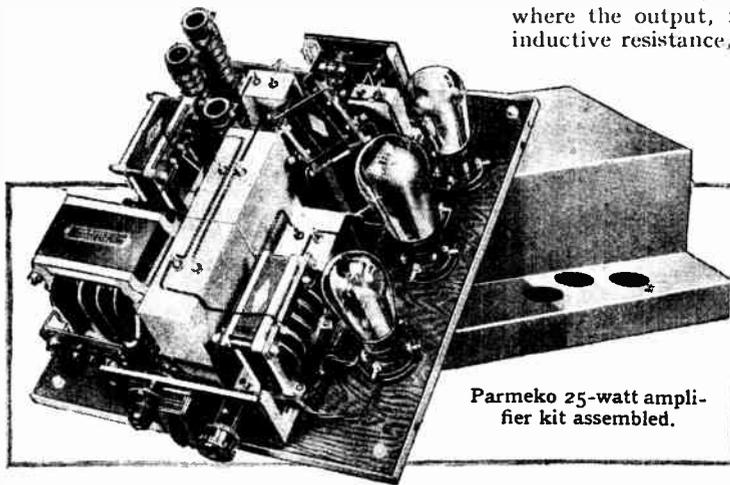
The high tension supply is derived from a

range of permanent-magnet moving-coil loud speakers particularly good results were obtained on test. The output is well balanced with an adequate treble response to give brilliance to the reproduction without accentuating record surface noises. Despite the good response at the lower end of the frequency scale, very little mains hum was noticed.

A more detailed investigation of the amplifier reveals that between 70 and 4,000 cycles the amplification is sensibly constant, but above this there is a slight falling off. At 6,000 cycles, however, an improvement occurs, and this is maintained up to 8,000 cycles, where the output, measured across a non-inductive resistance, was found to be about eleven decibels lower than at 1,000 cycles.



"Parmeko Senior" loud speaker.



Parmeko 25-watt amplifier kit assembled.

full-wave rectifying valve of the "C" class, giving some 450 volts after smoothing on full load. Good quality components are employed throughout, the mains transformer, smoothing choke and output choke are the firm's own make, while the various resistances are wire-wound and all condensers have an adequate factor of safety.

Using a high-grade gramophone pick-up, and one of the latest models in the Parmeko

complete kit, excluding valves, is £14 10s. For those who wish to enclose the amplifier totally,

a 22-gauge steel case, cellulose enamel finished, is available, the price being 21s. The loud speaker used throughout our tests with the amplifier was the new "Parmeko Senior" model. It is a permanent-magnet type fitted with a 12in. diameter cone and handles a large input. An input transformer is contained in the base, giving two alternative ratios, viz., 1:11 and 1:22, and the price, in chassis form, is £7.

LABORATORY TESTS

NEW RADIO PRODUCTS REVIEWED



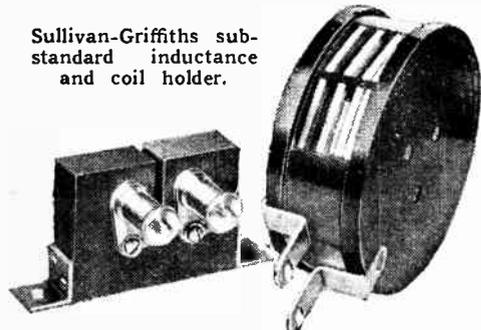
"Peak" aqueous-type 4- and 8-mfd. electrolytic condensers.

"PEAK" ELECTROLYTIC CONDENSERS

WILBURN & CO., 23, Bride Lane, London, E.C.4, have extended their range of "Peak" condensers, and now include two of the wet electrolytic type rated at 450 volts D.C. working. These are obtainable in 8-mfd. and 4-mfd. sizes, the prices being 5s. and 4s. 6d. respectively. The customary style of construction is adopted, a cylindrical metal container forming the negative electrode with the positive pole, or anode, passing through an insulated bush in the centre of the large fixing screw. Being of the aqueous type these condensers must be mounted in an upright position, only, however, to maintain the liquid in contact with the electrodes, since there is no possibility of leakage, for a leakproof vent is fitted on top of the container. Tests made with some specimen condensers show that the average leakage current is less than 0.5 mA. at 450 volts D.C. The condensers can be subjected to an overload of about 30 per cent. without damage, but it is advisable not to exceed the working voltage other than for short periods.

SULLIVAN-GRIFFITHS SUB-STANDARD INDUCTANCE COILS

INDUCTANCE coils accurately adjusted to certain known values form an essential part of laboratory equipment, but in view of the work involved in manufacture and measurement their prices have, of necessity, hitherto been high. With the view to bringing these within the reach of many of the smaller laboratories in the country, H. W. Sullivan, Ltd. Leo Street, London, S.E.15,



have introduced a new range of inductances classed as second-grade coils. They are, in effect, inexpensive copies of their high-grade standard inductances, being constructed on exactly the same principle, and but for the

exceptionally high standard attained in all Sullivan laboratory equipment would otherwise be described as first-grade coils. They have a high degree of constancy and are suitable for use in laboratory calibrated resonance circuits and for all apparatus in which a coil of known inductance is necessary.

Although the accuracy of the initial adjustment to nominal value is not high, the stated actual inductance of each coil as marked on its carton is measured to within fine limits. Coils of low inductance have an accuracy better than 0.5 per cent., whilst an accuracy of 0.05 per cent. is given for coils of 2,000 mH. and over. If a higher order of accuracy is required it is suggested that an N.P.L. certificate be obtained, for the coils are fully worthy of this, as their constancy is quite as good as the accuracy to which such measurements can be effected.

The price of these sub-standard inductances is 25s. each, and the special coil holder costs 5s. 6d.

DALLOW MONODIAL CABINETS

DESIGNED especially for the Monodial superheterodyne receivers, these radio-gramophone cabinets bear the hall-mark of the craftsman, being in every respect high class pieces of furniture. Two models simi-



Dallow radio-gramophone cabinets for the Monodial Super receivers.

lar in general outline and size were submitted for our examination. Both are made of walnut, handsomely grained and finished with a high polish.

The receiver compartment, which is in the upper part of the cabinet and just below the motor board, will accommodate a chassis measuring 18½ in. x 13 in., and provides 12 in. head room. Below this is the loud speaker compartment, and here there is ample space for the power pack. A baffle board, cut from ½ in. thick wood having a hole 7 in. in diameter, is fitted. The back is removable and acoustically open.

Including the recess in the lid the gramophone compartment allows 3½ in. head room, which is ample for all pick-ups and tone arms in general use. A long piano-type hinge is fitted, also a strong supporting arm to hold the lid open. The motor board is ½ in. thick and made of nine-ply wood walnut finished on top. In view of the thickness of the wood we do not anticipate any trouble arising from cabinet resonance.

Two models similar in general outline and size were submitted for our examination one is provided with side pillars inlaid with thin strips of brass and costs £6 6s., while the other is relieved with bands of a darker veneer down the sides and round the edges of the lid. This model costs £5 19s. 6d.

The makers are The Dallow Manufacturing Co., Ltd., Forge Mill, Milford, near Derby.

McDANIEL MAINS TRANSFORMERS

TWO mains transformers both of the "A" type and designed for use in receivers having up to three valves in number, but excluding the rectifier, have been received from G. C. McDaniel and Co., 154, Hainault Road, Romford, Essex. One comes within the category of the "constructor's type," being fitted with terminals, while the other is a manufacturer's model, or stripped type, in which the various windings are brought out for direct connection to their respective components or other convenient anchorage points.

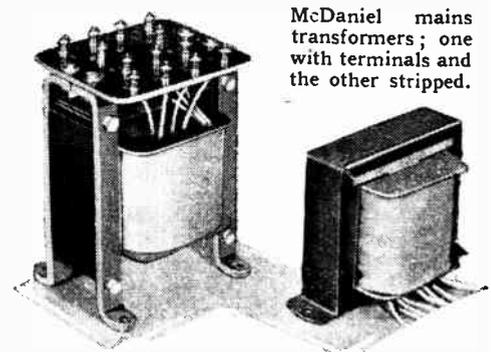
Both designs allow for supplying heater current to three A.C. valves, the filaments of a one-amp. rectifier valve and 250-0-250 volts, nominal, for the H.T. supply. The primary winding is tapped for mains of 200, 230 and 250 volts A.C. at 50 cycles.

Although both types employ the same size stampings the core in the finished model contains nearly 50 per cent. more iron than the stripped type and, as a consequence, is the more efficient of the two. Nevertheless, there is no trace of overheating in the smaller transformer; indeed, both run perfectly cool.

On test the constructor's model provided the following H.T. voltages after smoothing and using a choke of 100 ohms D.C. resistance.

Current.	D.C. Volts.	Current.	D.C. Volts.
10 mA.	340	40 mA.	281
20 "	315	50 "	265
30 "	297	60 "	246

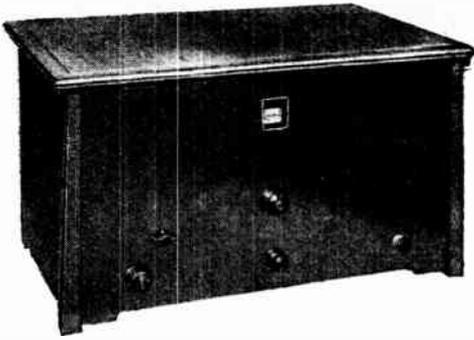
On full load the output from the 3-amp. L.T. winding was 3.82 volts, while the rectifier filament was operated at 3.92 volts.



McDaniel mains transformers; one with terminals and the other stripped.

The high voltage A.C. output was slightly higher in the case of the stripped model, being 276 volts as compared with 254 volts for each half of the winding on full load. The L.T. supplies were not materially different, for with 3 amps. flowing in one case and one amp. in the other the measured voltages were 3.88 and 3.85 respectively.

The price of the finished model is 22s., and that of the stripped type 12s.



FERRANTI Class "B" Band-Pass Four Constructors' Receiver

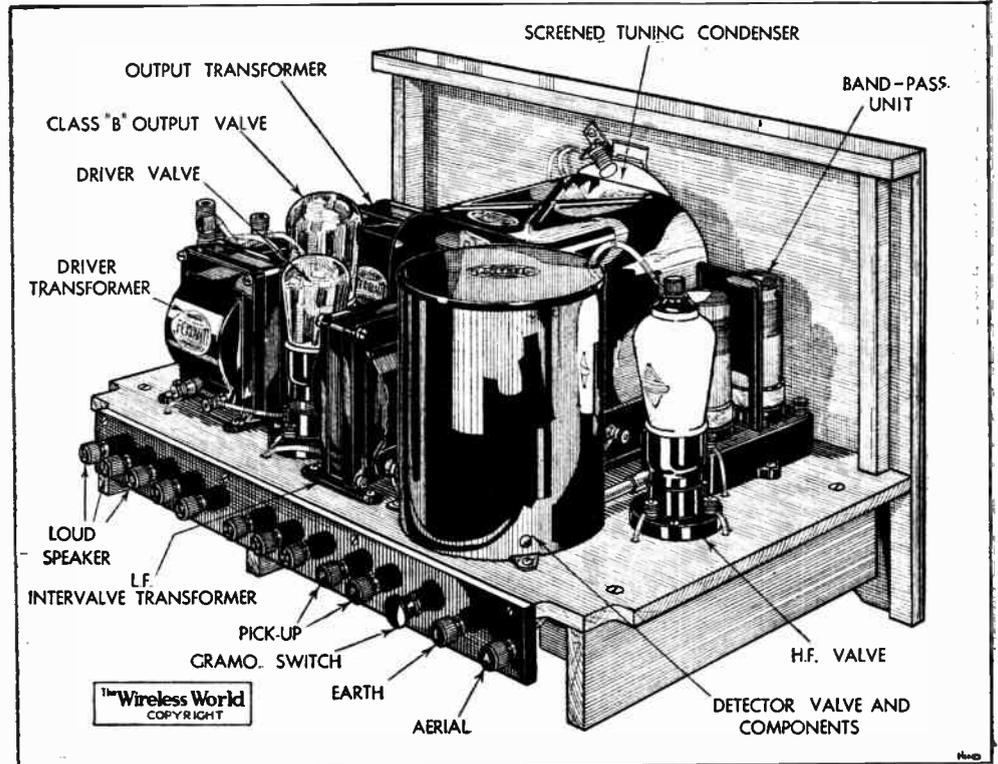
Four-valve Battery Set Embodying the Latest Technique

FEATURES. Four-valve circuit with one H.F. stage transformer coupled to regenerative grid detector, which in turn is linked by a driver stage to a Class "B" output valve. Undistorted output, 2 watts; average H.T. consumption about 10 milliamperes. Single-tuning control with illuminated dial and wavelength calibration. Price: Set of components, with valves, £12 17s. Without valves, £10 10s. 9d. Cabinet and baseboard, 30s. extra. Makers: Ferranti Ltd., Hollinwood, Lancs.

THE straight set with one H.F. stage boasts an easily understood technique, and this is, at least, one of the reasons why it still has many adherents. It is sensitive enough to provide good entertainment from a large number of foreign stations, and leaves nothing to be desired on the score of quality of reproduction. In the matter of selectivity, however, it can very easily fall short of the required standard unless the tuning scheme contains a filter designed on scientific lines. The band-pass circuit of the Ferranti Constructors' set under review is particularly well conceived, and with regard to its adjustment nothing has been left to chance.

The three-gang condenser and the tuned circuits which it controls are accurately balanced by the makers before being sent out, and no trimming is necessary. As a result, there are no "initial" adjustments, and as soon as the set is put into commission it will give of its best, and the selectivity will be found to be unusually high for this type of circuit.

There are other virtues. The power output from the Class "B" valve is enormous, although the H.T. current consumed is com-



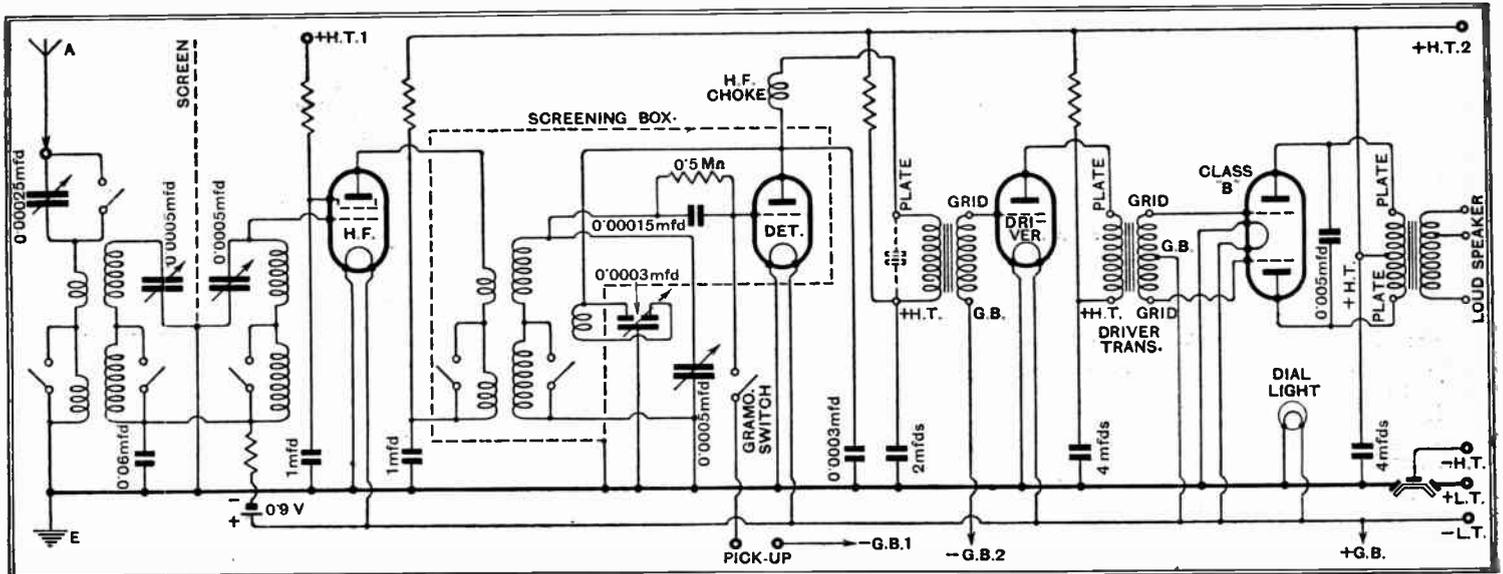
paratively small. A silver voltmeter test indicated that during a 7½-hour programme of typical composition the total current taken by the receiver averaged under 10 mA., showing that quite a modest-sized H.T. battery can be used, even when about 1½ watts speech are being dissipated.

The circuit is straightforward, and there are no economies which might lead to instability when the H.T. battery begins to age. A lavish decoupling scheme is to be found in the H.T. feeds, and double-wound transformers are used in the band-pass primary and the H.F. intervalve coupling. Reaction applied to the intervalve coupling was found to be progressively effective,

and practically no backlash was observed.

An AF5 intervalve transformer links the detector to the driver valve, and the latter feeds into a 1-to-1 ratio Ferranti driver transformer with a secondary of commendably low D.C. resistance (80 ohms per half). The output transformer provides three ratios for use with low-resistance speech coils, and correct matching is best found by trial and error. The four valves required are the Cossor 220SG, 210HL, 215P, and the new Ferranti HP2.

For excellence of components and general high standard of performance the Ferranti Class "B" constructors' receiver can be recommended with confidence.



Complete circuit diagram. Comprehensive decoupling in the anode feeds ensures absolute stability.



An Exciting Test

THERE is quite a stir in the B.B.C. Engineering Department over the forthcoming tests in synchronising West National with the National transmitter at Brookmans Park on a common wavelength of 261.5 metres. I understand that the first test may be made on or about June 1st.

Mr. Ashbridge's Secret

The two transmitters will, of course, employ tuning-fork control in order to maintain absolute synchrony. The system works quite satisfactorily where distant stations on low power are concerned, and I have heard of no complaints regarding the synchronising of Scottish National and Bournemouth on the 288.3 wavelength; but two 50-kW stations within 150 miles of each other offer a more formidable test. Mr. Ashbridge, Chief Engineer of the B.B.C., declined to prophesy when I asked him whether the forthcoming experiment was likely to prove successful. "What if it should fail?" I queried. "Even then," said Mr. Ashbridge, "we have 'something up our sleeves.'"

Possibilities

The remark suggests limitless possibilities, but the Chief Engineer declined to disclose his plans in advance.

Is it possible that the B.B.C., aided by their good friends from the Post Office, will secure another wavelength for Britain at the Lucerne Conference? Or will the B.B.C. engineers try first one wavelength and then another to synchronise with West National? I think we must look upon this problem as another of those secrets which the B.B.C. Chief Engineer must always be "holding up his sleeve."

By Our Special Correspondent

Listeners Abroad

When the B.B.C. embarks on a wavelength experiment interest is not confined to listeners in this country. Who knows how many zealous Czechs in Moravska-Ostrava may be profoundly agitated by the synchronisation tests on 261.5 metres? If the engineers decide to synchronise with North National instead, it might mean misery in Tallinn or Zagreb.

A Pious Hope

By the way, the new West Regional station stands on quite the most picturesque

Our title illustration shows the new West Regional Twin Wave Station of the B.B.C. at Washford Cross near Minehead, Somerset. Regular transmissions are now made on the Regional wavelength of 309.9 metres and tests will shortly begin on the National transmitter, which is to share with London National the wavelength of 261.6 metres.

of the sites occupied by the B.B.C. high-power stations, and I sympathised with the courteous engineer who escorted me round the building last week when he breathed the hope that one day he might be given a resident appointment!

Cardiff Dwarfed

As the photograph on this page shows, the new station is situated in rich pastoral country. Half-way up the 500ft. masts one can see the Bristol Channel, and, to judge by appearances, the transmissions should have a wide sweep over a service area which will make the range of the present Cardiff transmitter seem insignificant. Wales should

certainly have nothing to grumble at either on the transmission or programme sides.

From the remarks of the West Regional director, Mr. E. R. Appleton, during the Press visit, it really looks as if the B.B.C. will please everybody!

Ironical

By the way, while Mr. Appleton was uttering words of cheer for the benefit of listeners in the West, I understand that his house in Cardiff was being burgled, thieves making off with his wireless set. I wonder why?

A Chat with Control

ONE of the most modest of all departments at Broadcasting House, the Balance and Control Section, has suddenly found itself in the full glare of notoriety, in consequence of the misdirected energies of certain critics whose musical knowledge is probably far in excess of their technical attainments.

Last week, determined to get at the truth, I dived down into the bowels of the earth in Portland Place and chatted with the engineer who was then engaged in rehearsing for the evening's vaudeville concert.

"Musicians First"

Yes, *rehearsing*. For the Balance and Control Department rehearse just as conscientiously as conductors, singers and vaudeville stars. It was interesting to note the psychological reaction when I quoted to the engineer the remark of one of my correspondents: "The truth about Balance and Control is that it is in the hands of engineers, not musicians."

Speaking (as they say in the police courts) very slowly and in tones of great emotion,

the Balance and Control official said: "We in this section are musicians first and engineers afterwards."

The Ear Test

If certain critics could have stood with me beside the official at the control desk they would immediately have realised the truth of this remark. Balance and Control officials do not employ the meter, but rely entirely upon what they hear on a moving-coil loud speaker.

Two members of the section are ex-musical directors of the B.B.C., and every one of them is trained to read a full orchestral score.

Two Sections

Actually, the work of Balance and Control in the B.B.C. is divided into two big sections, the first dealing principally with the musical programmes such as opera and orchestral concerts, while the other branch covers the production side and is concerned with vaudeville, drama, and even talks. But both branches observe the same technique.

In the Silence Room

As we sat in the little Silence Room looking on to the vaudeville studio while Danny Malone and Ronald Frankau were heard in turn on the loud speaker, the official described just how the job is carried on.

Actually, there is truth in the rumour that more than one hand is at work controlling the music on its journey from the microphone to our loud speakers, but the main responsibility lies on the shoulders of the man in the Silence Cabinet who controls the minute currents which are passed to the A amplifier.

The Man Upstairs

The engineer in the control room upstairs watches the input to B amplifier, checking modulation by the familiar ammeter needle. At times some adjustment may be necessary at this stage, but, in the main, it is the Balance and Control official who narrows down the microphone output to the 28-decibel range which is the maximum which can be comfortably handled by a modern transmitter.

Marking the Score

The whole art of Balance and Control consists in securing a proportionate increase or decrease in volume. This is one reason why musical scores are carefully marked in advance so that when a moderately loud portion of the music is being handled there is still a sufficiently large decibel range in reserve to cope with the double sforzando which may suddenly leap out ten bars later.

Co-operation

One cannot fail to be struck by the atmosphere of co-operation between producer, artistes, and the Balance and Control section. The artistes seem to realise that the man in the Silence Cabinet has one aim in view: to produce the best possible results, and this is why, at the end of every "turn," the performer looks enquiringly through that little oblong window to see how his or her efforts have "got over."

For the Disgruntled

When I returned to ground level and daylight I felt more than ever convinced that listeners have nothing to worry about where Balance and Control is concerned, and that

the disgruntled few would learn a bitter but salutary lesson if they were compelled to listen to an uncontrolled concert with the 'phones padlocked and immovable.

The Late Mr. Stobart

THE death of Mr. J. C. Stobart has aroused real regret among the B.B.C. staff, among whom this strong, quiet, humorous man moved as a genuine friend.

Mr. Stobart was in Broadcasting House only a day or two before he died.

A Great Worker

Most people will remember him as the author of the "Grand Good Night," the last of which he gave at the beginning of this year in rather poignant circumstances, the microphone being installed beside his sick-bed. But, of course, the "Grand Good Night" was only a side issue in Stobart's activities; he put in an immense amount of work for the furtherance of the B.B.C.'s religious aims, in the general supervision of the Children's Hour, and the "Week's Good Cause" appeals.

Opera from Munich

I HEAR the B.B.C. are negotiating for relays of grand opera from the Munich National Theatre during the latter half of July and the beginning of August.

Until, in fact, the "Proms" begin.

Music and Drama from Canterbury

THE Festival of Music and Drama which is to be held in Canterbury Cathedral in June will provide two relays, one for Regional listeners, on the 7th, and the other

Does this Help?

PEOPLE are still trying to solve that eternal riddle: the identity of A. J. Alan. Here is another clue. The famous raconteur signs his cheques "A. J. Alan."

Tunes from the Talkies

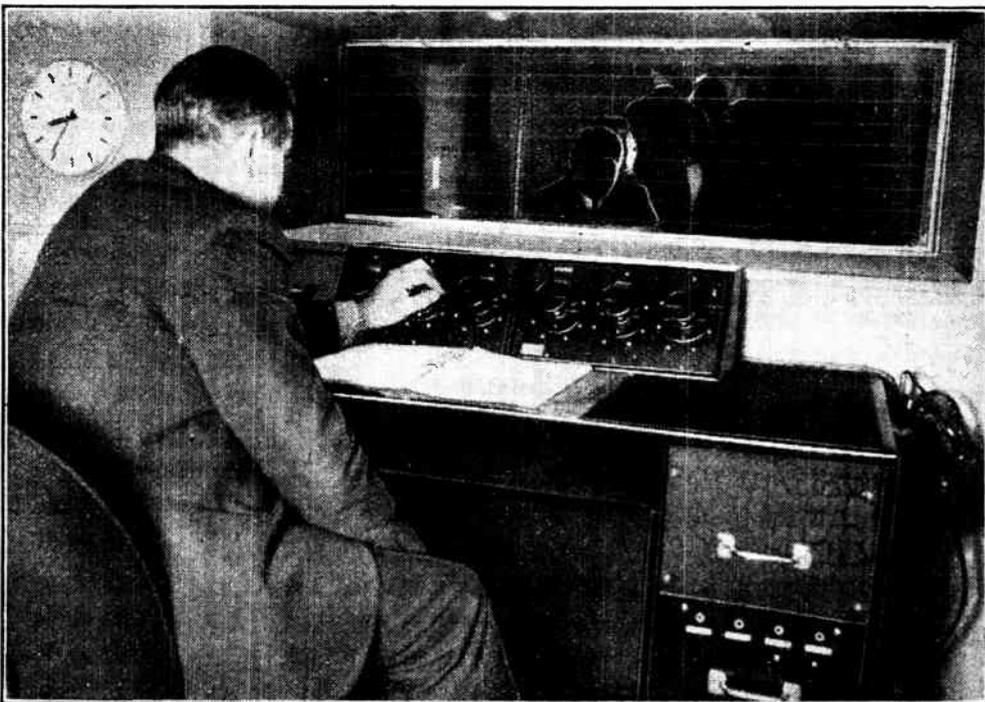
ANOTHER special programme is under discussion by Henry Hall and the B.B.C. Dance Orchestra for May 27th. Its title, "Tunes from the Talkies," reveals its nature, and, as the theme songs of many famous talkies are the daily backbone of a large number of dance-band performances, Henry's programme is certain to be well received.

Forty Years On

BOURNEMOUTH Municipal Orchestra will broadcast a special programme on May 21st to mark the completion of forty years' unbroken service under Sir Dan Godfrey. The orchestra's record includes 32,000 concerts, of which 2,600 have been symphony concerts, 600 performances of Beethoven symphonies, and 300 of the symphonies of Brahms. Ben Davies, who first sang with the Bournemouth Municipal Orchestra in 1893, will be the soloist on May 21st, and the programme will include Festival March from Tannhäuser, the first item played by the orchestra on May 22nd, 1893.

The Archbishop's Blessing

FROM the Empire Day luncheon at the Junior Carlton Club, London, on May 24th, a speech by Mr. J. H. Thomas, M.P., will be broadcast in the National programme. The Archbishop of Canterbury's blessing on the Empire will also be heard.



BALANCE AND CONTROL. The Chief of the "Productions" department of the B.B.C. Balance and Control Section is here seen in his silence cabinet adjoining the vaudeville studio in which a Ridgeway Parade is being broadcast.

for National listeners, on the 8th. The Regional relay will consist of a Serenade performance and the National relay of an orchestral concert. Adrian Boult will on both occasions conduct Section F of the B.B.C. Orchestra, which will be led by Arthur Catterall.

Why Engineers Look Stern

THE other day a B.B.C. engineer sent an enquirer brief instructions for calibrating a receiver. In the course of his remarks he said: "Place 180° on the dial at 3 o'clock." By return of post came the query: "Do you mean G.M.T. or B.S.T.?"

Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Stamford Street, London, S.E.1, and must be accompanied by the writer's name and address

British Sets in Egypt

I AM curious to know how it is that here in Egypt it is so difficult to obtain British-made radio sets. American, German, and French sets are easily obtainable at reasonable prices.

With sterling so low, it seemed that the English-made sets would flood the market, particularly as the Empire broadcasting scheme had proved so successful.

One explanation might be that until recently the home manufacturer was not interested in short-wave development, and that therefore the Egyptian market offered no scope.

Although Egypt is not an ideal country for reception on long or medium waves, it is within reasonable distance of a number of European broadcasting stations, in addition to having its own local stations. Short-wave reception is excellent, and the British community is demanding the medium-short wave set which is supplied satisfactorily by the American article. It seems a pity that the Britisher here must receive the Empire broadcast on an American or German set.

Is it the matter of royalties which brings about this state of affairs? Certainly the British manufacturer has to pay no more duty than the foreign competitor to export sets into Egypt, yet here we may purchase a 1933 short and medium, all mains superhet receiver of American manufacture at £25. In view of the fact that the new 20 kW. Marconi-built station will be operating here in the near future, British manufacturers should seize the opportunity of gaining the business thus opened.

V. G. RUSHWORTH.

Cairo, Egypt.

Automatic Volume Control

MR. BISSET seeks to justify the present use of the term Automatic Volume Control, and bids us stick to it. As regards the sticking to it I am afraid there is no option, for anybody who attempted to rule otherwise would provide a first-class revival of the Canute comedy. But I, personally, shall use the term under protest, for I think that Mr. Bisset has failed to make out a case for it.

He admits that the manual volume control, where no other is fitted, serves two purposes: (1) To compensate for inequalities in the signal strength at the aerial end, and (2) to set the volume to the desired level (*e.g.*, to prevent the gentle voice of the announcer from being reproduced at the same volume as a brass band).

Although these functions are often both performed by the same knob, logically they are quite distinct, and are preferably carried out by separate knobs, even if they are both hand operated. The reason is that the detector valve works best at one particular amplitude. The first duty should, therefore, be done by a predetector control, which reduces the signal from all stations to the level that suits the detector, and which would, if there were no further control, work the loud speaker at the greatest volume of which the output stage is capable.

The first control, then, does not alter volume at all, because a constant voltage at the detector means a constant volume from the loud speaker. It is therefore wrong to call it a volume control, even though it may be possible to control volume by it.

The true volume control is preferably a post-detector one, so that even if only sleeping-baby volume is required the detector is still working as before.

Owing to the fact that, except for comparatively nearby stations, it is necessary to have

one hand always grasping the first knob, in the tiresome attempt to compensate for fading, it has been found much better to let this department be looked after automatically. Its sole purpose being to adjust the gain of the pre-detector portion of the receiver to the amount necessary for the station which is tuned, far or near, it is not unreasonable to distinguish it by the term Automatic Gain Control.

The description A.V.C. strictly refers to a device which, as Mr. Bisset rightly suggests, is yet in the remote future, namely, one which automatically adjusts the volume to suit divers circumstances, such as baby's bedtime. The risk of the term being actually required for this purpose would appear to be so remote that there is not much reason for hesitating to pilfer it for application to automatic gain control.

M. G. SCROGGIE.

London, S.E.19.

DISTANT RECEPTION NOTES

SOME time ago I expressed in these notes doubts regarding the possibility of operating, without serious mutual interference, two high-powered stations only a few hundred miles apart simultaneously on the same wavelength. I had particularly in mind the B.B.C.'s scheme for working the London National and the West National on 261.5 metres; but the matter is important to long-distance enthusiasts, for were the system successful here it would probably be tried elsewhere. It was believed that the West National would have so short a range in an easterly direction and the London National in a westerly that, in service areas at any rate, no trouble would be experienced by listeners. The West Regional station has been in action for a week or two now on 309.9 metres and it is possible to form an idea from its doings of the way in which the scheme is likely to work out. A recent trip to the West Country has enabled me to compare the strength with which this station and the London Regional and National are received in different places.

At fifteen miles from Brookmans Park, the field strength of the local stations is, of course, enormously greater. At forty-five miles from Brookmans Park and rather more than a hundred from Washford Cross all three stations are good, though the two London transmitters are still the more strongly received. Tests at these distances lead one to feel that there would certainly be mutual interference between transmissions on the same wavelengths. The most interesting tests were those made at Marlborough, which is almost exactly half way between the West and London centres, being approximately seventy-five miles from each. Here the London Regional is strong and steady, though both the West Regional and the London National fade to some extent at times. With a three-valve set (S.G.-Det.-Power) neither of the last two normally requires any reaction. They are received at equal strength, and there can be no question that one-wave transmissions from Brookmans Park and Washford Cross could not be received satisfactorily.

Good reception is being obtained from the following: Radio-Paris, Warsaw, Motala, Luxembourg and Oslo, whilst Zeesen and Kalundborg are considerably below par at the moment. On the other hand, Moscow RVI (Old Komintern) and Moscow WZSPS (Trade Union) are to be received very well.

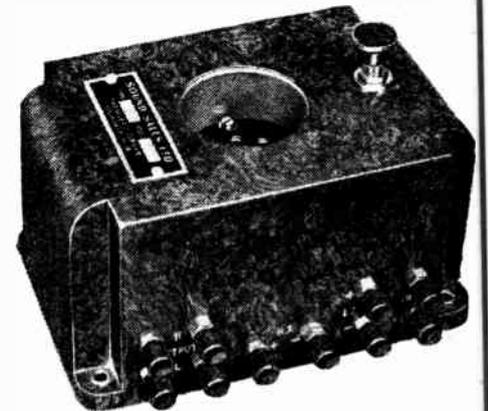
On the medium waves the pick of the stations at present are: Brussels No. 1, Florence, Prague, Langenberg, Lyons Doua, Rome, Stockholm, Leipzig, Strasbourg, Brussels No. 2, Milan, the Poste Parisien, Breslau, Göteborg, Hilversum, Heilsberg, Turin, Trieste and Nürnberg. Other stations which occasionally give a good account of themselves are Hörby, Belgrade, Madrid, Berlin Witzleben, Stalino, Hamburg, Brno, Bratislava and the new Milan transmitter.

D. EXER.

SOUND SALES CLASS "B" UNIT

THERE must be a large number of constructors who contemplate converting their existing battery sets to Class "B" amplification, but who do not wish to make much alteration in the layout or wiring. It is to these that the new Unit, made by Sound Sales, Ltd., Tremlett Grove Works, Junction Road, Highgate, London, N.19, incorporating Class "B" amplification, should make special appeal. The necessary equipment is contained in an attractive brown bakelite case with clearly marked terminals.

Connecting the unit to a receiver is simplicity itself as the existing loud speaker is disconnected and the output terminals of the



Sound Sales "Sound" Unit. The recess is a seven-pin valve holder for the Class "B" valve.

set are taken to the input terminals of the unit. By this means the last valve of the receiver becomes the driver and all the necessary coupling components, including the output matching device, are provided.

This development should prove attractive to battery set users in view of the fact that nearly seven times the normal output is obtained for a small increase in H.T. consumption. The price of the unit is 35s.

The Catkin Valve

More About Construction—A Practical Test



Catkin valves when packed occupy about one sixth the space of their glass counterparts.

If one were to penetrate the fastnesses of any of the service departments of the large wireless set manufacturers and were to enquire what was their chief activity, the answer would undoubtedly be "valve replacement." Although called upon to fulfil the most complicated function in a receiver, the valve, unfortunately, is one of those component parts which lend themselves least to modern manufacturing methods.

The use of glass for the bulb and "pinch" makes close tolerances for these parts difficult, and so from sample to sample there may be slight variation in performance. The glass container, with its irregularly gettered surface, provides a source of electric charges of indeterminate value which may influence to a slight extent the fields between the electrodes. Incidentally, the glass bulb is fragile, increases bulk, and is a hidden source of gas. The glass pinch of orthodox design has to accommodate so many leads in such a small space that there are measurable capacity effects. Furthermore, the capacity is not "pure," and can be looked upon as a condenser having a resistance of high value shunted across it.

Details of the unscreened S.G. valve showing the rubber mounting.

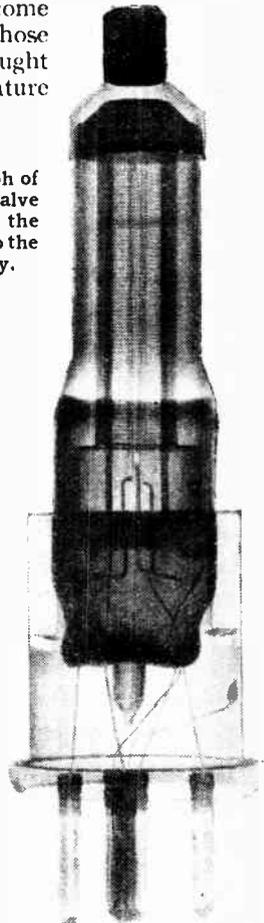
By almost entirely eliminating glass and introducing an all-metal construction into their new Catkin valves, the Marconi and Osram companies have instantaneously removed these and a num-

ber of other disadvantages. Not content with this complete breach of tradition, the makers have also made radical departures from the conventional in electrode assembly which have resulted in a hitherto unattainable consistency of characteristic and a considerably greater robustness.

A Catkin screen-grid valve without any packing whatsoever (photographed elsewhere in this issue) has survived the return journey by post from London to Aberdeen—an ordeal which, without

number of whistles had been reduced, pointing to a welcome reduction of those harmonics brought about by curvature

An X-ray photograph of the screen-grid valve which clearly shows the rigid support given to the electrode assembly.



of characteristic. Each valve in the set could be tapped with the metal end of a screwdriver and practically no microphony was observed. As an oscillator the MH4 gave normal results, and the reasonably long grid base of the VMS4 proved quite satisfactory for A.V.C. General sensitivity was above normal, this being probably due to reduced valve base losses and therefore decreased damping of the various tuned circuits. The Catkin pentode was a distinct improvement over the glass type, and approximately 3 watts speech output could be safely extracted from it owing to the greatly improved cooling of the anode.

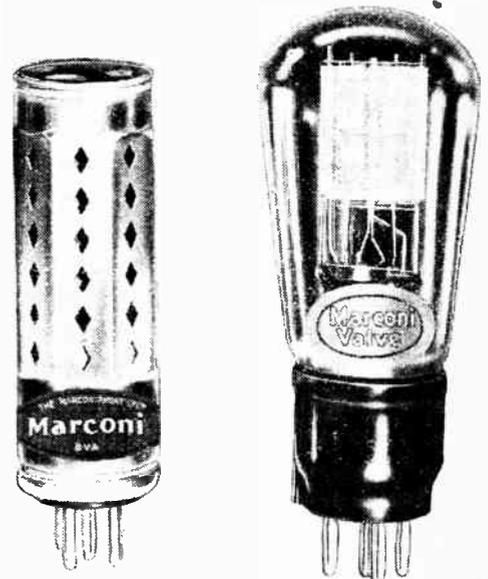


The triode and pentode (unscreened). The rapid cooling of the anode in the case of the pentode gives an increased A.C. watts dissipation.

offence to the Post Office, involved more man-handling and rough usage than an ordinary listener would give it during its life.

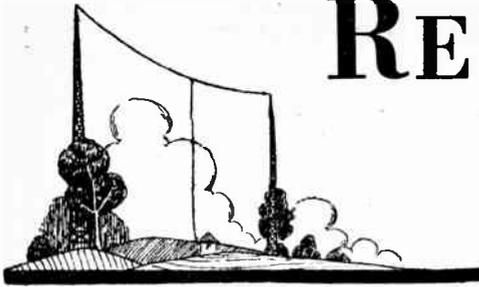
Tested in a Receiver

Although the electrical characteristics of the new valves are nearly the same as those of their glass counterparts, it was anticipated that the collective result of so many mechanical improvements would mean that a receiver in which these valves were substituted would give a better all-round performance. An experimental superhet. was fitted with Catkins, and it was at once apparent that the



A screened Catkin compared with a glass-bulb valve of similar type.

READERS' PROBLEMS



Grid Circuit Decoupling

IN the "Hints and Tips" section of *The Wireless World* for April 14th it was suggested that high-capacity low-voltage condensers of the dry electrolytic type might with advantage be connected in shunt with the self-bias resistance of an L.F. or output valve. The object is to avoid loss of bass, more particularly with resistance-coupled or resistance-fed auto-transformer amplifiers, with both of which ordinary decoupling systems are ineffective.

Some uncertainty seems to exist as to the precise type of circuit for which this method of decoupling is applicable, and a querist asks us to give a circuit diagram.

The arrangement in question is illustrated diagrammatically in Fig. 1 (a). The use of a condenser in this manner must not be confused with that shown in diagram (b), which represents the ordinary decoupling condenser, which, in the case of parallel-fed auto-transformer coupling, would not have the desired effect.

Until we become more accustomed to the use of electrolytic condensers, it will perhaps be as well to emphasise the fact that the correct polarity of the terminals of these condensers must be observed when making connections. In grid bias circuits the negative terminal must, of course, be connected to the earth line of the receiver, the positive

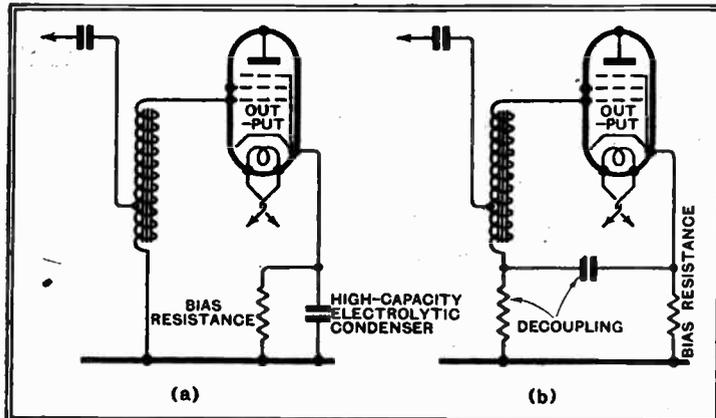


Fig. 1.—Diagram (a) shows the use of a high-capacity electrolytic condenser for grid-circuit decoupling. The more conventional resistance-coupled decoupling circuit is shown in diagram (b).

terminal being joined to the cathode, or (what amounts to the same thing) to the centre point of the potentiometer or filament transformer, where a directly heated mains-operated valve is employed.

S.G. Voltage

WHEN variable- μ battery valves are used, it is generally best to feed their screening grids directly from a suitable tapping point on the H.T. battery. The use of a potentiometer network, as in mains sets, is uneconomical, for the reason that, if reasonably constant voltage is to be maintained, the potentiometer must be of such a low resistance that it consumes considerably more current than the valves.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers.

Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

This is in answer to a reader who asks whether it would be worth while to fit a potentiometer for feeding the screening grid of his single H.F. stage. The only advantage to be gained by doing this is that the number of leads to the H.T. battery would be reduced, and so perhaps the operation of replacing batteries would be simplified. It is worth while observing that the designers of commercial sets, who have to study these matters, do not apparently consider that the extra current consumed by the potentiometer is justified, even when the set is to be used by the uninitiated, for whom everything must be made as simple as possible.

Insulation and Capacity

WE are asked to repeat the method of procedure for testing condensers by means of head telephones and a dry cell.

Although not entirely conclusive, this method of testing is to be recommended, as it gives an indication of satisfactory insulation in the condenser, and also shows in most cases that at least some capacity exists in it—in other words, that the condenser is not disconnected internally.

The procedure is to join the phones and battery in series across the terminals of the condenser under suspicion. On completing this testing circuit, a click should be heard in the phones, but if everything is in order there should be no appreciable sound on breaking the circuit.

The click at "make" is produced by the flow of charging current into the condenser; its loudness will depend on capacity, and it will be barely audible when dealing with small mica condensers. Any click that may be heard on breaking the testing circuit is

an indication that direct current is flowing through the condenser, and so its insulation is defective.

One Set : Two Speakers

A CORRESPONDENT, who normally uses a moving-coil loud speaker with his receiver, finds that, as a result of temporarily connecting a moving-iron instrument in parallel, the reproduction of the original speaker is adversely affected; there is a serious falling off in both quality and quantity. We are asked to say whether it is possible, by adopting a special method of connection, to obtain good results from both loud speakers simultaneously.

In practice we are afraid that it will be

found virtually impossible to obtain normal quality from both of the loud speakers. However, as it is probable that the highest quality of reproduction will not be expected from the moving-iron instrument, we suggest that it should be joined in the manner indicated in Fig. 2. Provided that the impedance of the moving-iron loud speaker is high at all frequencies, as compared with

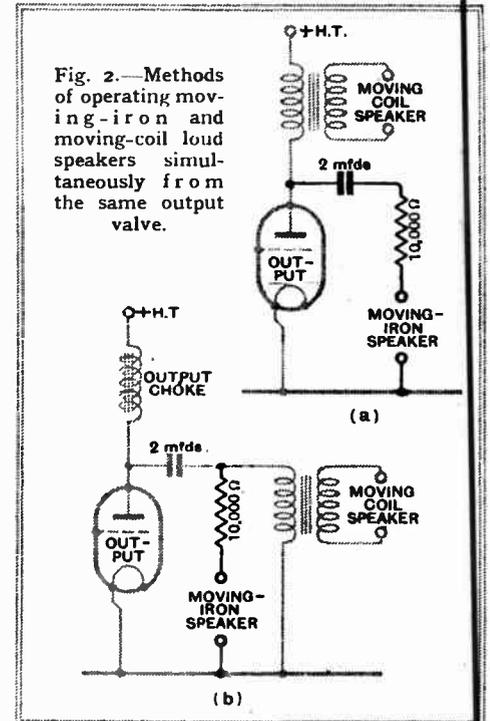


Fig. 2.—Methods of operating moving-iron and moving-coil loud speakers simultaneously from the same output valve.

that of the original instrument, the quality and volume of the latter should not be noticeably affected. The impedance of the extra loud speaker is increased artificially by inserting a resistance as shown; the value of this resistance is best determined by trial, but it will probably be in the neighbourhood of 10,000 ohms.

Although this arrangement will generally prove to be a practical one, it cannot be put forward as perfect; bass reproduction of the moving-iron loud speaker is bound to suffer. The general volume level will be reduced as well, but this may not matter, as this type of loud speaker can seldom deal with anything like the full output of a modern high-power valve.

The Wireless World

INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Stamford Street, London, S.E.1, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

... the busiest Spring we've experienced!

In view of the phenomenal interest which is being taken in this wonderful circuit,

"THE WIRELESS WORLD"

CLASS "B" FERROCART RECEIVER

we have reprinted 10,000 copies of the original constructional article which appeared in "The Wireless World" of April 7th last, and these are being offered free to all readers of "The



Wireless World" on receipt of application. Wireless dealers will be supplied gratis with as many copies as can conveniently be disposed of amongst their customers.

FREE DEMONSTRATION.

You are cordially invited to see and hear this receiver at our Surrey Street Showrooms.

Hours of business: 9 a.m. to 6 p.m.

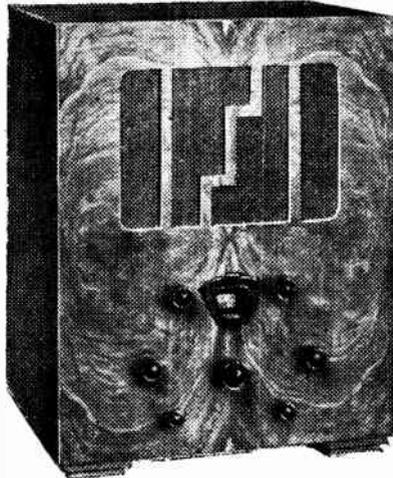
Two doors from the Strand, facing Aldwych tube station.

A large number of "WIRELESS WORLD" readers have expressed their appreciation of this excellent cabinet, which was chosen by the designer of the Class "B" Ferrocart Receiver. It is fashioned on modern lines, finished in beautifully figured walnut, and special care has been taken to ensure that cabinet resonances are eliminated.

Height, 19 1/2 in. Width, 15 in. Depth, 12 1/2 in. Complete with Loud-speaker Baffle-board, "Konduclite" metal-lined baseboard and removable back. Front drilled ready to take the "Ferrocart" Receiver, if desired, without extra charge.

Cabinet with metal-lined baseboard

32/6



The outstanding performance of this receiver has resulted in our experiencing one of the busiest Springs in our 12 years in the Radio trade. Never before have our resources been so fully taxed in keeping pace with the remarkable demand for kits of parts, but by the early ordering of components, we have kept our promise of delivery by return.

KITS AS SPECIFIED

(Designer's first Choice).

KIT 'A' Complete (less Valves Batteries, Cabinet and Loud Speaker) **£8-3-6**

KIT 'B' Complete with Valves (less Batteries, Cabinet, and Loud Speaker) **£10-9-9**

KIT 'C' Complete with Valves Cabinet and Loud Speaker (less Batteries) **£14-1-9**

Detailed Lists, Post Free.

Showrooms: 4, Surrey Street, Strand, London, W.C.2.
Telephone: Temple Bar 8620.

The CITY ACCUMULATOR CO., LTD.

Office and Works: 7, Angel Court, 173, Strand, London, W.C.2.
Telegrams: Cityacco, Estrand, London.

In courteous reply

to "The Wireless World's"

recent editorial leader asking for cheaper components

CLAUDE LYONS LTD. ANNOUNCE

THAT THEIR WELL-KNOWN



FIXED RESISTORS ARE NOW THE CHEAPEST 'QUALITY' RESISTANCES ON THE MARKET TO-DAY.

- 1-WATT - - 10 1/2d.
- 2-WATTS - - 19
- 3-WATTS - - 29
- 5-WATTS - - 40

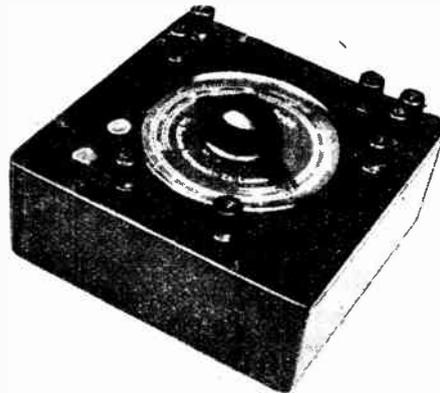
MANUFACTURED BY ALL-BRITISH LABOUR FROM ALL-BRITISH MATERIALS IN AN ALL-BRITISH FACTORY... DEFINITELY "BRITISH AND BEST."

Our 24-Page 2-Colour Art Booklet "OHMS LAW WITHOUT TEARS" free and post free on request. This contains numerous circuits, current and voltage tables, single-index four-variable ABAC covering volts, amps., ohms and watts, hints and tips, etc. Describes all the uses of fixed resistors in radio applications... "An invaluable booklet" (Vide Press).

CLAUDE LYONS LIMITED,
76, OLDHALL STREET, LIVERPOOL, 3.
40, BUCKINGHAM GATE, WESTMINSTER, S.W.1.

BALDWIN BRIDGES

THE MU-F-ER CAPACITY BRIDGE



has a self-contained mechanically silent oscillator and measures capacities from .00005 mfd. to 4 mfd. on a two-range logarithmic scale. It is a complete instrument and requires only a source of current such as a high tension battery or battery eliminator and a pair of headphones to test the capacity of condensers, or circuits having capacity and will enable the experimenter to construct for himself condensers of known values.

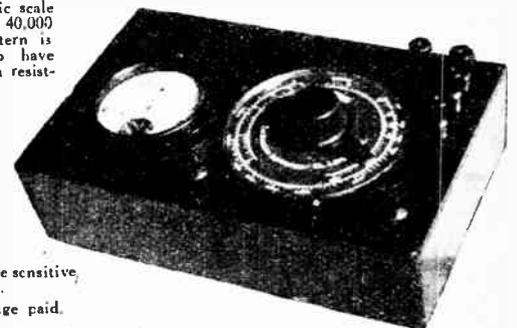
Price **75/-** Carr. Paid
Size: 6" x 6" x 3 1/2"
Weight: 1 1/2 lb.

THE LOGOHM RESISTANCE BRIDGE

has a two-range logarithmic scale reading from .5 ohm. to 40,000 ohms. The Mark I pattern is designed for those who have only occasional need for a resistance bridge and gives accurate results used with a milliammeter and a flash lamp battery. The price is carriage paid. **70/-**

The Mark II instrument is for those who have sufficient resistance measurement work to want a complete instrument and contains a suitable sensitive galvanometer and a battery. Price **110/-** carriage paid.

The range of both these instruments can be extended by means of a multiplier to read to 400,000 ohms.



THE BALDWIN INSTRUMENT CO.,
91, BELLE GROVE ROAD, WELLING, KENT.
Telephone: BEXLEY HEATH 1320

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST ON MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Stamford Street, London, S.E.1, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 280, Deansgate, Manchester, 3; 26b, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **Notes** being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

IMPORTANT NOTICE.

Owing to the Whitsun Holidays, the issue of "THE WIRELESS WORLD" for June 9th must be closed for press earlier than usual.

MISCELLANEOUS ADVERTISEMENTS for insertion in that issue can be accepted up to **FIRST POST FRIDAY, June 2nd.**

RECEIVERS FOR SALE.

- BETTER** Part Exchange at Appleby's, 109, Edgware Rd., Hyde Park, London, W. [2650]
- 1933** Ultra Panther Radiogram; list £33/12, approval, £22.-2, Barleywood Rd., Sheffield 9. [2629]
- SINGLE-DIAL** Superhet, £5; mains unit, 25 m.a., 2-4-6v trickle charger. -55, Avondale Sq., S.W.1. [2673]
- EKCO A.C.** 2-valve, 220-250-volt, model 312, perfect, valves included; 65/-, Illoare, Brownlow Estate, Hindhead. [2636]
- MICHAEL** Colonial Superionic Short Wave Receiver, perfect condition; £8.-Winter, 14a, Vicarage Rd., Kingston, Surrey. [2660]
- 4-VALVE** Chassis S.G. Detector, pentode rectifier, complete with B.V.A. valves and energised moving coil loud speaker; £8/8 complete. [2674]
- 5-VALVE** Latest Pattern Superhet. Chassis, complete with B.V.A. valves and energised moving coil loud speaker; £10/10, complete.—Stott's, Clare Hill, Huddersfield. [2601]
- MORE** Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation.—Coutts, Wireless Engineers, Borley. [2613]
- ALL-WAVE** Monodial, assembled and wired, including Multitone control and Class B output, less valves; best offer accepted.—Jasper, 3, Eaton Rise, Ealing, W.5. [2674]
- 1933** All-electric D.C. 2-valve Sets, Magnavox speaker, walnut cabinet, in unopened cartons and carrying makers' full guarantee; listed £9/17/6, our price £4/19/6 each; c.o.d.; trade enquiries invited.—W. Burns and Co., 287, City Rd., E.C.1. [2690]
- SPARTA** 2-valve All Mains Sets brand new, Philco pattern table cabinet, moving coil speaker, illuminated esentcheon, ring valves, pentode output, guaranteed perfect; 87/6; carriage paid; state A.C. or D.C.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2693]
- POWER** Amplifiers.—A few well designed and constructed all mains A.C. amplifiers, gramophone and radio inputs, 3 to 4 watts output, teak cases, £7/10 each, less valves; ditto, metal cases, crackle black finish, slightly higher output, tone control, superlative quality reproduction, £16 each, less valves; one 3-unit all mains portable amplifying equipment, comprising amplifier, playing desk, and moving coil speaker, polished oak cases, fitted with plugs and sockets, output 2 1/2 watts, £17; also a limited number of radio pillows at 15/6 each; light-weight headphones, 7/9 per pair, quick sale.—Walden and Hill, 459-461, London Rd., Isleworth, Middlesex. Tel.: Iltonus 1635. [2630]

CHARGERS AND ELIMINATORS.

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

PILOT AUTHOR KITS

Exact to Specification

CLASS "B" FERROCART

KIT "A" Author's Kit of **FIRST SPECIFIED Components** including **Peto - Scott PLYMAX Baseboard, Ready Assembled**, but less Valves, Cabinet and Speaker. **CASH or C.O.D. Carriage Paid. £8 - 10 - 0** or 12 monthly payments of 15/7.

KIT "B" exactly as Kit "A" but including Valves only. Cash or C.O.D. **£10-16-3** Carriage paid. Or 12 monthly payments of 19/10.

KIT "C" as Kit "A" but including Valves and Peto-Scott Cabinet, Less Speaker. Cash or C.O.D. Carriage Paid, **£12-1-3** or 12 monthly payments of 22/3.

- ### KIT BITS
- Selected C.O.D. Items. You pay the postman. We pay your charges on orders over 10/-
- 1 Peto-Scott "Plymax" Baseboard 10" x 14" x 1" ready drilled with buttons and brass strips £2 3 6
 - 4 Conax Valves as specified £2 6 3
 - 1 Polar "Star" 3-gang 5000mf. Var. Condenser with case drive £1 10 6
 - 1 Set of 3 Covert Ferrocart Coils £2 10 0
 - 2 Multitone Transformers as specified £1 7 0
 - 1 Amplion Loudspeaker with Class "B" transformer £1 10 6

BUILD YOUR CLASS "B" FERROCART into the beautiful **PETO-SCOTT WALNUT CABINET** described and illustrated in "Wireless World" April 21. Cash or C.O.D. **25/-** Complete with Shelf and Speaker Baffle.

IMMEDIATE DELIVERY

FERROCART III

KIT "A" Author's Kit of **FIRST SPECIFIED Parts** complete down to the last screw, including **READY DRILLED Peto-Scott Panel** with assembled and drilled **Peto-Scott PLYMAX CHASSIS** but less Valves and Cabinet. **CASH or C.O.D. Carriage Paid. 12 GNS.** or 12 monthly payments of 23/- Set of 4 Specified Valves £3-7-8. or add 6 2 to each Kit "A" monthly payment.

A.V.C. MONODIAL SUPER

KIT "A" Author's Kit of **FIRST SPECIFIED Components** for Set only including **Ready Drilled Polished Oak Panel, Ready Assembled and Drilled PLYMAX Set Chassis**, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet. **Cash or C.O.D. Carriage Paid. £11 . 10 . 6** or **Deposit £1-10-6 and 11 monthly payments of £1**

COMPLETE KITS

- 2.5 WATT MODEL** Includes all **FIRST SPECIFIED Components** for Set and 2.5 Watt Power Chassis with Valves, less Cabinet. Cash or C.O.D. Carriage Paid. **£26-19-0, or deposit £4-18-0, and 11 monthly payments of £2-4-0.**
- 5 WATT MODEL** Includes all **FIRST SPECIFIED Components** for Set and 5 Watt Power Chassis with Valves, less Cabinet. Cash or C.O.D. Carriage Paid. **£31-8-0, or deposit £6-8-0, and 11 monthly payments of £3-10-0.**

A.C. SHORT WAVE CONVERTER

KIT "A" Author's Kit of **FIRST SPECIFIED Components** including **Peto-Scott Ready Drilled Plywood Panel and PLYMAX Baseboard, Ready Assembled**, but less Valves. **CASH or C.O.D. Carriage Paid. £8.11.6** or 12 monthly payments of 15/9. **1 Peto-Scott Ready Drilled PLYMAX B seboard 10 0**

Readers desiring to purchase any items separately can order with confidence from the **EDITORIAL LIST OF PARTS** for delivery against **CASH or C.O.D.** Orders over 10/- Carriage Paid, or C.O.D. Post charges Paid. Components or Part Kits value over 50/- by **EASIWAY** if preferred.

Prices of all "Wireless World" Broadcast Tested Finished Instruments available on application.

To PETO-SCOTT CO. LTD. 77 City Road, E.C.1.

Dear Sirs: Please send me by return **CASH/C.O.D./H.P.**

for which I enclose £ s. d.

Name
Address
W.W. 19/5/33.

West End Showrooms: 62, High Holborn, W.C.1.

NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words **Box 000, c/o "The Wireless World."** All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Stamford Street, London, S.E.1. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

DEPOSIT SYSTEM.

Readers who hesitate to send money to advertisers in these columns may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Stamford Street, London, S.E.1, and cheques and money orders should be made payable to Iliffe & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

Chargers and Eliminators.—Contd.

- 500** Only, Tantalum trickle chargers, complete in case. **PLUG** into Your Mains and Attach Your Accumulator, all guaranteed, 7/6, postage 6d., cash with order; with Westinghouse metal rectifier, 2-6 volts 1/2 amp., 11/3, postage 9d.—McDaniel and Co., 154, Hainault Rd., Romford. [2646]
- N.P.** Battery Chargers, for A.C. mains, eliminators, four tappings, to 120v. 20 m.a., 57/6, with trickle charger 76/6; photographs. [2646]
- N.P.** Trade Price Lists and Photographs of Battery Chargers: "Senior Two" will do 1 to 36 2v. cells; also H.T. 120v. at 1/2 amp., 105/-; H.P. terms; Westinghouse rectifiers. [2646]
- N.P.** Valve Chargers, one, two, or four circuits, from 65/-; state requirements. [2646]
- N.P.** Trickle Chargers, 2v., 4v., and 6v. tappings. 1/2 amp. 35/-, 1 amp. 39/6; with ammeter, each extra 8/-.
- N.P.** Have a Few Soiled Instruments, bargains; list.—Nash Products, Ltd., Stechford, Birmingham, 9. [2670]
- DAVENSET** Garage Charger, 230-volt, perfect condition, £7; Valley chargers, 30/- each.—Evans, 5, High St., Rhymney, Mon. [2654]
- TUNGAR** Dual Charger, input 200-250v. A.C., output 7.5-15v. 2-1 amp., 25-100v. 0.2-0.1 amp., guaranteed perfect; £2.—Ware, Beeches, Woodbury, Exeter. [2643]
- TRICKLE** Chargers, 2-6v., incorporating Westinghouse rectifiers, ready for immediate use, 1/2 amp., 11/9; 1 1/2 amp., 19/11; Tantalum chargers, 7/6; postage 6d.; send for list and guarantee.—Arlen Agency, Wollaston, Wellingborough. [2617]
- A.C. or D.C.** Chargers for 2 to 200 cells at Low Prices; all state requirements; dynamos and rotaries in stock, for 2v. 6v. input, 37/6 and 52/6; television and sewing machine universal motors, 25/-; lists.—Electradix Radios, 218, Upper Thames St., E.C.4. [2628]
- VORTEXION**, Wimbledon, for the latest type transformers, all with screened primaries and 12 months guarantee, absolute reliability (we supply talkie equipment); regulation guaranteed within 5% all models except super, which are 2 1/2%: you cannot buy more reliable or better looking transformers, not a pressed shrouding, but a substantial casting free from hum. [2643]
- VORTEXION**.—Specified for A.C. quality amplifier, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T., terminals, 24/-; tagged leads, 20/-; shrouded, 24/-.
- VORTEXION**.—Ferrocart III, 350-0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 13/6, shrouded 16/-; post 9d.
- VORTEXION**.—250-0-250, 4v. 1 to 2a., 4v. 2 to 4v.; open type 10/6, shrouded 12/6; post 9d.
- VORTEXION**.—Open type H.T.8 model, 4v. 4a.; 12/-; post 1/-.
- VORTEXION**.—Super model for H.T.8 or 9 or 10, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 16/-; post 1/-.
- VORTEXION**.—Parallel fed intervalve transformer for increasing bass response, large mu-metal core, 3 and 5 to 1, 180 henries, 7 and 9 to 1, 120 henries or to specification, in neat bakelite case terminals; 10/6.
- VORTEXION**.—2 1/2-watt Monodial A.V.C. model; open type 12/6, shrouded 16/6; post 1/-.
- VORTEXION**.—5-watt Monodial A.V.C. model, 400 p.p. 400, 120 m.a., 4v. 6a., 4v. 3 1/2a., 4v. 2, 4v. 1, super screened; 20/-, shrouded 24/-.

(This advertisement continued on next page.)

Chargers and Eliminators.—Contd.

(This advertisement continued from previous page.)
VORTEXION.—350 0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 16/6.
VORTEXION.—400 or 450 or 500v., 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type, 19/6, shrouded 23/6.
VORTEXION.—400 or 450 or 500, 150 m.a., 4v. 4a., 4v. 2.5, 4v. 2, 4v. 2, 4v. 2, core size 2 1/2 in. x 1 1/4 in., a super job, 2% regulation; 35/- shrouded, with terminals, less terminals, 30/- open type 26/-; post 1/3.
VORTEXION.—Autos to B.F.S.A. specification, 100 or 110 volts to 200 or 220 or 240 volt, 60 watts, 7/3, post 9d.; 120 watts, shrouded 12/6, open type 10/6, post 1/-; 200 watts, open 14/6, shrouded 16/6, post 1/3; 2,000 watt autos, 44/10.
VORTEXION.—Chokes, 20 h. at 120 m.a., 8/6; 30 h. at 60 m.a., 5/6; 30 h. at 150 m.a., open type 10/6, shrouded 12/6; post 1/6.
VORTEXION.—1,000 volt 600 ma. transformers, weight 34 lb., 44/10, or similar wattage; carriage free.
VORTEXION.—4-4 mf. 500 peak electrolytic; 4/6.
VORTEXION.—Transformers made to your specification.
VORTEXION (S. A. Brown), 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [2670]

CABINETS.

RADIOGRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686]

DYNAMOS, ETC.

ROTARY Converter, 60v. D.C. in, 45v. A.C. out, ball bearing; 30/- Stain-by, Wexley, Hexham. [5644]
ROTARY Converter, 12in., 200-350 volts output, 50/-; wanted, M.L. 24 or 32 input, 400 out.—Jersey, Cummor Hill, Oxford. [2527]
D.C. to A.C. New Converter, input 260-230v. D.C., output 80 watts, 1 phase, 50c. 230v., complete with filter; 45/5 on rail.—Robertson, College Gate House, Bury St. Edmunds. [2634]
CONVERTER Crypto, D.C. 220. output 400 watts A.C., interference units, starter, resistance 1 P.D.C. input, ironclad switch, etc., as new; £10.—Armstrong, Folders Lane, Burgess Hill, Sussex. [2653]

GRAMOPHONES, PICK-UPS, ETC.

SIMPSON'S Electric Turn-table, 12in., 230v., 50c., one week's use only; 23/6.—Gedliffe, Moor and, Bedford, Notts. [2666]

LOUD-SPEAKERS.

LOUD Speaker, Blue Spot 66K unit, complete, in case; 15/-, postage extra.—52, Halstead Rd., London, N.21. [2687]
COLUMBIA A.C. and D.C. Moving Coil Speakers, fitted to variable ratio transformers in attractive figured oak cabinets; from 37/6 complete.
ALL Types of Moving Coil Speakers, pots and windings, etc.; going cheap.—R. Newman, 309, Roman Rd., Bow, E.3. [2418]
15/6, carriage paid.—Celestion Soundex moving coil loud speakers (list price 27/6), guaranteed brand new; satisfaction or money back.—Radio Supplies, 20, Ramsgrove Drive, Blackburn. [2694]
R.K. 12in. Cone M.C. Speaker, with output transformer for A.C. 100-250, D.C. 200-250, in solid walnut pedestal cabinet, 30in. high; cost £22, sacrifice £7/10; new and unused; maker's catalogue on request.—Box 6948, c/o The Wireless World. [2661]
30/-—!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.
27/6—!!—6v. D.C. speaker, as above; £2/7/6, speaker as above or 100-250 A.C.
SIMPSON'S Electric Turntables, 25/-; carriage paid; cash with order, or c.o.d.
B.T.H. Brand Nicrophone stage, 2 types, 12 watts and 6 watts outputs, 12-watt type has 2 P.P.S./400s in output, 6-watt type has 2 P.P.S./425s in output, 12-watt type price £15, 6-watt type £12/10; B.T.H. cinema type pick-up, 16in. tone arm brand new, 17/6.—Ward, 12, Tredgar Rd., Bow, E.3. [2608]
B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30/-; also A.C. models, £2/10; carriage paid, c.o.d., or cash with order; the best value in speakers obtainable to-day.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

CHAL-ELECTRIC Offers Brand New Set Manufacturers' Surplus (coming to the end) Moving Coil Speakers; Rolas F.6, in the following voltages, list 35/-, at 17/6, 110-175 volts (2,000 ohms), 90-130 vch (2,500 ohms), 200-250 volts (6,500 ohms), complete with transformer, state if power or pentode; senior models, F.7 (9in. cone), voltages as in F.6, list 46/6, at 25/-; permanent magnets, F.6P.M., list 49/6, at 28/-; F.7P.M., list 43, at 33/-; all carriage paid, cash with order or c.o.d.—Chal-Electric, 6, Conduit St., London, W.1. [2677]

MOVING Coil Speakers (in all about 50), brand new set manufacturers' surplus; Lampough Silver Ghost moving coil speakers, 6in. cone, 90-130 volts, 2,500 (ohms), listed 35/-, at 15/- each; Rolas, F.6, 90-130 volts (2,500 ohms), 110-175 volts (2,000 ohms), 200-250 volts (6,500 ohms), with transformers, list 35/-, at 17/6; F.7, list 46/6, voltages as above, 25/-; permanent magnets, F.6P.M., list 49/6, at 28/-; F.6P.M., list 43, at 33/-; Ultra (a really hefty job), list 44/10, at 42/5; all carriage paid, cash with order or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2675]

THE MOVING COIL SPEAKER with a NEW TECHNIQUE



Blue Spot 45P.M. is an unrivalled example of first class workmanship. Its design from an engineering point of view is unique; its reproduction, from your point of view, is little short of astounding.

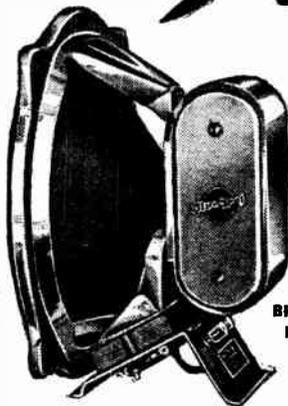
Its response throughout the whole musical range is really excellent. No excessive bass, no shrill top. A specially made Output Transformer is incorporated and is supplied with plugs and sockets, in lieu of troublesome solder tags, for easy matching with power, Super Power, Pentode, and Class B Output. Dust-proof plates are fitted to the Special Magnet. New process Cone and Speech Coil—no trouble from moisture, warping or fouling in the gap. Undistorted output 4 watts. Q.P.P. Pentode Model 2 6 extra.

45PM



is destined to create a new standard, a new ideal. Price complete

45/-



BRITISH MADE

CABINET MODEL 62 P.M. In Walnut or Mahogany utilises 45 P.M. as the driving movement. Cabinets have special acoustic features and are outstanding in themselves. Superior to anything at a like price 67/6.

WRITE FOR CATALOGUE W.W. 74.S.

These prices do not apply to Irish Free State.



THE BRITISH BLUE SPOT COMPANY LTD. 94/96 Rosoman Street, Rosebery Avenue, London, E.C.1. Distributors for N. England, Scotland, and Wales: H. C. RAWSON (Sheffield and London), Ltd., 100 London Rd., Sheffield

TRANSMITTERS.

RAYMART'S Transmitting and Receiving Equipment Designed by Specialists; all our staff licensed operators, one with years' tropical short-wave experience.—Radio Mart, 44, Holloway Road, Birmingham. [2659]

VALVES.

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.

A.C./Pens., P.T.4s, G.U.1s, A.C.S.G./V.M.s, Pen.4V.s, A.P.T.625s, V.M.S.4s, D.C.2/Pens., D.P.T.s, M.P.T.4s, V.M.4Vs, A.C.S.1/V.M.s, P.M.24Bs, D.C.2.S.G./V.M.s, 11/-; M.S.4s, M.S.4Bs, A.C.S.G.s, S4V.B.s, S4V.B.s, M.S.G./L.A.s, D.S.B.s, A.C.S./Ps, P.X.4s, D.C.2.S.G.s, 9/6; U14s, 10/-
M.L.4s, A.C./Ps, 41M.P.s, P.M.24s, 8/-; A.C./H.L.s, 164Vs, 354Vs, A.C.2/H.L.s, 41M.H.L.s, U10s, U11.60/250s, M.H.4s, M.H.L.4s, 7/6; V.S.2s, 215S.G.s, 220S.G.s, P.M.12s, P.M.12As, 9/-; 442 B.U.s, D.W.5s, 8/6.

ALL Types of Brand New American Valves in Stock. A first class makes: 247s, 235s, 224s, 236s, 237s, 235s, 244s, 12/-; 227s, 226s, 280s, 245s, 9/6; 242s, 232s, 11/-; U.X.210s, 15/-.

U.X.250s, 7 watts output, 16/-; 281s, 14/6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredgar Rd., Bow, E.3. [2609]

ANOTHER New Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the makers' characteristic exchanged free.

210 H.L.s, 210H.F.s, 210L.F.s, P.M.11.F.s, P.M.11.L.F.s, H.L.210s, 11210s, L210s, 3/9; 215Ps, 220Ps, L.P.2s, P215s, D.E.P.215s, P.M.2s, P220s, P.M.2A, 4/9; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C./H.L.s, A.C./211.L.s, 354Vs, 904Vs, D.C.3/H.L. 7/-; 41M.P.s, M.L.4s, A.C./P.s, 7/6; P.P.4, P.T.41, P.E.N.4V., M.P./P.E.N.s, A.C./P.E.N.s, 12/-; latest metallised S.4V.B.s, M.S.4B.s, M.S.G./H.A., A.C./S.G.s, 9/-; Coso M.V.S.G., 12/-; 442 B.V., 1807s, 7/9; 1821s, 7/-; D.O.60s, 40/-

4,000 Valves are Always in Stock for Immediate Despatch; prompt attention, for cash or c.o.d.

NEWMAN, 309, Roman Rd., E.3. [1659]

MAZDA Mains Valves.—A.C./Pen., D.C.2/Pen., 11/-; A.C./S.G.V.M., A.C./S.I.V.M., A.C./S.G., D.C.2/S.G.V.M., D.C.2/S.G., 10/-; A.C./H.L., D.C.2/H.L., 7/6; fully guaranteed, as new, or cash returned; post free—Reliance Radio, 6, Highgate Rd. N.W.5. [2662]

COMPONENTS, ETC., FOR SALE.

MILDMAY RADIO EXCHANGE OFFERS the Following Sound and Perfect
FERRANTI A.F.3, 10/-; A.F.3C, 12/6; A.F.5, 17/-; B.1, 10/6.
COLVERN Set, K.B.L.C. and K.G.R., 16/-; Colverdynes, 6 only, 7/- each.
POLAR 3-gang Tubs, 12/- each; 2-gang, with drum drive, 11/6 each, boxed.
CYLDON 2-gang Extenser Condensers; 15/- each, boxed.
EDISON BELL Pick-ups, 15/- each; B.T.H. Senior, 17/-; Marconi, old type, 20/- each.
EDISON BELL Permanent Magnet Speakers; 35/-.
ORMOND Senior Permanent Magnet; listed £3/5, 35/- each.
LOTUS Mains Chokes; listed 15/-, 7/6 each.
PYE Tapped Output Transformers; 7/6 each.

ALL Post Paid, Open Thursday, close Saturday.—24, Mildmay Grove, London, N.1. [2652]

HOYNE'S Transformers and Chokes.
250—0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T.; 10/-, post 9d.
250—0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T., 4v. 1a., C.T.; 12/6, post 1/6.
350—0-350v. 60-70 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., Ferrocat III model; 12/6, post 1/6.
350—0-350v. 70-80 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., 4v. 1-2a., C.T.; 13/6, post 1/6.
350—0-350v., 120 m.a., 4v. 2-3a., C.T., 4v. 4-6a., C.T., 4v. 1-2a., C.T.; 16/-, post 1/6.
400—0-400v. 90 m.a., 4v. 2-3a., C.T., 4v. 3-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/6.
500—0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v. 2a., C.T., 4v. 2a., C.T.; 27/6, post 1/3.

WESTINGHOUSE Model 0, 110, 135v. 90 m.a., 4v. 2-4a., C.T., suitable for H.T.6 or 7; 10/-, post 9d.

WESTINGHOUSE Model 0, 200, 240v. 200 m.a., 4v. 2-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/6; suitable for H.T.8 or 9.

LINE Transformers (auto-wound), 0-100, 110, 200, 220, 240v., 60 watt, 8/-, post 9d.; 120 watts, 11/-, post 1/6; 180 watts, 15/-, post 1/3.

HOYNE'S Chokes, 20h. 20 m.a., 3/6, post 6d.; 30h. 60 m.a., 5/6, post 9d.; 30h. 120 m.a., 9/6, post 1/-; 40h. 150 m.a., 12/6, post 1/6.

CLASS B Transformer: ratio 1/1, inductance 60-25h. 0-15 m.a., secondary resistance 100 ohms each half, 11/6, post 9d.; output transformer: ratios 1/1, 1.5/1, 2/1, 11/6, post 9d.

PARALLEL Fed Nicol Iron Audio Transformers: ratio 3/1 or 5/1, primary inductance 80h.; 3/6, post 4d.

HOYNE'S Transformers are Used Exclusively by Well Known Set Manufacturers.

HOYNE'S Transformers for Perfect Insulation, regulation and reliability; all components are clamped in solid cast aluminium clamps, and fitted with well marked terminal strips; power transformer primaries are tapped and screened; letter components are not available at any price, he safe and use Hoyne's guaranteed transformers.

HOYNE'S for the Quickest Service, all from stock.

HOYNE'S Transformers Built to Your Specifications.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Liberty 3303. [2537]

AT YOUR SERVICE OVER 7 YEARS' EXPERT EXPERIENCE

Whether your set needs Repairing or Modernising, if you want any "Wireless World" Receiver built to give the best possible results, you cannot place yourself in more expert or capable hands than the Technical Staff of Scott Sessions. During the past 7 years thousands of listeners have benefited by our experience and meticulous care in workmanship and choice of materials. Our prices are at all times reasonable, and we take a real pride in our work. Write, phone or call and we will tell you exactly how much our service and organisation can help you.



SCOTT SESSIONS

RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No.: Tudor 5326.
TRADE SUPPLIED
Contractors to H.M. Office of Works, etc.



Write for Illustrated Catalogue of RADIO - GRAMOPHONE CABINETS

of exclusive modern design, made by craftsmen, in highly figured Oak, Walnut or Mahogany, post free
REMARKABLE VALUES.
Cabinets made to order a speciality.
Maker, under license, of the
HOWE BOX BAFFLE.
Recommended by the B.B.C. Full details on request.
GILBERT
Cabinet Maker - SWINDON
Est. 1886



MICROFU

The Gold Film Fuse that guarantees full protection of Mains or Battery Set.

"Blows" under overload before the wire has even time to get warm. Cannot depreciate with time. Absolutely Reliable. 100% British.



Folder "W" gives full technical details and prices of the Microfu. Free on request. Complete U.S. Patent.
FUSE 6d. HOLDER 1s.
MICROFUSES, Ltd., 38, Clerkenwell Road, E.C.1
Telephone: Clerk. 4049.

**SCRATCH FILTER CHOKES;
TONE-CORRECTOR CHOKES;
SCREENED H.F. CHOKES;
SHORT WAVE CHOKES;
HETERODYNE FILTERS.**
LISTS ON REQUEST.
**POSTLETHWAITE Bros.,
KINVER, STOURBRIDGE.**



Components, etc., for Sale.—Contd.

R.
SELECTED Parts for Sale, as new, any road, or "Wireless World" deposit system, which we recommend in doubtful cases to the splendid value offered; we take risk of damage in transit to customers; goods tested for callers and guaranteed.

METERS, moving iron and moving coil, all new instruments—specialty made for Ryalls Radio, all guaranteed for one year, moving coil meters to B.E.S. first grade specification, all panel flush type bakelite case.

MOVING COIL, 0.1 m.a., 25/; 0.10 m.a., 0.5 m.a., 21/; 0.250v., 1,000 ohm per volt, 32/; 0.300v. ditto, 33/6; all with zero adjustment, size 3 1/2 in. diameter, 2 1/2 in. dial face.

RYALLS' Moving Iron Meters, first grade air damped, with zero adjustment, A.C. meters, 0.250v., 18/; A.C. and D.C., 0.50 m.a., 15/; size as above.

MOVING IRON Meters, in cases, as above, A.C. meters, 0.12v., 10/; 0.250v., 12/; 0.3 amps., 10/; A.C. and D.C., 0.50 m.a., 10/; 0.10 m.a., 8/6; D.C.

SUITCASE Cabinets in Best Crocodile Leather, 14v. 14-8, ample room for 12 in. turntable and pickup; 15/; new; Magnavox D.C. 144, with transformer, 2,500 ohms, 15/6; Lowrey and Wearie super hot, 10/5; 5-7 oscillators, 6/6; B.T.H. D.C. speaker, corrugated cone, 2,500 ohm, 14/; Note: We carry a large stock of assorted radio parts of every description and of the best quality.

T.C.C., type 84, 1 mfd., 375v. working, 1/3; T.C.C., 2 mfd., 350 working, 1/6.

RYALLS' Mains Condensers, offered with confidence, all with terminals, 4 mfd., 250v. working, 400v. peak, 3/; 4 mfd., 400v. working, 600v. peak, 4/; 4 mfd., 750v. working, 1,000v. peak, 5/6; 2 mfd., 750v. working, 3/6; new goods, guaranteed one year; ditto, bakelite cased, non-inductive, 350v. working, 1 mfd., 1/6; 2 mfd., 2/; 4 mfd., 3/; 0.1 mfd., 1/.

SET Cabinets for 5v. A.C. Sets, room for speaker, suit "W.W." A.C. sets, etc., fitted eschutcheon; 16/.

VALVES—A: new, M.S.4, 7/6; A.C./P, 8/6; D.M., 10/6; A.C./S2, 9/; S4V.A., 9/; D.L., 8/.

POLAR Star 3-gang Condensers, 16/6; with drive, 18/6; Radiophone 3-gang condensers, fully screened, with trimmers, Radiopak type, 9/; post 9/; Polar Uniknob 2-gang, with drive, 7/5; Radiophone 4-gang, 12/6; with cover and drive, 15/.

RYALLS' RADIO, 35, Chancery Lane, London, W.C.2 (nearest Tube, Chancery Lane, bus 67 passes door, or from to Sixty St.), Holborn 3529. Open Saturday afternoon, 10.30-7 p.m., Thursday 1 o'clock, Saturday 6 p.m.

R. [2613]

SPECIAL Offer for Quick Sale, Motor generators, as follows:

M—L, input 100v. D.C., output 500v. 150 m.a.; £5.

M—L, input 75v. D.C., output 500v. 200 m.a.; £5.

M—L, input 100v. D.C., output 500v. 250 m.a., 6v. 6 amp.; £10.

M—L, input 230v. A.C., output 500v. 250 m.a., 6v. 6 amp.; £12.

B.T.H. Motor Generator, in metal case, input 110v. D.C., output 720v. 140 m.a., 45/10. Also

ONE B.T.H. M.G., as above, input 220v. D.C., output 475v. 200 m.a., £5/10; smoothing equipment for item (5), including H.P. and L.T. chokes, cut-out, condensers, etc., £3/10.

BURNDEPT 100-watt Transmitter, with tuning unit 90-130 metres, originally listed £110 the 2 panels, 4 jewelled meters, also panel for 2 150 valves; £12/10.

10 Various Ultra Type Sets in Sliding Cabinets, £1 each; 2 Amplion P.A. speakers, with 6v. dynamic units, approx. 10/1, folded horns in waterproof cabinets, as new, £6/10 each; K.G.L. P.E.C., as new, 15/.

QUANTITY Pathelone Films, approx. 800ft. each, R.C.A. Rec., £1 5 each; Kaleo No. 6 projector, on stand lamp-house, as new, mirror type etc., complete with motor, not a spot of rust, what offers? Burndept Super Het, 2 frame ariels, double door cabinet, less valves, £4/15.

THREE Odd Suitcase Type Portables, less valves and batteries; the lot £4/10.

BURNDEPT Ethophone, with valves, £4; Marconi phone, all new valves, just from works; £7/10.—A. G. Long, 21, Mauldin Houses, Tenby, S. Wales. [2622]

MAYEYAR RADIO Offers Brand New Set Manufacturers' surplus.

MAINS Transformers, tapped and screened primary, 500 0-500, at 120 m.a., 4v. 2.5a., 4v. 2a., 4v. 5a., at 20/; 450 0-450, at 120 m.a., 4v. 2.5a., 4v. 2a., 4v. 5a., at 19/; 350 0-350, at 120 m.a., 4v. 2.5a., 4v. 2a., 4v. 5a., at 18/; 250 0-250, at 60 m.a., 4v. 1a., 4v. 3a., 4v. 1a., at 11/; for metal rectifiers, H.T.B. 200 volts, 200 m.a., 4v. 3-4 amps., 9/; H.T.B. for same, 15/9; H.T.B. 240 volts, 200 m.a., 4v. 4.5 amps., at 12/; H.T.B. rectifier, for same, 17/6; variable condensers, J.B. Nuttong, 3-gang, with covers, rise drive, eschutcheon, dial light, etc., complete, at 14/6; all goods carriage paid, cash with order or call, Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2676]

MAINS RADIO'S New Exclusive Set Manufacturers' surplus; carriage paid, or call.

ONE-WATT Resistors, colour coded, all values; 100 ohms to 5 megohms, 8d. each, or 7/6 any dozen; Philips pattern walnut table cabinets, 8/6; West non-inductive 0.01 condensers, 7d.; Benjamin 5-pin chassis V-holders, 1/3 for half dozen; Lamplugh moving coil speakers, boxed, 2,200 ohms, 14/; Utility 2-gang 0.0005, with all fittings, 7/6.—Mains Radio Development Co., 4-6, Muswell Hill Rd. London, N.6. [2692]

FERRANTI Push-pull A.F.5C. O.P.M.1C, pair 28/6.—Logan, 196, Woodstock Rd., Belfast. [2642]

OSTAR-GANZ

HIGH VOLTAGE MAINS VALVES

These valves work direct on either A.C. or D.C. supply. No transformers or resistances required. Remarkably free from tube hum.

A.520. G.P.	- 17/6	E.G.50. 50 m.a. Hali Valve	- 14/6
W.310. R.C.	- 17/6	E.G.100. 125 m.a. Hali Valve	- 15/6
U.920. L.F. Power	17/6	N.G.40. 40 m.a. Voltage doubler	20/6
L.1525. Super Power	18/-	V.G.45. 45 m.a. Full Wave	- 42/6

FREE BLUE-PRINT with first order.

UNIVERSAL

RECEIVER AND AMPLIFIER KITS

With British components. All instructions. Complete ready for assembly. Highly efficient yet cheap, because the Ostar Universal High Voltage Valves cut out cost of transformers and breakdown resistances.

Work off either A.C. or D.C.

2-VALVE RECEIVER	£5 15 0
Including valves and Rectifier	
2-VALVE AMPLIFIER	£4 4 0
Including valves and Rectifier	
3-v. Receiver including valves and Rectifier	£8 15 0
3-v. Amplifier including valves & Rectifier	£5 5 0

Write for leaflet.
EUGEN FORBAT, Sole rep. for Gt. Britain, c/o Nivaligh Ltd., 1, Rosebery Avenue, E.C.1. Tel.: Clerk 1227.

ERIE

Write for NEW Technical Brochure

THE RADIO RESISTOR CO
1, Golden Sq., Piccadilly Circus, London, W.1

WHOLESALE DEPOT

For all standard makes of COMPONENTS, KITS or PARTS etc., as advertised in this Journal and elsewhere. All usual sundries. Personal Attention to all orders. Write for Cat. enclosing trade card (bona fide Tradesmen only).

LEONARD HEYS: FARADAY HOUSE
HENRY STREET, BLACKPOOL.
ELEVEN YEARS' EXPERIENCE IN THE WIRELESS TRADE

BAKER

WRITE NOW FOR OUR NEW BOOKLET & LEAFLETS

75-77 SUSSEX ROAD, CROYDON SURREY
Phone: Croydon, 3441-2
FOR QUALITY MOVING-COIL SPEAKERS.

PUBLIC ADDRESS WITH A PUNCH

TRIX AMPLIFIERS give more watts per £. Write for NEW illustrated catalogue.
Eric J. Lever (TRIX) Ltd., 8/9, Clerkenwell Green, London, E.C.1

HARKEN ELECTRICAL Co. Ltd.,

Manufacturers of High Grade Electrical & Radio Apparatus.
Let us quote you for special apparatus of all kinds. Short Wave and other apparatus for the Tropics. Photoelectric Cell Amplifiers for Industrial and Scientific purposes. Power Amplifiers, Interference Eliminators, etc., etc. Our tender will be backed by over 30 years' Engineering experience.
227a, Walworth Road, S.E.17
Telephone: Rodney 4078. Telegrams: Harkelec, Eclit, London.

THE MOTOR CYCLE

Every Thursday 3d. w.w.15

Components, etc., for Sale.—Contd.

HALF Price.—New 1933 stock, unrepeatable offers; list free.—Gill, 10, Ecton St., Northampton. [2628]

MICROPHONES, carbon granule type, with carbon diaphragm, complete in aluminium case; 2/6.

WESTINGHOUSE Rectifiers, as new, H.T.8, 10/6; H.T.5, 7/6; 6-volt, half-amp., 5/6.

MAINS Valves, as new, emission guaranteed, 244v., 6/-; P.M.24a, 7/6; S4V.A., M.S.G.L.A., 3/6; 41M.H., 7/-; D.S., D.S.B., D.P.T., 9/- each.

ROLA and Magnavox Type 144 Moving Coil Speakers, for power or pentode output, 6,500 ohm field, for 200-250 volts excitation, 14/- each.

T.C.C. Condensers, working at 250 volts D.C., 4x4x2x1, 3/6; 2x2x2x1x1, 2/6, both types separately earthed; type 65, 1 mfd. 1/-, 2 mfd. 1/4, type 50 2/-; tubular type, with wire ends, 0.0001, 300 volts A.C., 5d.; 0.01, 250 volts A.C. working, 6d.; T.C.C., wet electrolytics, working 440 volts D.C., 8 mfd. 3/6, 4 mfd. 3/-.

GARRARD Large Single Spring Motors, No. 20, made for the Columbia Graphophone Co., complete with turntable, handle and stop, 12/6, in perfect condition, large double spring motor to play 4 12in. records, complete as above, 21/-, also made by Garrard; Dubilier block condensers, 2x2x1x1x1x1, 500 volts D.C., 4/6; 2 mfd., in bakelite case, 1/9.

MARCONI Ideal Transformers, 4:1 ratio, in perfect condition, 6/-; W.B. 5-pin valve holders, sub panel type, 3d. each; Loewe vacuum tube resistances, with wire ends for soldering, 3d. each, 2/- per dozen; 3,000, 10,000, 15,000, 25,000, 50,000, 100,000 ohms, quarter, half and one meg, 0.005 condensers.

BRITISH Radiophone 3-gang 0.0005 Condensers, with trimmers, 8/-; manufacturers' type, 2 mfd., in tin case, 250 volts working, made by T.C.C., 1/- each.

S.G. Brown Crystal Amplifiers; original cost £5/5; 7/6, in excellent condition.

S.G. Brown Vee Unit and Chassis, complete, new and unused, 12/6; Ferranti B1 choke, 10/6; A.F.6, 15/-.

TUNGSRAM Mains Screened Grid Valves, as new, emission guaranteed, type A.S. 4,100; 7/6.

2-VALVE A.C. Mains Chassis, complete with Ormond tuning condensers, mains transformer, Westinghouse H.T.8 rectifier, and all component parts, wired ready to take valves and speaker; 32/6.

MAGNAVOX D.C. Moving Coil Speakers, type 144, for Pentode, output field resistance 2,500 ohms, with input transformer, 17/6.

UTILITY Mite Drum Dials, with 0.0005 dielectric condensers, 2/-; 2-gang 0.0005, with external trimmer for front section, fully screened, with disc drive and brown knob; 10/6.

3-GANG 0.0005, fully screened, with trimmers, disc drive, dial light, and brown knobs, 14/6; all brand new and boxed; Gambrell mains transformers, 6 volts 6 amps., C.T., 170-0-170 volts, 60 milliamps., 5/-.

CONDENSER Blocks, 500 volts D.C., 4x2x2x1, 3/6; smoothing chokes, as follows, by reliable makers, 750 ohms, 40 henries, 20 milliamps., 3/-; read in same order 1,400, 60, 30, 4/6; 650, 30, 2, 2/6; 590, 20, 70, 4/-; 640, 30, 60, 4/-.

MAINS Transformers, all types, 200-240 input, 250-0-250, 60 milliamps., 4 volts 4 amps., C.T., 4 volts 2 amps., C.T., 10/-; 350-0-350 60 milliamps. filament, as above, 11/6; for H.T.8 rectifier and 4 volts 2 amps. C.T., 4 volts 1 amp. C.T., 6/6; for H.T.5 rectifier and 4 volts 3 amps., 5/6.

KIT of Parts for an Excellent Class B Amplifier, London made transformers, 1:1 overall input, 1, 2, and 3 to 1 output, 2 0.005 condensers, W.B. valve holder and Cossor 240B valve; all parts guaranteed and exchanged if faulty, 35/-.

ALL Above Goods in Perfect Order and Will be Exchanged if faulty.—Modern Radio, 25, York Terrace, Clapham, S.W.4. Tel.: Macaulay 3409. Nearest Tube Station Clapham North. [2681]

PEPPER Draws Your Attention to Bargains Offered in Last Week's Issue, page 5, columns 1 and 2.

REASONABLE Offers Accepted for Remainder of Goods Advertised; must be cleared to make way for new season's stocks.

8D. Each—Seradex tubular condensers, 0.005 mfd. to 0.1 mfd., non-induct ve 400v. D.C. working.

LISTS of Seradex Products from Trevor Pepper, Wakegreen Rd., Birmingham, 13. [2652]

RAYMART'S Weekly Bargains—Largest stocks in Midlands surplus radio, electrical, and P.A. gear.

ROTARY Convertors—M.L. 200v. 90 W., £5; 220v. 50 W., £4; E.D.C. 230v. 50 W., with filter, £7; Crypto, 110v. 600 W., £7, 10, all silent double wound and 200-230 A.C. output.

MOTORS—New B.T.H. 1/4hp. D.C., £2/10; 1/2hp., £2; ditto, generators, 720v. 120 m.a., £2; 440v. 200 m.a., £1/10; M.L., 12v. to 500v. anode convertor, £4.

WALNUT Radiogram Cabinets with brown felt lined lid by famous graphophone company, cost £8/10 to make; our price 50/-; many others in stock, callers only.

RESISTANCES—Erie, H.M.V., etc., 100 to 50,000 ohms, 3/- doz. Note—Our selection only. Raymart's famous 2 1/2in. flush milliammeters, 20 m.a. upwards, 5/9.

VARLEY or Pye H.F. Chokes, 1/6; Radiophone screened ditto, 1/9; short wave series gap condensers, 2/6; Goltone Cosmic coils, dual range and shortwave, 2/6 pair.

CONDENSERS—Radiophone screened superhet, 4-gang, 10/-; Polar screened 2-gang, 9/6; Ansoo semi-screened 3-gang, 10/-; T.C.C., 4+4+1, 3/9; Wego, 4+4+2+2+2, 6/6.

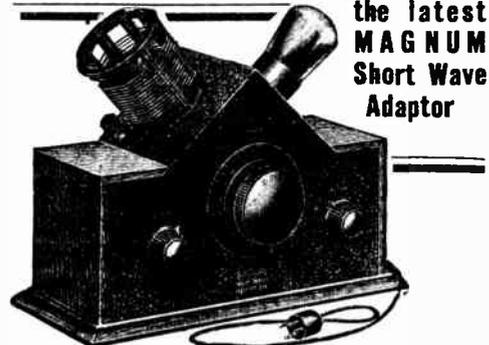
RADIOVISOR—Level compensated amplifier with valves; list price £15, our price £4.

SEVEN Floors of Bargains at Radio Mart, 44, Holloway Head; and 19, John Bright St., Birmingham. [2658]

EVERYTHING for Movies and Talks—Phone, write, or, better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

ENJOY Short Wave RECEPTION—with



the latest **MAGNUM Short Wave Adaptor**

FOR A.C. MAINS AND BATTERY SETS.

Model T.C. For sets using British Valves.
Model T.A. For sets using American Valves.
Model T.S.G. For sets using British S.G. Valve as detector.
Model T.A.S.G. For sets using American S.G. Valve as detector.

Price, including coil 40/80 metres, Cord and Plug **39/6**

Extra if Coil required 18/40 metres.....**3/-**
SUPERHET ADAPTOR MODEL T.S.H.

For all British and American A.C. Mains and Battery sets employing a tuned high-frequency stage.

Price: Adaptor only, including 2 coils 18/40 and 40/80 metres..... **45/-**
Complete with special valve, H.T. and L.T. Batteries..... **63/-**

Send at once for full particulars with a list of Short Wave Stations and free trial offer.

BURNE-JONES & Co., Ltd.,

"Magnum" House, 296, Borough High Street, London, S.E.1.

Telephone: Hop 6257 & 6258.
Scottish Agent: Mr. Ross Wallace, 54, Gordon St., Glasgow, C.1

ELECTRADIX H.T.

for all Battery Sets and for **CLASS B Amplification . . .**



The GENEROMETER BATTERY SUPERSEDER

makes H.T. from your L.T. 2-volt battery rectified and smoothed. Gives 3 tapings with output exactly suited to Class B Amplification and lasts indefinitely. A boon and blessing to those who are not on the mains. Reduced from £3/15s.

NEW AND GUARANTEED. From us only. **37/6**

MICROPHONES

MAXIMUM EFFICIENCY & LOWEST PRICE

For Home Talks, Public Address, etc.

- No. 11, Solo Pendant, massive brass case, 6/6.
- Marconi Hand..... 15/-
- No. 12, Ring Pedestal..... 18/6.
- Announcers, Scotland Yard type..... 65/-
- Deaf Aid Sets..... 18/6.
- High Ratio Transformers..... 3/6, 5/-, 7/6.

A wonderfully versatile Moving-Iron, Multi-range portable or panel meter, Bakelite Cased for **A.C. or D.C.**

is the VEST POCKET TESTER **DIX-MIPANTA**

THREE RANGES OF VOLTS: A 2-Guinea meter for

0-7.5 v. 0-150 v. **19/6**

0-300 v.

Write for Sale List "W"
ELECTRADIX RADIOS,
218, UPPER THAMES ST., E.C.4.

Components, etc., for Sale.—Contd.

R.I. Varley H.F. Air Spaced Choke, 3/-; Ormond 0.0003 denser, complete, 3/-; Marconi S.410, 4/-; 52, Haldstead Rd., London, N.21. [2688]

CHAL-ELECTRIC Special Offers: Set manufacturers brand new surplus coils (10 sets only), Colvern Ferricart (3), 6/-; ganged, list 50/-, at 38/- set.

VARIABLE Condensers—Polar 3 Star, 1933, few only, complete with disc drive, covers, escutcheon, knob, etc.; list 30/6, at 16/6, in sealed cartons.

CONDENSERS—C.E.C. Multiple Banks, 1,500 test, 500 A.C. working, 800 peak (separate tapings), 20 mfd., 4+4+2+2+2+2+2+1+1, at 11/-; 11 mfd., 4+2+2+2+2+1, at 6/9; 1,500 test, Bakelite, with terminals, 1 mfd. at 1/9, 2 mfd. at 2/4, 4 mfd. at 4/-; 750 test, 1 mfd. 1/1, 2 mfd. 1/9, 4 mfd. 2/6; Electrolytic T.C.C., 8 mfd., 500 working, list 9/-, at 6/-; all carriage paid, cash with order or c.o.d.—Chal-Electric, 6, Conduit St., London, W.1. [2678]

RADIOPHONE, 110 k.c. superhet Radiopak, 47/6 (cost 75/-); Ormond P.M. moving coil, £1; both perfect.—Aldridge, 29, Chatterton Rd., London, N.4. [2667]

W.W.3 (cabinet, M.C. speaker), £4; A.F.5, 15/-; set Colvern coils (K.B.I.C.s and K.B.G.R., on base), 15/-—Box 6930, c/o The Wireless World. [2641]

O.P.M.2, 6/-; B.T.H. pick up and arm, nickel, 13/11; Claritone ditto, 8/11; B.T.H. eliminator, 12/-—Mackay, Station Rd., Corstorphine, Edinburgh. [2668]

KREXO, the new plug-in stabiliser for all receivers using I.F. stages, no wiring to alter; price 2/- each, post free by return.—Krexo Radio, 20, Union St., Jersey, C.I. [2635]

WEST END RADIO for Genuine Radio Bargains—Pye 20 henry H.F. chokes, new, 3/3; large selection of Erie resistances, 6d. each; Collaro A.C. gramophone motors, £3 model, 35/-.

T.C.C. 500-volt Test Condensers, 2 mfd. 1/9, 4 mfd. 2/9, 5 mfd., tapped, 3/6, 8 mfd., tapped, 4/6; Hydra, 2 mfd., Bakelite, 1/9; T.C.C. 2,000+2,000 mfd., Electrolytic condensers, 4/9.

BROWNIE No. 3 Crystal Sets, new, 12/6 type, 6/11; ex-G.P.O. Galvanometers, 5/-; Rola and Magnavox slightly used 6,500 ohms D.C. speakers, 12/6.

HEAYBRED Mains Transformers, 350-0-350v., 60 m.a., 4v. 4a., 4v. 2a., 7/11; Igranic 180v. 11.T. transformers, 3/11.

UTILITY 3-gang 0.0005 Screened Condensers, boxed, 12/6; British 2-gang ditto, 7/11.

3-VALVE A.C. Chassis, in working order, £3; 2-valve ditto, 30/-; 2-valve D.C. chassis, 25/-.

BROOK 2-valve D.C. Set, complete, £4; 2-valve A.C. ditto, £4/10.

HUNDREDS of Other Bargains for Callers Only: postage extra on all orders.—West End Radio Stores, 14, Lisle St., W.C.2; also at 382, Coldharbour Lane, Brixton, S.W. [2629]

B.T.H. Senior P.U. and Arm, £1; Cossor M.S.4, 7/6; 2 Cossor 215 N.C. m.e., 7/6 each; Mullard D.G., 7/6; R.I. L.F. choke, 5/-—E. Lamont, 7, Dean St., Edinburgh. [2647]

BRITISH Radiophone Radiopak Super Het 4-gang, 0.0005, fully screened with trimmers; list 37/6, our price 9/11; c.o.d., postage paid.—Kay, 167, City Rd., London, E.C.1. [2542]

FERRANTI Eliminator, type B.E.M.1, 200v. 100 m.a.; transformers, P10, 4v. 4a., 6v. 3.2a., 45v. 5 m.a., A.F.5r. O.P.3(c); others—Nettleton, 77, Albert Av., Sedgley Park, Prestwich, Manchester. [2663]

MOVING Coil Milli-Ammeters, 0-50, 10/6 each; 2 milliamps and 120v. 17/6 each; other ranges in stock; alterations, repairs of every description.—The Victoria Electrical Co., 47, High St., Battersea, S.W.11. [0355]

FAY £8/8 Home Recorder, as new, £4/10; G8 rectifier, as new, 12/6; V.M.S.4, as new, 11/-; M.S.4, 9/-; Siam 0-1 ampmeter, 12/6; Burndept pick-up, filter, volume control, 35/-—Angel, Tanghall Lane, York. [2639]

HAND Telephones, 4/6; pedestal telephones, 7/6; bell ringing magnets, 4/-; twin gong phone bells, 3/-; large size, 6/-; microphones, 4/6, 2/6 and 1/-; microphone transformers, 2/6; earphones, 9d.; automatic dials and switch, 2/-—Below.

WIRELESS Transmitters for Morse, 12/6; morse keys, 4/- and 2/6 each; 2-valve receiving sets, 10/-; transmitting microphones, 5/-; new mine exploder, 25/-—Below.

PLATING Dynamo, 6-volt, voltmeter, ampmeter, large regulator, copper knife switch, complete, £5; A.C. generator, 100v. 20a., self exciting, £4/10; Verner recording switch, 110v. D.C., 25/-; ampmeter, 0-400 amps, with shunt, 25/-—Below.

ROTARY Convertors, input 6-12v. D.C., output 30v. 1a. A.C., 15/-; ditto, 50v. D.C. input, 75v. 50 m.a. A.C. output, 17/6; ditto 220v. D.C. input, 145v. 40 m.a. A.C. output, 45/-; converter for D.C. mains charging, 220v. input, 30v. 6a. output, 45/-; large motor generator, 4kW. 100v. motor, 50 cycles, 3 ph., generator 100v. 40 amps, as new, £8.—Below.

TALKIE Reduction Gears, ratio 40 to 1, silent drive, 2 flexible shafts, one 5ft. long, easily transmit a 1/4hp., suit any purpose, 9/-; large dimmer rheostats 110 or 220v., 15/-; 110v. A.C. motor, 1/4hp., 35/-; 1/4hp. 110v. A.C., 15/-—Below.

CHARGING Dynamos, all shunt wound for charging, 100v. 40 amps., £7/10; 220v. 15a., £8/10; 220v. 1/2a., 45/-; 50v. 5a., 37/6; 60v. 15a., £5, etc.; 0.3 amp-meter, 7/6; 0-20 ampmeter, 12/6; shunt regulators, 15/-; charging resistances, 10/-; 110v. D.C. motor driven pumps, for water, etc., 35/-; 1 kW. 100v. transformer, output 10,500 volts, 12/6 and 25/-, etc., etc.; please state requirements, anything electrical.—Below.

GALPIN, 23, Tyrwhitt Rd., Brockley, London, S.E.4. Nearest station, 89, John's Lewisham. All goods cash with order, or c.o.d. (charges extra). Three days' approval from date of delivery, all goods guaranteed. [2638]

Components, etc., for Sale.—Contd.

SUBJECT Class B Amplifier Components.—2 Cossor valves, 2 Multitone transformers, Celestion P.M. 19 speaker, new, 50/-; also battery Baby Superhet, parts, with Q.P.P. output, as new, offers.—O. H. B., 22, Argill Mansions, Chelsea. [2645]

PREMIER SUPPLY STORES offer the following Manufacturers' Surplus Brand New Goods at a fraction of the original cost; all goods guaranteed perfect, carriage paid over 5/-, under 5/-, postage 6d. extra. (Inland, carriage forward.)

SPECIAL Offer of Mains Transformers, manufactured by Philips, input 100-115 volts or 200-250 volts, output 180 0-180 volts, 40 m.a., 4v. 1a., and 4v. 3a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 200-250 volts, 40-100 cycles, output 135v., 80 m.a., for voltage doubling, 8/6; 4v. 3-5a., c.t., L.T., 2/- extra; Westinghouse rectifier for above, giving 180v. at 30 m.a., 8/6.

PREMIER H.T.8 Transformer, 250v. 60 m.a., rectified, with 4v. 3-5a., c.t., L.T., and screened primary, 15/-; with Westinghouse rectifier, 25/-.

PREMIER H.T.9 Transformers, 300v. 60 m.a., rectified, with 4v. 3-5a., c.t., L.T., and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER H.T.10 Transformers, 200v. 100 m.a., rectified, with 4v. 3-5a., c.t., L.T., and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER Mains Transformers, output 250 0-250 volts 60 m.a., 4v. 1-2a., 4v. 2-3a., 4v. 3-4a. (all c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 350 0-350 volts 90 m.a., 4v. 3-5a., (c.t.), and 4v. 2-3a. (c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 400 0-400 volts 100 m.a., 4v. 4-5a. (c.t.), and 4v. 2-5a. (c.t.), 15/-.

PREMIER Mains Transformers.—4 volts 3 amps., 7/6; 7 1/2 volts 5 amps., c.t., 8/6; 6 volts 2 amps., 7/6; 9 volts 1 amp., 7/6; 12 volts 1 amp., 7/6; 14 volts 4 amps., 12/6; 22 volt 1 amp., 10/-.

PREMIER Auto Transformers, 100-110, 200-250 volts, or vice versa, 60-watt, 7/9; 100-watt, 10/-; 180 watt, 15/-.

SPECIAL Offer of Manufacturers' Type Mains Transformers, any input, output 250 0-250 volts, 60 m.a., 4v. 1a. (c.t.), and 4v. 3a. (c.t.), 8/6; 175v. 50 m.a., 4v. 4a., 4v. 1a., 5/6; H.T.8 transformer, with 4v. 3-5a. (c.t.), 8/6; with rectifier, 18/6.

AMPLION Mains Transformers, input 100-250 volts, output 350 0-350 volts, 120 m.a., 4v. 5a., 4v. 2a., and 6v. 1a. (all c.t.); 17/6.

PREMIER Chokes, 40 m.a., 25 henries, 4/-; 65 m.a., 30 henries, 6/-; 150 m.a., 30 henries, 10/6.

PYE Chokes, 20 or 32 henries, 4/-; Premier multi ratio output transformers, 6 taps, giving 15 different ratios, 7/6.

PREMIER Eliminators, input 200-250 volts 40-100 cycles A.C., incorporating Westinghouse metal rectifiers; output 250v. at 60 m.a., S.G. and 120v. taps, 42/6; with 4v. 4a. c.t. L.T., 7/6 extra.

PREMIER Eliminators, output 150v. at 30 m.a., S.G. and 100v. taps, with 4v. 3-4a. c.t. L.T., 37/6; or with trickle charger, 42/6.

PREMIER Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 27/6; with L.T. trickle charger incorporated, 35/-.

PREMIER D.C. Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 15/-; larger model, output 200v. at 50 m.a., S.G. and 120v. taps, 25/-.

ACCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse rectifiers: 2v. at 40 amp., 8/6; 2, 4, and 6v. at half amp., 17/6; 2, 4 and 6 volts at 1 amp., 22/6; 12v. at 1 amp., 27/6; 6v. or 12v. at 2 amps., 35/6; 12v. at 1.5a., 30/-; 6v. at 3a., 39/6; 12v. at 3a., 52/6; three separate 12v. 1a. circuits, 75/6.

AMPLION High Inductance Chokes, resistance 2 500 ohms, 80 hys., 60 m.a.; 5/6.

WESTINGHOUSE Metal Rectifiers: 120v. at 20 m.a., 6/6; 180v. at 30 m.a., 8/6; 250v. at 60 m.a., 10/6; 200v. at 100 m.a., 11/-; 300v. at 60 m.a., 11/-; 8v. at half amp., 6/6; 6v. at 1a., 9/6; 12v. at 1a., 12/6; 6v. at 2a., 20/-.

KOLSTER Brandes Electric Gramophone Motors, complete with turntables and automatic stop: 100-250 volts A.C. and D.C., list price £5, to clear £2.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250 volts, 30w., complete; double spring gramophone motors, with 12in. turntables, 15/- complete.

ROLA 2,000 Ohm- and 6,500 Ohm, type F6, moving coil speakers, 17/6; A.C. model, 200-250v., 27/6; F6 permanent magnet, 31/-.

AMPLION Moving Coil Speakers, type E.M.644, dual fields, 2,500 and 5,000 ohms (100-250v.), with output transformer, 12/6 ditto 200-250v. A.C., 22/6.

AMSCO 3 gang 0.0005 Condenser, with trimmers (listed 30/-), our price 7/6; Pola 0.0005 and 0.0035 bakelite dielectric condensers with knob, 1/-.

POLAR 3-gang Variable Condensers, tub type, fully screened, split end vanes and disc drive, 0.0005, 10/-; Ormond all-brass 2-gang condensers, semi-shielded, 0.0005, 3/6.

WESTERN Electric Condensers, 250 volts working, 1 mfd. 6d., 2 mfd. 1/-.

T.C.C. Condensers, 750v. working, 2 mfd. 4/-, 4 mfd. 6/-; 400v. D.C. working (300v. A.C. working), 4 mfd., 4/-.

T.C.C. Condensers, 250v. working, 4x4x1 mfd., 5/-; 300v. working, 4x4x2x2 mfd., 7/-; 375v. working, 6x4x2x2 mfd., 10/-; 300v. working, 4x4x2x1 mfd., 6/-.

400 Volts Working 3 separate 4 mfd. condensers, 8/6; Western Electric 400v. working, 0.01x0.01 mfd., 1/-.

SPECIAL Offer of Wire Wound Resistances: 4 Watts, any value up to 10,000 ohms, 1/-; 8 Watts, any value up to 15,000 ohms, 1/6; 15 Watts, any value up to 50,000 ohms, 2/-; 25 Watts, any value up to 50,000 ohms, 2/6; 50 Watts, any value up to 50,000 ohms, 3/6.

(This advertisement continued in col. 3.)

IF YOUR RECEPTION IS BAD

SUPERIAL THE AERIAL WHICH MADE BROADCASTING POPULAR ELECTRON'S SUPER-AERIAL

WILL IMPROVE IT



Whether it is a bad set or a bad locality SUPERIAL will make your reception definitely better because it is the most efficient and powerful aerial ever devised. The extra heavy rubber insulation stops interference and noise, abolishes masts, insulators and separate leads-in and increases the signal strength. The only efficient indoor or invisible aerial. Lightning proof too get your £100 Free Insurance to-day. From all dealers.

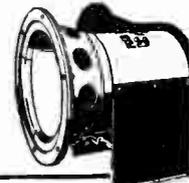
100ft 3'6" : 75ft 2'6" : 50ft 1'9" : 25ft 1'4" THE NEW LONDON ELECTRON WORKS LTD EAST HAM LONDON E.6

FIRST CLASS REPRODUCTION

AN UNREPEATABLE OPPORTUNITY TO SECURE A REAL B.T.H. R. K. LOUDSPEAKER

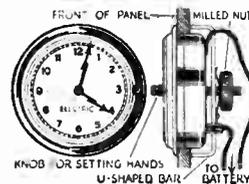
GUARANTEED NEW AT BARGAIN PRICES

Specification:—6 in. diameter cone moving Coil Loudspeaker giving full bass response and handling the output from the heaviest power valve. Far superior to many small modern moving coil speakers. Weight 30 lbs. Field winding to suit 6, 100, or 200 volts D.C. Send cash with order or C.O.D.



R. K. SPEAKER Originally listed at £6. 6. 0 Now offered for 30/- A.C. MODELS £2. 10. 0

O. H. SEEKAMP, 46, FARRINGDON ST., E.C.4



FIT THIS ELECTRIC CLOCK TO YOUR SET!

NO MAINS NEEDED! KEEPS CORRECT TIME! NO WINDING!

Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1 1/2" thick. Easy to fix—no screws required. Only 1" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.

RIVERSIDE MFG. CO., LTD., Dept. 20, Crisp Rd., Hammersmith, W.6. Telephone: Riverside 6392.



CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.

SAVAGE FOR PUBLIC ADDRESS AMPLIFIERS

56/58, Clerkenwell Rd., London, E.C.1. Phone: Clerkenwell 3008/9

PARIMA SELENIUM CELLS

FOR ALL PURPOSES. Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. Prices from 5/- PARIMA MANUFACTURING CO. 1, BROMLEY ROAD, S.E.5. Ethar (Green 3029

Components, etc., for Sale.—Contd.

(This advertisement continued from col. 1.)

WIRE Wound Potentiometers, 15,000 ohms, 1/6; Central band potentiometer volume controls, 0.000 ohms, 2/-; wire wound Charostat potentiometer, 0.000 ohms, 2/6; Colverston logarithmically wound potentiometers, 6,000 ohms, 1/9.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms quarter-amp and 500 ohms half-amp; 5/- each.

DOUBLE Reading Moving Iron, volt meters, read A.C. and D.C., pocket watch type, 0.120 volts and 0-12 volts; 5/-.

FOR Sellers Only. The following valves, guaranteed as new, P.T.625, M.P. Pen., D.C.S.G., V.D.S., V.M.S., S.4V.A., A.C.S.G., A.C.S.G.V.M., V.M.S.G., 41M.S.G., V.M.S.4, M.S.4B., 1'S, 904V., M.S.G.I.A., M.S.G.I.A., M.I.L.4, M.L.4, M.H.4, U.14, S.4V.B., D.W.3, T.4, D.S., D.N.B., M.S.4, 41M.L.S., M.V.S.G., A.C.H.I., at half list price.

THE Last Few Western Electric 4211-D Valves, 100, 3a. filament, 750-1,000 volt plate, 50-65 m.a., impedance 3,500 ohms, amplification factor 12; cost £5, to clear at 15/-.

500 Volt 125 Milliamper Full Wave Rectifying Valves, 4v. 2a. filament; 7/6.

PHILIPS 328 Valves, for L.T. charging, 5/6; 329 Burreter lamp, 2/-.

ALL the Following Lines, 6d. each or 5/- per doz. assorted: Shielded S.G. or Pentode leads, Pommel 0.01 condensers, 2ft lengths of screened wire, 5-pin valve holders, Crabtree 5 amp. sink switches, T.C.C. 0.1 mfd. condensers, 0.5 condensers.

ALL Orders to The Premier Supply Stores, 20-22, Tigh St., Clapham, S.W.4 (Maconally 2188). Closed 1 o'clock Wednesdays. Open to 9 o'clock Saturdays. Nearest Station Clapham North Underground. [2695]

VARNISHED Insulated, Sleeving, all colours.—Send P.O. for 1/- for 24ft. in 3ft. lengths, of any colour; will take all standard wires; separate your circuits.—Small Tools, Ltd., 400b, Caledonian Rd., N.1. [2689]

CONDENSER Blocks 6d. per mfd., 650-volt test in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 day approval; cash with order, Butlers Radio, Ltd., 91, Forest Rd., Walthamstow, E.17. Phone: 3134. [2596]

EXPERIMENTER'S Surplus, as new.—Two 904v. 1 D.P.T. set Magnium 4-gang coils, Umello D.C. eliminator, 200v. 40 m.a., Cydon 0.0005 extender, ditto 2-gang; non T.C.C. blocks, 250v., 8 1/2 x 2 1/2 x 1 1/2 mfd.; Gairard D.S. motor and turntable; offers, Radio, 19, Falkland Rd., London, N.W.5. [2664]

PAIR Dual Compensated Magnaxons, freshly new, £2; A.F.5, A.F.6, 15/6 each, A.F.3, 9/6; E.M.6, 11/-; other Ferranti's half price; P.P.5 400, 12/6; E.M.6, 11/-; 10/-; M.S.4B., 7/6; emissions perfect; unused 30 Henry Lotus heavy duty chokes, 7/6. Hulbert, 24, Targeter Rd., Watley, Birmingham. [2665]

GILBERT INDUSTRIES offer a Further 200 A Parts, containing one each of the following high grade components: 1 cadmium plated chassis, 1 heavy mains transformer, 350 0-350 at 60 m.a., 4 v. 4 a., c.t., 4 v. 1 a. rect., one I.I.M.V. 2-gang, with trimmers and 2 coils, one electrolytic 8 mfd., 435 working, one I.I.M.V. screen H.P. choke, one volume control, one smoothing choke, 50 h., 50 m.a.; complete parcel, post paid, £1.

250 B Parts, containing one each of the following high grade components, suitable for building Class B or straight 30 m.a., 150-180 v. A.C. eliminators: One Westinghouse rect., voltage doubler; one transformer; one condenser pack 4+4+2+1+1; one choke, 50 h., 50 m.a., 4 resistances; complete parcel, post paid, £1, by return.—Gilbert Industries, 519, London Rd., West Ham, E.8, Essex. [2675]

FERRANTI—A.F.3, 12/6; A.F.4, 7/9; A.F.5, 10/-; A.F.6, 11/6; O.P.1, 10/6; O.P.6, 7/6; O.P.3, 9/6; O.P.M.5, 14/6; O.P.M.6, 13/6; O.P.M.2, 12/-; Margoni leads, 6/6; Lewcos triple I.F. unit, with oscillator, 18/6; Varley C.S.P., 8/6; Edison Bell pick-up with tone arm, 12/6; Philips or Mullard filament transformer, 12/6; J.B. Chassis-mount, 3-gang, 0.0005, 10/6; e.o.d. or against cash. We have many other bargains; send list of your requirements. Bostock, 1, Westbourne Terrace, S.W.23. [2672]

SOUTHERN RADIO Wireless Bargains: set manufacturers' guaranteed surplus. Ready Radio constructors' kits: 303 3 valve battery kit, less valves, 18/6, with three Mullard valves (P.M.11.F., P.M.2D.X., P.M.2), 35/- each (list 70/-); Meteor screen grid 3-valve kit, less valves, 26/-, with three Mullard valves (P.M.12a., P.M.2D., P.M.2), 49/- each (list £5 7/6); Meteor screen grid 3-valve "A" kit, including cabinet, Celestion permanent magnet speaker, and kit of parts, less valves, £3 7/6, with three valves as above, £4 12/6 (list £8 17/6); Mullard Radio for Million 3-valve A.C. kits, complete, with three Mullard valves (P.E.N. 4v., 354v., S.4v.), £3 12/6 (list £6 10/0); please note all kits advertised by us are brand new, and contained in original sealed cartons; the valves advertised with these kits are the manufacturers' special values.

CELESTION Permanent Magnet Soundex Speaker, 3-gang condenser, 0.0005, shrouded and trimmers, 8/0 each (list 32/-); genuine Amplion loud speaker units, 2/0 each (list 12/6); screened choke (H.M.V.), 1/- each; condensers: 4 mfd., 2 1/2 mfd., 1 1/2 mfd., 1/- each; all 750-volt test; blocks, 12 mfd., (2+2+2+2+2+1+1+1) 6/9 each; 10 mfd. (2+2+2+2+1+1), 6/3 each; all 1,500 volt test; mains transformers, all capacities, in stock, and specials quoted for; all goods guaranteed in every way an carriage paid; hundreds of bargains in mains and battery valves, ganged condensers, resistances, etc.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren S. Tube). Phone: Muscum 6324. [264]

Components, etc., for Sale.—Contd.

1933, brand new, tested, guaranteed British radio at half price; P.M. moving coil speakers, £1; "Classic" super model, 25/-; oak and walnut speaker cabinets, 12/6; 20 m.a. A.C. eliminators, 30/-; trickle charger models, £2; D.C. eliminators £1, 15 m.a. models 15/-; 120v. H.T. batteries, 7.6; Amplion Guinea cone speakers, complete, 10/-; dual range coils, 2/11; transformers, 3/11; 20 A.H. accumulators, 2/1; 40 A.H., 5/11; D.C. all-mains units, 39/-; A.C. ditto, 55/-; all-electric and battery sets at very special prices; c.o.d.; cash refunded if not approved; trade enquiries invited.—Collin's Depot, 9-11, Riversley Rd., Nuneaton, Warwickshire. Phone: 76. [0400]

EXPERIMENTER'S Surplus.—Ferranti A.F.5, 16/-; A.F.3, 11/-; A.F.4, 8/-; O.P.M.1.C, 16/-; A.F.6, 16/-; O.P.6.C, 9/-; A.F.4C, 10/-; O.P.3C, 13/-; O.P.2, 10/-; B1 choke, 12/-; B3 choke, 8/-; L.M.1 mains transformer, 200v. 115 m.a., 18/-; E.M.6 for H.T.8, 15/-; Met-Viek mains, 250-250 75 m.a., 4v. 1a., 4v. 4a., 14/-; R.I.-Varley 28-14 120 m.a. choke, 12/-; ditto 14-7 200 m.a., 12/-; R.I. push-pull output choke, 12/-; pair Varley push-pull D.P.7, D.P.6, 30/-; Webson 300 m.a. output choke, 12/-; Ferranti eliminator, 200v. 115 m.a., cost £16/10, £5/10; Cairnror gramophone recorder, 25/-—Yardley, 57, Guildhall St., Preston. [2612]

MISCELLANEOUS.

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months. Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2. [0337]

ENGINEERS and Technical Workers of All Kinds.—A proper training by pos. in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [0395]

PATENT AGENTS.

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 47 years' experience. Advice Handbook free. [0381]

PATENTS and Trade Marks, British and foreign.—Gee and Co. (H. T. P. Gee, Member R.S.G.E. and A.M.I.R.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0001]

REPAIRS.

CONSULT Alexander Black about Set Repairs.—55, Ebury St., S.W.1. Sloane 1655. [0397]

TRANSFORMERS, phones, speakers, re-wound and overhauled, 3/-; year's guarantee, 48 hours' service; mains transformers and eliminators quoted for.—Hatton, 30, Mount St., Battle, Sussex. [2614]

Repairs.—Contd.

REPAIRS to Loud-speakers, transformers and head-phones, 4/- each; Blue Spots or Wufa's, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-speaker Repair Works, 2, Shipka Rd., Balham, London, Streatham 6618. [0394]

GUARANTEED Repairs by Experts; specialists for repairs to S. G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots, any type re-wound, remagnetised and adjusted; 4/-; post free; mains transformer repairs; terms to trade.—Howell, 91, Morley Hill, Enfield, Middlesex. [9716]

TUITION.

RADIO Engineering.—Day, evening, and postal courses. This school is fitted with most modern apparatus. Prospectus free. Valuable recommendations given to qualified students.—Northern Counties Wireless School, Preston. [0399]

EXCHANGE.

YOUR Old Set or Apparatus Accepted in Part Payment for New Set or Apparatus, easy payments are granted if your order amounts to £5 or over, taking your goods as deposit. Send lists.—Bostock and Stonhill, 1, Westbourne Terrace, S.E.23. [2671]

WANTED.

CONVERTER, 240-volt D.C. to A.C.—62, Queen Victoria Rd., Coventry. [2656]

COIL, Winder Suitable for Transformer Winding.—Write 254, High Rd., Leyton, E. [2657]

SPOT Cash for Components, etc.—Economic Radio Co., 56-98, South Lambeth Rd., S.W.8. [2437]

WANTED, Fayotone aluminium recorders or similar make.—28, Featstead Gardens, Eastern Av., Ilford. [2637]

WANTED, Pye M.M. or G. or Ekco superhet, A.C. 230 volts, 50 cycles, London.—Box 6955, c/o The Wireless World. [2684]

RYALL'S RADIO, 33, Chancery Lane, London, purchase modern radio parts for cash; send list for quotation; goods taken in part payment for brand new. [2616]

ROTARY Converter, 110 D.C. to 230 A.C., also "Wireless World" power radiogram, or other first class instrument; state output.—Box 6921, c/o The Wireless World. [2633]

NEW or Second-hand Wireless Sets and Parts Bought, sold or exchanged; best prices allowed; useable valves wanted, any quantity.—R. Wigfield, Furlong Rd., Goldthorpe, Yorks. [2655]

BUSINESSES AND PROPERTY FOR SALE, TO BE LET, OR WANTED.

ESTABLISHED Radio Business for Sale, mid-Essex, good proposition, living accommodation; £525, all in, including complete tuition and help if required.—Box 6954, c/o The Wireless World. [2683]

SITUATIONS VACANT.

YOUNG Salesman-Service Engineers Required by Richmond Laboratory.—Box 6953, c/o The Wireless World. [2691]

AMBITIOUS Men Should Apply for Free Particulars of Training or Appointments in Radio or Talkie Engineering; valuable introductions.—Radio Training Institute, St. John St., Newcastle-on-Tyne. [1907]

MAN Wanted for Radio Testing, must have sound radio and electrical training and practical experience.—Write, stating age, experience, qualifications, and wages required, Box 6958, c/o The Wireless World. [2686]

RADIO Engineer Required for Investigational Work and Circuit Research, graduates preferred.—Only those having previous experience in the industry need apply, with full details, to Box 6920, c/o The Wireless World. [2632]

If You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [0388]

ENGINEERS!—Are you earning less than £6 per week? If so, you cannot afford to carry on without reading "Engineering Opportunities." In this 250-page handbook Professor A. M. Low indicates where worth-while vacancies are constantly occurring. The book also explains the methods of our unique appointments dept., gives details of all leading examinations (A.M.I.Mech.E., I.E.E., G.P.O., etc.), and outlines modern home study courses in every branch of engineering. In your own interests, investigate; send P.C. for handbook to-day, free of charge.—British Institute of Engineering Technology, 87, Shakespeare House, 29-31, Oxford St., London. [2583]

SITUATIONS WANTED.

SALES, service engineer (27), nine years' experience, requires situation.—BM/MHTV, London, W.C.1. [2610]

YOUNG Man, 22, requires situation, sound technical knowledge, P.M.G. certificate, experience fault finding, testing.—Box 6956, c/o The Wireless World. [2685]

RADIO Engineer, age 21, experienced in all branches of radio, well educated, with manufacturing experience, requires situation.—Box 6963, c/o The Wireless World. [2696]

YOUNG Man (25), sound theoretical and practical knowledge of wireless, with 10 years' experience of service and technical enquiries desired position in London.—Box 6957, c/o The Wireless World. [2682]

GENTLEMAN, middle-aged, capable accountant and business man, would organise and manage the clerical side of small radio and gramophone business; reasonable salary; would invest £150 immediately in progressive concern; excellent references.—Particulars to Box 6888, c/o The Wireless World. [2625]

THE WIRELESS ENGINEER

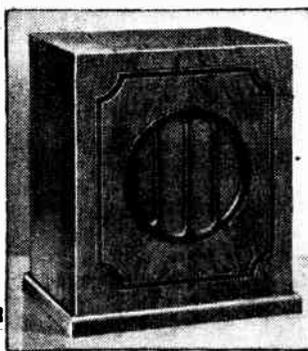
AND EXPERIMENTAL WIRELESS
The Journal for Professional Engineers and Advanced Wireless Experimenters

Monthly
2/6 net.

Annual Subscription
. 32/- post free.

ILIFFE & SONS LTD., Dorset House, Stamford St., London, S.E.1

The Camco 'Nutone' Speaker Cabinet



A quality cabinet that gives "new tone" to your speaker.

You will appreciate a definite improvement in the tone of your speaker housed in the Camco 'NUTONE' Cabinet. Though simple in design, it has proved to give results in tone and quality equalling a large baffle board. Supplied in Oak, Mahogany or Walnut finish. Price 32/6d.



See it at our Showrooms and send for a copy of the Camco Cabinet Catalogue.

CARRINGTON MANUFACTURING CO. LTD.
Showrooms: 24, Hatton Garden, London, E.C.1.
Phone: Holborn 8202. Works: S. Croydon.

INDEX TO ADVERTISEMENTS!

	PAGE
Baker's Selhurst Radio	4
Baldwin Instruments	1
Barber & Colman, Ltd.	
Belling & Lee, Ltd.	
Birmingham Sound Reproducers, Ltd.	
Britannia Batteries, Ltd.	
British Blue Spot Co., Ltd.	3
British Pix Co., Ltd.	v.
British Radiophone Co., Ltd.	
British Rola Co., Ltd.	
Bryce, W. Andrew, & Co.	
Bulgin, A. F., & Co., Ltd.	
Burne-Jones & Co., Ltd. (Magnum)	5
Burton, C. F. & H.	
Carrington Manfg. Co., Ltd.	7
Celestion, Ltd.	
City Accumulator Co., Ltd.	1
Clerke, H., & Co. (Mer.), Ltd.	
Cole, E. K., Ltd.	Front Cover
Collaro, Ltd.	
Columbia Graphophone Co., Ltd.	Front Cover
Colvern, Ltd.	
Coradio	
Cossor, A. C., Ltd.	
Cressall Manfg. Co.	6

	PAGE
Darwins, Ltd.	
Dubilier Condenser Co. (1925), Ltd.	
Edison Swan Electric Co., Ltd.	
Electradix Radios	5
Epoch Radio Manfg. Co., Ltd.	8
Gilbert, J. C.	4
Gramophone Co., Ltd.	
Heayberd, F. C., & Co.	4
Heys, Leonard	4
Jackson Bros.	Inside Back Cover
Lectro-Linx, Ltd.	
Lever, Eric J. (Trixi), Ltd.	4
London Radio Supply Co.	
Lyons, Claude, Ltd.	1
Microfuses, Ltd.	4
Multitone Electric Co., Ltd.	Back Cover
New London Electron Works, Ltd.	6
Ostar Ganz (Eugen Forbat)	4
Parima Manfg. Co.	6
Partridge & Mee, Ltd.	
Partridge, Wilson & Co.	Inside Front Cover
Pepper, Trevor (Seradex)	

	PAGE
Peto-Scott Co., Ltd.	2
Pifco, Ltd.	Inside Front Cover
Postlethwaite Bros.	4
Radio Resistor Co.	4
Reproducers & Amplifiers, Ltd.	4
Rich & Bundy, Ltd.	4
Riverside Manufacturing Co., Ltd.	6
Rotax, Ltd. (M-L Equipment)	
Savage, W. Bryan	6
Scott Sessions & Co.	4
Seekamp, O. H.	6
Siemens Electric Lamps & Supplies, Ltd.	
Sonochorde Reproducers, Ltd.	
Standard Telephones & Cables, Ltd.	Back Cover
Tannoy Products	
Telegraph Condenser Co., Ltd.	Front Cover
Telsen Electric Co., Ltd.	Front Cover
V.G. Manufacturing Co., Ltd.	
Wamel Wireless Co., Ltd.	
Westinghouse Brake & Saxby Signal Co., Ltd.	Inside Back Cover
Wilburn & Co.	
Wilkins & Wright, Ltd.	
Wingrove & Rogers (Polar), Ltd.	Inside Front Cover

EPOCH

MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.5a. It is free.

EPOCH RADIO MANUFACTURING Co. Ltd.
Exmouth House, Exmouth St., London, E.C.1
At the Junction of Rosbery Avenue and Farrin don Road.
Phone: Clerkenwell: 6698 (4 lines).

BOOKS on WIRELESS

Write for complete list to
ILIFFE & SONS LTD.
Dorset House, Stamford St., London, S.E.1. W.W.1

COLLARO COMBINED PICK-UP AND MOTOR UNIT

A complete self-contained unit comprising "32" model Induction Motor, suitable for 100-130 Volts and 200-260 Volts, 40-60 Cycles. (Can also be supplied for 25-40 and 60-100 Cycles.)

Automatic start and stop, combined with "Collaro" Pick-up; all that is required for the Gramophone side of a Radio-gram.

The "Collaro" Pick-up can be used in conjunction with all receiving sets and amplifiers. The built-in wire wound Volume Control will show no signs of deterioration or crackling in use.

The Pick-up base head and arm are Bakelite mouldings and the general outline is designed to harmonise with the clean lines of the modern Radio-Gramophone.

Obtainable from all Radio Factors and Dealers.

COLLARO LIMITED.
Culmore Works, Culmore Rd., Peckham, London, S.E.15



Starts automatically
Stops automatically

PRICE
76/-
WITH BUILT-IN
VOLUME
CONTROL
80/-

★ GANGED CONDENSERS ★



Utility Ganged Condensers are matched and adjusted until the ganging is as near perfect as the best checking apparatus will permit. That is why we can guarantee the extraordinarily small error of $\frac{1}{10}\%$. And the unique construction enables us to give another outstanding guarantee—*permanently* matched.

So insist on Utility Ganged Condensers, the condensers with the dual guarantee. Try one out in a band pass circuit and notice the difference. We supply ganged condensers for every purpose including superhet work. If your dealer cannot show you the range write to us direct.



WILKINS & WRIGHT, LTD., UTILITY WORKS, HOLYHEAD RD., BIRMINGHAM
London Agent: E. R. MORTON, LTD., 22, Bartlett's Buildings, Holborn Circus, E.C.4.

Complete Constructional Details of

The
Wireless World
THE PRACTICAL RADIO JOURNAL

MONODIAL A.C. SUPER

A SEVEN-VALVE SUPERHETERODYNE RECEIVER OF OUTSTANDING PERFORMANCE

By W. T. COCKING

This booklet contains in a compact form the original articles which appeared in "The Wireless World" some months ago.

It describes at length, with full explanations and illustrations, a superheterodyne receiver for A.C. Mains which is still unchallenged for faithful reproduction and exclusive selectivity.

Since the Monodial A.C. Super was first described, many thousands have been built, and no single instance of failure or disappointment

with the performance due to difficulties of construction, has come to light. The Receiver is an ambitious one, but the design is straightforward, and a simplified method of construction has been adopted.

For quality, range and selectivity, the performance is unsurpassed by any known receiver.

Crown 16. 2. p.p. In attractive coloured cover

PRICE 1/6 net. By post 1/3

From all booksellers, or direct from the Publishers

ILIFFE & SONS LIMITED, DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1



W.W.33

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

ATHLONE

725 kc.s, 413 metres; 60 kW.; and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report and Popular Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, First Dublin Company Boys' Brigade Brass Band. 8.0, Soprano Solos by Chrissie Manning. 8.10, Talk: Ballad History of Ireland, by John Brennan. 8.40, Soprano Solos by Chrissie Manning. 8.50, Station Orchestra. 9.10, Tenor Solos by Sean O'Carroll. 9.25, The Station Orchestra. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA

560 kc.s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Station Trios. Selection from Fiddler (Beethoven); Melancholie (Granier); Violin Solo: Ballet Music from Sylvia (Debussy); Et badinant (Ambrosio); Andante (Glazunov); Selection from La Bohème (Puccini). 8.0, Request Gramophone Records. 8.30, Exchange Quotations and Relay from the Ayuntamiento. 9.0, Popular Music on Gramophone Records and News. 10.0, Chimes from the Cathedral. Weather and Exchange. 10.5, Concert by the Station Orchestra: March (Tichy); Selection from La Absalona (Quijano-Guerrero); Selection from Der Rosenkavalier (R. Strauss); Interlude from Pepita Jimenez (Albéniz); Cantabile, Diana (Lefebre); Overture, A Life for the Czar (Glinka). 11.0, Reading from the Poems of Emilio Carrere, with Introductory Talk. 11.15, Concert by the Toldra Sextet from the Granja Royal. 12 Midnight, News and Variety Music on Gramophone Records. 1.0 a.m. (Thursday), Close Down.

BARI

1,112 kc.s, 269.8 metres; 50 kW.—8.0 p.m., Agricultural Report, Tourist Talk, and Dopp-lavoro Announcements. 8.20, Giornale Radio, Weather, and Sports Notes. 8.30, Time and Announcements. 8.40, Patriotic Music. 9.30, Chamber Music Concert; Selection from Zampa (Verdi); Pianoforte Solo, Sonata clavicembalistica (Cantini); Soprano Solos: (a) Malinconia (Alfano), (b) Madrigal (Staffelli); Melody (Respighi); Pianoforte Solos: (a) Pierrot si diverte (Ferrari), (b) Nella tormenta (Ferrari); Soprano Solo: Nuit d'Espagne (Massenet); Gavotte (Hamud). Talk in the interval. 10.30, Variety Music on Gramophone Records. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc.s, 430.4 metres; 2.8 kW.—7.30 p.m., Folk Song Recital by P. Bosnjakovic. 8.0, Radio Play. 8.30, Concert of Slav Music by the Radio Orchestra. 9.30, Jugoslav Songs. 10.10, News. 10.20 (approx.), Cigány Music from a Hotel.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc.s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Light Music. 2.45, Programme for Children. 3.30, Weather and Exchange. 3.45, Reading: From my Air Travel Diary (Carl Maria Holzappel). 4.0, See Hamburg. 5.0, Reading (Dr. Unger). 5.30, Chopin Recital by Gisela Binz (Pianoforte); Three Preludes; Nocturne in F Sharp; Two Mazurkas; Waltz in A Flat; Berceuse; Tarantella. 6.0, A Poem. 6.5, Recital of Duets by Eva Katharina Jekelius-Lissmann and Gerhard Jekelius in der Sternennacht (Cornelius); Ich und Du (Cornelius); E-rauscht das Wasser (Brahms); Die Sonne und der Ritter (Brahms); Vor der Tür (Brahms); Wiegenlied (Schumann); So wahr die Sonne scheint (Schumann); Du mein einzig Licht (Folk Song); Nachlied (Folk Song); Du, du leugst mir im Herzen (Folk Song); Schwefelblüde (Folk Song). 6.35, Wireless Technical Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Report on the First Production of the Play Totila (Wilhelm Kube) in the Municipal Theatre, Frankfurt am der Oder. 8.45, Dance Music by the Ludwig Riith Band. 9.15, Radio Report on the D.L.G. Horse Show. 9.30, Dance Music (contd.). 10.0, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Concert from Heilsberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN; 715 kc.s, 419.5 metres; 1.5 kW.—6.10 p.m., Recital of Folk Songs. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Munich. 8.5, Announcement. 8.10, The Starry Sky—the Myths, History, and Future of Life among the Stars—a Sketch (Jochem Klepper). 9.0, Berlin art Week—Part Relay of a Concert of Chamber Music from Charlottenburg Castle. The Orchestra, conducted by Hans von Benda. Soloists: Eigel Krutze (Harpischord) and Paul Luther (Flute); Concerto in D Minor for Harpischord and Strings. (C. P. E. Bach); Concerto in C for Flute and Strings (Frederick the Great); Symphony in D (C. P. E. Bach). In the interval at 9.25, Radio Report from Charlottenburg Castle. 10.10, Weather and

WEDNESDAY

MAY THE TWENTY-FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL

Empire Day luncheon speeches by Mr. J. H. Thomas and the Archbishop of Canterbury.

LONDON

REGIONAL

Act I of "La Tosca" (Puccini), from Covent Garden. Relay from the Palace Theatre, Halifax.

MIDLAND

REGIONAL

The music of Arthur Sullivan and Edward German.

NORTH

REGIONAL

Relay from the Palace Theatre, Halifax.

WEST

REGIONAL

Orchestral concert from the National Museum of Wales.

BELFAST

The music of Wagner, orchestral concert.

ABROAD

BERLIN

(Witzleben)

9.0 p.m. Music of the time by Frederick the Great, from Charlottenburg Castle.

COPENHAGEN

8.30 p.m. Radio Ball for the Older Generation.

FRANKFURT

8.0 p.m. Operetta Overtures.

HAMBURG

8.0 p.m. Mozart Concert, conducted by J. Eiben-schutz.

HUIZEN

8.40 p.m. Carillon recital from the Royal Palace, Amsterdam.

MUNICH

7.0 p.m. Max Reger Concert (relayed by other German Stations).

RIGA

7.5 p.m. Operetta: "The Land of Smiles," by Lehar.

STRASBOURG

10.45 p.m. Symphony Concert, conducted by M. Munch.

STUTTGART

8.0 p.m. National Dances.

TURIN

8.30 p.m. Concert in celebration of the National Festival (also from Florence, Genoa, Milan, Rome and Trieste).

News, 10.15 (approx.). Dance Music from the Moka ERI. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc.s, 304 metres; 13 kW.—7.30 p.m., News and Market Prices. 7.40, Tourist Talk. 7.55, Lottery Results. 8.0, Agricultural Report. 8.15, News. 8.30, Concert of Gramophone Music. 9.0, Concert by the Station Symphony Orchestra. Soloists: Mlle. Suzy Andry (Songs), M. Padenaz (Comedian), M. Rouillon (Flute).

BRATISLAVA

1,076 kc.s, 279 metres; 14 kW.—7.10 p.m., See Brno. 10.0, See Prague. 10.30, See Brno. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc.s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc.s, 253 metres.—1.5 p.m., Weather, followed by Gramophone Concert of Romantic Music. 1.45, Time and News. 2.5, Puccini Concert on Gramophone Records. 2.45, Programme arranged by the Post Office, with Gramophone Records. 3.10, Market Prices. 3.50, Talk: Thoughts on Silesian Patriotism. 4.15, Recital of Silesian Songs by Käthe Prochaska (Soprano); Four Songs (R. Wet); (a) Morgenlied, (b) Spiel-mauslied, (c) Du, (d) Dass ich dich liebe; Three Songs (A. Mendelssohn); (a) Der Husar, (b) Goldhahn, (c) Aus dem Nachlied Zarathustras; Three Songs (H. Buebel); (a) Verwehelter Klang, (b) Wie ich sterben möchte, (c) Ruf des Seehäcksels. 4.45, Book Review. 5.0, Märchen-zählung. Op. 132, for Viola and Clarinet (Schumann). 5.30, Talk: Situation in Destiny—the Plight of the Frontierslands. 5.50, Market Prices. 5.52 (approx.). Trio in F. Op. 48, for Viola and Clarinet (Mozart). 6.20, Talk: The Tasks of Silesia in the New Germany. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Programme to be announced. 9.0, Music from the Charlottenburg Castle. See Berlin (Witzleben). 10.0, Time and News. 10.30, Talk: German Legendary Figures. 10.50, Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc.s, 342 metres; 35 kW.—4.0 p.m., Talk. 4.10 to 6.15, Relay from Olomouc. 4.10, Military Band Concert. 4.55, A Play for Children. 5.20, Report from the Aerodrome. 6.5, Review of Periodicals of the Olomouc Districts. 6.15, Talk for Workers. 6.25, German Transmission, Talk on Old

Olomouc. 877kc.s, See Prague. 7.10 to 10.0, Relay from Olomouc (contd.). 7.10, Introductory Talk to the following Transmissions. 7.15, A Farm in Hamí—Radio Report. 7.30, Report from an Agricultural Machinery Factory. 7.45, Report from a Cheese Factory. 8.15, Address by the Mayor of Olomouc. 7.25, Orchestral Concert, conducted by A. Heller, relayed from the Olomouc Municipal Theatre. 9.25, Recitations. 9.40, After the Ball—Play (Bystrina). 10.0, See Prague. 10.30, Light Music, relayed from the National Café, Olomouc. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc.s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Dance Music on Gramophone Records. 5.0, Concert by the Radio Orchestra, conducted by Franz André: Funi-culimulca (Denza); Selection from Le Possé-tillon de Longjumeau (Adam); Rondo capriccioso for Violin (Saint-Saëns); La Boîte à joujou (Debussy); Song Waltz (Stolz); Christine Potpourri (Salabert); Selection from Tip-toes (Gershwin); Selection from La Cocarde de Mimi Pinson (Goublier); Scènes pittoresques (Massenet); Spanish Dances (Granados). 6.0, Talk: Gymnastics. 6.15, Gramophone Records of Popular Music. 6.25, Songs with Lute Accompaniment. 6.45, Life is not a Dream—Sketch (Léon Domyay). 7.0, Gramophone Concert: Prelude to Le Déluge (Saint-Saëns); Si je le savais (Tchaikovsky); Spanish Dance from La vida breve (Fallá); Ronda Aragonesa (Granados). 7.15, Talk: Traffic in Towns. 7.30, Talk on Hygiene. 8.0, Recital of Brahms' Waltzes for Mixed Quartet and Pianoforte Duet. 8.25, The Twenty-fourth of February—Play in One Act (Alexandre Dumas). 9.0, Trio Concert: Trio in C, Op. 87 (Brahms); Trio in D, Op. 70, No. 1 (Beethoven). 10.0, Le Journal Parlé. 10.10, Old and Modern Dances on Gramophone Records.

BRUSSELS (No. 2)

I.N.R., 590kc.s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert: Overture 1914 (arr. Deloy); Selection from Countess Maritza (Kálmán-Colin); Serenade to Lisette (Caldesi); Golliwog's Cake Walk (Debussy); Comme au plus beau jour (Popper); Selection from Hans the Flute Player (Ganne); Chanson d'Arlette (de Tave); Selection from Enlevez-moi (Gabaroché); Kol nidrei (Bruch); Selection from The Cinema Star (Gilbert); Dance of the Tumblers (Rimsky-Korsakov-O'Donnell). 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: Wigy (Violin). Spanish March, Merida (Gulliani); Waltz (Ziehrer); Selection from The Carnival Fairy (Kálmán); Serenade for Violin (Drlla); Dance of the Merry Mascots (Ketilbey); The Garden of Love (Haydn Wood); Potpourri, Contrasts

(Robrecht). 5.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 6.0, Popular Music on Gramophone Records. 6.15, Reading. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Peter Schmoll (Weber); Procession (De Bonek); Sérénade carnavalesque (Erlanger); Selection from Hansel and Gretel (Humper-dinck); Elégie for Violin (Delcroix); Dance Scenes (Richter). 7.15, Talk: Flemish Proverbs. 7.30, Review of International Events. 8.0, Concert by the Radio Orchestra, conducted by Franz André. Soloists: Brenders (Pianoforte) and Steurs (Accordion). Hungarian March (Berlioz); Concerto for Piano-forte and Orchestra (Gershwin); Suite, Jazz in the Zoo (Basilewsky); Trimpet Solo from Jack in the Box (Salic); Waltz, Wiener blut (Joh. Strauss); Gavotte and Minuet (Lully); Valse des blondes (Ganne); Schottische (Frick); Foxtrot, Swanee Stomp (Knight-Tower); Waltz, Give me a Moment please (Whiting); Manolita (Borchard); Tango, A mi madre (Pizarro); Rumba (Sentis); Java, Manuda (Kalter); Russian Dance (Bul-berian); Spanish Dance (Albéniz); Tarantella (Rossini); Flemish Dances (Bloekx). In an interval at 8.45, Recitations. 10.0, Journal Parlé. 10.10, Concert by the Max Alexys Orchestra, relayed from the Ancienne Bel-gique.

BUCHAREST

761 kc.s, 394 metres; 12 kW.—5.0 p.m., Concert by the Radio Orchestra: March (Blank-enburg); Overture, Iphigénie en Aulide (Gluck); Rococe Suite (All out); Selection from Tannhäuser (Wagner); Selection from Paganini (Lelár); The Caravan in the Desert (Niemann); The Forge in the Forest (Michaelis). 7.0, Educational Talks. 7.40, Light Music on Gramophone Records. 8.0, Pianoforte Recital by Mlle. Musca Litvin; Two Etudes (Chopin); Theme and Variations (Tchaikovsky); Corooba (Albéniz); Fire Dance (Fallá); The Juggler (Tsch). 8.30, Talk. 8.45, Violin Recital by V. Filip. 9.15, Cello Recital by G. Cocea. 9.45, Radio Journal.

BUDAPEST

545 kc.s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 8.15 p.m. till Close Down.—5.30 p.m., Song Recital by a Choir. 6.15, Talk. 6.45, Light Music on Gramophone Records. 7.35 Exchange. 7.45, Talk. 8.10, Racing Notes. 8.15, Concert of Operetta Music by Viktor Jacobi and Paul Abraham. The Budapest Concert Orchestra conducted by Wilhelm Konor, and Soloists. In an interval at 10.15 (approx.), News. 11.15, Pianoforte Recital by Géza Frid: Pan-tusias in C Minor and D Minor (Mozart); Light Preludes—in C, G, E Minor, B Minor, A, C Sharp Minor, C Minor, and G Minor (Chopin); Four Pieces (Debussy): (a) Doctor Gradus ad Parnassum, (b) Serenade for the Doll, (c) The Little Shepherd, (d) Golliwog's Cake Walk; Four Etudes (Frid).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12.0 Noon, Time and Chimes from the Town Hall. 12.2, Concert by the Max Skalka String Ensemble, relayed from the Hotel Angleterre. 2.0 to 3.0, Interval. 3.0, Gramophone Concert. 3.30, Concert by the Mogens Hansens Instrumental Ensemble; Overture, Der Schauspielerdirektor (Mozart); Suite No. 2 from L'Arlesienne (Bizet); Nocturne and Czardas from Belsazar's Feast (Sibelius); March (Holzmann); Selection from La Belle Hélène (Offenbach); Air from Countess Maritza (Kálmán); Russian Sketches (Petrus); Intermezzo from Saor Angélica (Puccini); Dance of the Hours from La Gioconda (Ponchielli). In the interval at 4.15 (approx.), Talk for Women. 5.35, Exchange and Fish Market Prices. 5.50, Agricultural Talk. 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk. 8.0, Time Signal from the Town Hall. 8.2, Talk: The Danish Krone. 8.30 to 12.0 Mid-night, Radio Ball for the Older Generation—The Station Orchestra and Soloists; Con-ductor, Lanny Gröndahl. 8.30, Four Melodies (H. C. Lumbye); (a) Mac Mahon March, (b) Pepita Polka, (c) Caecilie Vals, (d) Columbine Mazurka; Svenk Maskerade; Hopsa. 9.0, Four Songs. 9.15, Polka, Tré-tiac (Waldteufel); Waltz, Soirée d'été (Waldteufel); Cora Mazurka (Möller); The Lancers (Mikl); Finger Polka. 9.50, Read-ing. 10.5, Danish Dance Music for Strings and Clarinet; Polka (J. Bach); Vesten om (Jensen); Waltz, Vejløleden (Iversen); Polka, Mary (Christensen); Tyrolse Waltz (Simonsen); Galop (Simonsen); Mazurka, Skaerslipper (Jespersen); Waltz, Alt Wien (Ziehrer); Polka from The Geisha (Jones). 10.45, News. 11.0, Pianoforte Recital by Viktor Fischer; Polka, Petersberggrinden (H. C. Lumbye); (b) Juleaften Vals (H. C. Lumbye); Polka (Carl Lumbye). 11.15, Dance Music; Sekstur (Jensen); The Skater's Waltz (Waldteufel); Rits rats; Amalie Polka (Jensen); Petra Mazurka (Jen-sen); March, The Washington Post (Souza); Waltz, Solymyrther (G. Lumbye); Hopsa (Poulsen); Kankan (Erichsen); Galop, En Træfcer (Kral). 12.0 Midnight, Time Signal and Chimes from the Town Hall.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. 5.30 p.m., Special Request Concert for Portsmouth and Southsea Listeners: Selection from the Merry Widow (Lehár); Songs: (a) Grannie's Old Arm Chair, (b) Just an Echo in the Valley; Ilandsau Solo, Roses of Picardy (Haydn Wood); Regimental Marches; Song, Killarney (Balfe); Tipperary (Judge Williams); Selection from The Desert Song (Romberg); Selection from The Maid of the Mountains (Fraser Simpson); Song, Who am I? (Clifford); Vienna, City of my Dreams (arr. Reeve). 6.15, Concert for Isle of Wight Listeners: The Dance of the Tea Dolls; I kiss your hand, Madame; A Thousand Maidens Fair; Duet, Shout for Happiness; The Butterfly; In Old Madrid; That's my Song; Black Eyes; Duet, You're the one I care for; Falling in Love again; Swinging in a Hammock; Love's Dream after the Ball. 7.0, Programme in French. 7.0 till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music by the Ibcians: Moon; Bahama Mama; You're my everything; If you were only mine; Moonlight, the Danube and You; Sweet Sixteen and never been kissed; Is I in love—I is; We just couldn't say Good-bye; Wherever you are; Too many Tears; Love, you funny thing; We all wanna know why; I got Rhythm; Gettin' Sentimental. 11.0, Empire Concert: The Thistle (Myddleton); The Empire (Talip); In the Sudan (Sebek); Festival of Empire (arr. Mackenzie Rogan); New Colonial March (Hall); National Emblem March (Bagley); Naval Patrol (Williams). 11.30, Concert of Songs and Organ Solos: Daryl and Joan (Molloy); The Flight of Ages (Bevan); Organ Solo, On Wings of Song (Mendelssohn); I've ken John Peel (Traditional); The Meynel Hunt (Cotton); Organ Solo, Temple Bells (Woodford-Finden); The Children's Home (Cowan); Vale (Russell). 12 Midnight, Club Concert for Londonderry Listeners: Londonderry Air (Traditional); Songs: (a) Just one more chance (Johnson); (b) Silent O'Moyle (arr. Hughes); (c) The Meeting of the Waters (arr. Hughes); Mignonette (Friml); Songs: (a) Please don't talk about me (Steph); (b) Wandering Days (Strickland); Organ Solo, Mother Macbrée (Ball); Songs: (a) To you it's only Ireland; (b) Just Plain Folk (Gilbert); (c) Eileen Allannah; (d) The Irish Emigrant; (e) The Heart of the Sunset (Nicholls); Medley of Irish Airs. 1.0 a.m. (Thursday), Maudie Band; Loin du Bal (Gillet); In Old Seville (Ege and Rosen); Solo, Capriccio Mazurka (Aricenzo); Dear old Pal o' Mine; La Czarine (Ganne); Tesoro Mio (Becucci); Solo, Czardas (Monti); Napolitano (Hey and Meisel). 1.30, Vocal and Orchestral Concert: Wonderful you; Every little kindness; When the Lilac blooms again; Selection from Bow Bells; Love is a Dreamer; Would you; For the likes of you and me. 2.0, Dance Music by the Ibcians: How do you do, Mr. Brown; Everyone says I love you; Leave a little for me; Mariette; Please; Little Lady; Here lies Love; It's Winter again; You're telling me; Look who's here; Always in my heart; Cinderella's Wedding Day; Strange Interlude; Business in Q. 2.57, I.B.C. Good-night Melody. 3.0 a.m., Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—6.0 p.m., Talk. 6.25, Topical Talk. 6.50, Time, Programme Announcements, Weather, and Economic Notes. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Concert of Operetta Overtures: Cagliostro (Joh. Strauss); Ein tolles Mädel (Ziehrer); Die Frau Meisterin (Suppé); Gasparone (Müllbacher); Frühlingsluft (Strauss-Reiterer); Das Süsse Mädel (Reinhardt); Die Kausche Barbara (Bednall); Berliner Luft (Lincke). 9.0, See Berlin (Witzleben). 10.0, A German Almanack. 10.15, Time, News, Weather, and Sports Notes. 10.45, Serenade from Munich. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m. (from Hanover) Concert by a Symphony Orchestra, conducted by von Sosen: March, Vom Fels zum Meer (Liszt); Overture, King Stephen (Beethoven); Symphonic Poem, Korsholm (Järnefelt); Ballet Music from Austin (Marschner); Coronation Waltz (Joh. Strauss); German Triumph March (Reinecke). 5.0, Talk: Heredity and the German

MAY 24th

WEDNESDAY

continued

Race. 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Senates and House of Burgesses of the Hanseatic Free Cities. 6.0, Dance Music from the Faun. 6.35, Talk for the Country Woman. 6.45, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Mozart Concert, conducted by José Eibeuschütz; Soloist, Frieda Jürges-Boeckmann (Pianoforte); Overture, Don Giovanni; Concerto in E Flat, for Pianoforte and Orchestra; Symphony in E Flat. 9.15, Thor Goote reads from his own Works. 9.45, Time, Weather, Announcements, Sports Notes, and Police Report. 10.5, Topical Talk. 10.20, Concert by the Station Chamber Orchestra, conducted by Gerhard Maasz: Overture, Alfonso und Estrella (Schubert); Suite, Rossini (Rossini-Respighi); Finnish Lyric (Palmgren); Russian Dance (Bullerian); A Fairy Tale (Suk); Pianoforte Solos: (a) In Primavera (Novak); (b) Frauenbildnis (Graener); (c) Dance Melody (Willner); Extracts from Ein Tausend Jahre Hamburg (Erdlen); Song and Czardas, Mariska (Lehár); Suite from The Merchant of Venice (Sullivan); Bombardon-Marsch (Brüll). HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.20, Talk for Housewives. 3.30, Programme for Children. 4.0, Talk for Parents. 4.30, Concert by the Orchestra of the Königsberg Opera House; Conductor, Karl Hrbetz; Overture, Hymni Laszlo (Erkel); Waltz, Dame in Braun (Robrecht); Im heiligen Hain (Lindemann); Dances of the Nations (Mannfred); March (Hrbetz); Overture, Prinzess Goldschuh (Rust); Odaliskis—Walzer (Reiterer); Selection from Das Veilchenmüdel (Helmberger); Polka, Froh durchs Leben (Riechelberg). 5.45, Bridge Lesson. 6.15, Agricultural Prices. 6.25, Talk. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, News. 8.10, See Berlin (Witzleben). 9.0, Dance Music by the Small Station Orchestra and the Paul Glatzel Band. 10.0, Weather, News, and Sports Notes. 10.10 (approx.), Concert by the Small Station Orchestra, conducted by Eugen Wilken; Overture, Der Vampyr (Marschner); Suite No. 2 (Machet); Kaiser-Walzer (Joh. Strauss); Suite, Ein Scherbenabend in Alt-Wien (Ralf); Selection from Der Freischütz (Weber); Overture, Lystrata (Lincke). 12 Midnight, Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by De Notenkrakers. 12.25 p.m., Song Recital by A. de Booy. 12.40, Concert (contd.). 1.10, Song Recital (contd.). 1.25, Interval. 1.40, Programme for Women. 2.40, Programme for Children. 3.0, Orchestral Concert, conducted by H. de Groot. In the intervals at 5.40, Gramophone Music, and at 6.40, Talk. 7.39, S.O.S. Announcements. 7.40, Talk. 8.0, Choral and Orchestral Concert relayed from Leyden; Soloists: Mme. J. Oskan van Rangeroon (Soprano), Mlle. Maartje Offer (Contralto), E. Miedema (Tenor), and W. Keizer (Bass); Frühlingsbotschaft (Gade); Tenor Solos: (a) Aria from I Pagliacci (Leoncavallo); (b) Aria from The Queen of Sheba (Gounod); Scènes alsaciennes (Massenet); Soprano Solo: Aria from Der Freischütz (Weber); Choir, Bass and Orchestra: Landerkenning (Grieg). 9.0, Dramatic Programme. 9.25, Concert (contd.): Rhapsody for Choir, Orchestra, and Contralto (Brahms); Tenor and Orchestra: Lohengrin's Farewell (Wagner); Academic Festival Overture (Brahms); Cantata for Mixed Choir, Orchestra and Soloists: Landa Sion (Mendelssohn). 10.25, News. 10.35, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Christian Radio Society (N.C.R.V.)—12.10 p.m., Quartet Concert. 1.40, Programme to be announced. 2.10, Talk for Young Stamp Collectors. 2.40, Schubert and Cyril Scott Music on Gramophone Records. 3.10, Song, Pianoforte and 'Cello Recital. 4.40, Programme for Children. 5.40, Brahms Concert. Sonata in F. Op. 99, for 'Cello and Pianoforte; Mezzo-Soprano Solo (on Gramophone Records); Vor dem Fenster, Op. 14, No. 1; Trio in C, Op. 87. 6.40, Police Notes. 6.55, News Bulletin. 7.10, Mozart Music on Gramophone Records. Overture, Der Schauspielersdirektor; Eine kleine Nachtmusik (Mozart); Selection from Les petits riens. 7.40, Concert of Sacred and Classical Music. 8.40, Carillon Recital from the Royal Palace, Amsterdam. 9.40, News Bulletin. 9.50, Gramophone Concert of Classical Music. 11.10 (approx.), Close Down. INNSBRUCK.—See Vienna

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Report and Racing Results. 8.10, Scientific Review. 8.20, Music Review. 8.30, Literary Talk. 8.45, News. 9.0, Concert relayed from St. Raphael. 12 Midnight till Close Down, Programme in English by the I.B.C., H. K. Hitechock announcing. 12 Midnight, Military Band Concert: On the Quarter Deck (Alford); Medley of British Songs; National Emblem March (Bagley); Pomp and Circumstance (Egar); March, King Cotton (Sonsa); Old Comrades (Teike); Marche Militaire (Schubert); The Thunderer (Sonsa). 12.30 a.m. (Thursday), Vocal and Orchestral Concert: The English Rose (German); Take off your Coat (Longstaffe); I attempt from Love's Sickness to fly (Purcell); Merry-maker's Dance (German); The Vicar of Bray (arr. Tait); Ginchy Road (Edward); The Lincolnshire Poacher (Barrett); Country Dance (German). 12.57, I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 60 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Estonian Lesson. 6.40, Talk. 7.0, Boy Scout Programme. Talk by S. Donner. 7.20, Concert by the Boy Scouts Orchestra: In True Jest (Blanckenburg); Minuet in G (Moszkovsky); Liebeserene (v. Blom); Waltz from The Nutteracker Suite (Tchaikovsky). 7.40, Talk by Martta Homi. 8.0, Songs by Bertel Saarimä. 8.20, Concert (contd.): Song (Kiitula); Karnevals-Botschafter (Joh. Strauss); Selection from The Thieving Magpie (Rossini). 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Eysoldt. Soloist: Max Fleck (Tenor). March, Ehrenwache (Lehnhardt); Overture, Le Maçon (Auber); Tenor Solos: (a) Ein Traum (Grieg); (b) Frühlingsstraum (Schubert); (c) Ich trage meine Minne (Strauss); Nordisches Capriccio (Donisetti); Selection from Othello (Verdi); Love Song (Elman); Chant russe (Lalo); Fantasia, Reminiscences of Tannhäuser (Hamm); Humoresque (Dvořák); March, Freidrichshelden (Blanckenburg). In the interval at 2.0, News. 2.30, Sponsored Programme with Gramophone Records. 3.0, Educational Talk. 3.30, Exchange and Time Signal. 3.50, Programme for Young People. 4.30, Concert by the Station Orchestra, conducted by Kühn. Soloist: Guernanova (Contralto); Overture, Fidelio (Beethoven); Song, An die Hoffnung (Beethoven); Klavierregien (Klose); Song, Hymnus der Liebe (Reger); Festliche Overtüre (Sieg). 5.45, Programme arranged by the Post Office. 5.50, Reading in Dialect. 6.0, Talk: The Economic Position of the Rhineland and Westphalia in the First Quarter of 1933. 6.20, Italian Conversation. 6.45, Weather, Time, Exchange, and Sports Notes. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, First News. 8.5, Memorial Programme for the Anniversary of the Death of Annette v. Droste-Hülshoff. 8.30, Friedrich List—Radio Play (Walter von Molo). 10.0, News and Sports Notes. 10.25, Young Hitlerites Programme. 10.50, Concert and Dance Music. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and Dresden, 319 metres.—12.5 p.m., Concert by the Station Orchestra, conducted by Willy Steffen. In the interval at 1.0 p.m., News. After the Concert, News. 2.15, Talk for the Eightieth Anniversary of the Death of Annette von Droste-Hülshoff. 2.30, Interval. 3.0, Pianoforte and 'Cello Sonata No. 3 in A. Op. 69 (Beethoven). 3.35, Economic Notes. 4.0, Programme for Young People: Radio Play and Songs. 5.10, Talk: German Folk Dances. 5.50, News, Weather, and Time. 6.0, Book Review. 6.20, Talk: Germany's Foreign Trade Policy. 6.45, Reading. 7.0, Transmission for all German Stations, relayed from Munich. 8.0, Topical Talk. 8.15, The Twenty-Second Musical Festival at Zerbst; Concert by the Orchestra of the Friedrichstheater of Dessau, conducted by Artur Rother; Musik für Orchester (Stefan); Little Symphony (Knappe); Musik am Abend, Op. 44 (Graener). 9.15, The People of the Sudetic Mountains—Radio Sequence (Kaergel). 10.15, News. 10.30, Concert of Light Music by the Emde Orchestra: Fanfare March (Zinke); Waltz, Mein Lebenslauf ist Licht und Lust (Strauss); Ukrainian Sketch (Dreyer); Soch sind die Tage der Rosen (Bammgartner); Potpourri, Vom Rhein zur Donau (Rhode); Norwegian Peasant Dance (Schytte); Song from Der Rastelbinder (Lebar); Serenade (Lilting); Waltz, Die Schönbrunner (Lauer); Potpourri of Students' Songs (Mannfred); S'Räsel vom Wärbhersee (Koschatt); Two Viennese Waltzes, Op. 42 (Fuchs); Winterlied (von

Koss); March, Unter dem Freiheitsstern (Blanckenburg). 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C. E. Miklavcic announcing. International Broadcasting Club Concert. One Step, Taboo, Taboo; Foxtrot, I don't want to go to bed; Slow Foxtrot, Ich liebe dich, my dear; Foxtrot, Bon Voyage; Tango, He's got a wife and family at home; Tango, Will you dance through life with me?; Foxtrot, Yes, Mr. Brown; Foxtrot, Leave a little for me; Waltz, If you would learn to live. 6.0, English Music on Gramophone Records. 6.30, Talk: Modern Heroes. 7.0, Russian Lesson. 7.30, Literary Talk. 8.0, Talk on Politics. 8.30, Song Recital. 9.30, Weather and News. 10.0, Quintet Concert.

LWOW

788 kc/s, 381 metres; 16 kW.—7.10 p.m., Miscellaneous Items. 7.30, See Warsaw. 11.0, Musical Programme by Mmc. Thodozia Lisiewicz. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, An Hour in Vichy—Surprise Programme. 9.30, L'ainé—Play (René Thomann). After the Play, News Bulletin.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Concert of Andalusian Songs and Dances. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Thursday), Talk. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Talk for Women, Humorous Talk on Beauty Competitions, Talk on Books for the Blind, and Dance Music. 9.25, News and Political Review. 9.30 to 10.30, Interval. 10.30, Chimes, Time Signal, and Political Review. 10.45 (approx.), The Midnight Sun—Radio Fantasia (Theo Fleischman), preceded by a Talk on the Author. 12.45 a.m. (Thursday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.10 p.m., See Brno. 10.0, See Prague. 10.30, See Brno. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—6.30 p.m., Concert, relayed from the Radio Theatre. 9.0, News Bulletin. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—5.0 p.m. (from Nürnberg), Concert by the Ferd. Werners Orchestra. March, Bremen-Flug (Redlich); Selection from Il Trovatore (Verdi); Waltz, Wiener Bilder (Ertl); Potpourri, Halloh, hier Wien (Morena); Viennese March, Herr Adelp (Bednarz); Bayerische Ländler (Fürst); Potpourri, Vom Rhein zur Donau (Rhode); March, Mein Regiment, mein Vaterland (Leuschner). 6.5, Talk: The New Empire and the German Nation. 6.25, Discussion with the Owner of a Small Business. 6.45, Time Signal, Weather Report and Agricultural Notes. 7.0, Transmission for all German Stations; Max Reger Concert by the Nazi Symphony Orchestra, conducted by Franz Adam. Four Tone Poems after Beeklin, Op. 128; Ballet Suite, Op. 130. 8.0, Topical Programme. 8.15, Concert by the Small Station Orchestra, conducted by Erich Kloss. 8.40, Old Munich in May—Radio Sequence (Ernst Hohenstatter). 9.0, Chamber Music Concert by the Stuhlfaul Quartet. Soloist: Hanna Eschenbricher (Soprano). String Quartet in A (Proteze); Two Serious Songs for soprano, with String Quartet, Op. 8 (Pauls); String Quartet in One Movement, Op. 4 (Pauls). 10.20, Time, Weather, News and Sports Notes. 10.45, Serenade, conducted by Erich Kloss. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.1 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Gramophone Music. 5.45, Press Review. 6.0, French Lesson. 6.30 (from Hamar), Programme for Boys. 7.0, Announcements, Weather and News. 7.30

MAY 24th

WEDNESDAY

continued

Educational Talk, relayed from **Trendheim**, 606 kc/s, 495.8 metres. 8.0, Time. 8.1, Concert by the Station Orchestra, conducted by Hugo Kramm. Soloists: Ida Björset (Pianoforte) and Mme. Elisabeth Reiss-Faerden (Pianoforte). Overture, Der Freischütz (Weber); Concerto in F, for Two Pianofortes and Orchestra (Mozart); Extracts from A Midsummer Night's Dream (Mendelssohn); Spanish Caprice (Rimsky-Korsakov). 9.10, Recitations. 9.30, Agricultural Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Song Recital by H. Herberth. 10.45, Dance Music on Gramophone Records.

DSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time and Announcements. 8.45, Concert of Patriotic Music: Marcia reale italiana (Gabetti); Giovinetta (Blanc); Songs and War Scenes. 10.55, News.

PARIS

EIFFEL TOWER, Call **FLE**, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.25 a.m. and 11.26 p.m. (Preliminary and 6-dot Signal).—6.45 p.m., Songs from Katinka—Operetta (Friml), with Commentary by Victor Larbey. 7.0, Le Journal Parlé. 8.30, Lili Boulanger Concert by the Radio Orchestra, conducted by Edouard Flament. Talk: Her Life and Compositions. Vieille prière bondhique, by G. Paulet, the Russian Choir conducted by M. Vlassov, and the Orchestra; Duet from Faust et Hélène, by Mme. Greslé and G. Paulet; Clairières dans le ciel, by Mme. Modrakowska and M. Paulet, with Nadia Boulanger at the Pianoforte; Renouveau, by Mmes. Modrakowska and Greslé and M. Paulet and Prigent, Nadia Boulanger at the Pianoforte; Psalm 24, by G. Paulet, the Russian Choir conducted by A. Vlassov, and the Orchestra. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 7 kW.—6.45 p.m., Journal Parlé. 7.0, Popular Music on Gramophone Records. 8.0, Talk on Social Insurance. 8.5, Talk on Parasites. 8.15, Interval. 8.30, Etienne—Comedy in Three Acts (Jacques Deval). 10.15, Dance Music, relayed from the Lido. 10.45, News.

PARIS

RADIO PARIS, Call **CFR**, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather Forecast. 12 Noon, Educational Talk. 12.15 p.m., Concert by the Radio Paris Orchestra: Selection from Les Mousquetaires au couvent (Varney-Casadesu). 12.30, Organ Recital by G. Desseure, relayed from the Gaumont Palace; Overture, Pierrot Brigand (Ardely); Melody (Goetze); Selection from Rigoletto (Verdi); Old French Songs (Bronsted). 1.0, Exchange, News and Weather. 1.5, Orchestral Concert (contd.): Selection from Pepita Jimenez (Albeniz-Letorey); Funiculi-Funicula (de Cecco); Fretillon (Terrasse); Selection from The Quaker Girl (Monckton). In the interval at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.40, Popular Music on Gramophone Records. 7.0, Medical Talk. 7.20, Popular Melodies: Petite Suite (Fevrier); Song from Miarka (Georges); Melody (Besse). In the interval at 7.45, Commercial Prices and News. 8.0, Literary Talk by Paul Reboux. 8.30, News and Weather. 8.45, Concert of Chamber Music: Sonata for Cello and Pianoforte (Lalo); Harp Solos: (a) Prelude and Dance (Büsser). (b) Jardin mouillé (Jacques de la Presle). (c) Clair de Lune (Debussy); Violin Solos: Quintet for Strings (Schubert). In the intervals at 8.40, Fashion Notes, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC, **KDKA**, 980 kc/s, 306 metres; 25 kW. Relayed by **W3XK** on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, **KDKA** Home Forum. 7.45, Fidelity Hall Programme. 8.0, Betty and Bob, from New York. 8.15, Radio Teleshadows, from New York. 8.45, Microphone Melody Makers. 9.0, Teaberry Baseball Scores. 9.5, Mid-Week Musicale, from New York. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, Bass Solos by Fred Wehber. 10.15, Dick Darling, from New York. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Palais D'Or Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Riggs and Moke. 11.45 to 12.30 a.m. (Thursday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, The Townsend Murder Mystery. 12.30 a.m., Adventures in Money. 12.45 to

2.30, New York Relay. 12.45, String Symphony. 1.0, Eno Crime Clues. 1.30, Tasty-cast Jesters. 1.45, Phil Cook and the Ingram Shavers. 2.0, Adventures of Sherlock Holmes. 2.30, Programme to be announced. 3.0, Time Signal and Revelers' Quartet from New York.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.0 p.m., See **Brno**. 7.0, Chimes. 7.1, News Bulletin. 7.10, See **Brno**. In the interval at 9.0, Time Signal. 10.0, Time Signal. 10.1, News Bulletin. 10.15, Announcements in French for Foreign Listeners. 10.30, See **Brno**. 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and **Geneva**, 395 kc/s, 760 metres.—7.0 p.m. (from **Lausanne**). Talk: The Modern Idea of Chemical Elements. 7.30 (from **Lausanne**). Talk on Bee-Keeping. 8.0 (from **Lausanne**). Song Recital by Mlle. Marthe. 8.25 (from **Lausanne**). Talk. 8.45, Concert by the Station Orchestra. 9.50, News and Weather. 10.0 (from **Geneva**). Talk: The Work of the League of Nations. 10.20 (from **Geneva**). Dance Music by the Broadcasting Serenaders. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call **IRO**, 650 kc/s, 441 metres; 50 kW. Relayed by **Naples**, 941 kc/s, 319 metres; and **2RO**, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert. Songs of the Trenches. War Songs. Selection from Katja the Dancer (Sorenstella bruna (Rosati) (Culotta); (Fall); Festa al villaggio (Melody (Bibi); Prude to Vecchia Milano (Vittadini); Flow on, Mississippi (Caffrey); (A tuoi baci (Scorilli). In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.0, Report on the Fourteenth Lap of the Cycle Tour of Italy. 5.10, Announcements. 5.15, Exchange, Report of the Royal Geographical Society and Giornale Radio. 5.30 to 6.15, Orchestral Concert. Napoli (Pennini); Voce lontana (Montanaro); Ragazze allegri (Viale); Selection from Gipsy Love (Lehar); Giza (Martucci); Selection from La danza di Olaf (Plek-Mangialilli); Triana (Albeniz); Anna Maria (Heinz). 6.40 (**Naples**), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Tourist Report. 7.20, Giornale Radio. 8.0, Time, Announcements and Summary and Notes on the Day's Results of the Cycle Tour of Italy. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.45, Celebrations in connection with the National Festival. Anthems and Patriotic Songs followed by the Marcia Reale Italiana (Gabetti) and Giovinetta (Blanc). 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, **WGY**, 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by **W2AF** on 31.48 metres and by **W2XAD** on 19.56 metres.—8.0 to 9.0 p.m. (approx.). New York Relay. 8.0, Pop Concert. 8.30, Texas Cowgirl. 8.45, Charis Musical Review. 11.45, Stock Reports and Baseball Scores. 12 Midnight to 1.30 a.m. (Thursday), New York Relay. 12 Midnight, Royal Vagabonds. 12.30 a.m., Woodbury Programme. 1.0, Band of Famous Brands. 1.15, Rocking Chair Memories. 1.30, General Electric Programme. 2.0, Corn Cob Pipe Club of Virginia, from New York. 2.30, Dance Hits of Yesteryear, from New York, followed by Programme Résumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; **Basle**, 1,229 kc/s, 244.1 metres; and **Berne**, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from **Berne**), Chamber Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.40 (from **Berne**), Gounod and Donizetti Music on Gramophone Records. 1.25 (from **Berne**), Exchange, Time and Weather. 1.45 to 5.0, Interval. 5.0 (from **Basle**), Programme for Children. 5.30 (from **Basle**), Concert by the Radio Quartet. 6.30 (from **Zürich**), Talk: Everyday Philosophy—Mankind and Divine attributes. 7.0 (from **Zürich**), Time, Weather and Market Prices. 7.10 (from **Zürich**), Gramophone Music. 7.30 (from **Zürich**), English Lesson. 8.0 (from **Zürich**), Monte Stunde. 9.0, Weather and News. 9.10 (from **Zürich**), Brahms Concert. 10.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW.—Relayed by **Boden**, 244 kc/s, 1,229.5 metres; **Göteborg**, 932 kc/s, 322 metres; **Hörby**, 1,166 kc/s, 257 metres; **Motala**, 221.5 kc/s, 1,354.4 metres; **Ostersund**, 389 kc/s, 770 metres; and **Sundsvall**, 554 kc/s, 542 metres.—4.0 p.m., Sextet Concert: Marell, La Promozione (Manente); Overture, Les Dragons de Villars (Maillart); Waltz (Wesley); Selection from Der Bettelstudent (Müllöcker); Melody (Durand); Finnish Melodies; Polka Mazurka (Herman); March (Lundin). 5.5, Programme for Children. 5.35, Gramophone Music. 6.30, Provincial Programme from **Sundsvall**. 7.30, Concert of Folk Songs by the Wireless Male Voice Choir. Soloist: Olle Björling. 8.0, Talk: Psychological Causes of Accidents. 8.30, Military Band Concert, conducted by G. Løjdh, relayed from **Sundsvall**: Victory March (v. Blon); Waltz, Bonasagen (Fucik); Potpourri (Lögren); Saxophone Solo, Kunstreiter (Oertel); Selection from The Geisha (Jones); Little Dance Suite (Frimann); March (Olsson). 9.30, Microphone Report. 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Modern Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal and Exchange Prices. 1.5, Operetta Music on Gramophone Records. 2.0 to 4.0, Interval. 4.0, Organ Recital, relayed from **Paris (Radio Coloniale)**, 11,905 kc/s, 25.2 metres. 5.0, Orchestral Concert, conducted by M. Roskam. Overture, Frau Luna (Lincke); Waltz, Gipsy Love (Lehar); Intermezzo, Der Roschschütz (Jessel); Selection from The Merry Widow (Lehar); La Cinquante (Gabriel-Marie); Cello Solo by M. Roskam; Suite gaie (Gabriel-Marie); Melody (Kalkman); El Paseo (Razigade). 6.0, Concert, relayed from **Lille**, 1,130 kc/s, 265.4 metres. 7.0, Legal Talk. 7.15, Talk on Electricity. 7.30, Time Signal and News. 7.45, Programme from **Paris (Eiffel Tower)**. 10.15, Press Review in German, Lottery Results, and News. 10.30, Light Music on Gramophone Records. 10.45, Symphony Concert by the Municipal Orchestra, conducted by M. Munch, relayed from the Orangry Restaurant. Symphonic Suite, Scheherazade (Rimsky-Korsakov); Symphony No. 5 in E Minor, Op. 64 (Tchaikovsky). In the interval, Press Review in French. 10.30, Dance Music on Gramophone Records. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 932 kc/s, 360.5 metres; 60 kW.; and **Freiburg**, 527 kc/s, 570 metres.—1.30 p.m., Gramophone Concert of German Fighting Songs. 2.0 to 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.0 (from **Freiburg**), Programme for Children. 4.0, Recital of Children's Songs (Reincke) by Hede Kraft (Soprano), Robert Ealdmann (Violin) and Otto Seyfert (Pianoforte): Eine kleine Geige möcht ich haben; Christkindchens Einlass; Lustiges Musizieren; An die Biene; Ein Serenadchen; Das Kind und der Kuckuck; Der Abendstern; Zwiegesang. 4.30, See **Langenberg**. 5.45, Time, Weather and Market Prices. 6.0 (from **Karlsruhe**), Talk: Germany's Contribution to Chemistry, on the Occasion of the Thirty-Eighth Annual Meeting of the German Bunsen Society. 6.25, Talk: Reminiscences of War Time on Board the Emden. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from **Munich**. 8.0, Concert by the Württemberg Symphony Orchestra, conducted by Arthur Haessig. Part I—National Dances: Slav Dances Nos. 1 and 3 (Dvorak); Irish Dance: Molly on the Shore (Percy Grainger); Persian Dance (Mussorgsky); Russian Dance (Haus Bullerian); Norwegian Dance No. 2 (Grieg); Slovak Dances (Rudolf Felber); Italian Dance: Tarantella (Chopin-Glazunov); Provençal Dance: Farandole (Bizet). Part II—German Dances (Beethoven); Overture to and Ballet Music from Die Geschöpfe des Prometheus (Beethoven). 9.30, A Radio Report from the Wine and Fruit Growing Centre of Oberkirch. 10.0, Time and News. 10.20, New Gramophone Records. 10.45, See **Munich**. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—6.30 p.m., Orchestral Music. 6.50, Musical Programme and Talk. 7.15, News, Racing Results, Market Prices, and Announcements. 7.25, Local News. 7.30, Opéra-Comique Music. 7.45, Cello Solos. 8.0, Marseilles Programme of Literature and Music. 8.30, Viennese Music. 8.45, Accordion Music. 9.0, Concert by La Sirène Music Society, conducted by M. Jehuc. Light Music in the interval. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Arias from **Opera**. 11.15, Popular Songs. 11.30 to 12 Midnight, Programme in English by the

I.B.C., arranged by the International Broadcasting Company of London. W. Brown-Constable announcing. 11.30, Dance-Tune Memories: Song of Happiness; The Longer that you linger in Virginia; The Queen was in the Parlour; O Donna Clara; I'm happy when I'm hiking; Moonlight on the Colorado; You will remember Vienna; The Love Waltz. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Thursday), Bal Musette. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 to 6.10 p.m., Concert by the Lute Quartet. Pastoral (Boccherini-Vizzari); Ochsen Menuett (Hady). Mandoline Solo: Scenata Lombarda (Alfieri). Guitar Solo: Canto d'amore (Munier); Träumerei (Schumann); An den Frühling (Grieg). Mandoline Solo: Racconto strano (Calace); Mazurka (Calace); La capricieuse (Elgar); Festa del villaggio (Cannas); Spanish Fantasy (Redenghieri). 6.35 till Close Down, See **Turin**.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by **Milan**, 331.5 metres; **Genoa**, 312.8 metres; and **Florence**, 500.8 metres.—5.10 to 6.10 p.m., Song Recital. 6.35, Giornale Radio, and Agricultural and Dopolavoro Notes. 7.0, Time, Tourist Report and Gramophone Records of Songs and Dances. 7.20, Giornale Radio. 7.45, Gramophone Records of Variety Music. 8.0, Announcements, Report of the Cycle Tour of Italy, Giornale Radio and Weather. 8.15, Medical Talk. 8.30, Concert in Celebration of the National Festival. Marcia Reale Italiana. Giovinetta (Blanc). Fascist Hymns: (a) The March of the Legions. (b) Hymn of the University Students. (c) Hymn of the Young Fascists. Triumphant Ode, Il Decennale (Blanc). 9.0, (approx.). A Comedy, followed by Gramophone Records of Light Music. 11.0, Giornale Radio. 11.5 (Florence only), Dance Music from the Chez moi, Rajola. 11.30 (approx.), Close Down.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 19 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by **Graz**, 852 kc/s, 352.1 metres; **Innsbruck**, 1,058 kc/s, 283 metres; **Klagenfurt**, 662 kc/s, 453.2 metres; **Linz**, 1,220 kc/s, 245.9 metres; and **Salzburg**, 1,373 kc/s, 218 metres.—6.45 p.m., Report on the Industrial Outlook in Austria. 7.0, Concert by the Pepi Wehert Schrammel Quartet. 7.50, Time, Weather and Programme Announcements. 8.0, Talk: The House of Austria (1526-1718). 8.25, Two One-Act Plays (Raoul Aernheimer): (a) The Older Branch—Comedy. (b) The Bridge of Lies—Farce. 9.40, News and Announcements. 9.55, Concert by the Oscar Jascha Orchestra.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Polish Press Review. 11.50, Aviation Weather Report. 11.57, Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Light Music on Gramophone Records. 12.30, Weather Report. 12.35, Last Concert for Schools by the Philharmonic Orchestra, conducted by J. Oziminski. Soloists: Mme. S. Raheewicz (Pianoforte) and G. Czaplinski (Songs). Introductory Talk; Overture, Bajka (Moniuszko); Larghetto and Finale from the Concerto in F Minor (Chopin); Three Songs (Moniuszko); Song, Le Guerrier (Chopin); Tarantella (Chopin); Dances from Halka (Moniuszko); Mazurka (Moniuszko). 2.0 to 3.10, Interval. 3.10, News Bulletin. 3.15, Economic Report. 3.30, Talk for Boy Scouts. 3.35, Programme for Children. 4.0, Popular Music on Gramophone Records. 4.40, Talk in Ukrainian. Simon Petlura. 5.0, Talk for Teachers. 5.15, Light Music on Gramophone Records. 5.40, Talk on Trades. 5.55, Programme Announcements. 6.0, Light Music Relay. News in the interval. 7.0, Miscellaneous Announcements. 7.20, Agricultural Correspondence. 7.30, Literary Talk. 7.45, Radio Journal. 8.0, Variety Programme. 9.0, Sports Notes. 9.5, Radio Journal. 9.10, Pianoforte Recital by Leopold Muenzer: Sonata in G (Mozart); Ronlo (Hummel); Three Sonatas (Scarlatti); Two Impromptus (Schubert); Scherzo in B Minor (Mendelssohn); Rondo capriccioso (Mendelssohn); Wedding March from A Midsummer Night's Dream (Mendelssohn-Liszt); Three Etudes (Liszt). 10.0, Topical Talk. 10.15, Dance Music. 10.40, Talk on Dreams. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music Relay.

ZÜRICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Reports, and Popular Music on Gramophone Records. 6.0, Programme for Children. 6.40, News and Dublin Cattle Market Report. 7.0, French Lesson. 7.15, Programme by Val Vonsden (Entertainer). 7.30, Time Signal. 7.31, The Station Orchestra. 8.0, Bass Solos by P. W. Dockery. 8.15, Pianoforte Recital by Lilian Conolly. 8.35, Variety Half-hour by Tom Madden and Company. 9.5, Light Music by the Station Orchestra. 9.25, Soprano Solos by K. McCaffery. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA

860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Station Trio. 8.0, Request Gramophone Records. 8.30, Exchange and Talk on Catalonian Literature, relayed from the University. 9.0, Request Gramophone Records and News. 10.0, Chimes from the Cathedral, Weather, and Exchange. 10.5, Concert by the Station Orchestra: March, Imperial Edward (Souza); En el patinillo (Rodriguez Rosés); A los toros (Turina). 10.30, Programme by Pilar Cañete (Argentine Artist). 11.0, Casa't mama—Comedy in Two Acts (Paol Aragay). In the interval at 12 Midnight, News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale radio, Sports Notes and Weather. 8.30, Time and Announcements. 8.40 (approx.), Concert by a Military Band, conducted by Salvatore Rubino: Overture, Tannhäuser (Wagner); Selection from L'amico Fritz (Mascagni); Pastoral from the Quintet, Op. 37, No. 2 (Bocherini); Minuet from the Quintet, No. 6 in E; Concert Allegro, Moto perpetuo (Paganini); Selection from Adrienne Lecouvreur (Cilea); Descriptive Piece, Reminiscences of Apulia (Van Westerhout). In the interval, Talk on Wireless. 10.30, Light Music on Gramophone Records. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—7.30 p.m., Slav Music by the Radio Orchestra. 8.30, Folk Music, Songs and Wind Instrument Concert. 10.15, News Bulletin. 10.30 (approx.), Music relayed from the Ratnicki Dom.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,636 metres; 60 kW.—2.0 p.m., Violin Recital on Gramophone Records. 2.30, Programme for Children. 3.0, Talk: The Stars in German Folk Songs, Legends and Customs. 3.30, Talk: Women in Modern Germany. 3.50, Talk and Readings. The Letters of Caroline Schlegel-Schelling. Caroline von Humboldt, Clara Schumann and others. 4.10, Violin and Pianoforte Recital by Erich Böhm and Helmut Hildegthil: Prelude and Allegro (Pugnani); Romance (Svendens); Hungarian Dance No. 2 (Brahms-Joachim); Waltz (Tchaikovsky); Andalusian Serenade (Saracate). 4.45, Programme from Hamburg. 5.5, Variety Concert. 6.0, See Leipzig. 7.0, The Adventurer—Play (after the short story by Joseph von Eichendorff, arr. Günther Eich). 8.0, See Stuttgart. 9.0, See Frankfurt. 10.15, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Programme from Langenberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.20 p.m., Orchestral Concert, conducted by Clement Schmalstich: Suite, Auf der Wälderschaft (Klughardt); Waltz, Mein Lebenslauf ist Lieb und Lust (Jos. Strauss). 4.45, Programme from Hamburg. 5.5, Spring Songs by the Station Orchestra, conducted by Maximilian Albrecht. 5.20, Concert (contd.): Der Tag von Potsdam (Schmalstich). Acceleration-Walzer (Joh. Strauss); Sonneneimer, from Jubelnder Sommer (Leuschner); Invitation to the Dance (Weber); Hungarian Rhapsody No. 2 (Liszt). 6.10, Talk on Exemplary Lives. 6.30, Song Recital by Rudolf Watzke (Bass-Baritone). 6.55, Märkische Himmelfahrt—Radio Play (Ernst Keienburg). 8.0, Announcement. 8.5, Concert by the Station Orchestra, conducted by Dr. Helmut Thierfelder: Soloist: Rosalind von Schirach (Soprano); Overture and Song from Figaro (Mozart); Liebesgeständnis (Nicodé); Song, Und ob die Wolke verhilft, from Der Freischütz (Weber); Waltz, O schöner Mai (Joh. Strauss); Selection from Peer Gynt (Grieg). 9.0, A Radio Report, by Hans Heinz Mautz and Fred Krüger. 9.20, Concert (contd.): Overture, Oberon (Weber); Elsa's Dream, from Lohengrin (Wagner); Tarantella, from Venetia e Napoli (Liszt); Lyrical Monologue from Doge and Dogressa (Roselius); Military March (R. Strauss). 10.0, Weather, News, and Sports Notes. 10.15 (approx.), Dance Music. In the interval at 10.50 (approx.), By their Deeds ye shall know

THURSDAY

MAY THE TWENTY-FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL** Contrasts, a feature programme. Military Band. "Aucassin and Nicolette," a mediæval romance.
- MIDLAND REGIONAL** "Etc. . . Etc., one inconsequential thing after another," feature programme.
- NORTH REGIONAL** The Yorkshire Mimmers' Concert Party.
- WEST REGIONAL** Orchestral and choral concert.
- SCOTTISH REGIONAL** "Dunach," a short play in Gaelic, by Don Robertson.
- BELFAST** Light orchestral concert.
- ABROAD**
- BERO-MUNSTER** 8.0 p.m. Opera: "The Bridge of Sighs," by Crémieux and Halévy, from Basle.
- BUCHAREST** 7.40 p.m. The St. Matthew Passion, by Bach.
- COPENHAGEN** 9.0 p.m. Operetta: "A Waltz Dream," by Oscar Strauss.
- HEILSBURG** 8.20 p.m. Opera: "Hanneles Himmelfahrt," by Paul Graener.
- HILVERSUM** 7.50 p.m. Beethoven Concert, conducted by W. Mengelberg, from Amsterdam.
- LANGENBERG** 9.0 p.m. Symphony Concert, conducted by Buschkötter.
- POSTE PARISIEN** 9.15 p.m. Ravel Concert.
- TURIN** 9.0 p.m. Opera: "I Puritani" (Verdi), from the Politeana Fiorentina (relayed by Florence, Genoa, Milan, Rome and Trieste).
- VIENNA** 9.0 p.m. The Nelson Mass, by Haydn.

them—a Satirical Radio Sequence, with Poems. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.40 p.m., Talk arranged by the International Labour Bureau. 7.55, Lottery Results. 8.0, Talk on Wine. 8.15, News. 8.30, Par Droit de Conquête—Comedy (Legouvé).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—6.40 p.m., Concert by the Station Band, conducted by K. Nagl. 7.10, Talk for Housewives. 7.15, Gramophone Music. 7.25, See Moravská-Ostrava. 8.0 till Close Down, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.40 p.m., Talk: Spring in the Zeser Gebirge. 3.0, Talk: Silesian Art and the Modern Generation. 3.30, Hans Henning Baron Grote reads from his own works. 4.0, Concert by the Station Orchestra, conducted by Franz Marszałek: Soloists: Hellmut Hallendorf (Tenor) and Bruno Janz (Violin); Overture, Mignon (Thomas); Ballet Scene for Violin (Bériot); Puppenwalzer, from Die Puppenfee (Bayer); Selection from Manon Lescaut (Puccini); Valse lente and Pizzicato, from Sylvia (Delibes); Selection from Das süsse Mädel (Reinhardt). 5.30, Silesian Variety Programme. 6.0, See Leipzig. 7.0, Weather for Farmers and Sports Report. 7.30, Programme of Children's Songs, Folk Songs, Maxims, and Legends, by a Children's Choir, the Station Orchestra conducted by Ernst Prade, Margarete Raabe and Hermann Gaupp. 8.30, Announcements. 8.40, Military Band Concert. 10.0, Time and News. 10.30, Programme from Langenberg. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.25 p.m., Balalaika Concert of Russian Folk Music. 8.0 till Close Down, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—10.0 a.m., Extracts from Mignon—Opera (Thomas), on Gramophone Records. 11.0, Concert by Mickey's Club Jazz Attraction, conducted by M. Langlois. 12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra,

conducted by P. Leemans: Overture, Farfadet (Adam); Waltz from Eva (Lehár); Selection from A Masked Ball (Verdi); Violin Solo: Polichinelle (Kreisler); A Musical Story (Wetzel-José); Selection from White Horse Inn (Stolz-Benatzky); Serenade (Bonincontro); Foxtrot (Römberg). 5.0, Concert by the Station Orchestra, conducted by Franz André: Harlequin (d'Ollone); Air from Daphnis et Chloé (Offenbach); Extracts from Le Chemin du Paradis (Heymann); Farandole (Dubois). 5.30, Programme for Children. 6.0, Talk: Art in the Home. 6.15, The Clock Symphony (Haydn) on Gramophone Records. 6.30, Concert of Popular Music by the Small Station Orchestra, conducted by P. Leemans. 7.15, Talk for Workers. 7.30, Le Journal Parlé. 8.0, Concert by the Station Orchestra, conducted by F. André: Soloist: Mlle. Hélène Cortés (Songs); Norwegian Rhapsody (Lalo); La Féra (Lacôme); Pautins et poupées (de Tave); Songs: (a) L'alonette (Graham), (b) Aime-moi (Reinberg); Petite Suite (Ibert). 8.45, Talk. 9.0, Concert (contd.): Spanish Dances (Fallá); Four Viennese Pieces (Kreisler); Humorous Scenes (Leonard); Songs: (a) Love Song (Scott), (b) To the Stars (Denza); Danse macabre (Saint-Saëns); Sound Film Novelties. 10.0, Le Journal Parlé. 10.10, Popular Music on Gramophone Records. 11.0, Concert by the Alexys Orchestra, relayed from the Ancienne Belgique.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—11.0 a.m., Gramophone Concert of Light Music. 12 Noon, Concert by the Small Station Orchestra, conducted by M. Leemans: March from Madame Pompadour (Fall); Viennese Waltzes (Gillon); An den Frühling (Grieg); Ballet du printemps (Thomas); Variations (Proch), on a Gramophone Record; Melody (Rubinstein); Overture, Light Cavalry (Suppé). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert: Part I: Sacred Music; Part II: Variety Music: Egyptian March (Strauss); Frühlingserwachen (E. Bach); Feldeinsamkeit (Brahms); Selection from La Boite à bijoux (Debussy); Oriental Dance (Glazunov). 5.0, Gramophone Concert: Selection from Aida (Verdi); Cantate héroïque (De Voelt); Andante religioso (Lang); Elegiac Melody (Grieg); On Wings of Song (Mendelssohn); Mephistowalzer (Liszt). 5.45, Programme for Children. 6.30, Programme arranged by the J.V.K.A. 7.15, Talk for Catholics. 7.30, Programme for Women. 8.0, Concert by the Symphony Orchestra, conducted by M. Jean Kumps: Soloist, M. Tontenel (Baritone); Spanish Rhapsody (Ravel); Pacific No. 231 (Honegger); Finale from Wallenstein (d'Indy). 8.45, Talk on the Encyclical Rerum Novarum. 9.0, Concert (contd.): Symphonic Variations on Istar (d'Indy); Baritone Solos: (a) Popular

Flemish Song, Ik zag Cecilia komen, (b) Der Doppelgänger (Schubert); Two Basque Songs for Orchestra (Kumps); Baritone Solos: (a) Annie Laurie, (b) Popular Italian Song, Ti voglio bene assai; Slav Dances (Dvorák); De Vlaamsche Leeuw (Miry). 9.55, Evening Prayers. 10.0, Le Journal Parlé. 10.10, Gramophone Concert of Popular Music: The Clock is playing (Haaauw); Potpourri of Strauss Music: Chrysanthemum (Yoshitomo); Parody on Liszt's Second Rhapsody; Polka, Perles de cristal (Jamel); The Rosary (Sevin); No, No Lulu (Valny); Potpourri of Operetta Music by Offenbach. 11.0, Dance Music from the Century Hotel, Antwerp.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Dinico Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, The St. Matthew Passion (Bach), by the Radio Orchestra and the Bach Choir, conducted by Victor Bickerich. After the Programme, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 7.0 p.m. till Close Down.—5.30 p.m., Concert conducted by Otto Berg: Selection from Mignon (Thomas); Selection from The Pearl Fishers (Bizet); Waltz from Faust (Gounod); Selection from Samson and Delilah (Saint-Saëns); Selection from Thaïs (Massenet); Melodies from Lakmé (Delibes); Ballet Music from Hérodiade (Massenet). 7.0, Programme for Young People. 7.30, Sports and Racing Results. 7.40, Recital of Hungarian Songs by the Karl Bura Orchestra and Soloists. 8.50, Arme gute Anna—Comedy in Three Acts (Grete Harsanyi). 10.30, News, followed by Dance Music from the Café Patria.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by Hogens Hansen's Instrumental Ensemble: Overture, The Italian Girl in Algiers (Rossini); Waltz, from Faust (Gounod); Melody (Müller); Entr'acte, from La Colombe (Gounod); Albumblatt, Op. 19 (Andersen); Clanson japonais (de Séverac); Minuet from the String Quartet in D (Mozart); Scherzo (Schubert). 1.30, Programme for Boys. 2.0, Gramophone Concert: Else Knepel, Hans Jørgensen, and Choir. Air and Pilgrims (Chorus from Tannhäuser (Wagner); Tancredi Pasero; Ferrando's Aria from Act I of Il Trovatore (Verdi); Claire Dux; Marie Wiegand (Reger); Minstrels (Debussy); Vehludi Menhinn: The Flight of the Bumble Bee (Rimsky-Korsakov-Hartmann); Eric Bertner: My Darling (Heymann and Myers); Richard and Carry: Sans vous (G. Carry); Boswell Sisters: Was that the Human Thing to do? 3.0, Concert by the Station Orchestra, conducted by Emil Reesen. Soloist: Volmer Holthill (Songs). Overture, The Black Domino (Auber); Swedish Melodies, arranged for Strings (Emil Reesen); Selection from The Jewels of the Madonna (Wolf-Ferrari); Waltz, España (Waldteufel); Tarantella, from the Gipsy Suite (Germán); Six Danish Songs; Overture, La Mascotte (Audran); Suite No. 1 from Carmen (Bizet); Danse macabre (Saint-Saëns); Anitra's Dance from Peer Gynt (Grieg); Gallop (Lumbye). 5.0 (also relayed by Skarniebaek on 1,511 metres). Divine Service, relayed from the Christiansborg Castle Church. 6.20, Talk: The Extension of Schooldays, from the Mother's Point of View. 6.50, Weather. 7.0, News and Sports Results. 7.15, Time Signal. 7.30, Religious Address. 8.0, Time Signal from the Town Hall. 8.2, Around the Camp Fire—Scout Programme. Talks, Bugle Calls, Songs, Orchestral Music, Recitations, and Choral Music. 9.0, A Waltz Dream—Operetta in Three Acts (O. Strauss). 10.0, Recital of Norwegian Poetry. 10.20, News. 10.35, Recital of Polish Songs by Eva Bandrowska-Turka. 11.5, Dance Music by the Erik Tuxen Band, relayed from the Arena. In an interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., The Letter Box. 7.15, Miscellaneous Announcements and News. 7.25, See Warsaw. 11.0, Light Music followed by Dance Music from the Pavillon Restaurant. 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsburg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.8 p.m., Programme in English by the I.B.C. 5.30, Special Request Concert for Worthing and Littlehampton Listeners. The Blue Danube (Joh. Strauss); The Rose of Tralee (Glover); Spring Song (Mendelssohn); Of a' the airts (Traditional); Highland Flang (Traditional); Sailors' Hornpipe (Traditional); Overture, Morning, Noon and Night (Suppé); Father O'Flynn (Traditional); In

MAY 25th

THURSDAY

continued

the Gloaming (McGeogh); Serenade (Heykens); A-Roving (Terry); Dance of the Hours (Ponchielli). 6.15, Concert for Brighton and Hove Listeners. Ready for the River; Pianoforte Solo, I found you; Wedding Bells are ringing for Sally; Pianoforte Solos: (a) Let Love take care of you, (b) One night alone with you; Song of the Drum; When it's Springtime in the Rockies; Song of the Flame; Pianoforte Solo, Big Pond Medley; The Sun is at my Window. 7.0, Programme in French. 10.0, Close Down. Programme in English by the I.B.C. 10.0, Dance Music by the Ibcolians; Just Hummin' along; What makes you so adorable? The King was in the Counting House; Don't tell a soul; By the Fireside; Long Ago; Goodnight little Girl, Goodnight; Hoch Caroline; We will always be Sweethearts; Sing Brothers; What would you do? How are you?; Night shall be filled with Music; When the rest of the Crowd goes home. 11.0, Concert of Violin and Organ Duets, with Songs: The Standard of St. George (Alford); Because (d'Hardelot); Songs: (a) The Drum Major (Newton), (b) The Gay Highway (Drummond); Organ Solo, Love's Old Sweet Song (Molloy); I'll sing thee Songs of Araby (Clay); Song, Stonecracker John (Contes); A Perfect Day (Jacobs-Bond). 11.30, Celebrity Concert of Gramophone Records: Love me To-night, by Greta Keller; A Day's Broadcasting, by Clapham and Dwyer; That Man of my Dreams, by Sophie Tucker; Cello Solo, The Garden of Sleep, by Beatrice Harrison; Siboney, by The Street Singer; I can't just figure it out at all, by Grace Fields; It don't mean a thing, by the Mills Brothers. 12 Midnight, Club Concert for Donegal. Listeners: Irish Medley (arr. Somers); Songs: (a) My Old Irish Mother (O'Donnell), (b) Terence's Farewell to Kathleen; Violin Solo, The Morning Dew; Song, My Irish Home; Violin Solos: (a) Donegal Hornpipe, (b) Cliff Hornpipe; The Company Sergeant Major (Sanderson); Roses from the South (Joh. Strauss); Songs: (a) My Old Irish Cottage, (b) Ireland, Mother Ireland; Air de Ballet (Herbert); Songs: (a) Ho Jolly Jenkin (Sullivan), (b) A Jovial Monk am I (Audran); Medley, Come back to Erin. 1.0 a.m. (Friday), Concertina Solos: Bonnie Lass o' bon accord (Skinner); Hornpipe Medley (arr. Dale); The Road to the Isles (Fraser); Orange and Blue (Traditional); Song, Madeline—Waltz Serenade; Lopezianna (Alter); Scottish Reels (arr. Dale); Marilyn (Alter). 1.30, Popular Concert: Paining the Clouds with Sunshine; Tiptoe through the Tulips; Children of Dreams; I've never seen a smile like yours; I've finished with Lily for ever; My Rose of Stamboul; First you say Yes; Selection from The Good Companions. 2.0, Dance Music by the Ibcolians: The Knave of Diamonds; Overnight; The Juggler; Cheerful little Earful; The Japanese Sandman; Well, Well, well; A Waltz of long ago; Jack in the Box; Where is this Lady?; Balloons; Old Father Thames; Always in my Heart; Butterflies in the Rain; Drifting and Dreaming. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres, 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—12 Noon, Concert by a Darmstadt Orchestra, conducted by Willy Mehlhor; Soloist, Philipp Kraft (Flute); Overture, Martha (Flotow); Acceleration-Waltzer (Joh. Strauss); Flute Serenade from Fridericus Rex (Roland); Carillon from the Potsdam Garrison Church (Steger); Suite (Kulmann); Selection from The Land of Smiles (Lohar); Frankfurter Turnermarsch (Kämpfer). 1.20, Concert from Langenberg. 2.30, Programme for Children. 3.20, Agricultural Talk. 4.0, Concert from the Kurhaus, Wiesbaden. In the interval at 4.45, Report of the Grand Prix from Hamburg. 5.0, Talk on Hermann Lietz. 6.25, Extracts from Pictures of the Time of the Bolshevist Reign in Riga (M. Iwanis). 6.50, Sports Notes. 7.0, Variety Programme. 8.0, See Munich. 9.0, Ali Pascha—One-Act Opera (Lortzing). 10.15, Time, News, Weather, and Sports Notes. 10.45, See Munich. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

COTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., See Leipzig. 7.0, See Stuttgart. 7.40, Sports Notes. 7.55, Weather. 8.0 (from Hanover), Concert of Old Music, relayed from Schloss Marienburg. 9.0, Announcements. 9.10 (from Bremen), National Character in the Folk Song Recital by the Bremen Oratorio Quartet and

the Embergh Quartet. Part I: Slav Music. Folk Songs—Russian: (a) The Cossack and his Girl, (b) The Red Sarafan (arr. Varlamov); Violin Solo, Canzonetta (Tchaikovsky); Two Bohemian Folk Songs: (a) Lebewohl, (b) Das Gänschen; Violin Solo, Hoire Kati (Hubay); Two Hungarian Folk Songs: (a) Am Himmel leuchten schon die Sterne, (b) Mein Ungarland. Part II: Music of the Romance Lands; Serenade, Sula Corta Azura (Ceretti); Venetian Gondola Song; Italian Folk Melody Fantasia, Flora (Sartori); Basque Folk Song, Part III: German Folk Songs: Prelude for Clavichord and Viola da Gamba (Kühnel); Two Songs: (a) Heidenröslein (Werner, arr. Humperdinck), (b) Der Lindenbaum (Schubert, arr. Rudorff); Serenade and Aria for Lute (Reuser); Deutschland über alles (Haydn, arr. Mandyczanski). 10.10, Time and News. 10.30, Commentary on the Police Sports Festival, relayed from the Police Stadium. 11.0, Dance Music by the Station Chamber Orchestra, conducted by Gerhard Maasz.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—2.0 p.m., Talk for Young People: Youth Hostels. 2.30 (from Danzig), Talk: German Scientific Libraries and their Organisation. 3.0, Sigismund Rustig—Radio Play for Young People, after Marryat's Midshipman Ready. 3.40, Concert by the Small Station Orchestra, conducted by Eugen Willeken: Overture, Iphigenie in Aulis (Gluck); Selection from The Miracle (Humperdinck); Spanish Serenade (Mello); Ballet Music from Undine (Lortzing); Overture, Jessonda (Spohr); Suite No. 2 from L'Arlesienne (Bizet); Jota Aragonesa (Albeniz); Waltz from The Arabian Nights (Joh. Strauss). In the interval from 4.45 to 5.5, Programme from Hamburg. 5.30, Talk: Richard Wagner and the Art of Song. 6.0, Radio Report from the Sarkan Youth Hostel in the Kurische Nehrung. 6.45, Concert by the Small Station Orchestra: Overture, Masaniello (Auber); Waltz, Ernst und Humor (Strauss); German Dances (Regner); Neapolitan Serenade (Sgambati); Old Minnet (Sgambati); Dance of the Satyrs from A Winter's Tale (Humperdinck); Selection from The Gozika (Jones); March from Der Bärenhäuter (S. Wagner); Waltz, Nordseestürme (Döring). 8.15, News. 8.20, Hannele, Himmelfahrt—Opera in Two Acts (Graener). 10.0, News Bulletin. 10.10, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM

296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—Programme of the Algemeene Vereniging Radio Omroep (A.V.R.O.). 12.10 p.m., Gramophone Music. 12.40, Popular Music by Kovacs Lajos and his Dance Band. 1.40, Interval. 1.55, Chamber Music by the Hague Trio: Variations in E Flat (Beethoven); Andante con moto in C Minor (Grieg). 2.25, Gramophone Music. 2.40, Organ, Soprano and Flute Recital. 3.40, Programme for Hospitals. 4.10, Violin Recital by Frits Kok. 4.40, Programme for Children. 5.10, Popular Music by the Rentmeester Ensemble. In the interval at 6.10, Sports Talk. 7.10, Talk on the Nibelungs. 7.40, Time, Weather, and News. 7.50, Beethoven Concert relayed from the concertgebouw, Amsterdam. The Orchestra conducted by Willem Mengelberg. Soloist: Louis Zimmermann (Violin). Overture, Ezmont; Concerto for Violin and Orchestra. 8.55, Gramophone Music. 9.10, Concert by the Maastreechter Staar Male Voice Choir, conducted by Peter Giele: Le Rossignol (Grétry); O hodie Jesu (Palestrina); Ecce quomodo moritur (Händel); Chorus from Tannhäuser (Wagner). 9.30, Gramophone Music. 9.40, Concert by Kovacs Lajos and his Dance Band. 10.40, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. 1.40 p.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Part Relay of the Meeting of the Dutch Young Men's Association, relayed from the New Church, Middelburg. 2.40, Concert by the Station Orchestra, conducted by Piet van den Hurk, with Recitations. 4.40, Organ Recital. 5.40, Concert by the Kunst Naar Kracht Double Male Voice Quartet. 6.40, Request Gramophone Concert. 7.40, Gramophone Records. 7.55, Concert by the Utrecht Municipal Orchestra, conducted by Henri van Goudeover. Soloist: Max Kloos (Bass). The Unfinished Symphony (Schubert); The Kreutzer Cantata for Soloist and Orchestra (Bach). 8.40, Concert by the Radio Choir. In an interval from 9.0 to 9.10, News. 10.10, Orchestral Concert (contd.). Two Movements from the Second Symphony (Mahler); Lieder eines fahrenden Gesellen (Mahler); La Valse (Ravel). 10.10, Gramophone Con-

cert of Sacred Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Report and Racing Results. 8.15, Scientific Review. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert. 12 Midnight till Close Down, Programme in English by the I.B.C. H. K. Hitchcock announcing. 12 Midnight, Tango Band: Goodbye Argentina (Rodriguez); A Media Luz (Donato); Rose Colour (Polito); No te engañes Corazon (Sciammeralla); La Camparsita (Rodriguez); Mama, Yo quiero un Novio (Collazo); Farolito de mi Barrio (Traditional); El Estandarte (Pizarro). 12.30 a.m. (Friday), Concert of Popular Songs and Pianoforte Solos: Was that the human thing to do? (Fain); I'm a Specialist (Sale); Just Friends (Klemer); Pianoforte Solo, The Cat and the Fiddle (Kern); My Darling (Heymann); Taught me how to play second fiddle (Dahl); Her name is Mary (Sievier); Pianoforte Solo, Row Bells (Sullivan). 12.57, I.B.C. Goodnight Melody. 1.0, Close Down.

KALUNDBORG.—See Copenhagen.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.30 p.m., Concert. 8.30, Medical Talk. 8.50, Concert. 9.20, Sports Notes. 9.30, Talk in Esperanto: Visit Lithuania. 9.50, Concert from the Music of Thomas and Halevy. 10.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.35 p.m., Recitations by Jaakko Korhonen. 7.0, Harp, Viola and Cello Recital. 7.45, Song Recital. 8.10, Finnish Music by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Eysoldt. Festival Overture (Lenschner); Dance Suite from The Bartered Bride (Smetana); Waltz, Strandwellen (Lilling); Selection from Preciosa (Weber); Love Song (Edman); Chant russe (Lalo); Tannhäuser Potpourri (Hamm); Humoresque (Dvorak); March, Freiheitshelden (Blankenfeld). 2.40, Talk on the Great Elector. 3.5, Reading in Dialect. 3.30, Talk on Sick Benefit Societies. 4.0, Talk on Heredity. 4.30, Concert by a Women's and Girl's Choir, conducted by Maria Theresia Muckermann, and the Small Station Orchestra, conducted by Wolf. Part I: Latin and German Songs Celebrating May. Part II: Orchestral Music. Overture, Iphigenie in Aulis (Gluck); Ballet Music from Die Liebesprobe (Mozart); Two German Dances, Nos. 3 and 4 (Beethoven). Part III: May Folk Songs and Music for Recorder, Viola da Gamba, Lute, and Spinet. 6.5, Talk: Cathedrals in the Upper Rhine District—Speyer, Worms and Mainz. 6.30, Talk: The German Housewife in the Colonies. 7.0, Variety Programme. 7.45, Sports Report. 8.0, Concert by the Station Orchestra, conducted by Buschköter. 9.0, Symphony Concert conducted by Buschköter. Soloist: Heinrich Mainardi (Cello). 'Cello Concerto in A Minor (Schumann); Symphony No. 5 (Stravsky); Concerto for Strings (Sieg). 10.5, News and Sports Report. 10.25, Serenade and Dance Music conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—11.30 a.m., Transmission for all German Stations: Auf Christi Himmelfahrt allein—Cantata (Bach) by the Gewandhaus Orchestra, the Choir of St. Thomas' and Soloists. 12 Noon, Concert by the Leipzig Symphony Orchestra. Soloists: Paul Holzner (Horn) and Theodor Blumer (Pianoforte). Spring Overture (Goetz); Horn Concerto in E Flat, K.147 (Mozart); Idylle and Tanz unter der Dorflinde, from The Tölpel (Reinecke); Serenade, Op. 33 (Beethoven); Selection from Das Nechtlager von Granada (Kreutzer); Waltz, Künstlerleben (Joh. Strauss); Second Suite from L'Arlesienne (Bizet); Heiteres Spiel, Op. 68 (Blumer); Fantasia on the Waltz, Tales from the Vienna Woods (Schütz-Strauss); Comedy Overture (Reznicek). In the interval at 1.0 p.m., Reading. 2.0, Radio Report from an Allotment Garden. 2.40, Pianoforte Recital by Dr. Alf Nestmann. 3.15, The Golden Pitcher—Radio Play with Music (Heidecke). 4.45, Programme from Hamburg. 5.5, Songs of Freedom Old and New. 6.0, The Twenty-Second Musical Festival at Zerbst. The Leipzig Symphony Orchestra and the Friedrichs theater Orchestra of Dessau. Conductor: Artur Rother.

Soloist: Albert Fischer (Baritone). Vaterländische Ouverture (Regner); Triumphlied for Eight-Part Choir, Baritone Solo and Orchestra (Brahms). 7.0, Topical Talk. 8.5, See Berlin (Witzleben). 10.0, News. 10.10, Dance Music by the Emdé Orchestra. 12 Midnight, Close Down.

LINZ.—See Vienna.

LWOW

788 kc/s, 381 metres; 16 kW.—7.0 p.m., Miscellaneous Items. 7.20, News. 7.25, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—LA DOUA, Programme from Paris (Ecole Supérieure) 671 kc/s, 447.1 metres.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Programme from Madrid (EAJ7). 1.0 a.m. (Friday), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—3.0, Chimes, Exchange, Radio Journal, and Programme for Children. 9.15, News and Political Review. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes, Time Signal, Political Review, Relay of European Stations, and Literary Talk, followed by Song Recital by Luisa Nere (Soprano) and Franco Mar (Baritone). 12.45 a.m. (Friday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.25 p.m., Concert by the Station Orchestra, conducted by V. Musil. 8.0, See Prague. 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—6.30 p.m., Concert. 9.0, News Bulletin. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

553 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Orchestral Concert, conducted by Ernst Hagel: Overture, Alessandro Stradella (Flotow); Fantasia from Gaudeamus (Humperdinck); Liebesromanz (Gaudemstich); Potpourri, Songs my Mother sang (Borchert); Waltz, Amoretten-tänze (Gungl); Parade in Lilliput (Kunze); March, Die Jugend marschiert (Lindemann). 5.40, Talk: Reminiscences of Wagner's Last Birthday Celebrations. 6.0, Der Prozessions—Dialect Play in Four Acts (Gaughofer and Neuert). 7.30, Hans Jost, reads from his Book, Ich glaube. 7.50, Weather and Sports Notes. 8.0, Concert of Viennese Music by the Station Choir, Orchestra, and Soloists: Deutsches Regiment—March (Jurek); Vienna Jubilee Overture (Suppe); Stephanie Gavoille (Gzibulka); Potpourri of Viennese Folk Music with Songs (Kozjak); Waltz, Wiener Bonbons (Joh. Strauss); March, Wien bleibt Wien (Schrammel); Selection from Cagliostro in Wien (Joh. Strauss); Waltz, Hofschwalben aus Oesterreich (Jos. Strauss); March, Erzherzog-Albrecht (Kozjak). 9.10 (from Nürnberg), Die Fenster an der Leuz ist da—a Spring Variety Programme. 10.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.30 p.m., Recital of Sacred Songs by Mmc. Thorsen (Soprano), with Cello obbligato. 5.50, Chimes. 6.0, Divine Service, relayed from the Fagerborg Church. 7.15, Weather and News. 7.30, Talk on Trout Fishing. 8.0, Time Signal. 8.1, Choral Concert, relayed from the University. 9.10, Recitations, Weather, and News. 10.0, Topical Talk. 10.15, Concert by the Station Orchestra, conducted by Hugo Kramm: Second Suite from L'Arlesienne (Bizet); Piece (Halvorsen); Polchiello (Rachmaninov); The Nile (Leroux); Spanish Serenade (Albeniz); Humoresque (Spalder); Invitation to the Dance (Weber); Medley of Popular Norwegian Melodies. 11.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Notes, Agricultural Notes, Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time and Announcements. 8.45, Concert of Operetta Music. Selection from (a) Il ventaglio (Cuscia), (b) La Fornarina (Lombardo), (c) L'amante nuova, (d) The Girl in the

Taxi (Gilbert). In an interval at 9.30, Casanova in Olanda—One-Act Comedy (De-Stefani). 10.55, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Talk, 7.0, Le Journal Parlé, 8.30, Tourist Propaganda Programme, relayed from the Puy de Dôme, Radio Report, Interviews with Local Celebrities, and Musical Programme, followed by Gramophone Concert. Part I: Russian Music: Easter Overture (Rimsky-Korsakov); Cradle Song by the Chauve-souris Choir; Spanish Caprice (Rimsky-Korsakov); Dance (Rimsky-Korsakov); Oriental Dance (Glazunov); March of the Caucasian Chief (Ippolitov Ivanov). Part II, Light Music: Selection from Rose Marie (Friml); Two Songs from Les Mousquetaires au Convent (Vaincy); Minuet (Bocherini); Humoresque (Dvorák); Melody (Tabani); The Way to the Heart (Lincke); The Clock in the Black Forest (Richter); Siamesische Wacht-Parade (Lincke); A travers la nuit vers la lumière (Laukien); Surprise Potpourri (Dostad). 10.30 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé, 7.0, Programme for Children, 7.30, Variety Music on Gramophone Records, 8.0, Agricultural Talk, 8.15, Interval, 8.30, Variety Programme by Max Régulier and his Company, 9.0, Interval, 9.15, Ravel Concert: Piano-forte Solo, Foxtrot, Five O'clock from L'Enfant et les Sortilèges; Histoires naturelles; String Quartet, 10.30, News.

PARIS

RADIO PARIS; Call CFR, 174 kc/s, 1,725 metres.—7.5 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (cont'd.), 7.45, Light Music on Gramophone Records, 8.0, Press Review and Weather, 12 Noon, Protestant Address, 12.30 p.m., Orchestral Concert: Selection from Frederica (Lehar); Extracts from The Love Parade (Scherzinger); Song and March from Un Réve blond (Heymann); Gramophone Records: (a) Ne sois pas jaloux (Oberfeld), (b) Si tu veux (Moretti); Popular Melodies. In the interval at 1.0, Exchange, News, and the Weather, 1.5, Concert, Part I: Emilie Vaucher and his Musette Orchestra. Soloists: Jean Pegronni, M. Regoram, M. Brannonval, Part II: Max Franey and his Orchestra. In the interval at 1.30, Exchange, 2.0, Exchange, 3.0 (approx.), Running Commentary on the France v. Wales Football Match, relayed from the Stade de Colombes. In the interval at 3.45, Exchange and Market Prices, 6.10, Agricultural Talk, 6.30, Popular Music on Gramophone Records, 6.45, Legal Talk, 7.0, Orchestral Concert: Melody from Namouna (Lalo); Dance (Moszkowsky); Clair de Lune (Novak); Les Fables de La Fontaine (Monton); Ballet Music from Bouton d'or (Pierne); Divertissement on Russian Songs (Rabaud); Masquerade (Lacôme), 7.45, Review of the German Press, Commercial Prices, and News, 8.0, Programme of Poems and Music, 8.30, News, Weather, and Sports Notes, 8.40, Review by Christophe, 8.45, Two Plays: (a) Montheu chez Montaigne (Cahlier de Beynac), (b) Le Misanthrope et l'Avare (Laficque). In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 980 kc/s, 306 metres; 25 kW.—Relayed by W8XK on 48.85 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland, 7.35, KDKA Home Forum, 7.55, Care of the Garden, by Alfred C. Hottes, 8.0, Betty and Bob, from New York, 8.15, Radio Troubadours, from New York, 8.30, Radio Sky Pilots, 8.45, State Federation of Pennsylvania Women, 9.0, Teaberry Baseball Scores, 9.5, Pages of Progress, 9.30, Weather Report, 9.32, Market Reports, 9.45, Programme to be announced, 10.0, Teaberry Baseball Scores, 10.5, Dick Darling, from New York, 10.30, The Singing Lady, from New York, 10.45, Little Orphan Annie, 11.0, Hotel Park Central Orchestra, from New York, 11.15, Time Signal, 11.16, Weather Report, 11.17, Teaberry Sports Review, 11.22, Press News Reeler, 11.29, Temperature Report, 11.30, Riggs and Moke, 11.45 to 4.0 a.m. (Friday), New York Relay, 11.45, Today's News, by Lowell Thomas, 12 Midnight, Pepsodent Amos 'n' Andy, 12.15 a.m., A and P Programme, 12.30, Concert Footlights, 12.45, Merle Thorpe Talks, 1.0, Captain Diamond's Adventures, 1.30, Rin Tin Tin Thrillers, 1.45, Thurston, the Magician, 2.0, Death Valley Days, 2.30, Wayne King's Orchestra, with Lady Esther, 3.0, Time Signal, and Green Brothers' Musical Varieties, 3.30, Radio City Variety Programme.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.0 kW.—6.50 p.m., Miscellaneous Announcements and News, 7.10, Agricultural Letter Box, 7.25, See Warsaw, 7.58, Time Signal, 8.0, Orchestral Concert, conducted by Wladyslaw Ruzickowski, Soloists: Mile. Barbara Lasinska (Piano-forte), Concerto grosso (Händel); Concerto in D Minor for Piano-forte (Bach); Lux Dei

MAY 25th

THURSDAY

continued

(Gorezycki). 8.45, Spring Song Recital by Mme. Wanda Roessler-Stokowska (Mezzo-Soprano), 9.10, Arias from Opera by Roman Heysing (Baritone): An Old Legend (Zelen-ski); Halka (Moniuszko); Die Gräfin (Moniuszko); Prince Igor (Borodin); Faust (Gounod); Lakmé (Delibes), 10.0, Time Signal, Sports and Police Notes, 10.15 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.0 p.m., Military Band Concert, conducted by Prokop Oberthor, relayed from the Slovansky Ostrov, Festival Entry March (Oberthor); Overture, The Secret (Smetana); Slav Rhapsody No. 1 (Dvorák); Overture, The Mastersingers (Wagner); Tarantella (Bendl); Three Czech Dances, Op. 15 (Novak); 1812 Overture (Tchaikovsky); Sokol Festival March (Suk), 6.0, German Transmission: Folk Songs and Spring Songs by a German Choral Society, 7.0, Concert by the Prague Piano-Accordion Quartet, 7.25, See Moravská-Ostrava, 8.0, Marriage—Comedy in Three Acts (Gogol). In the interval at 9.0, Time Signal, 10.0, Time Signal, 10.1, News Bulletin, 10.15, Concert of Light Music, 11.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Geneva), Topical Talk, 7.30 (from Geneva), Weather, News, and Announcements, 8.0 (from Geneva), Vibraphone Solos, 8.15 (from Geneva), The Optimists—Musical and Literary Cabaret, 9.0, Concert by the Station Orchestra, 9.50, News and Weather, 10.0, Concert (cont'd.), 10.30 (from Geneva), Talk: The Work of the League of Nations, 10.50 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW.—Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.0 p.m., Humorous Talk, 1.5, Report on the Cycle Tour of Italy Cycling Race, 1.10 to 2.15, Variety Concert from Turin. In the interval from 1.30 to 1.45, Giornale Radio and Exchange, 4.45, Children's Radio Review, 5.0, Report on the Cycle Tour of Italy Cycling race, 5.10, Announcements, 5.15, Exchange and Giornale Radio, 5.30 to 6.30, Soloist Concert, Mary Luisa Sardo (Violin), Maria Briganti (Soprano), Maria Williams (Mezzo-Soprano) and Clara Sardo (Piano-forte), Violin Solos: (a) Slav Fantasia (Dvorák), (b) Serenata spagnola (Carnevali-Corti); Soprano Solos: (a) Ave Maria, from Othello (Verdi), (b) Arietta from Le donne curiose (Wolf-Ferrari), (c) Aria from Anna Balena (Donizetti); Syncopated Music for Piano-forte; Mezzo-Soprano Solos: (a) Aria from Ruy Blas (Marchetti), (b) Aria from Don Carlos (Verdi); Violin Solos: (a) Malagena (Sarasate), (b) Moto perpetuo (de Giarnieri), 6.40 (Naples), Shipping and Sports Notes, 6.50, Agricultural and Dopolavoro Notes, 7.10, Tourist Report, 7.20, Giornale Radio, 8.0, Time and Announcements, 8.5, Summary and Notes on the Day's Results of the Cycle Tour of Italy, 8.15, Gramophone Records of Light Music, 8.30, Giornale Radio and Sports Notes, 8.50 (approx.), See Turin. In the interval: Talk on Literature and Art, Recitations and Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW.—Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports and Baseball Scores, 12 Midnight, Fleischmann Hour, from New York, 1.0 a.m. (Friday), Capt. Henry's Show Boat, from New York, 2.0, Lucky Strike Hour, from New York, followed by Programme Resume.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—12 Noon (from Zürich), Concert by the Swiss Radio Orchestra, 12.28 p.m., Time and Weather, 12.30, News Bulletin, 12.40 (from Zürich), Concert (cont'd.), 1.30 (from Basle), Agricultural Programme, 2.0 (from Basle), Concert of Light Music by the Miinchenstein Society, 2.30 to 5.0, Interval, 5.0 (from Basle), Organ Recital on Gramophone Records, 5.30 (from Basle), Protestant Address, 6.0 (from Basle), Recital of Italian Arias and Songs on Gramophone Records, 6.30 (from Basle), Reading from I Promessi Sposi (Manzoni), with Introductory Talk, 7.0 (from Basle), Time and Sports Notes, 7.10 (approx.), Songs on Gramophone Records, 7.30 (from Basle), Talk in Berne Dialect, 8.0 (from Basle), The Bridge of Sighs—Opera in Four Acts (Crémieux and Halévy). In the interval at 9.10, News Bulletin, 10.20 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW.—Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 267 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.30 p.m., Gramophone Music, 5.30, Reading, 6.0, Evensong, relayed from Uppsala, 6.62 kc/s, 453.2 metres, 7.15, Weather and News, 7.30, Orchestral Concert of Light Music, 8.5, Professor Bernhardt—Comedy (Schnitzler), 9.45, Weather and News, 10.0, Concert of Swedish Music by Iva Aulin-Voghters (Songs), Astrid Berwald (Piano-forte), and Charles Barkel (Violin), Three Songs (Sjögren); Piano-forte Solos: (a) Two Pieces from Strofer i sol och skugga (Seymer), (b) Intermezzo (Stenhammar), (c) Improromptu (Fryklöf); Violin Solos: Idyll, Cradle Song and Humoresque from Fyra akvareller (Aulin); Songs: (a) Vid havet (Aulin), (b) Giorgiones serenad (Aulin), (c) Piece (Stenhammar), 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.0 a.m., Gramophone Concert of Classical Music, 11.30, Catholic Service in French, 12 Noon, Gramophone Concert of Variety Music, 12.45, News, 1.0, Time, 1.1, Orchestral Concert, conducted by Maurice de Villers: Festival Overture (Lentner); Selection from Madame Chrysanthème (Messager); Orchestral Suite, On the Volga (Dyck); Popular Romanian Dances (Béla-Bartok); Divertissement on Russian Songs (Rabaud); Scherzo (Lalo), 2.0, Programme for Children, 3.0, Piano-forte Recital by Wanda Landowska, relayed from Paris (Radio Coloniale), 15.243 kc/s (19.68 metres), 4.0 to 4.45, Interval, 4.45, French Elocution Lesson, 5.0, Concert of Jazz Music, conducted by Roskam, 6.0, Talk in German: Old Castles on the Loire, 6.15, Talk for Housewives, 6.30, Orchestral Concert, conducted by Maurice de Villers: March, Sambre et Meuse (Plauquette-Turlet); Valse des brunes (Ganne); Overture, Raymond (Thomas); Selection from I Pagliacci (Leoncavallo); Violin Solo, Légende (Wieniawski); Carnival (Guiraud); Orchestral Suite, Gitaneries (Razigade); March, Le coq gaulois (Poppy), 7.30, Time and News, 7.45, Light Music on Gramophone Records, 8.15, Lottery Results, Announcements, and Light Music on Gramophone Records, 8.30, Organ Recital by V. Duseh, relayed from the Catholic Church in Erstein: Fantasia and Fugue in G Minor (Bach); Melody (Reger); Andante gracioso (Hesse); Scherzo (Gigout); Canzone (Guilmant); Adagio from the Fifth Symphony (Widor); Rhapsody No. 2 on Breton Songs (Saint-Saëns), 9.30, Orchestral Concert, conducted by Jaquet, relayed from the Café Moll in Mulhouse: Overture, Zampa (Dèrolé); Waltz, La rose noire (Anby); Trio from Tannhäuser (Wagner); Séduction (Accordi); Introduction and Rondo capriccioso for Violin and Piano-forte (Saint-Saëns); In the Mystic Land of Egypt (Ketelbey); Selection from I Pagliacci (Leoncavallo), 10.30 (approx.), Close Down.

STUTIGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.0 p.m., Concert by the Württemberg Protestant Young Men's Association, relayed from Reutlingen. Address by the President of the Association, 2.0, In May—Gramophone Concert, 2.45 (from Karlsruhe), Choral Concert, 3.15, Talk: Swabian Architecture, 3.45, Programme for Young People, 4.45, Radio Report of the Grand Prix Horse Races from Hamburg, 5.15, Concert of Old Viennese Dances by the Radio Orchestra, conducted by Gustav Görlich, Fiaker-Marsch (Reidhardt); Waltz, Mähren aus Alt-Wien (Ziehrer); Polka, Wiener Type (E. Strauss); Waltz, Singedichte, Op. 1 (Joh. Strauss); Polka, Rutschepeter (Ziehrer); Da gehn wir halt nach Nussdorf 'aus (Lorenz), 6.0, Sports Notes, 6.20, Reading of Swabian Poems and Recital of Swabian Songs, 6.50, Im Krug zum grünen Kranze—Gramophone Records, 7.30, Programme for Soldiers—Relay from a Barracks, 8.0, Variety Programme, 9.0, Operetta Concert by the Württemberg Orchestra, conducted by Gustav Görlich, Soloists: Gerda Hans (Soprano) and Hans Hanns (Tenor), Overture, Griegi (Lincke); Two Songs and Duet from A Carnival in Rome (Joh. Strauss); Mimosa Waltz from The Geisha (Jones); Song and two Duets from The Cousin from Nowhere (Künneke), 10.0, Time and News, 10.30, Gramophone Records of Famous Instrumentalists, 10.45, See Langenberg, 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire.—6.0 p.m., News, 6.15, Saxophone Solos, 6.30, Opera Music, Selection from: (a) Lakmé (Delibes), (b) Thais (Massenet), (c) Romeo and Juliet (Gounod), (d) The Tales of Hoffmann (Offenbach), 6.45, Petite Suite (Debussy), 7.0, Batailaka Music and Russian Songs,

7.15, Racing Results, Market Prices, and News, 7.25, Local News Bulletin, 7.30, Concert of Viennese Music, 8.0, Light Music, 8.15, Cello Solos: Prelude to Le Déluge (Saint-Saëns); Agnus Dei (Bizet); Le Cygne (Saint-Saëns), 8.30, Recitations, 8.45, Instrumental Solos, 9.0, Extracts from La Basoche—Opera (Messager), 9.40, Instrumental Music, 10.0, Popular Melodies, Chanson d'avril (Bizet); Le Passeur du printemps (Goublier); Song (Beethoven), 10.15, North African News, 10.30, Concert for Listeners in Morocco, L'Air du Corno (Galos); L'Angeus de la mer (Goublier); Hindu Song (Rimsky-Korsakov); Prelude (Kachmannov); La Ronde des heures (Sylviano); Selection from Si j'étais roi (Adam), 11.0, Sound Film Music, 11.15, Organ Recital, 11.30 to 12 Midnight, Programme in English by the I.B.C., W Brown-Constable announcing, 11.30, Hawaiian Music, My Waikiki Mermaid; Hawaiian Skies are gleaming; La Paloma; Pasadena Rose; O Sole Mio; Life; Maria Mari; Poor Kid, 11.57, I.B.C. Good-night Melody, 12 Midnight, Weather and Announcements, 12.5 a.m. (Friday), Songs from Operettas, 12.15, Orchestral Music, 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 p.m., till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW.—Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 550 kc/s, 500.8 metres.—5.0 p.m., Report on the Cycle Tour of Italy, 5.10 to 6.0, Concert by the Eliseu Cigany Quartet, 6.35, Cornale Radio, Sports Notes, and Agricultural and Dopolavoro Notes, 7.0, Time, Tourist Report and Gramophone Records of Light Music, 7.20, Giornale Radio, 7.45, Gramophone Records of Variety Music, 8.0, Announcements, Report on the Cycle Tour of Italy, Weather and Light Music on Gramophone Records, 8.50, Talk on the following Transmission, 9.0, I puritani—Opera in Three Acts (Verdi), relayed from the Politeama Fiorentino. In the intervals: Literary Notes and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 9,569 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French, 8.0, to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW.—Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres.—6.45 p.m., Weekly Microphone Feuilletin, Die Dichterkönigin von Vacluse (E. Kästner-Michal-tschke), 7.5, Woman in Operetta, Dance and Song; Concert by the Josef Holzer Orchestra and Soloists, 7.50, Time and Announcements, 7.55, Concert (cont'd.), 8.45, Topical Talk, 9.0, The Nelson Mass (Haydn) The Hofmusikkapelle, conducted by Carl Luzzi; Soloists: H. Sandler (Soprano), E. Tauterl (Contralto), Richard Tomek (Tenor) and Rudolf Zeindler (Bass), 10.0, News, 10.15, Dance Music from Hübners Parkhotel Schönbrunn.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—12.15 p.m., Concert by the Philharmonic Orchestra, conducted by S. Kazuro, Soloists: H. Werpachowska, C. Izzygrin, H. Bielicka, K. Norska, M. Bulat-Mironowicz, M. Ochalski and W. Prusak, Extracts from The Creation (Haydn); Et incarnatus est from the Mass in B Minor (Bach); Extracts from The Messiah (Händel); Children's songs (S. Kazuro). In the interval, Talk, 2.0, Agricultural Talk, 2.20, Polish Music, relayed from Cracow, 959 kc/s (312.8 metres). In the interval at 2.40, Dialogue, 4.0, Programme for Children, 4.25, Gramophone Records, 4.45, Talk: Dogs and Children, 5.0, Violin Recital by Irene Dubiska: Two Hungarian Dances (Brahms); Scottish Fantasia (Bruch); Thema grandino (Huarte); Rondalla aragonesa (Granados); Bulgarian Rhapsody (Vladigerov), 5.55, Programme Announcements, 6.0, Dance Music from a Café, News in the interval, 7.0, Miscellaneous Items, 7.25, Dramatic Programme, 8.0, Concert by the Radio Orchestra, conducted by S. Navrot; Overture, Faust (Gounod); Invitation to the Dance (Weber-Berlioz); Introduction and Aria from Eugene Onegin (Tchaikovsky); Solos (to be announced); Intermezzo and Barcarolle from The Tales of Hoffmann (Offenbach); Waltz from Eugene Onegin (Tchaikovsky); Introduction to Act II of Carmen (Bizet); Cracovienne fantastique (Paderewsky); Overture, Raymond (Thomas); Berceuse de Jocelyn (Godard); Mazurka, Obegias (Wieniawski); Solos (to be announced); Extracts from Un Bal costumé (Rubinstein); Suite campestre (Amadei); Romance (René); Minuet (Bolzoni); Mazurka (Lysarski). In the interval, Sports Notes, 10.0, Dance Music Relay, 10.55, Aviation Weather Report and Police Notes, 11.0, Dance Music Relay.

ZURICH.—See Schweizerischer Landessender.

ATHLONE
 725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report and Popular Music on Gramophone Records. 6.0, Programme for Children. 6.45, News. 7.0, Gardening Talk. 7.15, Literary and Dramatic Talk. 7.30, Time Signal. 7.31, Irish Music by the Station String Orchestra. 7.50, Anglo-Irish Songs by P. J. Duffy (Baritone) and Mrs. Duffy (Mezzo-Soprano). 8.5, Pianoforte Solos by Carl Hardebeck. 8.20, Ballad Selection by the Station Orchestra. 8.35, Favourite Songs by P. J. Duffy and Mrs. Duffy. 8.45, Dramatic Programme by the Mimmers. 9.15, Programme by Jack MacGarvey (Entertainer). 9.35, The Station Orchestra. 9.45, Sponsored Programme. 10.45, Time, News, Weather and Close Down.

BARCELONA
 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Concert by the Station Trio. 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Request Gramophone Records and News. 10.0, Chimes from the Cathedral, Weather, Messages for Seamen and Exchange. 10.10, Concert by the Station Orchestra: Overture, The Ruins of Athens (Beethoven); Prelude to Act III of The Mastersingers (Wagner). 10.20, Dance Music. 11.0, Reading. 11.15, Concert by the Philharmonic Mandoline Orchestra, conducted by Felix de Santos Sebastian: Adagio and Allegretto from the Sonata No. 14 (Beethoven); Minuet in G Minor (Mozart); Ave Maria (Gounod); Selection from La reina mora (Soriano); And den Frühling (Grieg); Sardana, Camprodon (Maen). 12 Midnight, News and Popular Music on Gramophone Records. 1.0 a.m. (Saturday), Close Down.

BARI
 1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk, and Dopolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.40 (approx.), Concert of Opera Music: Soloists: Milena Barberio (Soprano) and Franco Signorile (Tenor); Overture, I promessi sposi (Ponchielli); Soprano Solo: Aria from Gianni Schicchi (Puccini); Tenor Solo: The Stars were shining from Tosca (Puccini); Selection from La rondine (Puccini); Soprano Solo: Ora non soffro piu, from Lodoletta (Masenghi); Tenor Solo: Amor li vieta, from L'Arlesiana (Gile); Soprano Solo: Two Arias from L'Arlesiana (Gile); Prelude to L'Amico Fritz (Masenghi); Soprano Solo: Adoloscito ancor from Dejanice (Catalani); Tenor Solo: Testa dorata from La Bohème (Leoncavallo); Prelude to Act I of William Ratcliff (Masenghi); Soprano Solo: In son Famile anella from Adriana Lecouvreur (Gile); Tenor Solo: Madame Butterfly (Puccini); Tarantella from Sicilian Vespers (Verdi); Theatre Notes in the interval. 10.30, Popular Music on Gramophone Records. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE
 697 kc/s, 430.4 metres; 2.8 kW.—7.20 p.m., Talk for Sokols. 8.0, Recital by Milica Moe and Ciril Licar: Variations and Fugue on a Theme of Beethoven (Royer); Scherzo, Op. 37, for Two Pianofortes (Saint-Saëns). 8.45, Song Recital by Majda Georgijevic-Pahst: Gavotte from Maunon (Massenet); Villanelle (Del' Aqua); Melody (Tachick); Ein Schwam (Grieg); Spanish Song (Balakirev); Aria from The Bartered Bride (Smetana); Aria from The Merry Wives of Windsor (Nicolai). 9.15, Concert of French Music by the Station Orchestra: Bacchanale from Samson and Delilah (Saint-Saëns); Intermezzo angelicus (Franck); Prelude and Mazurka from Coppélia (Delibes); Scènes alsaciennes (Massenet). 10.0, News Bulletin. 10.10 (approx.), Cigány Music from the Petrosacka Zadruga.

BERLIN
DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Choral Concert on Gramophone Records. 3.0, Talk: German Girls at the Memorial of Gorch Fock. 3.30, Weather and Exchange Quotations. 3.45, Reading. 4.0, Concert from Leipzig. 5.0, Educational Talk. 5.25, Talk: Reminiscences of Brahms. 5.50, Topical Talk. 6.0, A Poem. 6.5, Song Recital by Hilde Finke: Songs (Schubert): (a) Heiss' mich nicht reden, (b) Nur wer die Sehnsucht kennt, (c) So lass mich scheinen, (d) Ach neige Du Schmerzenreiche: Songs (Brahms): (a) An die Nachtigall, (b) Immer leiser wird mein Schlummer. 6.30, Talk: The Physical Training of the Soldier. 6.50, Weather for Farmers and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 9.20, Interval. 9.30, String Quartet in A Minor, Op. 41 (Schumann), by the Berber Quartet. 10.0, Weather, News, and Sports Notes. 10.25, Talk by Kurt G. Sell: What People are talking about in America, relayed from America (on Gramophone Records). 10.45, Weather Report for Shipping. 11.0, Concert from Frankfurt. 12 Midnight, Close Down.

FRIDAY

MAY THE TWENTY-SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Place names and their history. Recital of light music.
- LONDON REGIONAL** Variety programme. Concert of contemporary music.
- MIDLAND REGIONAL** Vocal and instrumental concert.
- NORTH REGIONAL** Historic cities of the North: Durham.
- WEST REGIONAL** Welsh concert.
- SCOTTISH REGIONAL** Instrumental concert.
- BELFAST** "The Presentation," an Ulster comedy, by Mafe Haughton.

ABROAD

- BERLIN (Witzleben)** 8.0 p.m. "Schlageter," Drama by Hanns Johst (relayed by other German Stations).
- BUDAPEST** 7.30 p.m. Opera: "Il Trovatore" (Verdi), from the Royal Hungarian Opera House.
- COPENHAGEN LEIPZIG** 10.25 p.m. Brahms' String Quintet, in F (Op. 88).
- PALERMO** 9.40 p.m. Beethoven's "Eroica" Symphony.
- PRAGUE** 8.45 p.m. Opera: "La Wally," by Catalini.
- RADIO PARIS** 8.5 p.m. Concert, conducted by Jirak, from the Municipal Theatre, Teplice-Sanov.
- RIGA** 8.45 p.m. Popular Concert by the Garde Républicaine Band.
- ROME** 7.15 p.m. Symphony Concert.
- 9.0 p.m. Operetta: "The Dance of the Dragonflies," by Lehar.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.40, The Witzleben Station informs its Listeners. 6.45, Topical Talk. 6.55, Announcement. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Transmission for all German Stations: Schlageter—Drama (Hanns Johst). 9.30, Helden—Hymn for Male Voice Choir and Organ (Köhneke), by the Wireless Choir, conducted by Alexander Ecklebe. 9.35, Pianoforte Concerto in G, Op. 58 (Beethoven), by Edwin Fischer (Pianoforte), and the Station Orchestra, conducted by Eugen Joellm. 10.10, News Bulletin. 10.15 (approx.), Orchestral Concert. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.30 p.m., News Bulletin. 7.40, Gramophone Records of Popular Music. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News Bulletin. 8.30, Concert of Waltzes by the Station Symphony Orchestra. Soloists: Mlle. Bastime and M. Delurey.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.10 p.m., Sports Report. 7.25, The Thief—a Radio Sketch. 7.50, Talk on Politics. 8.5, See Brno. 9.10, Military Band Concert, conducted by J. Langer: Entry of the Guests from Tambüser (Wagner); Overture, The Tinker (Skrop); Slav Dance, No. 3 (Dvorák); Suite from Der Freischütz (Weber); Slovak Dance (Smatek); Polka (Chlap); Festival March (Langer). 10.0, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.5 p.m., Gramophone Concert. 2.45, Programme arranged by the Post Office, with Gramophone Music. 3.10, Agricultural Prices. 3.40, Programme for Children. 4.10, Pianoforte Duets by Käthe Stränssler and Wilhelm Stränssler; Introductory Talk; Four Polonaises (Schumann); Variations on a Theme by Schumann (Brahms). 4.40, Talk on Schlageter. 5.10, Concert by the Station Orchestra, conducted by Franz Marszalek: Overture, Egmont (Beethoven); Legend Op. 69, No. 10 (Dvorak); Andante religioso (Brycschok); Prayer and Temple Dance from Olaf Trygvason (Grieg); Melody Op. 3, No. 3 (Rachmaninov); Scènes dramatiques (Massenet). 6.20, Programme to be announced. 6.50, Weather

for Farmers, News and Market Prices. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.10, Transmission for all German Stations, relayed from Berlin (Witzleben). 9.40, Concert from Berlin (Witzleben). 10.10, Time and News. 10.30, Talk: By Water from Breslan to Stettin. 10.50, Concert from Frankfurt. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by J. Janota; Soloist: Marta Svoreiková (Songs); Overture, Finlandia (Sibelius); Five Scandinavian Songs; Two Pieces (Sinding): (a) Evening, (b) Rustle of Spring; Five Scandinavian Songs; Greenland Suite (Frederiksen). 4.55, Theatre Notes. 5.5, See Prague. 6.5, Talk: Creative Art. 5.5, Talk for Workers. 6.25, German Transmission: News, Talk for Women, Talk for Workers, and Reading of Poems. 7.0, See Prague. 7.10, Literary Talk. 7.25, See Moravská-Ostrava. 8.5, Concert of Spanish Music by the Station Orchestra, conducted by Jan Janota, with Commentary and Gramophone Interludes. 9.10, Reading of Czech Poems, with Introductory Talk. 9.40, Pianoforte Recital. 10.0, See Prague. 10.15 (approx.), Close Down.

BRUSSELS (No. 1)

1.1 N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Gramophone Concert of Light Music. 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. 2.0, Broadcast for Schools. 5.0, Concert by the Station Symphony Orchestra, conducted by Meulemans: Selection from The Merry Wives of Windsor (Nicolai); Phaeton (Saint-Saëns); Two Melodies for Strings (Grieg); Conte d'avril (Widor); Wienerburg (Ziehrer). 6.0, Talk. 6.15, Light Music on Gramophone Records. 6.30, Concert by the Small Station Orchestra, conducted by P. Lemans. Soloist: Michot (Violin). Overture, Le nouveau Seigneur du Village (Boieldieu); Suite, La source (Delibes); Serenade (Widor); Selection from Madame Favart (Offenbach); Dance of the Merry Mascots (Kotlhey); Madrigal for Violin (Simonetti); Polka from Mademoiselle Sourire (Lachaux). 7.15, Humorous Talk on the Amateur Wireless Enthusiast. 7.30, Legal and Literary Talks. 8.0, Programme for Soldiers and Ex-Servicemen. 8.45, Tourist Talk. 9.0, Concert by the Station Symphony Orchestra, conducted by Meulemans. Soloist: Mme. Dautinne (Songs); Festival March (Busser); Overture, Il Seraglio (Mozart); Selection from Le petit effe Fernie-Joel (Schmitt); Songs: (a) Aria from Werther (Massenet), (b) Song (Bemberg), (c) Roses of Picardy (Haydn Wood); Tarantella for Flute and Clarinet (Saint-Saëns); Ballet Music from

Lakmé (Delibes); Spinning Song (Van Oost); Coronation March (Eggar). 10.0, Journal Parlé. 10.10, The Listeners' Quarter of an Hour. 10.25, Gramophone Concert of Dance Music. 11.0, La Brabançonne.

BRUSSELS (No. 2)

1.1 N.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture: La Girald (Adam); Suite, La Féria (Lacôme); Andalusian Song (Fort); Selection from Benvenuto Cellini (Diaz); Serenade for Violin (Arensky); The Clock and the Dresden Figures (Kotlhey); Selection from Gipsy Love (Lehar); One-step, Ragazze d'oggi (Mascheroni). 1.0 p.m., Le Journal Parlé. 1.10, Selection from La Gioconda (Ponchielli) on Gramophone Records. 2.0, Broadcast for Schools. 5.0, Gramophone Concert: March (Frick); The Rose-Beetle goes a-wooing (Armandola); Andante religioso (Lang); Parade im Märchenwald (Nonck); Gihwürcmens Stelldichein (Siede); Melody; Einwürmens Stelldichein (Siede); Selection from The Gipsy Baron (Joh. Strauss); Overture, La Princesse jaune (Saint-Saëns); Selection from The Arabian Nights (Joh. Strauss); Variations on Es kommt ein Vogel geflogen (Ochs); Romance, Op. 26 (Svendsen); Slav Rhapsody (Friedemann); Entry March of the Boyards (Halverson). 6.15, Talk: The Draining of the Zuider Zee. 6.30, Recital of Sonatas for Pianoforte, by Mme. Wechs-Cosson. 7.0, Gramophone Records: Variations on a Swiss Theme (Mohr); Hungarian Rhapsody No. 2 (Liszt). 7.15, Talk on Flemish Broadcasting. 7.30, Wireless Review. 8.0, Light Music on Gramophone Records. 8.30, The Path of Glory—an Extravaganza (L. du Gardie Peuch), translated by G. de Mynck. 9.30, Gramophone Records of Light Music. 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the Century Hotel, Antwerp.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Radio Orchestra; Soloist: D. Teodorin (Violin); Overture, Carnaval Romain (Berlioz); Spanish Suite (Albéniz); Selection from Francesca da Rimini (Zandonai); Selection from Zigeunerprimas (Kálmán); Potpourri, Souvenirs of Bayreuth (Mörena); Waltz No. 1 (Dvorák); Second Movement from the Symphony in C (Brahms); Marionettes (Ljadov); Violin Solo, Legend (Wieniawski); March (Suk). In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, An Opera on Gramophone Records. In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 7.25 p.m. (approx.) till Close Down.—4.0 p.m., Concert by the Wireless Quintet. 5.0, Talk for Scouts. 5.30, Violin and Guitar Recital: Sonata for Violin and Guitar (Gragnani); Tocata (Bischoff); Minnet (Roussseau); Prelude in E Minor (Chopin); Oursante (Cui); Wiegengied (Schumann). 6.0, Talk. 6.20, Concert by the Misi Vörös Cigány Orchestra. 7.0, Exchange. 7.10, Review of Foreign Affairs. 7.30, Il Trovatore—Opera (Verdi), relayed from the Royal Hungarian Opera House. News in the interval. After the Opera: Dance Music on Gramophone Records.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,163 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 1.15, Broadcast for Schools. 1.45 to 2.40, Interval. 2.40, Concert of Jazz Music by Anker Albech and his Band. In an interval at 3.25, Reading. 4.40, Programme for Children. 5.35, Exchange and Fish Market Prices. 5.50, Talk: Summer Camping. 6.20, German Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.20, Talk on Social Reform. 7.50, Programme by Knud Heglund. 8.0, Time Signal from the Town Hall. 8.1, Concert of Music by N. O. Raasted, with the Composer at the Organ, relayed from the Cathedral. Niels Rudolph Gade (Songs) and Knud Pedersen (Violin). Introduction and Passacaglia for Organ; Psalm 90, Op. 34, No. 2, for Solo Voice, Choir and Organ; Sonata, Op. 45, for Violin and Organ. 8.45, Shanghai—Dramatic Episode from the Days of Sailing Ships, arranged for Radio. 9.25, Saxophone and Pianoforte Recital by Eigil Mortensen and Viktor Fischer, with Gramophone Interludes; Waltz (Renard); Gramophone Record, Then I'll be happy (Brown and Friend); Pianoforte Solo, Yo-Yo (Waltner); Saxophone Solo, Fox Trot, I'll do my Best to Make You Happy (Noble); Gramophone Record, This is the Day of Days (Dixon and Woods); Saxophone Solo, Valse lente (Eyolf); Pianoforte Solo, Dancing Puppets (Rust); Gramophone Record, Minnie the Moucher's Wedding Day (Koesler and Arden); Saxophone Solo: Blues (Hoffmark). 10.5, News. 10.25, String Quintet in F, Op. 88 (Brahms) for Two Violins, Two Violas, and Cello. 11.5, Dance Music by the Kal

MAY 26th

FRIDAY

continued

Julian Band, relayed from the National Seal. In an interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Saturday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Talk on Films. 7.15, Miscellaneous Announcements and News. 7.30, See Warsaw. 12 Midnight (approx.). Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. 5.30 p.m., Special Request Concert for Southampton and Winchester Listeners: Spring Song (Mendelssohn); Songs: (a) The Lute Player (Allittson); (b) Danny Boy (Weatherley); Stephanie Gavotte (Czibulka); Songs: (a) The Old Superb (Stanford); (b) There's another empty saddle (Colville); In the Still of the Night (Thornburn); Songs: (a) Lay my Head beneath a Rose; (b) Wayside Rose (Lehar); Ideal (Tosti); Over the Waves (Rosas). 6.15, Organ Recital for Bourne and Weymouth Listeners: There's something about a Soldier (Gay); Paradise, from Tell her the Truth; Butterflies in the Rain (Sherman Myers); Vocal Trios: (a) Roll on Mississippi, roll on; (b) Time on my Hands; Bells across the Meadow (Kettelbey); The Wooden Soldier and the China Doll; Serenade (Drigo); Vocal Trios: (a) Painting the Clouds with Sunshine; (b) Tiptoe through the Tulips; Sing, Brothers; Selection from the Film Illegal. 7.0, Programme in French. 7.0, News and Gramophone Music. 7.45, Agricultural Talk. 8.0, Gramophone Music and News. 8.30, Listeners' Programme. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Iboalians: The Younger Generation; You, just you; Mad about the Boy; Don't say Good-bye; Bravo, Jim; In a shanty in an old shanty town; When the band goes marching by; We just couldn't say Good-bye; There's another trumpet playing in the sky; Yes, Mr. Brown; And then we'll have some more; Take a Spot of Happiness; They all start whistling Mary; Song of the Bells. 11.0, Concert by the Symphony Orchestra: Drink to me only with thine eyes (Calcott); Shepherd's Dance (German); Solveig's Song (Grieg); Hungarian Dance No. 6 (Brahms); Harp Solo; Ave Maria (Schubert); Night on the Bare Mountain (Massogorsky); Song without Words in A Minor (Tchaikovsky). 11.30, Gilbert and Sullivan Concert: Selection from Patience; A Regular Royal Queen, from The Gondoliers; Take a Pair of Sparkling Eyes, from The Gondoliers; Selection from The Pirates of Penzance; Brightly dawns our Wedding Day, from The Mikado; I'm called a little Buttercup, from The Mikado. 12 Midnight, Club Concert for Omaha Listeners: Irish National March (Brace); Songs: (a) Aensibia Macree; (b) Mother in Ireland; (c) My little Irish home; Accordion Solo; (d) The Irish Washerwoman; (e) Sailor's Hornpipe; Songs: (a) She is far from the Land (Moore); (b) Till the Sands of the Desert grow cold (Ball); March, Jolly Good Fellows; Songs: (a) Danny Boy; (b) The Mountains of Mourne; In a Persian Market (Kettelbey); Songs (Woodford Finden): (a) Kasluiri Love Song; (b) Till I wake; Irish Jigs and Reels. 1.0 a.m. (Saturday), Concert by a Hawaiian Guitar Band: Nobody cares if I'm blue; Lazy Louisiana Moon (Donaldson); O Donna Clara (Petersbury); Songs: (a) I'll never ask for more (Ahler); (b) Hello, Sunshine (Murray); Irish Medley (arr. Dale); My Bluebird was caught in the Rain ("Creamer"); Parlez-moi d'amour (Lenoir). 1.30, Popular Songs: If I'm dreaming; Considering; I give my Heart; Orchestra: Say it with Songs; Little Green Heaven; Just one of my Dreams; A Mother's Kiss.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW., and Cassel, 1,220 kc/s, 246.9 metres, and Trier, 1,157 kc/s, 259.3 metres. 4.30 p.m., See Munich. 5.50, Economic Notes. 6.0, Medical Talk. 6.25, Talk on Bee-keeping. 6.50, Time, Programme Announcements. Weather and Economic Notes. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 9.30, Programme to be announced. 10.0, A German Almanac. 10.15, Time, News, Weather and Sports Notes. 10.45, Concert by the Station Orchestra, conducted by Hans Rosband; Symphony in D (Nicolai); Gallus (Calvin); Intermezzo, Die kleine Kompanie (Ganglberger); Erinnerung an Luzern (Blon); Zsambekis-Sarlas (Gungl); March Potpourri, Alle mit uns (Robrecht). 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romands.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.30 p.m., Hamburg, Bremen, and Lubbeck—Report on Events in the Senate and House of Burgesses of the Hanseatic Free Cities. 6.0, Variety Programme. 6.40, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 9.30, See Berlin (Witzleben). 10.0, Time, Weather, News, Sports Notes, and Police Report. 10.25, Talk: What People are talking about in America, relayed from America. 10.40 (from Kiel), Concert of Light Music, conducted by Hans Döring; March, Finkheil (Hoffmann); Overture, Le Cheval de Bronze (Auber); Country Dance, Klänge aus der Heimat (Gungl); Galop, Storchschäbel (Fahrbaeh); Selection from The Blue Mazurka (Lehar); Gavotte (Humperduck); Potpourri, Jugendklänge aus Alt Heidelberg (Rohde); Hungarian Dances Nos. 4 and 6 (Brahms); Stahlhelm—March (Evertovsky). HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office with Gramophone Music. 3.0, Agricultural Prices and Exchange Rates. 3.30, Talk: The German Woman in East Africa. 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetzky; Overture, Das Liebesverbot (Wagner); Four German Dances, Op. 602 (Mozart); Wedding of the Doves, from The Birds (Brahms); Mephisto-Walzer (Liszt); Overture, Elisa (Cherulini); Symphonic Poem, The Watersprite (Dvorak); Savonara-Ouverture (Kursch); Prelude to Der Rubin (d'Albert); Triumphant March (Beethoven). In the interval at 5.0 (approx.), Book Review. 5.45, Talk: The Races of East Prussia. 6.16, Agricultural Prices. 6.20, Talk: The Art of Pianoforte Playing, with Illustration: Sonata in C, Op. 2, No. 3 (Beethoven). 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 9.40, Concert from Berlin (Witzleben). 10.0, Weather, News, and Sports Notes. 10.25, Talk by Kurt G. Sell: What People are talking about in America, relayed from America.

HILVERSUM

296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Concert by the Hendriks Ensemble. In the intervals: Gramophone Music. 1.40 p.m., Talk. 2.10, Concert by Kovacs Lajos and his Dance Orchestra. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Organ Recital. 4.40, Programme for Children. 5.10, Orchestral Concert, conducted by Hugo de Groot. 5.40, Gramophone Music. 5.55, Concert (contd.). 6.40, Talk on Hitler's Book, Mein Kampf. 7.0, Concert (contd.). 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Talk. 8.10, Pianoforte Recital: Variations and Fugue on a Theme by Händel, Op. 24 (Brahms). 8.40, Talk. 9.10, Pianoforte Recital (cont'd.): Prelude and Fugue, Op. 99, No. 7 (Bach); Vivace, Op. 82, No. 4 (Bach); Adagio, Op. 82, No. 2 (Bach); Moderato, Op. 2, No. 5 (Bach); Etude, Op. 25, No. 1 (Chopin); Etude, Op. 25, No. 1 (Chopin); Polonaise (Chopin). 9.40, Religious Information. 9.45, News. 9.55, Talk. 10.25, Gramophone Music. 10.40 till Close Down, V.A.R.A. Programme: Gramophone Concert. 11.0 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Christian Radio Society (N.C.R.V.).—12.10 p.m., Trio Concert. 1.40, Programme to be announced. 2.10, Reading. 2.40, Talk for the Housewife. 3.10, Violin and Pianoforte Recital: Sonata for Violin and Pianoforte (Vivaldi-Respighi); Sonata for Pianoforte (Franck); Pianoforte Solos (Ravel): (a) Pastorale, (b) Habanera; Sonata for Violin and Pianoforte (Milhaud). 4.10, Talk for the Amateur Photographer. 4.40, Concert by the Columbia Three: March, Trene Freunde (Holzmann); Les Patineurs (Waldteufel); Frühlingserwachen (E. Bach); Negro Humoresque (Hoffmann); Selection from The Tales of Hoffmann (Offenbach); Pritzelpuppen (Ehrlich); Nur wer die Sehnsucht kennt (Translatour); Potpourri (Clerc); March, The Washington Post (Souza). 5.40, Agricultural Talk. 6.10, Gardening Talk. 6.40, Police Notes. 6.55, News. 7.10, Literary Talk. 7.40, Organ Recital from the Lutheran Church, Amsterdam. 8.40, Talk: The Econo-

mic Position of Western Europe. 9.10, Concert by a Male Voice Choir. In an interval at 9.35, News. 10.20, Gramophone Concert of Variety Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Report and Racing Results. 8.15, Esperanto Lesson. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert. 12 Midnight till Close Down, Programme in English by the I.B.C. H. K. Hitchcock announcing. 12 Midnight, Organ Recital: To-morrow is another Day (Sept); Close your eyes (Tennent); Singing with Tears in my Eyes (Dubin and Burke); Sweet and Lovely (Toldos); If I had a Talking Picture of You (Henderson); Who am I (Newman); A little Kiss each Morning (Wood); For the sake of the days gone by (Wallace). 12.30 a.m. (Saturday): Vocal and Orchestral Concert: The Song of Songs (Moya); A New Love is Old (Harbach); My Song (Brawn and Henderson); Try to forget (Kern); Sirenade (Heykens); Love letters in the Sand (Coats); The Thrill is gone (Henderson); Just you, just me (Greer). 12.57, I.B.C. Goodnight Melody. 1.0, Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Announcements and Gramophone Music. 7.25, Sports Notes. 7.30, See Warsaw. 11.0, The Letter Box in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.30 p.m., Divine Service Relay. 8.0, Announcements. 8.15, Evening Concert. 8.50, Psychological Talk. 9.10, Popular Programme. 9.30, Talk. 9.50, Concert: Overture, Alphonse and Estrella (Schubert); Ballet Music from Rosamund (Schubert); Sonata in A Minor (Schubert). 10.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk. 6.40, Programme of Italian Songs and Arias, relayed from Helsinki. 7.5, Recitation. 7.30, Concert by the Station Orchestra, relayed from Helsinki. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Wolf. Soloists: Hans Wranza-Lienhart (Baritone); March, Standarten wehn und Fahnen (Siede); Selection from Oberon (Weber); Baritone Solos: (a) Der Olnf (Loewe); (b) Frühlingstraum (Schubert); (c) Der Atlas (Schubert); (d) Erlkönig (Schubert); Miniature (Kaskel); Seitz-Walzer (Strauss); Zieher Potpourri, So schön wie's einmal war (Damber). In the interval at 2.0, News. 2.30, Sponsored Programme with Gramophone Records. 3.15, Interval. 3.30, Economic Notes and Time. 3.50, Radio Sequence for Children. 4.30, Concert conducted by Eysoldt: Overture, Genoveva (Schumann); Suite from Prometheus (Beethoven); Cradle Song (Dvorak); On the Black Sea (Dvorak); Ballet Music from Rosamund (Schubert); Selection from The Taming of the Shrew (Goetz); Turkish March (Mozart). 5.50, Book Review. 6.10, Talk: The Lower Animals and their surroundings. 6.35, German Anecdotes. 6.45, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations. Homage to German Heroes—Programme relayed from Cologne. 8.0, News. 8.5, Transmission for all German Stations, relayed from Berlin (Witzleben). 9.30, Concert of Chamber Music. 10.5, News and Sports Notes. 10.25, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 10.46, Dance Music, relayed from Berlin (Witzleben). 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Concert by a Nazi Orchestra, conducted by Alfred Schröter. In the interval at 1.0 p.m., and after the concert, News. 2.0, Notes on Art. 3.35, Economic Notes. 4.0, Concert by the Symphony Orchestra, conducted by Hilmar Weber: Overture, Hamlet (Krehl); Suite for School Orchestra (Rinkens); Nocturne (Trapp); Selection from Herzog Wolfgang (S. Wagner); Sonet in F (Schubert). In the intervals, Talks. 5.50, Economic Notes and News. 6.0, Reading (E. E. Disinger). 6.40, Talk by Kurt G. Sell: What People are talking about in America (on Gramophone Records). 7.0, Transmission for all German

Stations relayed from Langenberg. 8.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 9.40, The Eroica Symphony (Beethoven), by the Symphony Orchestra. 10.25, News. 10.50 (approx.), Close Down.

LJNZ.—See Vienna.

LWOW

788 kc/s, 381 metres; 16 kW.—7.0 p.m., Reading. 7.15, Miscellaneous Items. 7.30, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Programme arranged by the Tourist Association of Central France; Relay from Mont Dorre and La Bourboule—Choral Music, Dances and Chimes. 9.20, Concert by the Symphony Orchestra, conducted by Pierre Lorraine, the Station Ensemble and Soloists. After the concert, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—11.30 p.m., Concert of Popular Music. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Saturday), Answers to Correspondence. 12.40, Spanish-American Talk. 12.45, Light Music 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Request Gramophone Records, and Variety Items by Ramon Gomez de la Serna. 9.15, News Bulletin and Political Review. 9.30 to 10.30, Interval. 10.30, Chimes, Time Signal and Political Review. 10.45 (approx.), Symphony Music on Gramophone Records. 12.45 a.m. (Saturday), News and Programme Announcements for Listeners Abroad. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—7.25 p.m., Concert of Folk Music. 8.5, Talk on Newspaper Reporting. 9.0, Concert by the Station Orchestra, conducted by J. Plichta: Overture in Italian Style (Schubert); Toin Concerto in E Minor, Op. 64 (Mendelssohn); Ballet du Printemps (A. Thomas). 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—6.30 p.m., Concert for Young People relayed from the Radio Theatre. 8.0, News Bulletin. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.20 p.m., Concert, conducted by Erich Kloss: Overture, Des Teufels Lustschloos (Schubert-Bullerjan); Tempo di Minuto (Beethoven); Selection from Salomé (R. Strauss); Evening Idyll (Fibich); Italian Songs and Dances (Micheh); Meditation from Thais (Massenet); Slav Dance (Dvorak); March, Deutscher Film (Hans Faust); 5.45, Talk on Johann Anselm Feuerbach, the Famous Reformer of Criminal Law, on the Hundredth Anniversary of his Death. 6.5, Concert by the Munich Mandoline Quartet; Soloists: Willy Hintermayer (Zither) and Euphemia Hintermayer (Guitar). 6.40, Talk: What People are talking about in America, relayed from America. 6.45, Time, Weather, and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 9.30, Concert by the Small Station Orchestra, conducted by Erich Kloss. 10.0, Topical Talk. 10.20, Time, Weather, News, Sports Notes, and Traffic Report.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 45.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Orchestral Concert relayed from the Grand Hotel. 6.0, French Lesson. 6.30, Saxophone Quintet Concert, Pilgrims' Chorus from Tannhäuser (Wagner); Overture, The Merry Wives of Windsor (Nicolai); Minnet (Paderevsky); Angela Serenade (Braga); Stephen Forster Potpourri (Holmes). 7.0, Announcement. 7.15, Weather and News. 7.30, English Lesson. 8.0, Cultural Programme relayed from Stavanger, 1,247 kc/s, 240.6 metres. 9.15, Talk. 9.30, Weather and News. 10.0,

MAY 26th

FRIDAY

continued

Topical Talk. 10.15, Choral Concert. 10.45 (approx.). Close Down.
OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time and Announcements. 8.45, La Wally—Opera in Three Acts (Catalani). In the interval, Talk and Announcements. After the Opera, News.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot signals).—6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Tourist Propaganda Programme, relayed from Mount Dore, Radio Report. Interviews with Local Celebrities, Musical Programme, and Chimes. 9.30, Concert by the Symphony Orchestra, conducted by Edouard Flament. Les Forains (Berger), Waltz, Sensitive (Amadei), Minuet (Valensin-Daubé), Cello Solo, A ton reveil (d'Ambrosio), Habanera (Turina), Violin Solo, Waltz, Au-er schönen, grünen Narenta (Kozák). 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 323.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Sponsored Talk. 7.10, Light Music on Gramophone Records. 7.55, Weekly Review. 8.0, Talk on Music. 8.15, Interval. 8.30, Les Linottes—Operetta (Mathé). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Jewish Programme, Music and Address. 12.30 p.m., Gramophone Concert. Overture, Figaro (Mozart); Romance (Fauré); The Nightingale (Alabiev); Polichinelle (Rachmaninov); L'apprenti sorcier (Dukas); Von ewiger Liebe (Brahms); Nights in the Gardens of Spain (Fallá); Invitation to the Waltz (Weber); Symphony, From the New World (Dvorák). In the intervals at 1.0, Exchange, News, and Weather; and at 1.30, Exchange. 2.0, Exchange and Announcements. 3.35, Exchange and Market Prices. 6.30, Book Review: London (Paul Morand). 6.50, Insurance Societies' Report. 7.0, Talk by M. André Maurois: The Entente Cordiale. 7.20, Gramophone Concert: Bonkhara (Avignon); Tes yeux (Bonincontro); Selection from Les Saltimbanques (Gaume); Melody (Heymann); Gnomesfest (Schmidt-Hagen); Mai (Hahn); Selection from Lysistrata (Lüncke); Nougat-Sur-Marin (Paradis). 7.45, Commercial Prices and News. 8.0, Talk by Georges Colin: Famous Romantic Actors. III.—de Max. 8.30, News and Weather. 8.40, Gastronomic Review. 8.45, Concert by the Garde Républicaine Band, conducted by Commander Pierre Dupont: Dances from Prince Igor (Borodin); The Flight of the Bumble-Bee (Rimsky-Korsakov); Rondalla Aragonesa (Granados-Lamote de Grignon); The Dionysiaques (Schmitt); Pavane pour une Infante défunte (Ravel); Escapes (Ibert): (a) Tunis, (b) Valence; Symphonic Poem, Till Eulenspiegel (R. Strauss); First Suite from Cypalisse et le Chèvripied (Pierćnić). In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (WKKA), 980 kc/s, 306 metres; 25 kW. Relayed by W2XK on 48.86 metres and 25.27 metres.—7.30 p.m., Health Talk by Dr. Royal S. Copeland. 7.35, WKKA Home Forum. 7.45, Utility Bill Programme. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. S. Lippin. 8.30, Tenor Solos by John Dunlap. 8.45, Morin Sisters, from New York. 9.0, Teaberry Baseball Scores. 9.5, Hotel Cosmopolitan Orchestra, from New York. 9.15, S.A.I. Musicals—Carnegie Tech Chapter. 9.30, Weather Report. 9.31, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, Muskogean College Music Clubs. 10.15, Dick Dating, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Hotel Roosevelt Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Riggs and Moke. 11.45, Today's News, by Lowell Thomas, from New York. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Saturday), Art and P. Programme. 12.30 to 3.15, New York Relay. 12.30, Five Star Theatre—Charlie Chan. 1.0, Nestlé's Programme. 1.30, Adventures in Health. 1.45, Phil Cook and his Ingram Shavers. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Time Signal and Music is my Hobby.

PORSGRUND.—See Oslo.

POZNAN

886 kc/s, 335 metres; 1.9 kW.—6.30 p.m., Talk on Children's Week. 6.45, Talk on Polish Topography. 7.0, Miscellaneous Announce-

ments and News. 7.28, Time Signal. 7.30 to 10.40, See Warsaw. 10.40, Time Signal and News. 10.45, See Warsaw. 10.50, Announcements. 11.0, Dance Music from the Esplanade Café. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW. 4.10 p.m., See Brno. 4.55, Talk. 5.5, Concert by the Ondrick Quartet. String Quartet No. 2 (Papandopulos); Pianoforte Quartet in C Minor (Op. 7 (Novak)). 6.5, Market Prices. 6.15, Review of New Books for Workers. 6.25, News in German. 6.30, German Transmission: Talk. 7.0, Chimes. 7.1, News Bulletin. 7.10, See Brno. 7.25, See Moravská-Ostrava. 8.5, Concert by the Municipal Orchestra, conducted by Karel Jirák, relayed from the Municipal Theatre, Teplice-Saurov. Soloists: S. Novak (Violin), and V. Cerny (Cello). Overture and Isolde's Death Song from Tristan and Isolde (Wagner); Double Concerto (in A Minor Op. 102, for Violin, Cello and Orchestra (Brahms)); Symphony No. 2 in F. Op. 25 (Jirák). In the interval at 9.0, Time Signal. 10.0, Time Signal. 10.1, News Bulletin. 10.15, Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Religious Address. 7.30 (from Lausanne), Weather, Announcements, and Answers to Correspondence. 8.0 (from Geneva), Illustrated Talk on Romanian Music. 8.40 (from Geneva), Four Etudes (Debussy). 9.0 (from Geneva), Band Concert. In the interval, Variety Items. 10.0 (from Geneva), Concert. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert Cielo azzurro (de Mendelvi); Melody (Caslar); Selection from Die Faschingsfee (Kälman); Mattinata (Malatesta); Mimosa (Abel); Meditation (Ranzato); Serenata andalusia (Petrallia); Baci al buio (de Micheli); Melody (Stolz); Stelletta allegra (Fragua). In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.0, Report on the Round Italy Cycle Race. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Song and Cello Recital. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 6.57, Report of the International Institute of Agriculture (in Spanish, German and French). 7.10, Tourist Report. 7.20, Giornale Radio. 7.30, Sports Notes. 8.0, Time, Announcements and Summary and Notes on the Day's Results of the Cycle Tour of Italy. 8.15, Light Music on Gramophone Records. 8.45, Talk on Ariosto. 9.0, The Dance of the Dragonflies—Operetta in Three Acts (Lehar). In the intervals: Humorous Programme and Talk on Michel Angelo. After the Operetta: Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 p.m., Biblical Drama. 8.15, Moore Triangle Club, from New York. 8.30, Echoes of Erin, from New York. 8.45 to 9.0 (approx.), Stock Reports. 11.45, Stock Reports and Baseball Scores. 12.0 Midnight, Cities Service Concert, from New York. 12.30 a.m. (Saturday), WGY Farm Forum. 1.0 till Close Down, New York Relay. 1.0, Best Foods Musical Country Store. 1.30, Pond's Programme. 2.0, Chevrolet Programme. 2.30, Richfield Country Club and Programme Résumé. 3.0 (approx.), Close Down.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—12 Noon (from Zürich), Concert of Operetta Music by the Swiss Radio Orchestra. 12.30 p.m., News Bulletin. 12.40 (from Zürich), Concert (contd.). 1.25 (from Zürich), Exchange, Time and Weather. 1.45 to 5.0, Interval. 5.0 (from Zürich), Programme for Children. 5.30 (from Zürich), Orchestral Concert. 6.30 (from Berne), Programme to be announced. 7.0 (from Berne), Time, Weather, Market Prices and News. 7.20 (from Berne), Septet, Op. 20 (Beethoven). 8.0 (from Berne), Modern Music Lecture Recital on Gramophone Records. 8.40, Concert of Italian Music by the Swiss Radio Orchestra. 9.0, Weather and News. 9.10 (from Berne), Programme of Popular Music. 9.45, See Paris (Radio Paris). 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Mörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Accordion Music relayed from Eskilstuna, 1,220 kc/s, 245.9 metres. 5.30, The Practical Corner. 5.45, Gramophone Music. 6.45, Reading. 7.15, Weather and News. 7.30, Talk: The Swedish Coast. 8.0, Orchestral Concert. Soloists: Ernst Tornqvist (Violin), and Ragnar Mårten (Songs). Concerto in E Minor for Violin and Orchestra (Alderberg). Ballad for Baritone and Orchestra, Kung Liv och Drottning Död (Broman). Suite (Seymer). Two Songs with Orchestral Accompaniment (Grieg). Ballad with Orchestral Accompaniment (Hermann). Overture, The Corsair (Berlioz). 9.25, Talk on Foreign Politics. 9.45, Weather and News. 10.0, Chamber Music by the Danish Quartet. Two quartets for Strings: (a) Quartet in C No. 3 Op. 76 (Haydn); (b), Quartet, From Out my Life (Smetana). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 1.15, Relay from the Belfry of the Romanesque Church in Issoire—Description of the View and Chimes. 1.30, Light Music on Gramophone Records. 2.0 to 3.0, Interval. 3.30, Concert relayed from Balzac's House, Paris (Radio Coloniale), 11,905 kc/s, 25.2 metres. 4.30, Popular Music on Gramophone Records. 4.45, Talk in French on Madame de Staël. 5.0, Orchestral Concert, conducted by Roskam: Polonaise in A (Chopin); Waltz from Der Rosenkavalier (R. Strauss); Overture, Czar and Carpenter (Lortzing); Träumerei (Wagner); Selection from Samson and Delilah (Saint-Saëns); Melody (Rubinstein); Suite Internationale (Tchaikovsky); Selection from La petite marie (Lecocq); Intermezzo, Polospielle (Fétras). 6.0, Trio Concert, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Topical Talk in German. 7.15, Talk on Economics. 7.30, News. 7.45, Variety Music on Gramophone Records. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, Concert by the Municipal Orchestra, relayed from Metz; Conductor, Louis Narbonne: Two-step (Gurtner); Overture, Martha (Flotow); Three Pieces for Harpsichord; Moments musicaux, Op. 94, Nos. 6 and 3 (Schubert-Narbonne); Selection from La princesse au Sabbat (Ganne-Fouquet); Der Schatzwäzler (Strauss); Solo No. 3 for Oboe (Collin); Fantasia (Corroyez); La voix des cloches (Lugin-Parés); Waltz from La fille de Madame Angot (Lecocq); Tarantella, Campana Napolitaine (Fernand). In the interval, Educational Talk and Press Review in French. 10.30 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Gramophone Concert. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0 to 3.50, Interval. 3.50, Talk on Sunday Excursions. 4.10, Song Recital by Karl Feutsch. Songs (R. Strauss): (a) Nichts, (b) Traum durch die Dämmerung, (c) Ich traue meine Minne, (d) Zueignung. Songs (Gretchaninov): (a) The Dreary Steppe, (b) The Prisoner, (c) Home. 4.30, See Munich. 5.45, Time, Weather and Agricultural Report. 6.0, Medical Talk. 6.25, Talk, German Cultural Relations with South-East Europe. 6.50, Time and News. 7.0, Transmission for all German Stations relayed from Langenberg. 8.0, See Berlin (Deutschlandsender). 9.40, Concert by the Stuttgart Chamber Trio. Trio in E (Mozart). Trio in C Minor Op. 1 No. 3 (Beethoven). 10.20, News. 10.25, Talk by Kurt G. Sell: What People are Talking about in America, relayed from America. 10.40 (from Karlsruhe), Theatre Review. 11.15, News. 11.30, Concert from Frankfurt. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—6.0 p.m., News. 6.15, Music by an Argentine Orchestra. 6.30, Opera Music: Air from The Huguenots (Meyerbeer); Cavatina from William Tell (Rossini); Air from Hérodiade (Massenet). O Star of Eve, from Tannhäuser (Wagner). 6.45, Divertissement sur des Chants russes (Rabaud). 7.0, Medical Talk. 7.5, Accordion Music. 7.15, Racing Results, Market Prices and News. 7.25, Local News Bulletin. 7.30, Music by a Viennese Orchestra. 7.45, Opera Music: Melodies from: (a) Les Dragons de Villars (Maillart), (b) The Daughter of the Regiment (Donizetti), (c) Rigoletto (Verdi). 8.0, Operetta Music; Airs from: (a) The Land of Smiles (Lehár), (b) Frasquita (Lehár), (c) Le Roi Fausole

(Hoegger). 8.15, Light Music. 8.30, Instrumental Solos. 8.45, Operetta Music. 9.0, The Practical Corner. 9.5, Trio in B Flat (Schubert), followed by Sound Film Music. 9.45, Accordion Music. 10.0, Music by a Viennese Orchestra. 10.15, North African News. 10.30, Concert for Listeners in Morocco: The Sparrows' Parade (Rathke); Broadway Melody (Brown); Triumphal March from Tannhäuser (Wagner); Airs from La Vie parisienne (Offenbach); Violin Solo, Variations (Kreisler); Souvenirs-toi (Lebail); Grenadine (Persiani). 11.0, Opera Music. 11.15, Extracts from Opéra-Comique. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Dance Music: If I could be one Hour with you; Swingin' the Blues; Shine; When Day is done; Wah-de-dah; It's the darndest thing; Sweet Rhythm; Sweetheart I'm dreaming of you. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m., Dance Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Chamber Music Concert. 6.35, Giornale Radio, Agricultural Report and Dopplavoro Announcements. 7.0, Time and Report of the Royal Geographical Society. 7.10, Gramophone Records of Songs. Se tu mi baci (Buzà-Mascheroni); Ritorna (Carosio); Povero Jolly (Bracchi-Lanzetta); Ave Maria (Carosio). 7.20, Giornale Radio. 7.45, Light Music on Gramophone Records. 8.0, Announcements, Report on the Cycle Tour of Italy, Giornale Radio, Weather and Gramophone Records. 8.30, Talk in connection with the Ariosto Centenary. 8.45, Notes on Art. 9.0, Symphony Concert. In the interval, Talk. 11.0 Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.0 p.m., Gramophone Concert of Opera Music. 4.40, Talk for Women: The late Comtesse de Noailles. 5.0, Song Recital by Maria Kienzl (Soprano) and Hans Koch (Bass). Aria from Der Freischütz (Weber); Prayer from Die Königskinder (Humperdinck); Aria from Carmen (Bizet); Soprano Aria from Aida (Verdi); Bass Solos (Schubert): (a) Der Neugierige, (b) Der Lindenbaum, (c) Im Dorfe, (d) Die Stadt, (e) Frühlingsglaube, (f) Der Wegweiser. 5.40, Tourist Report. 5.55, Talk: The Workers' 550-Kilometre Cycle and Motor Trials. 6.10, Sports Report. 6.20, Talk: The International Olympic Games Conference in Vienna. 6.35, Talk: The Life of a University Professor. 7.0, Gramophone Records of Famous Artists. 7.30, Talk: Poor America. 7.50, Time and News. 8.0, Popular Concert. 10.0, Second News. 10.15, Dance Music by Gustav Rohn and his Band, relayed from the Café Palmhof. Soloists: Viktor Sternan (Songs), Willy Swoboda (Pianoforte), and Hans Fischer (Vibraphone).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW. 12.10 p.m., Variety Music on Gramophone Records. 1.20, Weather Report. 1.25 to 3.10, Interval. 3.10, News Bulletin. 3.15, Economic Review. 3.25, Aviation Notes and Anti-Gas Drill. 3.30, Naval and Colonial Report. 3.35, Popular Music on Gramophone Records. 4.25, Review of Periodicals. 4.40, Talk: The Polish Countryside. 5.0, Concert by a Wind Instrument Orchestra, conducted by S. Lidzki-Sledzinski. 5.55, Programme Announcements. 6.0, Light Music and Dance Music. In the interval, News. 7.0, Miscellaneous Items. 7.20, Talk: Silk Producing in Poland. 7.30, Talk in connection with Children's Week. 7.45, Radio Journal. 8.0, Talk on Music. 8.15, Symphony Concert by the Philharmonic Orchestra. In the interval, Talk: Children's Literature. 10.40, Sports Notes. 10.45, Radio Journal. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music from the Maison Fouquier.

WILNO

533 kc/s, 563 metres; 16 kW.—5.55 p.m., Programme Announcements. 6.8, Dance Music. 6.40, Talk for Poles in Lithuania. 6.55, Miscellaneous Announcements. 7.0, Daily Reading. 7.10, Announcements. 7.20, Agricultural Press Review. 7.30, Talk on Joachim Lelewel—Historian. 7.45, See Warsaw. 12 Midnight (approx.), Close Down.

ZURICH.—See Schweizerische Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 224.4 metres.—1.30 to 2.0 p.m., Time Weather, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.45, News. 7.0, Talk: The International Fishing Conditions at Loch Leven. 7.15, Gaelic Talk by Seamus O'Duinn. 7.30, Time Signal. 7.31, Piano and Violin Duets by Mrs. Boxwell and Miss Ellard. 7.45, Vocal Duets by P. J. Byrne and W. J. Hobbs. 8.0, Piano and Violin Duets (cont.). 8.15, Vocal Duets (cont.). 8.30, The Station Orchestra. 9.0, Contralto Solos by Joan Burke. 9.15, Variety Programme. 9.45, Sponsored Programme. 10.45, Time, News, Weather, and Close Down.

BARCELONA

860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Programme for Children. 8.0, Request Gramophone Records. 8.30, Exchange. 9.0, Gramophone Records and News. 9.15, Literary and Musical Programme relayed from the Municipal Theatre, Perpinyà. 1.0 a.m. (Sunday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk, and Popolavoro Announcements. 8.20, Giornale Radio and Weather. 8.30, Time and Announcements. 8.40, Concert of Songs and Operetta Music. Soloists: Clara Dentri (Soprano) and Michele Montanari (Tenor). L'eco dei monti (Antonini); Soprano Solo: Dory, sei tu (Masccheroni); Tenor Solo: Canzone della radio (Alfano); Risveglio (Montaguini-Saletti); Soprano Solo: Luci nella notte (Borella); Tenor Solo: Leda (Massaro); Selection from La reginetta delle rose (Leoncavallo); Soprano Solo: Rimpianto (Bonavolantà); Tenor Solo: Pardon (De Serra); El picador (Pattacini); Tenor Solo: Castello incantato (Alfano); Soprano Solo: Lylia (Rognoni); Selection from Si (Masccheroni); Tenor Solo: Silvana (Hamm); Soprano Solo: Tango, Mihonguita (Valdes); Anima catalana (Cortopassi); Tenor Solo (Stransky); Soprano Solo: Il paese del mandolino (Moletti); Review of New Books in the interval. 10.30, Popular Music on Gramophone Records. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 450.4 metres; 2.8 kW.—7.0 p.m., Concert by the Radio Orchestra. Serbian Festival March, 1912 (Frait); Potpourri of Gypsy Music (Bordil); Slav Dances Nos. 2 and 3 (Dvorák); Selection from The Gipsy Princess (Kálmán). 7.50, Announcements. 8.0, An Opera relayed from the National Theatre. In the interval at 9.30, News. After the Opera, Gramophone Dance Music.

BERLIN

DEUTSCHLANDSENDER; 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Modern German Marches and Songs, on Gramophone Records. 3.0, Handwork for Children. 3.30, Weather and Exchange. 3.45, Reading. 4.0, Concert from Hamburg. 5.0, Weekly Review. 5.30, Saxophone Recital by Sigurd M. Rascher; Waltz No. 10 (Chopin-Rascher); Suite (Kaun); Czardas (Monti-Rascher). 6.0, A Poem. 6.5, Songs from Operettas by Käthe Jöken-König; Songs from (a) Der Bettelstudent (Müllacker), (b) The Bird Fancier (Zeller), (c) Ihre Heiligkeit die Tänzerin (Goetze), (d) Heilblau Schwestern (Kinnicke), (e) Der Tenor der Herzogin (Kinnicke), (f) Tänzerin aus Liebe (Selmalstich) and (g) Der Tanz ins Glück (Stolz). 6.30, Talk: Hunting among Savane Races. 6.50, Weather for Farmers and Announcements. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, See Munich. 8.30, Sailors' Yarns. 9.0, See Vienna. 10.0, Weather, News, and Sports Notes. 10.45, Weather Report for Shipping. 11.0, Serenade from Munich. 12 Midnight, Transmission for all German Stations, relayed from Stuttgart. 12.30 a.m. (Sunday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Concert by the Station Orchestra, conducted by Dr. Max Burkhardt; Ballet Suite (Gluck-Mottl); Suite from Les petits riens (Mozart); Air and Ballet Music from The Merry Wives of Windsor (Nicolai); Scherzo (Pfitzner); Prelude to the Second Act of Ingwilde (v. Schillings); Selection from Die Folkinger (Kretschmer); Folk Dance (Hartmann); Albumblatt (Kaun); Waltz, Tales from the Vienna Woods (Joh. Strauss). 5.50, Talk: New Methods in Physical Culture. 6.15, Programme Announcements. 6.20, Brahms Song Recital by Heinz Marten (Tenor); Komm bald; Der Ueberläufer; Bei dir sind meine Gedanken; Schwermut; Muss es eine Trennung geben; Abschied; Mondenschein; Ständchen. 6.40, The Witzleben Station informs its Listeners . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations relayed from Stuttgart. 8.5, Announcement. 8.10, With the Bear Leader through Berlin—Programme arranged by Max Bigg. 10.0, Weather, News and Sports Notes. 10.15 (approx.), Orchestral Concert. 12 Midnight, See Stuttgart. 12.30 a.m. (Sunday), Close Down.

SATURDAY

MAY THE TWENTY-SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Variety programme. "Stars in their Courses," by James Agate.
LONDON REGIONAL Running commentary from Shelsley Walsh on the Open Hill Climb for Racing and Sports Cars.
MIDLAND REGIONAL The Massed Choirs of Birmingham, Coventry, and Leicester Cathedrals, from Coventry.
NORTH REGIONAL Orchestral concert, Gilbert and Sullivan selections.
WEST REGIONAL Orchestral concert from the Colston Hall, Bristol.
SCOTTISH REGIONAL Vaudeville programme.
BELFAST Orchestral concert from the Ulster Hall.

ABROAD

BRUSSELS 8.0 p.m. Musical Play: "White Horse Inn," by Stolz-Benatzky.
(No. 2) 8.1 p.m. Bach Concert.
COPENHAGEN 8.30 p.m. Radio Festival from the Palais de la Mutualité.
EIFFEL TOWER 8.30 p.m. Operetta: "The Circus Princess," by Kallman.
MUNICH 8.45 p.m. Operetta: "Fascino azzurro," by Ettore Bellini.
PALERMO 4.0 p.m. Wagner and Pieni Concert. 8.30 p.m. Operetta: "The Land of Smiles," by Lehar.
STUTTGART 7.0 p.m. "The Black Forest," a Radio Sequence by Martin Lang and J. Künzig.
TURIN 9.0 p.m. Opera: "La Cenerentola" ("Cinderella"), by Rossini (relayed by Florence, Genoa, Milan, Rome and Trieste).

BERNE.—See Schweizerischer Landessender.
BEROMÜNSTER. — See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODD.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—7.40 p.m., Sports Talk. 7.45, Talk or Gramophone Records. 8.0, News, Exchange, Market Prices and Lottery Results. 8.5, English Lesson. 8.20, News Bulletin. 8.30, Concert of Light Music on Gramophone Records. 9.0, Programme (to be announced), relayed from Paris.

BRATISLAVA

1,076 kc/s, 279 metres; 11 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by J. Odchazel. 5.10, See Prague. 5.20, Gramophone Music. 5.35, Moravian Folk Song Recital by Martin Šesták. 6.0, Talk on American Houses. 6.10, Popular Concert, conducted by K. Hirschmann. 6.40, Talk: Summer Sports. 6.55, Talk for Housewives. 7.0, See Prague. 8.15, See Moravská-Ostrava. 10.0, See Prague. 10.15, see Brno. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—2.5 p.m., Gramophone Concert. 2.45, Programme arranged by the Post Office with Gramophone Music. 3.10, Agricultural Prices. 4.0, Book Review. 4.20, Concert by the Station Orchestra, conducted by Franz Marszalek; Selection from The Tales of Hoffmann (Offenbach); Waltz from Fasching (Kienzl); Overture, Anna Bolena (Donizetti); Humorous Variations on the Song, Nimm leb denn wohl du kleine Gasse (Blümann); From Glück to Wagner (Schreiner); Waltz, Lustiges Wien (Meisel); Selection from Drei arme kleine Mädel (Kollo). In the interval at 4.50 (approx.), Film Review. 5.45, Talk: Germany's Struggle for Equality. 6.5, Programme to be announced. 6.30, Concert by the Station Orchestra, conducted by Franz Marszalek. Soloists: Bruno Janz (Violin), Chamber Sonata for Violin and Strings (P. Hermann); Kleine Kammermusik in Old Style for Strings and Piano (H. Herrmann). 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, See Vienna. In the interval at 8.50, Announcements. 9.45, Time and News. 10.15, Orchestral Concert, relayed from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.0 p.m., See Prague. 8.15, See Moravská-Ostrava. 10.0,

See Prague. 10.15, Concert by the Station Orchestra, conducted by J. Gottward. Soloist: J. Zamecnik (Violin); Ballet Music from Laurin (Maszkovsky); Selection from Orpheus in the Underworld (Offenbach); Waltz (Joh. Strauss); Intermezzo (Roob); Ballet Overture (Lauke); Moravian Dance (Balling); Violin Solo: Fantasia on a Folk Song (Moore); Jubilee Polka (Sebor); Intermezzo (Sebor); Medley of Czech Folk Dances (Moore); Polonaise for Violin and Orchestra (Provaznik); Festival March, Op. 54 (Dvorák). 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloist: Loefler (Tenor). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert; Czardas (Groszmann); Waltz, Frühlingstimmchen (Joh. Strauss); Tatjana (Lindsay); Plaisir d'amour (Mauritz); Offenbachiana (Finck); Hayanaise (Saint-Saëns); Cockney Suite (Kotelbey). 4.45, Talk: Belgium and the Great Powers. 5.0, Concert by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp. 6.0, Talk on Fish. 6.15, Gramophone Concert: Septet (Saint-Saëns); Concert Waltz (Glazunov); Duet, Le cloître (Adam); Spanish Serenade (Glazunov); Air from Le grand Mogol (Audran); Berceuse (Gretchaninov); Italian Serenade (Wolf); Nocturne (Chopin); Scherzo Waltz (Chabrier). 7.15, Talk on Folklore Maytime Customs. 7.30, Journal Parlé. 8.0, Concert by the Symphony Orchestra, conducted by Meulemans. Soloists: Marguerite Thys (Songs) and Adolphe Frezin (Cello); Overture, Charlotte Corday (Benoit); Symphonic Poem, Le chasseur maudit (Frauck); Arias from (a) Il Re Pastore (Mozart), (b) Figaro (Mozart); Waltz from Der Rosenkavalier (R. Strauss); Spanish Caprice (Rinsky-Korsakov); Symphonic Variations (Boellmann); Chanson triste (Dupare); Songs (Jongen); (a) Tableau gothique, (b) Bal des fleurs; Overture, Tamhäuser (Wagner). In the interval, Reading of Poems. 10.0, Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse. 11.30, Light Music on Gramophone Records.

BRUSSELS (No. 2)

I.N.R., 837 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert: March (Walner); Two Airs from Marietta (Oscar Strauss); Foxrot (Jacobs); La cinquantaine (Gabriel-Marie); Little Grey Home in the West (Löh); My Little Persian Rose (Wolf); Horn Solo, Rêverie (Glazunov); Minuet (Valensin); Mattinata (Leoncavallo); Selection from Mamon (Mascenet); Romanian Dance (arr. Racz); Dance of the Raindrops (Evans); Carnival in Vienna (Joh. Strauss-Rosenthal); March, King Cotton (Souza). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted

by M. Charles Walpot; Soloist: M. Loefler (Tenor); Marche des marionnettes (Hallebroeck); Overture, Orpheus in the Underworld (Offenbach); Waltz Potpourri (Kobrecht); Songs; Ballet Music from Faust (Gounod). 4.45, Book Review. 5.0, Dance Music from the St. Sauveur Palais de Danse. 6.0, Gramophone Records of Variety Music. 6.15, Talk on Gustavus Adolphus. 6.30, Gramophone Records of Russian Music, with Commentary; In the Steppes of Central Asia (Borodin); Two Pieces (Liadov); (a) Baba-Yaga, (b) Kikimora; A Night on the Bare Mountain (Mussorgsky). 7.15, Talk: Belgium and the Crisis. 7.30, Film Review. 8.0, White Horse Inn—Musical Play in Three Acts (Stolz-Benatzky). In the interval at 9.5, Recitations, and at 10.20, Le Journal Parlé. 11.30, Gramophone Records of Popular Music.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiceano Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. 7.40, Light Music on Gramophone Records. 8.0, Concert by the César Franck Choir. 8.45, Talk. 9.0, Light Music and Romanian Music, relayed from a Restaurant. 10.0, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres from 6.50 p.m. (approx.) till Close Down.—5.30 p.m., Choral Concert. 6.15, The Letter Box. 6.50, Talk. 7.35, Exchange. 7.45, Gramophone Records of Light Music. 8.25, Racing Results. 8.30, Talk. 8.55, Concert by the Agad Toll Cigány Band. 10.0, News. 10.15, Concert conducted by F. Fridl; Overture, The Hebrides (Mendelssohn); Suite (Dornator); Kaiserwalzer (Joh. Strauss); Ballet Scene, Zigeunerfest (Lehar); Oriental Suite (Popy); March, Per aspera ad astra (Urbanc). 11.30, Concert of Light Music and Dance Music from the Douankorso Café; Waltz, Dorf-kinder (Kálmán); Tango Song (Proszky); Serenade della laguna (Becco); Waltz Song (Buday); Waltz (Rapee); You are my Heart's Delight from The Land of Smiles (Lehar); Tango Song (Sorge).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Time Signal and Chimes from the Town Hall. 12.2 p.m., Concert by the A. Bendix String Ensemble, relayed from the Wivex Restaurant. 2.0 to 2.30, Interval. 2.30, Gramophone Concert: Elisabeth Schumann; Songs (Schubert); (a) Heidenröslein, (b) Lied im Grünen; Michele Fletta; Camio's Aria from Act I of I Pagliacci (Leoncavallo); Giuseppe Nesi; Arisride Baracchi and Emilio Venturini; Trio from Turandot (Puccini); M. L. Goldis (Viola d'amore); Ave Maria (Bach-Gounod); Sven Olof Sandberg; Melody (Sulvain); Kate Smith; Twenty Million People (Cuslow and Johnston); Mills Brothers; I heard (Redman and Mills). 3.0, Programme for Children. 3.30, Concert by the Station Orchestra, conducted by Launy Gröndahl. Soloist: Holger Valbjorn (Violin). March (Reussen); Overture, Piazza del Popolo (Schradner); Ballet Music from Les Templiers (Litolli); Death and the Maiden for Strings (Schubert); Dance from I Hést (Hallén); Violin Solos; (a) La Folia (Corelli-Leonard), (b) Spanish Serenade (Chaminade-Kreisler), (c) Allegretto (Bocherini-Kreisler); Concert Overture, Michel Angelo (Gade); Largo from the New World Symphony No. 5 (Dvorák); Waltz, New Wien (Joh. Strauss); Music of the Spheres, for Strings (Rubinstein); Hedvig Polka (Ranssee); Honey-moon March (Rosey). 5.35, Exchange and Fish Market Prices. 5.50, Talk (from the Aalborg Studio). 6.20, French Lesson. 6.50, Weather. 7.0, News. 7.15, Time Signal. 7.30, Talk on Bach. 8.0, Time Signal from the Town Hall. 8.1, Bach Concert by the Station Orchestra, conducted by Launy Gröndahl. Soloists: Johanne Karstens (Songs), Henry Munck (Oboe), and Folmer Jensen (Piano). Suite in D, for Orchestra; Two Arias with Oboe obbligato; (a) Hör! ihr Augen auf zu weihen, (b) Senzer; Tränen, Kummer, Not; Prelude and Fugue from Das wohltemperierte Klavier; Overture to the Cantata, Die Erde leucht, die Himmel jubiliert. 8.40, Reading. 9.0, Light Music by the Louis Prell Instrumental Ensemble. 9.15, A Tour round Copenhagen. 10.15, Concert by Louis Prell's Instrumental Ensemble: Nächtliche Ründe (Urbach); Liebeserenade (Löh); The Fountain (Nussbaum); Viennoise Waltz (Benatzky); Potpourri, Die Fahrt ins Blaue (Dostal); Ständchen No. 2 (Hayekens); Rhapsody, Zigeunerfest (Heykens). 10.50, News. 11.5, Dance Music by the Louis Prell's Band. 11.50, Reading. 12 Midnight, Time Signal and Chimes from the Town Hall. 12.2 a.m. (Sunday), Dance Music (cont.). 12.30 a.m., Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Review of Foreign Affairs. 7.15, Miscellaneous Announcements and News. 7.30, See Warsaw. 11.0, Light Music, followed by Dance Music from the Pavilion Restaurant. In an interval

MAY 27th

SATURDAY

continued

at 11.30, News for Members of the Polish Polar Expedition. 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. T. St. Ronald, C. Danvers-Walker, and B. McNabb announcing. 5.30, Concert of Popular Songs for Tunbridge Wells and Isle of Thanet Listeners: I'll stay with you (Woods); Try a little Tenderness (Woods); Piano-forte Solo, Butterflies in the Rain (Reaves); Let's put out the Light (Berlin); How deep is the Ocean (Hupfeld); I'm playing with Fire (Berlin); Piano-forte Solo, Everyone says I love you (Kalmar); Just an Echo in the Valley (Woods); A Ghost of a Chance (Washington); Popular Melodies for Piano-forte: I wish I was single again (arr. Raymond); Leave the pretty girls alone (Robison). 6.15, Concert for Dover and Folkestone Listeners: Mariette, La Camparista; Little Lady; Song, A Love Song of Old Valencia; Song, Lady of Spain; Plegaria; Old Vienna Moon; Madrid; Song, Cuban Love Song; Song, Street of Dreams; Corazon; Todavia. 7.0, Programme in French. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, Musical Comedy Programme: Potpourri (Ewing); The Night was made for Love, from The Cat and the Fiddle (Kern); Love will find a Way, from The Maid of the Mountains (Fraser-Simson); Selection from Frederica (Lehar); I give my Heart, from The Dubarry (Millöcker); Duft, A Paradise for Two, from The Maid of the Mountains (Fraser-Simson); Selection from Chu Chin Chow (Norton). 11.30, Duets: That Silver-haired Daddy of Mine; Paradise; When I was a Boy from the Mountains; Orchestra; Valencia; Leave the pretty girls alone; In a Kitchenette; Way down in Georgia; Orchestra, Chinatown, my Chinatown. 12 Midnight, Club Concert for Newry Listeners: Shamrockland (Williams); Songs: (a) My Irish Paradise, (b) The Rose of Tralee; Bitter Sweet Waltz (Howard); The Sweetest Flower that Blows (Hawley); Chorus, Gems of Erin; Song, Smiling Irish Eyes; By the Swanee River (Myddleton); Songs: (a) Shall my soul pass through Ireland, (b) Farewell my Native Irish Home; Sleepy Valley (Hanley); Songs: (a) My Dear Soul (Sanderson), (b) Imit Farrell; Irish Potpourri (Williams). 1.0 a.m. (Sunday), Xylophone Solos and Orchestral Music: Orchestra, My Sunshine is you (Stolz); Snappy Sticks; The Huntsman (Nelson); Orchestra, Happy Days and Lonely Nights (Fisher); First Waltz (Durand); Marionette (Gaston); Silvery Moon (Frazzini); Orchestra, Goodnight Sweetheart (Noble). 1.30, Songs: Beneath thy Window; That's my Song; I know of two Bright Eyes; Orchestra; Old Time Memories; Take away the Moon; Wind in the Willows; You used to belong to me. 2.0, Dance Music by the Heilsons: Leave a little for me; I can't write the Words; How do you do, Mr. Brown; Balloons; The Lady I love; Isn't it romantic; When they're on the Love Parade; Big Ben's saying Goodnight; Butterflies in the Rain; Me minus You; Brother, can you spare a Dime? Same old Moon; I'll never have to dream again; Ain't cha comin' out tonight. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m. Concert by the Station Orchestra. Part I, Conductor: Dr. Reinhold Merten. Selection from Twelfth Night (Hammerstein); Piano-forte Concerto in B Flat Minor, Op. 25 (Tchaikovsky); Hamlet (Liszt). Part II—Old Dance Music. Conductor: W. Caspar. 5.50, Economic Notes and Review of the Week. 6.25, Discussion on the Protestant Church and the State. 6.30, Review of the Week. 6.50, Time, Programme Announcements, Weather and Economic Notes. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, See Vienna. 9.45, Variety Programme. 10.15, Time, News, Weather and Sports Notes. 10.45, See Munich. 12 Midnight, Transmission for all German Stations, relayed from Stuttgart. 12.30 a.m. (Sunday), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GDZEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremer, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Concert by the Hamburg Philharmonic Orchestra,

conducted by Adolf Secker. 5.0 (from Hanover), Talk: The Australian Bushman. 5.30, Dialogue: Documents of the World War in the Hamburg Municipal Library. 6.0, Variety Programme. 6.50, Weather Report. 7.0, Transmission for all German Stations relayed from Stuttgart. 8.0 (from Kiel), Zither Concert conducted by Oscar Erikson; Potpourri, Ein Musikantenraun (Günther); Waltz, The Blue Danube (Strauss); Two Absatian Peasant Dances (Merkling); Marcu, Unter deutschen Eichen (Ludwig). 8.30, Concert from Vienna. 10.0, Time, Weather, News, Sports Notes and Police Report. 10.20, Topical Talk. 10.30, Orchestral Concert from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert. In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Music. 3.0, Agricultural Market Prices, and Exchange Rates. 3.30 (from Danzig), Handwork for Children. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Willeken: Overture, Le Dieu et la Bayadère (Auber); Italian Waltz (Joh. Strauss); Leichte Afrika (Seybold); Serenata fiorentina (Seybold); Selection from Alessandro Stradella (Plotow); Turkish Suite (Gauvin); Bridal Waltz (Waldteufel); Vor einer alten Spiechur (Müller-Melhorn); Oase (Wisnar); Selection from The Three Wishes (Ziehrer); French Comedy Overture (Kéfer-Béla). In the interval at 4.50 (approx.), Road Report. 5.50, Talk: Political Truths. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Monthly Review. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, News. 8.10 (from Danzig), Concert of Marches. 10.10, News, Weather, and Sports Notes. 10.30 (approx.), Orchestral Concert, relayed from Berlin (Witzleben). 12 Midnight, Transmission for all German Stations, relayed from Stuttgart. 12.30 a.m. (Sunday), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW up to 4.40 p.m.)—Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Orchestral Concert, conducted by Hugo de Groot. 12.25 p.m., Organ Recital. 12.55, Concert (continued). 1.40 to 1.55, Interval. 1.55, Gramophone Records. 2.30, Talk. 2.50, Concert by a Children's Choir. 3.30, Illustrated Talk on Music. 4.10, Talk. 4.30, Concert by De Notenkrakers. 5.20, Literary Talk. 5.40, Concert, conducted by P. Tiggers. 6.10, Talk. 6.40 Organ Recital. 7.10, Concert by a Mandoline Ensemble. 7.39, S.O.S. Announcements. 7.49, Concert by De Filiederuiters. Soloist: Hilde Barmat (Soprano). 8.10, Address. 8.25, Concert (continued). 8.40, Recitations. 8.55, Concert by the Radio Orchestra, conducted by Hugo de Groot. Overture, Orphans in the Underworld (Offenbach); You are my Heart's Delight, from The Land of Smiles (Lehar); Gern' hab' ich die Frauen geküsst (Lehar); Zion (Phillipson); Tanzen möcht' ich (Kalmár); Delibes Potpourri (Ubael). 9.40, News. 9.55, Concert (continued). The Red Flag (Broeck-Benes). In sine nomine (Altkink). Ballet Potpourri (Barrière); Selection from The Vagabond King (Friend); Lieblich (Strauss); Melody (Brusselmann); Jingle Drums (Kettelbey); Liebesfrond (Kreiser); March (Cler). 10.40, Gramophone Music. 10.55, Orchestral Concert. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Catholic Radio Society (K.R.O.)—11.55 a.m., Concert by the K.R.O. Sextet. 1.25 p.m., Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Gramophone Music. 4.25, Concert by the K.R.O. Boys. In the interval at 4.55, Sports Talk, at 5.25, Talk, and at 6.0, Press Review. 6.40, Police Notes. 6.55, Talk. 7.15, Gramophone Music. 7.25, Talk. 7.40, Variety Programme. 8.10, News. 8.15, Songs, by M. Gubbens. 8.30, Variety Programme (continued). 9.10, Songs by Mlle. Reiff and M. Dekker. 9.25, Variety Programme (continued). 9.55, Songs, by M. Gubbens. 10.15, Variety Programme (continued). 10.40, Songs by Mlle. Reiff and M. Dekker. 10.55, Gramophone Music. 11.40, (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News and Financial Report. 8.10, North African Review. 8.20, Film Review. 8.30, Literary Review. 9.0, News and Racing Results. 9.15, Radio Concert. 12 Midnight till Close Down, Programme in English by the I.B.C. H. K. Hitchcock announcing. 12 Midnight, Variety Concert, Welsh Medley (Somers). Riding on a Camel (Wright); Look what

you've done (Kalmar and Ruby); Bunkey-doodle-doo (Sarony); Sleepy Rio Grande (Vincent); Accordion Solo, Blaze away (Holzmann); The Crime Sheet; Daisy Bell (Dacre); What a perfect combination (Kalmar); When the Bloom is on the Sage (Vincent); After the Ball (Harris); Two Little Girls in Blue (Graham); Popular Melodies on a Piano; Reaching for Someone (Donaldson); Ain't Mischelaviv' (Donaldson); Close Your Eyes (Carter); Irish Medley (Somers). 12.57 a.m. (Sunday), I.B.C. Goodnight Melody. 1.0, Close Down.

KALUNDBORG.—See Copenhagen.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.30 p.m., Concert. 8.10, Talk on Weaving Exhibitions. 8.30, Dance Music. 9.0, Talk. 9.40, Sports Notes. 9.50, Concert. 10.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Variety Programme. 8.0, Dance Music, relayed from the Pörsi Restaurant. 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf: Overture, Hunyadi Laszlo (Erkel); Friedemann Bach Suite (Luschner); Es muss ein Wunderbares sein (Liszt); Ständchen (Schubert); Selection from Le Postillon de Longjumeau (Adam); Dream Pictures (Lunabye); Selection from Casanova (Lincke); Westphalian March Suite No. 1 (Bilow-Schlichting). In the interval at 2.0, News. 2.30 to 3.0, Interval. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Talk: Touring in the Rhineland and Westphalia—the Sauer District. 4.10, Talk on Handicrafts. 4.30, Concert. 5.50, Talk: The Significance of Professional Work for Women. 6.10, Reading. 6.20, English Reading. 6.45, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, News. 8.5, Wind Instrument Concert: March, In Treue fest (Teike); March, Reitergeist (Prager); Hitler March (Geller); March on Bichsenselütz; Song, Märkische Heide (Lincke); March, Hoch Heidecksburg (Herzer); March, Mit Eichenlaub und Schwertern (Blou); Germania-Marsch (Keil); Badonyiller-Marsch (Fürst). 8.35, Schütz-künning-Rheinish Folk Play in Five Acts (Georg Fuchs). 10.15, News and Sports Report. 10.40, Serenade. 12 Midnight, Transmission for all German Stations, relayed from Stuttgart. 12.30 a.m. (Sunday), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Folk Song Recital on Gramophone Records. In the interval, Wireless Notes. After the Concert, News. 2.30, Programme for Children. 3.15, Book Review. 3.45, Economic Notes. 4.0, Concert from Berlin (Witzleben). In the interval at 5.0, Talk on Music. 6.0, Talk: The Meaning of German Surnames. 6.20, A Modern Dictionary. 6.30, The Excavations in Geiseltal; Radio Report from the Palaeontological Museum at Halle University. 7.0, Transmission for all German Stations relayed from Stuttgart. 8.0, Topical Talk. 8.15, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffon. 10.15, News. 10.30, Concert Relay. 12 Midnight, Transmission for all German Stations relayed from Stuttgart. 12.30 a.m. (Sunday), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 p.m., Quintet Concert. 6.0, Talk on Ethnology. 6.30, English Lesson. 7.0, Educational Talk. 7.30, Week-end Hits. 8.0, An Opera (to be announced), relayed from Zagreb. 9.7 kc/s, 307 metres. 9.30, Weather and News.

LWOW

788 kc/s, 381 metres; 16 kW.—7.0 p.m., Programme for Young People. 7.15, Miscellaneous Items. 7.30, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

(LA DOUA), 644 kc/s, 465.8 metres; 1.5 kW.—7.15 p.m., Light Music. Airs from Les Millions d'Arlequin (Drigo); Czardas (Monti); Tu me dis non (Rosen); Christiana (Gottler). 7.30, Radio Gazette for Lyons and the South-East. 8.30, Variety Programme relayed from Paris (Ecole Supérieure) 671 kc/s (447.1 m.). After the Relay, News.

MADRID

ARANJUEZ (EAQ), 10,000 kc/s, 30 metres; 20 kW.—7.0 to 9.0 p.m., Programme for Listeners in the Canary Islands, Guinea and Europe. 7.0, Concert of Spanish Music. 8.15, Talk. 8.30, Light Music. 9.0 to 11.30, Interval. 11.30, Programme from Madrid (EAJ7). 1.0 a.m. (Sunday), Close Down

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes. Exchange Quotations, Radio Journal, Talk on Homeopathy, and Request Gramophone Records. 9.15, News. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes and Time Signal. 10.35 (approx.), La Gioconda—Opera (Ponchielli) on Gramophone Records. 12.45 a.m. (Sunday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Recital of Old Italian Songs, by Marta Zapletalová. Introductory Talk by E. Ambros. Recitative and Aria (Emmanuele d'Astorga); Canzonetta (Salvator Rosa); Aria (Antonio Caldara); Arietta (Jomelli di Aversa); Aria (Giovanni Buononcini). 7.0, See Prague. 8.15, Variety Programme. The Ghosts a Radio Sketch (J. and A. Wenig). Songs and Instrumental Music by the Station Orchestra and Soloists. 10.0, See Prague. 10.15, See Brno. 11.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—6.30 p.m., Concert. 9.0, News Bulletin. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

NOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—5.0 p.m., Concert, conducted by Erich Kloss: Overture, Die schöne Galathée (Stuppe); Romance from Symphony No. 4 (Schumann); Suite for Small Orchestra (Pottgiesser); Musical Scenes from Czar and Carpenter (Lortzing); Siesta Waltz (Waldteufel); Ecstasy (Günne); Dance of the Merry Mascons (Kettelbey); March, Mit Eichenlaub und Schwertern (Blou). 6.15, Talk for Young Girls: Expeditions into the Bavarian Forests. 6.45, Talk on Wireless. 7.0, Transmission for all German Stations, relayed from Stuttgart. 8.0, Concert by the Alois Leinberger Schrammell Trio: March, Heurigenbrüder (Fueck); Waltz, Der Weg zum Herzen (Freundorfer); Kirshblüte (Albert); Grün ist die Heide (Blume-Löns); Tyroler Song, Wo die Alpenrosen blühen; Viennese Song, Secht's Leut'n, so war's in Wien anno 30; Poltmarsch (Schrammel). 8.30, The Circus Princess—Operetta in Three Acts (Kalmár). 10.20, Time, Weather, News and Sports Notes. 10.45, Serenade, conducted by Erich Kloss. 12 Midnight, Transmission for all German Stations, relayed from Stuttgart. 12.30 a.m. (Sunday), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Gramophone Music. 5.15, Programme for Children. 6.15, Violin and Flute Recital of Norwegian Music. 7.0, Announcements, Weather and News. 8.0, Time Signal. 8.1, Concert by the Station Orchestra: Tyroler March (Dreyer); Overture, Paragaph 3 (Stuppe); The Nutcracker Suite (Tchaikovsky); Finnish Lullaby (Palngren); Erotikon (Sjögren); Gavotte from Mignon (Thomas); Peasant Idyll (Haarkllou); Lullaby, Nina (Micheli); Potpourri of Popular Melodies (Lie); Silver Clouds (Kettelbey); Humorous Variations on A Carnival in Venice (Ritzau); Selection from Frilling in Wienerwald (Ascher); Down South (Myddleton); Pizzicato Serenade (Beere); Kadettenstrieche (Jessel). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Choral Concert, conducted by Sigurd Torkildsen. 10.45, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopulavoro Notes, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Sports News. 8.25, Popular Music on Gramophone Records. In an interval at 8.30, Time and Announcements. 8.45, Fascino azzurro—Operetta in Three Acts (Ettore Bellini). In the intervals, Book Review and Announcements. After the Operetta, News.

MAY 27th

SATURDAY

continued

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Talk. 7.0, Le Journal Parle. 8.30, Radio Festival, relayed from the Palais de la Mutualité.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—8.45 p.m., Journal Parle. 7.5, Light Music on Gramophone Records. 7.30, Answers to Correspondence. 7.35, Light Music (cont.). 8.0, Review of the Week. 8.5, Theatre Review. 8.15, Interval. 8.30, Chamber Music. 9.0, Interval. 9.10, Dance Music. 11.0, News. 11.5, Dance Music on Gramophone Records. 12 Midnight, Close Down.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Concert by the Radio Paris Orchestra: Suite Lorraine (Boisdeffre); Melody (Joh. Strauss); Rhapsody in Blue (Gershwin); Hungarian Dances Nos. 5 and 7 (Brahms); Plantation Songs (Clusam); Japanese Suite (Holst); Kamarinskaja (Gliluka); Midnight on Matudy Thursday in Seville (Turina-Chapelier); Suite Savoyarde (Chamade). In the intervals at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Concert by the Radio Paris Orchestra. 7.0, Scientific Talk. 7.20, Concert by the Radio Paris Orchestra. 7.45, Commercial Prices, News and Review of the Latin Press. 8.0, Variety Programme. 8.30, News and Weather. 8.40, Reviews by René Dorin. 8.45, Gramophone Records. 9.0, See Vienna. 10.0, Gramophone Records. In the interval at 9.45, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW.—Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Radio Debuts. 8.0, Radio Troubadours, from New York. 8.30, Wealth of Harmony, from New York. 9.0, Teaberry Baseball Scores. 9.5, Mitchell Schuster Tangodahl Orchestra, from New York. 9.30, Concert Favourites, from New York. 9.55, Teaberry Baseball Scores. 10.0, The United States Government in Pittsburgh—3,500 Reserve Officers in Western Pennsylvania, by Major F. E. Bonney. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Hotel Lexington Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News—Recher. 11.29, Temperature Report. 11.30, A Recreio by Bill and Alex of the Downtown Y.M.C.A. 11.45, Jack Pettis and his Orchestra. 11.59, Time Signal. 12 Midnight, American Tax Payers' League, from New York. 12.15 a.m. (Sunday), The Townsend Murder Mystery, from New York. 12.30, Atkinson String Ensemble. 12.45, Honey and Old-Fashioned Quartet. 1.0, Joint Commission in Emergency in Education, from New York. 1.15, The Leaders, from New York. 1.30, Programme to be announced. 3.0, Time Signal and Gilbert and Sullivan Gems, from New York.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—6.0 p.m., Divine Service, relayed from Czenstochowa. 7.0, Theatre Notes and Programme Announcements. 7.5, Miscellaneous Announcements and News. 7.28, Time Signal. 7.30, See Warsaw. 10.0, Time Signal and Announcements (cont.). 10.50, Dance Music from the Café Polonia. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava. 5.10, Talk on Economics. 5.20, Czech Lesson for Germans and German Lesson for Czechs. 5.50, Gramophone Music. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Poetry Reading. 7.0, Chimes. 7.1, News Bulletin. 7.10, Talk on the following Transmission. 7.25, Concert of Czechoslovak Songs by the Vinohrady Hlahol Choral Society. 8.0, Talk. 8.15, See Moravská-Ostrava. In the interval at 9.0, Time Signal. 10.0, Time Signal. 10.1, News Bulletin. 10.15, See Brno. 11.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW., and

Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Geneva), Talk: Across India. 7.30 (from Geneva), Weather, News and Announcements. 8.0 (from Geneva), Orchestral Concert of Popular Russian Music. 8.30, Wagner Concert by a Symphony Orchestra, Women's Choir and Soloists, relayed from Vevey: Extracts from: (a) Tannhäuser, (b) The Mastersingers. 10.15, News and Weather. 10.30 (from Lausanne), Dance Music, relayed from the Bel-Air Métropole. 11.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.40 p.m., Organ Recital by Harald Kreichberg, Toccata, No. 5 (Frescobaldi); Andante (Elgar); Sonata, No. 3 (Gullmaut); Choral. 6.10, Agricultural Talk. 6.40, French Lesson. 7.10, Weather Report. 7.15, Harp and Flute Recital. 8.0, News. 8.20, Wind-Instrument Concert. In the interval at 9.0, Weather and News. 9.35, Old Dance Music. 10.0, Modern Dance Music. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW.—Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert. 4.30, Children's Radio Review. 4.45, Report of the Royal Geographical Society and Giornale Radio. 5.5, Exchange and Announcements. 5.15, Reading. 5.30 to 6.15, Orchestral Concert: A Bangalow, a Piccolo and You (Lewis); Taote (Carducci); Serenatella (Panizzi); Selection from La rondine (Puccini); Toccata (Martucci); Cipressi (Castelmoro-Telesoro); La Campanella (Liszt); Madrid (Alex). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopolavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Giornale Radio. 8.0, Time, Announcements, and Report on the Cycle Tour of Italy. 9.0, See Turin. In the intervals, Talk, Scientific Review, and Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 790 kc/s, 379.5 metres; 50 kW.—Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports and Baseball Scores. 12 Midnight to 3.0 a.m. (Sunday), New York Relay. 12 Midnight, Kallenmyer's Kindergarten. 12.30 a.m., The Economic World Today. 1.0, Band of Famous Brands. 1.15, Zora Layman and her Debonairs. 1.30, K-7, Secret Service Spy Story. 2.0, B. A. Rolfe and his Teraplane Orchestra. 3.0, Programme Résumé.

SCHWEIZERISCHER LANDESENTER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.—Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon (from Berne), Gramophone Music. 12.30, News Bulletin. 12.40 (from Berne), Concert (cont.). 1.25 (from Berne), Exchange, Time and Weather. 1.30 (from Berne), Answers to Correspondence. 1.45 (from Berne), Review of Books. 2.15 (from Berne), Gramophone Records. 2.30 (from Berne), Talk. 3.0 (from Berne), Zither and Guitar Music. 3.30 to 5.0, Interval. 5.0 (from Berne), Harp Recital. 5.30 (from Berne), Folk Songs on Gramophone Records. 6.0 (from Berne), Talk. 6.30 (from Berne), Programme for Young People. 7.0, Chimes. 7.10 (from Basle), Time, Weather, and Market Prices. 7.15 (from Basle), Nature and Technique in Music—Gramophone Concert. 8.0 (from Basle), Talk on Technical Research. 8.30, Aria and Song Recital. 9.0, Weather and News. 9.10 (from Basle), Radio Play. 10.15 (from Basle), Concert by the Weintraub Syncopeurs, from the Summer Casino. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW.—Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.15 p.m., University Degree Day Ceremony, relayed from the Town Hall. 5.5, Programme for Children, relayed from Karlstadt, 1,382 kc/s, 217 metres. 5.30, Song Recital by Elna Pauduro. 5.45, Reading. 6.15, Gramophone

Music. 7.30, Talk. 8.0, Old-Time Dance Music. 10.0, Modern Dance Music. 12 Midnight (approx.), Close Down.

STRASBOURG

859 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Opera Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0, Legal Talk in German. 2.15, Dance Music on Gramophone Records. 3.15 to 3.45, Interval. 3.45, Talk on Wagner. 4.0, Wagner and Pierre Concert, conducted by Maurice de Villers: Part I, Wagner Music: Prelude to Lohengrin; Selection from 'The Valkyries', Part II, Pierre Music: Orchestral Suite from Le Bonton d'or; Ballet de cour; Orchestral Suite from Ixyl; Dance Suite; Marche solennelle. 6.0, Talk in French: The Moselle Automobile Club. 6.15, French Elocution Lesson. 6.30, Lisbeth Eschrich Recital, with the Composer at the Piano. H. Gregoire (Violin), and Mlle. Wild (Songs). Piano Solo, Prelude and Fugue on a Hebrew Theme; Songs: (a) Arietta, (b) Novallette; Six Children's Songs; Gazonnis d'Enfant; Sonata for Violin and Piano. 7.15, Agricultural Talk. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results, and Announcements. 8.30, The Land of Smiles—Operetta (Lohár). In an interval at 9.30, Press Review in French. 10.30, Dance Music from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Concert by the Station Orchestra, conducted by Gustav Görlich: March (Smetana); Overture, Le Maçon (Auber); Ballet Divertissement (Blüthenmann); Waltz, Künstlerleben (Joh. Strauss); Overture, Naxos Hoelzelt (Lincke); March Potpourri, Alle mit uns (Robrecht). 2.30, Radio Report on the German Aviation Exhibition from the Industry Hall. 3.0, Time and News. 3.15, Anecdotes. 3.30, Programme for Children. 4.30, See Frankfurt. 5.15, Concert of Swabian Folk Melodies, relayed from Heidenheim. 5.50, Time and Sports Notes. 6.0, Talk: Germany's Naval Power. 6.25, Talk: A Visit to the German Marine Force. 6.50, Time and News. 7.0, Transmission for all German Stations: The Black Forest—A Radio Sequence (Martin Lang and Johannes Künzig). 8.0, Military Band Concert of Old and New Württemberg Marches. 8.30, See Munich. 10.15, Time and News. 10.45, See Munich. 12 Midnight, Relay from the Grave of Leo Schlageter from Wiesental in the Black Forest. 12.30 a.m. (Sunday), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire. 6.0 p.m., News. 6.15, Military Music. 6.30, Instrumental Solos. 6.45, Suite, Mascarede (Lacôme). 7.0, Extracts from Opéra-Comique. 7.15, Racing Results, Market Prices, and News. 7.25, Local News Bulletin. 7.30, Accordion Music. 7.45, Popular Music. 8.0, Instrumental Ensembles. 8.15, Opera Music: Airs from: (a) The Magic Flute (Mozart), (b) William Tell (Rossini), (c) Il Trovatore (Verdi). 8.30, Music by a Viennese Orchestra. 9.0, Extracts from I Pagliacci Opera (Leoncavallo). 9.30, Orchestral Concert. 10.0, Accordion Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Operetta Potpourri (Mizraki); Polonaise from Boris Godunov (Musorgsky); Elégie (Massenet); Le cor (Félicier); Une jolie blonde; March of the Foreign Legion (Quéret). 11.0, Request Concert: Ballet Music from Faust (Gounod); Serenade (Toselli); The Grand Narrative from Lohengrin (Wagner); Cavatina (Raff); Melody from Thais (Massenet). 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown Constable announcing. 11.30, Organ Solos: Popular Irish Medley; Sunshine Susie; You are my Heart's Delight; Close your Eyes; I bring a Love Song; Londonderry Air; When it's Night Time in Nevada; Good-night, Sweetheart. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Sunday), Orchestral Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 p.m. till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW.—Relayed by Milan, 905 kc/s, 331.5 metres; Genoa,

959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.10 to 6.0 p.m., Concert by a Gipsy Quartet. 6.35, Giornale Radio, Lottery Results, Agricultural Report and Dopolavoro Announcements. 7.0, Time and Announcements. 7.5 (approx.), Gramophone Records of Songs: Tre cuori (Mariotti-Ramo); Sperditi nel blu (Dorella); Ugo (Mariotti-Ramo); Parlami d'amore Mariù (Bixio). 7.20, Giornale Radio. 7.45, Gramophone Records. 8.0, Announcements, Report on the Cycle Tour of Italy, Giornale Radio, Weather and Gramophone Records. 8.30, Talk: Events and Problems. 8.50, Talk on the following Transmission. 9.0, Cinderella—Opera in Three Acts (Rossini), relayed from La Pergola Theatre. Conductor: Tullio Serafini. In the interval, Review of New Books, Miscellaneous Notes and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning); and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.45 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW.—Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 62 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.45 p.m., Concert of Light Music by Josef Wollner and his Orchestra. 6.55, Talk: The Huzuls, a Primitive People in Eastern Europe. 6.25, Talk: The Latest Developments in the Sino-Japanese War. 6.45, Talk: The Cautophone, a New Electrical Instrument—with Illustrations by the Inventor, Dr. Walter Brandt. 7.0, Talk on Franz Schalk on his Seventieth Birthday. 7.10, Piano forte Recital by Grete Hinterhofer, Sonata in F Sharp Minor, Op. 11 (Schumann); Albumblatt (Maz); Soiree de Vienne (Grünfeld). 7.45, The Watchdog. 7.50, Time and News. 8.0, Monster Concert by the United Military Bands of the Vienna Garrison, relayed from the Heideplatz, Overture, Titus (Mozart); Dance of the Apprentices and Procession of the Guilds from The Mastersingers (Wagner); Prelude to the Second Act and Sacred Song from Der Evangelist (Kreuzer); Wogenlied (Brahms); a Hungarian Dance, No. 6 (Brahms); Military March (Schubert); Waltz, Wiener Blut (Joh. Strauss); Der Traum eines österreichischen Reservisten (Zielner). 9.45, Topical Programme. 10.0, News. 10.15, See Budapest.

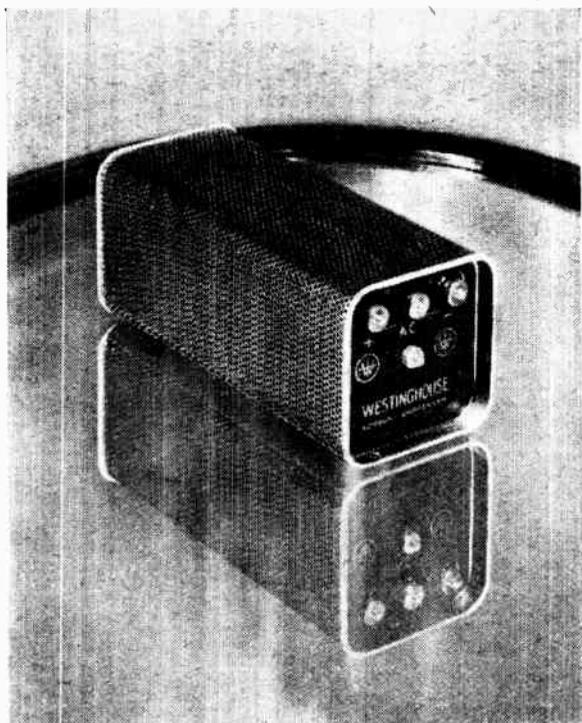
WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—12.0 p.m., Variety Music on Gramophone Records. 12.15, Broadcast for Schools, relayed from Lwów. 788 kc/s, 381 metres. 2.0, Programme for Soldiers. 2.40 to 3.10, Interval. 3.10, New Bulletin. 3.15, Economic Review. 3.20, News and Answers to Correspondence on Military Questions. 3.35, Programme for Children. 4.0, Symphony in B Minor (Borodin), conducted by Albert Coates, on Gramophone Records. 4.40, Reading. 5.0, Programme for Children, relayed from Lwów. 5.35, News Bulletin. 5.55, Programme Announcements. 6.0, Divine Service, relayed from Czestochowa. 7.0, Miscellaneous Items. 7.20, Talk for Gardeners. 7.30, Topical Talk. 7.45, Radio Journal. 8.0, Concert by the Radio Orchestra, conducted by St. Navorot. Soloists: Nina Gurdzinka (Songs) and W. Zywolewsky (Guitar). March, Vive Hungaria (Kálmán); Suite, Gollardica (Anacleto); Songs: (a) Le Nil (Loron), (b) Chant hindou (Bemberg), (c) The Musician (Hiljaich); Algerian Scene (Ketilbey); Love Duet (Galendry); Guitar Solos: (a) Black Eyes (Stroek), (b) Melody (Zywolewsky), (c) Waltz (Karaszinski-Karaszek); Czardas from Countess Maritza (Kálmán); Valse triste (Nedbal); Four Songs: Potpourri, Von Wien durch die Welt (Hruby); Three Songs; Waltz (Waldtufel); Oberkie (Namysłowski); Polonaise (Dworakowski). In the interval, Sports Notes, and Radio Journal. 10.5, Chopin Piano-forte Recital by J. Treczynski: Four Mazurkas, Op. 41; Impromptu in A Flat; Scherzo in B Minor; Nocturne in F Sharp Minor. Two Waltzes in C Minor and A Minor, Op. 34. 10.40, Reading. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music. In the interval at 11.30, News for Members of the Polish Polar Expedition.

WILNO

533 kc/s, 563 metres; 16 kW.—5.55 p.m., Programme Announcements. 6.0, Divine Service, relayed from Czestochowa. 7.0, Daily Reading. 7.10, Dialogue: Country Holidays for Children. 7.30, See Warsaw. 8.0, Concert of Request Gramophone Records. 9.0 till Close Down, from Warsaw. 12 Midnight (approx.), Close Down.

ZURICH.—See Schweizerischer Landeseater.



on reflection

there's no rectifier quite so efficient as the
WESTINGHOUSE METAL RECTIFIER

A 3d. stamp will bring you "The ALL-Metal Way" giving full particulars.
The Westinghouse Brakes & Saxby Signal Co., Ltd., 82, York Road, King's Cross, London, N.1

The ELEMENTARY PRINCIPLES of WIRELESS TELEGRAPHY and TELEPHONY

by R. D. BANGAY

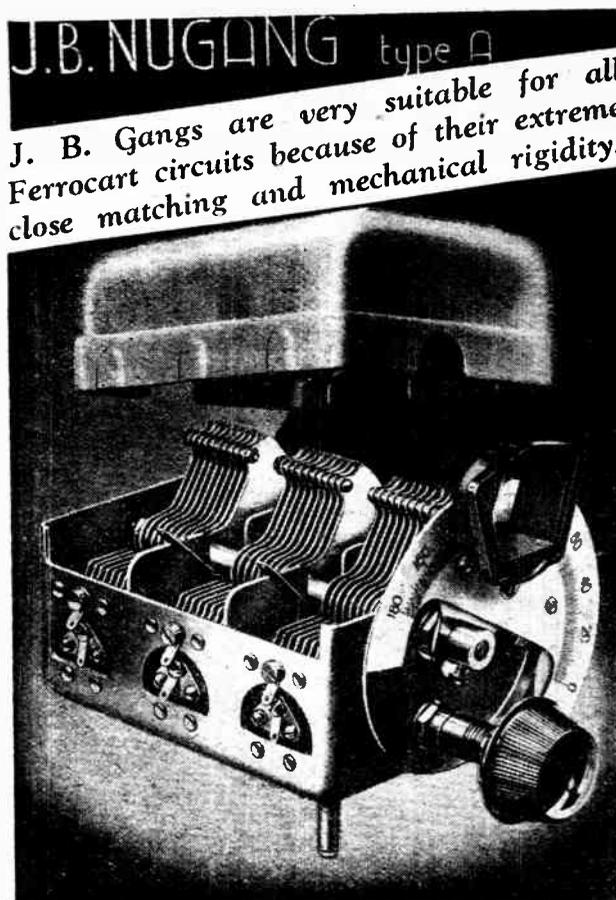
Third Edition
Revised by
O. F. BROWN, B.Sc.

THE standard book of instruction for wireless beginners and students. This new and revised edition brings the whole subject into line with modern developments in wireless. The style is clear and simple and attention is given to the theoretical elements of electricity and magnetism: to the dynamo: and to the properties of waves. A leaflet which gives full particulars of the volume, including a synopsis of the chapters, will be sent on request.

P R I C E
7/6 net, by post 8/-

From all leading Booksellers or direct from the Publishers
ILIFFE & SONS LIMITED
DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1

w.w.97



A RIGID CHASSIS THAT IS ALL ONE PIECE

Matched to within 1/2 of 1 per cent. + half a m.mfd.

● so strong that there can never be the slightest distortion in use. NUGANG TYPE "A" is similar to the standard Nugang Model but with the addition of a powerful Disc Drive. Easily fitted—only *round* holes to cut in receiver panel.

Trimmers to each stage operated by external starwheels. Vanes wide spaced and of heavy gauge. Special rotor bearings ensure *permanent accuracy* and give remarkably free movement. Capacity, .0005 mfd.

NUGANG TYPE "A" (Complete with Disc Drive).

Fully	18/6	2-gang	Semi-screened	16/6
Screened	27/-	3-gang	(without lid)	24/6
	34/6	4-gang		31/6



Other J.B. Gangs include:
J.B. "Nugang" (as type A but without disc drive),
"Unitune" Gangs and J.B. Superhet Gangs. Write for complete catalogue.

**P R E C I S I O N
I N S T R U M E N T S**

Advertisement of Jackson Brothers (London) Ltd., 72, St. Thomas' Street, London, S.E.1. Telephone: Hop 1837.

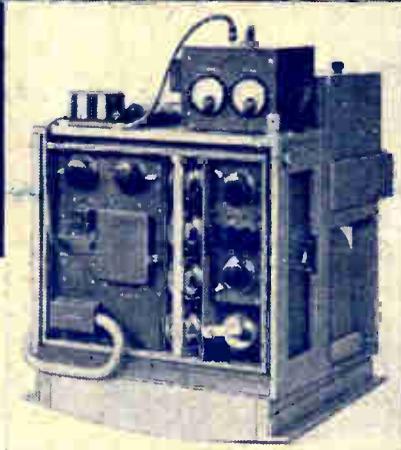


Standard IRADIO helps THE MOST CLIMBERS

The Rutledge Expedition, now attacking Mount Everest, is in constant contact with civilisation by means of STANDARD radio apparatus. A light-weight STANDARD aircraft-radio equipment is working at the Base Camp in two-way communication with a STANDARD receiver and transmitter at the Expedition's headquarters in Darjeeling. By means of this channel of communication, the climbers are receiving valuable data to help them in their task.



"The Times" Photograph. Type ATR.3 Radio Equipment similar to that in use at the Base Camp.



Standard Radio

Standard Telephones & Cables Ltd.,
The Hyde, Hendon, London, N.W.9.
Telephone : Colindale 6533.

MULTITONE: HIGH IN EFFICIENCY, LOW IN PRICE!

THE Editor of the "Wireless World" recently warned manufacturers against the high prices charged for components. This certainly does not apply to Multitone products, as you will see from the low prices, and specifications below.

The author of the article describing the "Wireless World" Class B Ferrocart Receiver, on the other hand, emphasised the value of using a Multitone Tone Control Transformer in the first L.F. Stage as a means of reducing H.T. consumption. It is also necessary to ensure good quality.

BEPU Class "B" driver transformer, in various ratios (very low secondary resistance of 100 ohms)

9/6

PUCHOKE for matching any speaker to Push-Push output (plate to plate resistance 150 ohms; inductance 45 henries) ..

9/6

BEPU ratios for different valve combinations :—

Output Valve	Driver Valve	Driver Transformer
Cossor 240B	Small power valve	BEPU 1/1
" "	General purpose valve	" 1.5/1
Marconi B21	Any driver valve	" 1/1
Mullard PM2B	" " "	" 1.5/1
Mazda PD220	Mazda L2 or similar valve	" 2/1
" "	" P220 or similar valve	" 1.5/1

In the output our PUCHOKE will match all the above valves.

★Obtain this Guide from your dealer. If he is not one of our demonstrating dealers, we will gladly let you know where the nearest demonstration can be obtained.

THE
MULTITONE
GUIDE
TO
PUSH PUSH
AMPLIFICATION



MULTITONE

ELECTRIC COMPANY LIMITED

(M.C. 59)

95-98, White Lion Street, London, N.1. Terminus 5063

The Wireless World

4^D

THE PRACTICAL RADIO JOURNAL

with

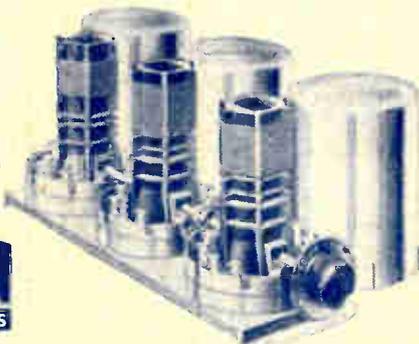
Complete Foreign Programmes

Friday, May 26th, 1933

TELSEN SUPERHET COILS

TYPE No. S.330

Specified for the W. W. Monodial Super Battery Receiver. The ideal coils for any superhet circuit. 25/6



Announcement of the TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

Write for the New

SONOCHORDE

Broadsheet and Technical Folder



STANDARD CLASS "B" P.M. UNIT

37/6

The Sonochorde Standard P.M. unit equipped with Class "B" transformer is ideal for use with the W. W. revolutionary Class "B" Ferrocart Receiver (see issue April 7th, 1933). The Sonochorde concentric disc suspension promotes added sensitivity and lends itself to heavy input loads without fear of distortion.

Sonochorde Reproducers Ltd.
1, Willesden Lane, London, N.W.6.

Phone: Maida Vale 6066 (5 lines).
Distributors in Belgium—Von der Becke and Mersly, 40, Rempart Klodorp, Antwerp, Belgium, under the trade name SONOVON.

When you see the name

DUBILIER



on your resistances you know you have the world's finest!

1/4 W
ACH

Exclusively Recommended and Adopted by

★ McMICHAEL, EDDYSTONE, G.E.C., PETO-SCOTT, PHILIPS, Etc.

M-L Anode Converters merely require connecting to a 6 or 12v. L.T. Battery to give smooth, constant H.T. and G.B. Current. Built to last. Models from £8.

Special Models for McMichael, G.E.C., Philips and Peto-Scott short-wave receivers £9.10.0. Eddystone Model £8.5.0. Models also for Mavox, Pegasus and Faraday Receivers.

GET H.T. CURRENT FROM L.T. BATTERY WITH



ANODE CONVERTERS

Write for full details post free from Dept. 1, ROTAX LTD., WILLESDEN, LONDON, N.W.10.



Models to suit all long- and short-wave receivers

Orders on rail within two hours

In view of the phenomenal interest which is being taken in this wonderful circuit,

"THE WIRELESS WORLD"

CLASS "B" FERROCART RECEIVER

we have reprinted 10,000 copies of the original constructional article which appeared in "The Wireless World" of April 7th last, and these are being offered free to all readers of "The



Wireless World" on receipt of application. Wireless dealers will be supplied gratis with as many copies as can conveniently be disposed of amongst their customers.

TRADE ENQUIRIES SOLICITED.

FREE DEMONSTRATION.

You are cordially invited to see and hear this receiver at our Surrey Street Showrooms.

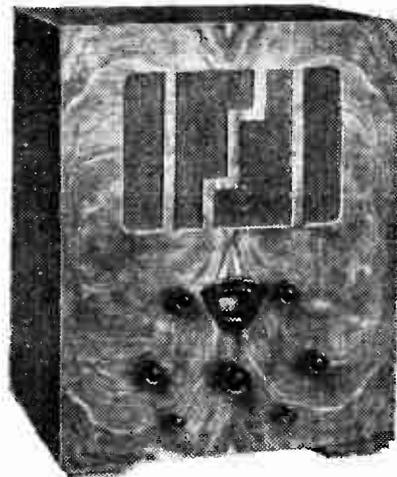
Hours of business: 9 a.m. to 6 p.m.

Two doors from the Strand, facing Aldwych tube station.

A large number of "WIRELESS WORLD" readers have expressed their appreciation of this excellent cabinet, which was chosen by the designer of the Class "B" Ferrocart Receiver. It is fashioned on modern lines, finished in beautifully figured walnut, and special care has been taken to ensure that cabinet resonances are eliminated.

Height, 19 1/2 in. Width, 15 in. Depth, 12 in. Complete with Loud-speaker Baffle-board, "Konductite" metal-lined base-board and removable back. Front drilled ready to take the "Ferrocart" Receiver if desired, without extra charge.

Cabinet with metal-lined baseboard - **32/6**



The outstanding performance of this receiver has resulted in our experiencing one of the busiest Springs in our 12 years in the Radio trade. Never before have our resources been so fully taxed in keeping pace with the remarkable demand for kits of parts, but by the early ordering of components, we have kept our promise of delivery by return.

KITS AS SPECIFIED

(Designer's first Choice).

KIT 'A' Complete (less Valves Batteries, Cabinet and Loud Speaker) **£8-2-6**

KIT 'B' Complete with Valves (less Batteries, Cabinet, and Loud Speaker) **£10-9-9**

KIT 'C' Complete with Valves Cabinet and Loud Speaker (less Batteries) **£14-1-5**

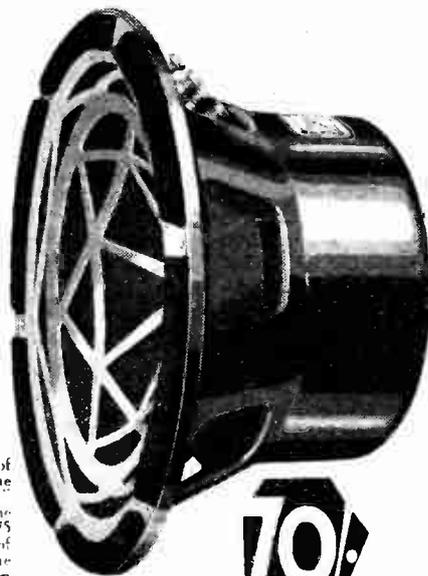
Detailed Lists, Post Free.

Showrooms: 4, Surrey Street, Strand, London, W.C.2.
Telephones: Temple Bar 8620.

The CITY ACCUMULATOR CO., LTD.

Office and Works: 7, Angel Court, 173, Strand, London, W.C.2.
Telegrams: Cityucco, Estrand, London

The **"VICTOR"** re-creates the original performance



A de-luxe Reproducer, a notable feature of which is the "uniform distribution of the output energy over the frequency range" ("Wireless World" Test Report) and the complete absence of resonances between 75 and 400 cycles, resulting in a fidelity of reproduction more closely resembling the original performance than has yet been attained by any other type of loud speaker. A response from below 50 cycles up to 12,000 cycles ensure reproduction of the pedal note of the organ and the upper harmonics of violin and piccolo with amazing realism and tonal beauty, and every instrument in orchestral reproduction is heard in true perspective. If you desire such reproduction, you, must have an R. & A. "VICTOR."



COMPLETE WITH 8 RATIO TRANSFORMER.

Ask your dealer to demonstrate.

The **R & A "VICTOR"** PERMANENT MAGNET MOVING COIL REPRODUCER DE-LUXE
REPRODUCERS & AMPLIFIERS LTD. WOLVERHAMPTON.

Illustration 382

ETA TRAFFIC SIGNALS



FOR your safety, protection and satisfaction all ETA valves are now sold with a distinctive label on the ends of the cartons. The colour and shape of these labels make it impossible for you to purchase the wrong type of valves in error.

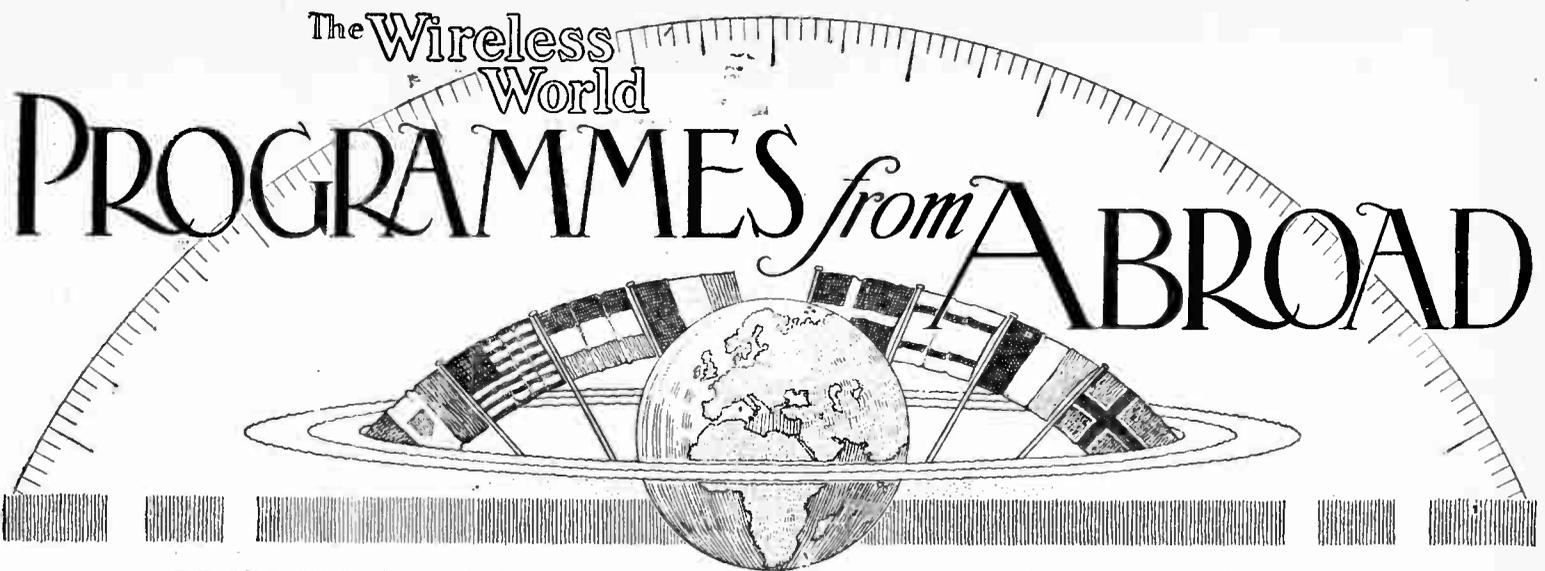
A square label, for example, denotes a Battery 2-volt valve, a triangular label tells you that the valve inside is a directly heated Mains Valve. Furthermore, if the label is Blue, an H.F. valve is denoted; if Yellow, a screen grid valve—and so on. Thus a square yellow label indicates a screen grid battery valve. Ask your dealer to show you this ingenious new method of marking, and **refuse to accept any ETA valve the carton of which does not carry one of the new labels.**

ETA Valves are the best that money can buy. You may pay more, but you can get no better service.

THE ELECTRICAL TRADING ASSOCIATION LTD., ALDWYCH HOUSE, ALDWYCH, W.C.2.

SCOTTISH AGENTS: RADIOVISION LTD., 233, St. Vincent St., Glasgow, G.2.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc s.	kW.	Station.	Tuning Positions.	Metres.	Kc s.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		453.2	662	0.25	Agon (France)	
1875	160	8.5	Huizen (Holland)		453.2	662	7	Milan (<i>Experimental Relays Rome</i>)	
1796	167	40	Lahti (Finland)		450.3	666	20	Madona (Latvia). (<i>Relays Riga</i>)	
1725	174	75	Radio Paris, C.F.R.		447.1	671		Paris. Ecole Supérieure, PTT (7.0 kW.); Ejukan (0.15 kW.), Notodden (0.08 kW.); Aalsund (0.35 kW.) (Norway) (<i>relays Oslo</i>).	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. D1A on 31.38 m., D1B on 19.73 m., D1C on 49.83 m., D1D on 25.51 m., D1E on 16.89 m.)		441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.)	
1554.4	193	30	Daventry National		435.4	689	55	Stockholm, SASA (Sweden)	
1538	195	7	Ankara (Angora) (Turkey)		430.4	697	2.5	Belgrade (Yugoslavia)	
1481	202.5	100	Moscow, RVI (Old Komintern) (Russia)		424.3	707	2	Madrid, EAJ7 (Union Radio). (<i>After 7.0 p.m.</i>)	
1446	207.5	13	Eiffel Tower, FL, Paris		424.3	707	100	Moscow, Imini Stalina (Russia)	
1412	212.5	120	Warsaw 1 (Poland)		419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		416.4	720.5	5	Rabat (Morocco)	
1354.4	221.5	30	Motala (Sweden). (<i>Relays Stockholm</i>)		413	725	60	Athlone (Irish Free State)	
1304	230	500	Moscow, WZSPS (Trade Union) (Russia)		408.7	734	16	Katowitz (Poland)	
1275	235	0.5	Tunis-Kashah (Tunisia)		403.8	743	25	Sottens (Radio Suisse Romande) (<i>Switzerland</i>)	
1230	244	0.8	Boden (Sweden). (<i>Relays Stockholm</i>)		398.9	752	25	Midland Regional. (Daventry)	
1200	250	5	Stamboul (Turkey)		394.2	761	12	Bucharest (Roumania)	
1200	250	21	Reykjavik (Iceland)		389.6	770	120	Leipzig (Germany)	
1190	252	200	Luxembourg (<i>Testing</i>)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1170	256	25	Tashkent, RV11 (Russia)		385.1	779	10	Stalino, RV26 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (<i>Relays Copenhagen</i>)		381	788	16	Lwow (Lemberg) (Poland)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		376.4	797	50	Scottish Regional (Falkirk)	
1083	277	60	Oslo (Norway)		372.2	806	1.5	Hamburg (Germany)	
1071	280	35	Tiflis, RV7 (Russia)		370.1	810.5	0.8	Radio, LL, Paris	
1035	290	36	Kiev, RV9 (Russia)		368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.); Galicia, EAJ1 (0.2 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Helsinki (10 kW.) (Fin- land) (<i>relays Lahti</i>); Kharkov, RV20 (10 kW.) (Russia).	
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.)		367.2	817	0.7	Fredriksstad (Norway). (<i>Relays Oslo</i>)	
938	320	20	Kharkov, RV4 (Russia)		364.1	824	1	Bergen (Norway)	
857	350	100	Leningrad (Russia)		363.6	825	13	Algiers (Algeria)	
840	357	18.5	Budapest (Hungary)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		355.9	843	50	London Regional (Brookmans Park)	
760	395	1.3	Geneva (Switzerland). (<i>Relays Sottens</i>)		352.1	852	7	Graz (Austria). (<i>Relays Vienna</i>)	
720	416.6	15	Monte Ceneri (Switzerland). (<i>Testing</i>)		348.8	860	7.6	Barcelona, EAJ1 (Spain)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		348.8	860	10	Leningrad, RV70 (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)		345.2	869	11.5	Strasbourg, PTT (France)	
680	441.2	0.8	Lausanne (Switzerland). (<i>Relays Sottens</i>)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
574.7	522	7	Ijubljana (Yugoslavia)		338.2	887	15	Brussels 11, Velthem (Belgium). (<i>In Flemish</i>)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (<i>Relay Stn.</i>)		335	896	5	Cadiz (Spain)	
568.1	528	2	Grenoble (France)		334.4	897	1.9	Poznan (Poland)	
566	530	0.25	Hanover (Germany). (<i>Relays Hamburg</i>)		331.5	905	50	Milan (Italy). (<i>Relays Turin</i>)	
563	533	16	Wilno (Poland). (<i>Relay Station</i>)		328.2	914	60	Poste Parisien (France)	
560	536	0.25	Augsburg (Germany). (<i>Relays Munich</i>)		325	923	60	Breslau (Germany)	
560	536	1.5	Kaiserslautern (Germany). (<i>Relays Munich</i>)		321.9	932	10	Göteborg (Sweden). (<i>Relays Stockholm</i>)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)		318.8	941	0.25	Dresden (Germany). (<i>Relays Leipzig</i>)	
542	554	10	Sundsvall (Sweden). (<i>Relays Stockholm</i>)		318.8	941	1.5	Naples, INA (Italy). (<i>Relays Rome</i>)	
537.6	558	3	Palermo (Italy)		315.8	950	1.8	Marseilles, PTT (France)	
533	563	60	Munich (Germany)		312.8	959	0.7	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)	
525	571	15	Riga (Latvia)		312.8	959	1.7	Cracow (Poland)	
517	580	15	Vienna (Rosenhügel) (Austria)		312.8	959	10	Genoa, IGE (Italy). (<i>Relays Turin</i>)	
509	589	15	Brussels No. 1, Velthem (Belgium). (<i>In French</i>)		309.9	968	1	Cardiff	
507.2	591.5	100	Bisamberg (Austria). (<i>Testing</i>)		309.9	968	50	West Regional (Washford Cross)	
500.8	599	20	Florence, IFJ (Italy). (<i>Relays Turin</i>)		307	977	0.75	Zagreb (Yugoslavia)	
495.8	605	1.2	Trondheim (Norway)		304	986	13	Bordeaux Lafayette, PTT (France)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		301.5	995	50	North National (Manchester)	
480	625	50	North Regional (Manchester)		298.8	1004	11	Tallinn (Estonia)	
472.4	635	60	Langenberg (Germany)		296.1	1013	20	Hilversum (Holland). (7 kW. before 4.40 p.m.)	
465.8	644	1.5	Lyons la Doua, PTT (France)		293.5	1022	0.7	Limoges, PTT (France)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).		293.5	1022	2.6	Kosice (Czechoslovakia)	
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (<i>relays Heilsberg</i>); Klagenfurt (0.5 kW.) (Austria) (<i>relays Vienna</i>); Porsgrund (0.7 kW.) (<i>relays Oslo</i>); Tromsø (0.1 kW.) Bodo (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (<i>relays Stockholm</i>).		291	1031	13.2	Viiipuri (Viborg) (Finland). (<i>Relays Helsinki</i>)	
					288.3	1040	50	Scottish National (Falkirk)	
					288.3	1040	1	Bournemouth (<i>Relay Station</i>)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, kc.s., kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Table with columns: Metres, kc.s., Call Sign, Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

MAY THE TWENTY-EIGHTH

ATHLONE

725 kc/s, 413 metres; 60 kW., and Cork, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal, 8.31, Instrumental Trio Music, 8.50, Programme of Songs and Readings by John MacDonagh and Company, 9.50, Soprano Solos by Mme. Hefferman, 10.5, Uilleann Pipe Solos by Liam O. Cathasaig, 10.15, Recital of Old Songs by J. Browner (Bass), 10.35, Instrumental Trio Music, 11.0, Time Signal, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW., 12 Noon, Chimes and Weather, 2.0 p.m., Gramophone Music. In the interval at 2.30, Theatre Notes, 3.0, Film Review and Sextet Concert, 4.0, Programme for Hospitals and other Benevolent Institutions, 5.0 to 6.30, Interval, 6.30, Agricultural Talk in Catalan and Gramophone Music, 7.0, Concert by the Station Orchestra, 7.30, Song Recital by Ramon Pradell (Baritone), 8.0, Concert by the Station Orchestra and Rancesca Marlet (Soprano), 9.0, Dance Music, relayed from Hollywood Bar, 10.0, An Opera on Gramophone Records, 11.45, Class Lesson, 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW., 10.0, Pontifical Mass, celebrated by His Eminence Cardinal Ascalesi, with Music by the Bari Choir, conducted by Biagio Gramaldi, relayed from the Duomo, 1.0, Giornale Radio, 1.10 to 2.15, Gramophone Music. In the interval at 1.55, Weather, and at 2.0, Time and Announcements, 5.30 to 6.30, Gramophone Music, 8.0, Sports Notes and Giornale Radio, 8.30, Time Signal and Announcements, 8.35 (approx.), Concert, Soloists: Luigi de Grandi (Violin) and D. d'Angelo (Baritone), Comedy Overture (Lincke); Violin Solo; Allegro from the Concerto in A Minor (Vivotti); Baritone Solo: Torna amore (Buzzi-Pareisi); Selection from Cavalleria rusticana (Mascagni); Baritone Aria from Ernani (Verdi); Second Small Suite (de Michel); Baritone Solo, Air from Germania (Franchetti); Selection from Siberia (Giordano), 9.45, Il Peggio passo è quello dell'uscio—Comedy in One Act (Marini), 10.15, Gramophone Music, 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BERLIN

DEUTSCHLANDSENDER; 183.5 kc/s, 1,635 metres; 60 kW.—11.15 a.m., Transmission for all German Stations, relayed from Langenberg, 12 Noon, Part Relay of a Concert from Heilsberg, 12.15 p.m., Relay of the National Demonstration in front of the Schinkel Church in Flatow, in connection with the Frontierland Church Festival, Trombone Choir, Die Himmel rühmen des Ewigen Ehre (Beethoven); Girls' Choir: Wach auf, wach auf, du deutsches Land (Walter); Address by Robert Graupe; Deutschland, Deutschland über alles (Haydn), 12.40, Concert from Heilsberg (cont'd.), In an interval at 12.55, Time Signal, 2.0, Fairy Tales for Children, 2.15, See Frankfurt, 2.45, H. H. Homben reads from his own Works, 3.0, Concert by the Leschke-Riemann Orchestra, 4.0, Talk: The Peasant and his Farm, 4.30, See Frankfurt, 5.0, Transmission for all German Stations, relayed from Langenberg, 5.45, Gramophone Records of Workers' and Soldiers' Songs, 6.30, Ballads and Songs by Borries Baron von Münchhausen, 7.0, Song Recital by Adelheid Arnold, Three Songs (Schubert): (a) Im Abendrot, (b) Suleika No. 1, (c) Suleika No. 2; Two Songs (R. Strauss): (a) Wiegenlied, (b) Traum durch die Dämmerung; Three Songs (Brahms): (a) Die Maidacht, (b) Fehlsinnigkeit, (c) Ständchen, 7.30, Variety Programme, 8.30, Berlin Art Week—Concert of Old Music, relayed from the Golden Gallery of the Charlottenburg Schloss, Trio Sonata for Viola d'amore, Viola da gamba, and Harpsichord (Lotti); Sonata for Viola d'amore and Harpsichord (Vivaldi); Harpsichord Solos, 9.15, Light Music and Dance Music by the Hans Band Orchestra, 10.45, Weather Report for Shipping, 11.0, Concert and Danzig Election Results, relayed from Heilsberg, 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN; 715 kc/s, 419.5 metres; 1.5 kW.—11.15 a.m., Transmission for all German Stations, relayed from Langenberg, 11.45, Transmission for all German Stations, relayed from Leipzig, 12.15 p.m., Concert from Heilsberg, 12.30, Radio Report of a Running Event in the Tiergarten-Sportplatz (on Gramophone Records), 12.50, Concert from Heilsberg (cont'd.), 2.0 to 3.0, Programme for Garden City Dwellers—Talks, 3.30, Concert by the Britz Mandoline Club Orchestra, During the intervals: Part Relay of the Public Folk Song Festival in the Lehrervereinshaus, the Alexanderplatz, the College of Music, the Kleistschule, and Mohlt, in the Tempelhof, 5.0, Transmission for all German Stations, relayed from Lan-

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Roman Catholic Service from St. Chad's, Birmingham, Oratorio: "Samson" (Handel).
- LONDON REGIONAL** Service from the City Temple, Orchestral Concert from Tonquay.
- MIDLAND REGIONAL** Service from Carr's Lane Church, Birmingham.
- NORTH REGIONAL** Service from Darlington Parish Church.
- WEST REGIONAL** Service from Wesley Church, Risca.

ABROAD

- BRUSSELS (No. 1)** 12.0 noon, Concert from the Grand Hotel, Antwerp, 8.0 p.m., Extracts from operetta: "Ciboulette," by Habin, 5.45 p.m., Handel Festival, from Hanover.
- HAMBURG HEILSBURG** 12.0 noon, Concert by the Königsberg Opera House Orchestra.
- LEIPZIG** 8.0 p.m., Verdi-Puccini Concert by the Leipzig Symphony Orchestra.
- MOSCOW** 4.30 p.m., Opera: "The Czar's Bride"; 6.30 p.m., "Kostchei the Immortal," both by Rimsky Korsakov, 8.45 p.m., Brahms Centenary Concert.
- PALERMO PITSBURGH PRAGUE** 8.0 p.m., National Opera Concert from New York, 8.0 p.m., Operetta: "La belle Hélène," by Offenbach.
- TURIN** 8.40 p.m., Opera: "Siberia," by Giordano, conducted by the composer (relayed by Florence, Genoa, Milan and Trieste).
- WARSAW** 12.15 p.m., The Warsaw Philharmonic Orchestra.

genberg, 5.50, Town and Country—Humorous Monologue, 6.25, Travelling Some Useful Hints (arr. Kurt Hlenfeld), 7.10, Talk: Seven Hundred Years of Schwedel's History, 7.50, Sports Notes, 8.0, Announcements, 8.5, Operetta Concert by the Wireless Choir, directed by Maximilian Albrecht, the Berlin Philharmonic Orchestra, and Soloists, 10.0, News, followed by Light Music and Dance Music, with Vocal Refrains, 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW., 5.45 p.m., Orchestral Concert of Dance Music, 6.15, Gramophone Music, 6.55, Talk for Housewives, 7.0, See Brno, 8.0, See Prague, 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW., and Głowitzi, 1,184 kc/s, 253 metres.—11.15 a.m., Transmission for all German Stations, relayed from Langenberg, 11.45, Transmission for all German Stations, relayed from Leipzig, 12.15 p.m., (approx.), Concert from Leipzig, 2.0, News, 2.10, Talk on Accident Insurance, 2.25, Reading, 3.0, Programme for Children, 3.30, Talk: Small Sacrifices for Big Things, 3.50, Historical Inaccuracies (arr. Herpel and Hans Helmolt), 4.25, Trio in D, Op. 1, for Violin, Cello, and Piano (Trichei), 5.0, Transmission for all German Stations, relayed from Langenberg, 5.45, Concert by the Station Orchestra, conducted by Franz Marszalek, In an interval from 6.5 to 6.25, Radio Report of the Sixth Centenary Celebrations of the Town of Löwen, 7.0, Recital of Songs by Anton Maria Topitz (Tenor), 7.35, Weather and Sports Notes, 8.5, Operetta Concert from Berlin (Witzleben), 10.0, General News, 10.45, Concert from Heilsberg, In the interval, Danzig Election Results, 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW., 12.5 p.m., See Moravská-Ostrava, 1.30 to 1.45, Talk for Parents and Children, 4.0, Music of Eighty Years Ago—Concert by the Station Orchestra, conducted by Bakala, with Songs and Recitations, 5.30, Accordion Recital, 6.0, German Translation Songs of Old and Modern Masters, for Soprano, Contralto and Baritone, 7.0, Military Band Concert.

French March (Pesta); Overture, The Thieving Magpie (Rossini); Selection from Jacobin (Dvorak); Selection from Die Puppenfee (Bayer); Waltz (Zita); March (Vacker), 8.0 till Close Down, See Prague, 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW., 3.45 a.m., Practical Hints, 10.0, Concert by the Small Station Orchestra, conducted by P. Leemans, 11.0, Variety Music on Gramophone Records, 12 Noon, Concert conducted by A. Felleman, relayed from the Grand Hotel, Antwerp, 1.0 p.m., Le Journal Parlé, 1.10 Concert by Micky's Club Jazz Attraction, In the interval at 1.30, The Star and her Admirer—Sketch (Behrme), In the interval at 2.30, Concert by the Orlande de Lassus Society of Mons, Conductor: Maurice Weynandt, Extracts from Boris Godunov (Mussorgsky); Polovtsian Dances from Prince Igor (Borodin), In the interval at 3.35, Legend, Op. 17 (Wieniawsky), on Gramophone Records, 5.0, Dance Music relayed from the St. Sauveur Palais de Danse, 5.30, Football Results, 6.0, Massenet Song Recital by Mme. Arent—De Vrin: Ouvre tes yeux bleus; Two Arias from Manon; Aubade, 6.15, Extracts from The Damnation of Faust Opera (Berlioz), 7.15, Religious Address, 7.30, Wireless Notes and Talk on Music, 8.0, Extracts from Ciboulette—Operetta (Habin), by the Station Choir, conducted by F. André, and Soloists, In the interval, The Belgian Author, Paul Champagne Talk and Readings, 10.0, Le Journal Parlé, 10.10, Jazz Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp, 12 Midnight (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW., Programme in Flemish, 10.0 a.m., Gramophone Music, 11.0, Concert by the Little Station Orchestra, conducted by P. Leemans; Soloist: M. Doulez (Pianoforte); Overture, Amoreon (Cherubini); Procession (Liszt); Selection from The Daughter of the Regiment (Donizetti); Hungarian Rhapsody No. 12 for Pianoforte (Liszt); Gramophone Records; Dance of the Elves (Henriques); Potpourri, Fortissimo (Kalmán), 12 Noon, Concert by Micky's Club Jazz Attraction, conducted by M. Langlois, 1.0 p.m., Le Journal Parlé, 1.10, Concert conducted by André Felleman, relayed from the Grand Hotel, Antwerp, 5.0, Trio No. 1, Op. 99 (Schubert), on Gramophone Records, 5.30, Sports Notes, 6.0, Gramophone Music, 6.30, Concert by the Little Station Orchestra, conducted by P. Leemans, 7.15, Religious Address, 7.30,

Music Review by Paul Gilson, 8.0, Gramophone Music, with Humorous Interludes by M. Gontran, 8.45, Recitations, 9.0, Dance Music from the St. Sauveur Palais de Danse, 10.0, Le Journal Parlé, 10.10, Dance Music (cont'd.), 11.30, Gramophone Music.

BUCHAREST

761 kc/s, 393 metres; 12 kW., 4.0 p.m., Programme for Peasants, 5.0, Light Music and Romanian Music by the Marco Orchestra, In the interval at 6.0, Radio Journal, 7.0, Educational Talks, In an interval at 7.20, Gramophone Music, 8.0, Song Recital by Mme. Antoinette Trandafiresco-Fremie, 8.20, Concert by the Station Orchestra: Overture, The Cunning Peasant (Dvorak); Suite, Scène d'adieu (Massenet); Selection from Roses of Florida (Leo Fall); Ballet Music from Czar and Carpenter (Lortzing); Spanish Dance (Fallá); Il cavallino sbrigliato (Brunetti), In the interval at 9.0, Talk, 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW., Also relayed on 840 metres from 7.45 p.m. to 12 Midnight.—9.15 a.m., News Bulletin, 10.0, Catholic Service, 11.15, Evangelical Service, followed by Inauguration of the Relay Station, 2.0, Gramophone Music, 3.0, Agricultural Report, 3.45, Military Band Concert, conducted by H. Ericsay, 5.0, Talk for Young People, 5.30, Concert by the Karl Bura Gypsy Band, 6.45, Talk on Swimming, 7.15, Song Recital by Gabrielle Reller; Aria from Figaro (Mozart); Aria from Taubhäuser (Wagner); Song (Liszt); Elegy (Massenet); Minutata (Leoncavallo); Aria from Fidelio (Beethoven), 7.45, Sports Notes, 8.0, The White Cloud—Play (Molnar), 9.15, News Bulletin, 9.30, Requiem (Liszt) by the Budapest Choral Society, conducted by Eugene Adam, 10.30, Concert by the Sándor Farkas Gypsy Band, relayed from the Ciro Bodo, 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 9.75 kW., and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—11.30 a.m., Weather and News, 12 Noon, Town Hall Chimes, 12.5 p.m., See Vienna, 1.40, Talk in English: The Economic Side of Daily Life, 2.0 (also relayed by Skamlebaek on 31.51 metres), Divine Service from Christiansborg Castle, 3.20, Talk in German: Linz and the Wachau, 3.40, Talk in French, 4.0, Orchestral Concert relayed from a Park, 5.50, Programme for Children, 6.20, Talk: Old Odense, 6.50, Weather and News, 7.15, Time, 7.30, Talk on Libraries, 8.0, Town Hall Chimes, 8.1, The Hansen Family—Humorous Episode (Jens Kocher), 8.15, Mozart-Tchaikovsky Concert by the Radio Orchestra conducted by Launy Gröndahl, Soloist: Holger Brunsgaard (Songs), Overture, The Magic Flute (Mozart); Two Arias from The Magic Flute (Mozart); Overture, Idomeno (Mozart); Prelude and Waltz from Eugene Onegin (Tchaikovsky); Aria from the First Act of Eugene Onegin (Tchaikovsky); Slav March (Tchaikovsky), 9.15, Historical Personalities in Literature and Music, 10.5, News, 10.15, Marimba Solos, 10.30, Concert of Light Music by the Radio Orchestra, conducted by Launy Gröndahl, 11.0, Dance Music from the Wifex Restaurant, In the interval at 12 Midnight, Town Hall Chimes, 12.30 a.m. (Monday), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 226.9 metres; 10 kW.—4.0 to 8.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb, 4.0, Programme for Children, 5.0, Songs and Vocal Quintets, Songs: (a) My Old Shako (Trotter), (b) The Vagabond (Vaughan Williams); Quintet: The Song of the Nightingale (Albion); Songs: (a) Serenade (Toselli), (b) Love's Nocturne (Drigo); Quintet: Butterflies in the Rain (Myers); Songs: (a) La Paloma (Vradier), (b) O Sole Mio (di Capua), 5.30, Music by a Tango Band; Marion (Hollander); Will you dance through life with me? (Swabach); I kiss your little hand, Madame (Erwin); There was a poor musician (Schwartz); La Campesina; Il canto dell'attesa (Bixio); Old Vienna Moon (Lohar); Farewell (Lindsey), 6.0, Club Concert for ChelmsfordListeners, My Hero, from The Chocolate Soldier (Oscar Straus); Captain Mac (Sanderson); The Wheel-tapper's Song (Walseley Charles); The Sunshine of your smile; Flower of Spain (Alexander); The Pipes of Pan (Monckton); Barefoot Trail; The Wedding of the Birds; Down in the Forest (Landon Ronald); Patiently smiling (Lohar); Zigarette (Alexander); Jus' keepin' on (Phillips-Carter); The Leader of the Town Brass Band (Longstaffe); Down South (Myddleton), 7.0 p.m., Orchestral Music.

MAY 28th

SUNDAY

continued

March from Sylvia (Delibes); Humoresque (Dvorak); Poor Butterfly (Hubbell de Filipini); The Fortune Teller (Herbert); Violin Solo: Bohemian Song (Baldy); La Source (Delibes); In the gloaming (Chamifade); Bacchanale from The Seasons (Glazunov). 7.30, Songs and Orchestral Music: Charming Episode (Ormandy); Songs: (a) Dear Old-fashioned Thing (Harrington); (b) Come along with me (Robison); (c) Coming-round the Mountain (Robison); Evolution of Dixie (Lacke); Songs: (a) Mamma (Denes); (b) Mamsie (Denes); Singing a Song to the Stars (Meyer). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Light Music. Oh, you Sweet Thing; Deep Forest; This is no Dream; Pale Volga Moon; One little Word led to another; White Lightning; My Heart's to let; Roll along, Kentucky Moon. 9.30, Orchestral and Vocal Concert: Anitra's Dance, from the Peer Gynt Suite (Grieg); Soprano Solo: Song from The Tales of Hoffmann (Offenbach); Tenor Solo: For you alone (Giesl); The Moon and I, from The Mikado (Sullivan); Song: Round the Bend of the Road (Klemmer); Soprano Solo: I want your Heart (Haydn Wood); Hungarian Dance, No. 6 (Brahms). 10.0, Military Band Concert: Majah General Thing-a-me-bob (Hargreaves); Sussex by the Sea (Ward Higgs); The Mill in the Black Forest (Eilenberg); Old Panama (Alford); Glow Worm Idyll (Lincke); A Hunting Scene; Bells across the Meadow (Kettleby); Military March (Schubert). 10.30, Light Music: Twenty Million People; Deep Water; Young and Healthy; My Heart's to let; When you've fallen in love; Chansonette; Body and Soul; Selection from The Beggar's Opera (Gay). 11.0, Popular Concert: Me and the Man in the Moon (Monaco); Round the Marble Arch; Roll along, Kentucky Moon; My Old Dutch (Ingle); The Blue Danube (Joh. Strauss); Underneath the Arches; Love's Old Sweet Song (Molloy); Rhapsody Russe (Nussbaum). 11.30, Organ Recital: American Psalm (Mocchiani); Nola (Arnold); Indian Love Call, from Rose Marie (Friml); Rhapsody in Blue (Gershwin); A Perfect Day (Jacobs-Bond); Un pen d'amour (Silesti); Turkish Patrol (Michaelis). 12 Midnight, Club Concert for Chelmsford Listeners: My Hero, from The Chocolate Soldier (Oscar Straus); Captain Mac (Sander-son); The Wheel-tapper's Song (Wolsley Charles); The Sunshine of your Smile; Flower of Spain (Alexander); The Pipes of Pan (Monckton); Barefoot Trail; The Wedding of the Birds; Down in the Forest (Landon Ronald); Patiently Smiling (Lehar); Zigarette (Alexander); Jus' keepin' on (Phillips-Carter); The Leader of the Town Brass Band (Longstaffe); Down South (Myddleton). 1.0 a.m. (Monday), Traditional Quartets: (a) The Irish Washer-woman, (b) Fintemel, (c) Miss Macleod's Reel; Trio: Turkey in the Straw; Harp Solo: Welsh Fantasia; Trio: Old Time Jigs and Reels; Mouth Organ solo: Scottish Airs; Quartet: Fisher's Hornpipe. 1.30, Songs: Speak to me of love (Sivier); I kiss your little hand, Madame; Springtime reminds me of you (Carter); Orchestra: On with the Show; Pretty Kitty Kelly; A Thousand Maidens Fair; To-day, to-morrow, forever (Milton). 2.0, Dance Music by the Bolshois. How can you say No?; Jungle Blues (Morton); Baby, when you ain't there (Ellington); Room 1411; Cabin in the Cotton (Parish); Swanee Stomp (McKnight); The Seat Song (Parish); Play it Hot (McKnight); Just another Dream of you (Burke); Get Happy (Arlen); One Hour with you (Whiting); A Big Bouquet for you (Simons); Fooling me (McKnight); Conchita (Matée). 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—11.15 a.m., Transmission for all German Stations, relayed from Langenberg. 11.45, Transmission for all German Stations, relayed from Leipzig. 12.15 p.m., Concert. 12.50, Report on the A.D.A.C. Eiffel Races, from the Nürnberg King; The Finish of the Motor Cycle Race. 1.20, See Langenberg. 2.15, Radio Report on the Eiffel Races (cont'd.). The Start of the Motor Race. 2.45, Talks arranged by the Wiesbaden Board of Agriculture. 2.55, Two Agricultural Talks. 3.30, See Stuttgart. 4.30, Radio Report on the Eiffel Races (cont'd.). The Finish of the Motor Races. 5.0, Transmission for all German Stations, relayed from Langenberg. 6.0, Concert by the Station Orchestra. 7.0, An Interlude. 7.30, Sports Notes. 7.40, Radio Report from the Pilots' Station at Camb. 8.5, See Berlin (Witzleben). 10.10, Time and News. 10.45, Concert and Danzig Election Results, relayed from Heilsberg. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW., relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—11.15 a.m., Transmission for all German Stations, relayed from Langenberg. 12 Noon, Talk. 12.15 p.m., Orchestral Concert, conducted by José Eibenschütz. In the interval at 12.55, Time and Weather. 2.0 (from Hanover), Programme for the Sixty Centenary of the Bakers' Guild at Alfeld. 3.45, Reading: Experiences with Animals (Hans Hesse). 4.0, Concert of Light Music and Dance Music. 4.50, Sports Dialogue: Water-Jumps. 5.0, Transmission for all German Stations, relayed from Langenberg. 5.45 (from Hanover), Göttinger Handel Festival, Conductor: Dr. Henkeshoven. Soloists: Martha, Maria, Kahnsdorfer (Songs). Introductory Talk by Hans-Meske. Overture, II Pastor Aho; Aria, Es haut die Nacht, from Julius Caesar; Sonata in G Minor for Two Violins, with Figured Bass; Aria, Wo ein Südwind sauft und heise, from Ezio; Concerto grosso in F for String Orchestra. 6.45, Sports Notes. 6.55, Weather. 7.0, In Praise of May; Variety Programme. 8.0 to 10.35, See Heilsberg. 10.35, Time and News. 10.45, Concert and Election Results from Heilsberg. HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW., relayed by Danzig, 662 kc/s, 453.2 metres.—11.15 a.m., Transmission for all German Stations, relayed from Langenberg. 12 Noon, Concert by the Königsberg Opera House Orchestra, conducted by Werner Franz. Overture, Die Feen (Wagner); The Swan of Thoneta (Sibelius); Dance Intermezzo (Sibelius); Styrian Dances (Kienzl); Serenade, Sommer-nächte (Huber); Selection from Cavalieri rusticana (Mascagni); Overture, A Midsummer Night's Dream (Mendelssohn); Selection from Der Evangelium (Kienzl); Suite of Bohemian Dances (Rueck); Finale from the Third Act of Rienzi (Wagner); Taramella (Liszt). 2.0, Talk on Chess. 2.30, Programme for Young People. 3.0, Talk: Primitive History Research. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken. 5.0, Transmission for all German Stations, relayed from Langenberg. 5.50 (from Danzig), Talk This Year's Marienburg Festspiele. 6.15, Talk The Life of Max Regier. 6.45 (from Danzig), Chamber Music for Wind Instruments. Serenade in C Minor for two Oboes, two Clarinets, two Bassoons and two Horns (Mozart); Rondino for two Oboes, two Clarinets, two Bassoons and two Horns (Beethoven). 7.20, Talk: Seven Centuries of Marienwerder. 7.50, Sports Notes. 8.0 (from Danzig), Concert by the Danzig Municipal Theatre Orchestra, conducted by Erich Ortman. Soloists: Hubert Klur (Bass) and Fritz Gölzsch (Violin). In the interval, Danzig Election Results. 10.10 (from Danzig), Election Report, followed by News. After the News, Band Concert. Danzig Election Results throughout the Concert.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—12.10 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Orchestre (A.V.R.O.) 12.10, Concert by the Reminiscence Ensemble. In the interval, Gramophone Music. 1.40, Weekly Book Talk. 2.10, Chamber Music by the Concertgebouw Trio. 2.40, On Approval Comedy in Three Acts (F. Lonsdale). 4.10, Gramophone Music and Sports Results. 4.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 4.40, Programme for Children. 5.40, Concert by the Amsterdam Salon Orchestra, conducted by M. D. Kiekens. Overture, The Bohemian Girl (Balfé); Plaintive (Paiko); Selection from Lila Time (Schubert-Berté); Waltz from Eva (Lehár); Serenade (Tarenghi). 6.20, Song Recital by M. A. de Booy. 6.30, The Adventures of MM. Wakker and Tropicuit. 6.50, Concert (continued). Overture, Opheus in the Underworld (Offenbach); Pompee val-sante (Poldini); Torch Dance of the Brides of Kasimir (Rubinstein); Selection from Don Giovanni (Mozart-Schreiner); Steeds voorwaarts (Foesling). 7.30, Song Recital (cont'd.). 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time and News. 7.55, Popular Music by Kovacs Lajos and his Dance Band. 8.40, Talk by Mr. W. Vogt. 8.50, Gramophone Music. 8.55, Concert by the Station Orchestra, conducted by Neco Treep. Soloist: Ferdinand Helman (Violin). Violin Concerto in A (Mozart); From Grieg to Wagner (Schreiner); Polonaise brillante for Violin and Orchestra (Wieniaw-sky). 9.40, Recital of International Songs by L. W. Nijland. 10.0, Concert of Light Music by the Station Orchestra. March. In the Gipsy Camp (Oscheid); Valse des brunes (Gauze); In a Monastery Garden (Kettleby); Torch Dance (Meyerbeer); Selection from Frederica (Lehár). 10.40, Gramophone Music. 11.40 (approx.), Close Down. HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. to 4.40 p.m., Programme of the Catholic Radio

Society (K.R.O.). 11.55, Orchestral Concert. In the interval at 12.40 p.m., Talk on Modern Art. 1.50, Talk for Tourists. 2.10, Concert by the Budapest Trio: Trio in G No. 7 (Haydn); Recitation by M. P. Balle-dux; Dumky Trio, Op. 90 (Dvorak); Recita-tion by M. P. Balledux; Trio in D Minor, Op. 32 (Arensky). 4.10, Programme for Ju-vals. 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Concert of Sacred Music for Soprano, Con-tracto and Organ. 5.30, Divine Service re-layed from Nijverdal, followed by Sacred Music on Gramophone Records. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk. 7.50, Football Results. 7.55, Orchestral Con-cert relayed from Maastricht: Marche eosu-se (Debussy); Carnaval romain (Berlioz); A la fontaine (Chabrier); Flirtation (Steck); Suite, Roma (Bizet). 8.40, News. 8.45, Talk: Child Protection. 8.55, Concert (cont'd.): Overture, De Gemeinde Feeks (Wagenaar); Ballet, Pierrot of Colombine (Guillaume); Ave Maria (Schubert); Selection from Madame Butterfly (Puccini); Rondo capric-cioso (Saint-Saëns); Finlandia (Sibelius). 9.55, News. 10.0, Gramophone Music. 10.20, Epilogue by the Small Choir.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Announcements and Variety Programme. 8.45, News Bulletin. 9.15, Radio Concert. 10.0, Answers to Correspondents. 10.30 to 11.30, Programme in English by the I.B.C.. H. K. Hitchcock announcing. 10.30, Celebrity Concert on Gramophone Records; Peter Dawson: (a) Harvest Home (Tate), (b) Merry-go-round (Tate); Billy Caryl and Hilda Mundy in scenes of Domestic Bliss—Breakfast Time; Florrie Forde: (a) Only a Bird in a gilded Cage (Von Tilzey), (b) Are we to part like this (Collins); Layton and Johnstone: (a) Laughing at the Rain (Gay), (b) You'll be mine in Apple Blossom Time (de Rose); Grace Fields; Fiddler Joe (London and More). 11.0, Music by a Gipsy Orchestra: Rakoczy March (Berlioz); Czardas (Monti); Romanian Fantasia (Stefanescu); Hungarian Melodies (Korbay); Waltz, The Blue Danube (Joh. Strauss); Gipsy Idyll (arr. Ferratis); Cymbalum Solo, Hungarian Medley (Leopold); Selection from The Countess Maritza (Kálmán). 11.27, I.B.C. Goodnight Melody. 11.30 (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.15 a.m., Transmission for all German Stations; Schlageter Festival relayed from Golzheim Heide; Address by Herr Goering. 11.45 (approx.), Transmission for all German Stations, relayed from Leipzig. Talk: Mussolini and the Wheat Question. 12.25 p.m., Reading from the Works of Ernst Wiechert. 12.50, See Frankfurt. 1.20, Concert conducted by Wolf. 2.15, See Frankfurt. 3.0, The World on Gramophone Records—People of Transylvania and the Banat. 3.25, Talk: Pictures of Germany in the Past—the Hansa League. 3.45, Astronomical Talk: The Stars in June. 4.5, Talk on Music. 4.30, See Frankfurt. 5.0, Schlageter Festival—Radio Report of the Transmission for all German Stations; Krupp Workers. 5.45, Programme to be announced. 6.0, Maria in Maien—Concert by the Dortmund Franciscan Church Choir, conducted by Franz Humold, relayed from Werl. 7.5, Grave and Gay—Variety Programme. 7.45, Sports Notes. 8.0, Talk. 8.10, Programme from Vienna. 9.0, May Cantata (Gustav Kneip) for Soloists, Choir, Orchestra and Mandoline Orchestra. 10.0, News and Sports Notes. 10.30, Concert from Heilsberg. In the interval: Report of the Danzig Election Results. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dres-den, 941 kc/s, 319 metres.—11.15 a.m., Trans-mission for all German Stations, relayed from Langenberg. 11.45, Transmission for all German Stations: Wo Gott, der Herr, nicht bei uns hilft-cantata (Bach), by the Gewandhaus Orchestra, the St. Thomas' Choir, and Soloists. 12.15 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloists: Max Krämer (Violin) and Friedbert Sammler (Harp-si-chor). Comedy Overture, Op. 38 (Busoni); Concerto in F for Strings and Harpsichord (Scarlatti); Rustic Suite for Violin and Orchestra (Kirchner); Ballet Music from Der Improvisation (d'Albert); Introduction and Scherzo from the Symphonic Poem; Die Jagd nach dem Glück, Op. 45 (Niède); Variations and Rondo on an Old German Folk Song (Haas); Pecher-Walzer (Lanner); Ballet Suite, Das Spitzweg der Li (Czerwik). In the interval at 1.0, Talk: Ernst Hempel, an Erzgebirge Author. 2.0, Weather and Time.

2.5, Programme Announcements. 2.55, Agri-cultural Notes. 2.55, Trio No. 2 in C for Pianoforte, Violin and Cello, Op. 87 (Brahms) by the Weitzmann Trio. 3.10, Ernst Jünger reads from his Book, In Stahl-gewittern. 3.45, Recital of Old Melts by the Leipzig University Madrigal Choir. 4.30, Dialogue between Julius Maria Becker and Carl Hauptmann's Widow: Carl Hauptmann, the Writer and the Man. 5.0, See Langenberg. 5.45, Concert by the Leipzig Sym-phony Orchestra, conducted by Hilmar Weher. 7.0, Three Reports: (a) The Nürnberg Races, (b) The Costume Festival at Rudol-stadt, (c) The Visit of the Glasgow Rangers to Dresden. 8.0, Verdi-Puccini Concert by the Leipzig Symphony Orchestra, conducted by Ludwig Neubeck. Soloists: Lise Sturmf-els (Soprano) and Valentin Haller (Tenor). Part I, Verdi: Introduction and Soprano Aria from Rigoletto; Manrico's Aria from II Trovatore; Introduction and Violetta's Aria from La Traviata; Selection from Aida: (a) Introduction and Radame's Aria, (b) Hymn and March, (c) Soprano and Tenor Duet-Finale from the Fifth Act). Part II, Puc-cini: Selection from Madame Butterfly: (a) Soprano Aria from the Second Act, (b) Finale Duet from the First Act, (c) Prelude to the Third Act, (d) Final Aria from the Third Act; Tosca's Prayer from Tosca; Finale from the First Act of La Bohème. In an interval at 9.0, Topical Talk. 10.5, News. 10.20 (ap-prox.), Concert of Light Music relayed from Heilsberg.

LINZ.—See Vienna.

MADRID

ARANJUEZ, EAQ, 9,860 kc/s, 30.43 metres; 20 kW.—11.30 p.m., Popular Music. In the interval at 11.45, Humorous Talk. 12.10 a.m. (Monday), Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Re-view. 12.30 p.m., Concert by the Madrid Municipal Band, conducted by M. Villa, re-layed from the Retiro. 3.0, Chimes, Time Signal, Theatre Notes and Concert of Popu-lar Music. 5.0 to 8.0, Interval. 8.0, Chimes, Radio Journal and Dance Music. 9.30 to 10.30, Interval. 10.30, Chimes and Time Signal. 10.35 (approx.), Actors and Actresses of the Romea Theatre before the Microphone, Pianoforte Recital by Fernando Estler and Programme of Songs. 1.0 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—12.15 p.m., Military Band Concert. 1.30 to 1.45, See Brno. 4.0, See Brno. 5.30, See Prague. 7.0, See Brno. 8.0, See Prague. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW., relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—11.15 a.m., See Langenberg. 11.50, Con-cept by the Station Orchestra, conducted by Hans A. Winter. Soloists: Ingaard Prohl (Soprano) and Axi Brand-Setterl (Piano-forte). 1.5 p.m., Time, Weather and Pro-gramme Announcements. 1.15, Agricultural Talk. 1.30, Gramophone Concert. 2.50, Talk: The National Revolution. 3.15, Zither and Guitar Recital of Music by Adalbert Albrecht. 3.40, Programme for Children. 4.0, Gorch Fock Memorial Programme. 4.20, Orchestral Concert: An den Fröhling (Grieg); Selection from La Traviata (Verdi); Die Liebesbotschaft (Siode); Polonni, Lehanna (Geiger); March, Inseer Barne (Thiele). 5.0, Transmission for all German Stations relayed from Langenberg. 5.50, Concert. 6.25, Talk on Native Bavarian Plants. 6.45, Weather and Sports Report. 7.0, Wind Instrument Concert relayed from the Platz Garten, Würzburg. 8.0, See Heilsberg. 10.20, Time and News. 10.45 (approx.), Police Band Concert relayed from Heilsberg. Danzig Election Results in the intervals. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW., relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—10.50 a.m., Chimes. 11.0, Divine Service from the Castle Chapel. 4.0 p.m., Music Festival of the Telemark District, re-layed from Porsgrund. 5.0, Divine Service, relayed from Kongsberg, with Dedication of the new Gloger Organ and Concert by the Kongsberg Choir; Soloists: Arild Sandvold (Organ), Elisabeth Munthe Kas (Soprano), Alfhild Sandene Bjurbeck (Contralto), Theodor Andrese (Tenor) and Morten Vatn (Baritone). 6.45, Parliamentary Review. 7.15, Weather and News. 7.30, Talk relayed from Bergen, 824 kc/s, 364 metres; West Norway as an Eldorado for Anglers. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kraum;

Overture, In Autumn (Grieg); Concerto grosso for Two Violins in D Minor (Handel); Larghetto from the Symphony No. 2 (Beethoven); In the Steppes of Central Asia (Borodin); Extracts from the Suite Algérienne (Saint-Saëns); Musette (Offenbach); Narcissus (Nevin); Valse Barcarolle (Waldteufel); Cossack Song (Ornstein); Selection from Mami-zelle Nitouche (Hervé). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitations. 10.45, Gramophone Dance Music. 12 Midnight (approx.). Close Down.

OSTERSUND. See Stockholm.
PALERMO

558 kc/s, 537.6 metres; 3 kW.—10.25 a.m., Bible Reading. 10.40, Sacred Music. 11.0, Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music. In the interval at 1.30, Time Signal, Announcements, and Weather. 5.30 to 6.30, Gramophone Music. 8.0, Dopplavoro Announcements and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Bralms Centenary Concert, conducted by Armando la Rosa Parodi, with a Talk by G. Del Valle. In the interval, Talk: The Poetry of Sibilla Alcamo. 10.0, Light Music on Gramophone Records. 10.55 (approx.). Close Down.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.25 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—1.0 p.m., News. 1.15, Weather. 1.30, Concert by Jean Doss and his Orchestra. Soloist: M. Saint-Cricq (Cello). 6.45, Le Journal Parlé. 7.55, Programme for Children. 8.25, News. 8.30, Gramophone Concert. Part I—Operetta Music. Part II—Popular Melodies. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 382.2 metres, on kW. 9.15 a.m., Gramophone Music. 9.35, Press Review. 9.45, Bible Reading. 10.0, News. 10.5, Sponsored Concerts. 11.40, Gramophone Music. 12 Noon, Interval. 12.15 p.m., Sound Film Music. 12.45, Announcements. 12.50, Half-an-Hour of Fantasy by Paul Weill and Mme. Mirame Esbly. 1.20, Interval. 1.30, Sponsored Programme. 2.0 to 6.45, No Transmission. 6.45, Journal Parlé. 7.0, Sports Notes. 7.15, Gramophone Music. 7.30, Catholic Review. 8.0, Gramophone Music. 8.15, Interval. 8.30, Song Recital. 9.0, Interval. 9.15, Variety Concert. 9.45, Gramophone Music. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—7.45 a.m., Light Music on

Gramophone Records. 8.0, Press Review and Weather Forecast. 8.30, Physical Culture. 10.0, Bookkeeping Lessons. 10.40 to 11.0, Spanish Lesson. 12 Noon, Religious Address. 12.20 p.m., Sacred Music. 12.30, Bibouquet and the Pyramids. 12.45, Press Review, News, and Weather. 1.0, Gramophone Concert of Popular Music. 2.0 to 3.30, Programme in English by the I.B.C. Miss Faith Shipway and C. Danvers Walker announcing. 2.0, Light Music. Signature Tune: A Perfect Combination; A Tree was a Tree; Tony's Wife; A Little Café in Vienna; Look what I've got; Moon Song; Shuffle on to Buffalo; Signature Tune. 2.30, Gramophone Concert. 3.0, Popular Music: March, Martial Moments (arr. Winter); Selection from A Waltz Dream (O. Strauss); Two-step; Nelly Bly (Cheyne); Selection from Dorothy (Cebler); Waltz, Brice-a-Brac (Monckton); Selection, Sweethearts of Yesterday (arr. Hall). 5.0 to 6.0, Programme in English by the I.B.C. Ten-time Variety Hour. S. H. C. Williams announcing. 6.30 to 7.0, Programme in English by the I.B.C. Miss Faith Shipway and C. Danvers Walker announcing. Light Music: Signature Tune; Forty-Second Street; What have we got to lose?; Play Fiddle, play; I Like Mountain Music; Signature Tune. 7.0, Variety Concert. 8.0, Radio Paris Circus. 8.30, News, Sports Notes and Weather Forecast. 8.45, Radio Paris Music Hall. In the interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.0 p.m., Monarch Mystery Tenor, from New York. 7.15, The Boys of Wymercastle. 7.30, The Northwestern Chronicle, from New York. 8.0, National Opera Concert, from New York. 9.0, Programme to be announced. 9.15, Symphonette, from New York. 9.30, Vesper Services, from Stadslyde Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Soprano Solos by Louis Miller. 11.15, Time Signal. 11.16, Weather Report. 11.17, Sport Review. 11.22, Press News-Reciter. 11.29, Temperature Report. 11.50, Programme to be announced. 11.45, Dick Daring, from New York. 12 Midnight, Time Signal and Jack Pettis and his Orchestra. 12.30 to 2.45 a.m. (Monday), New York Relay. 12.30, Great Moments in History. 1.0, Viennese Programme. 2.0, Will Rogers with Orchestra. 2.30, Walter Winchell. 2.45, Fireflies. 3.0, Time Signal and Popular Melodies by Will Rysanek.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—12 Noon, Chimes from the Church of St. Ludmilla. 12.5 p.m., See Moravska-Ostrava. 1.30, Agricultural Talk. 1.45 to 1.55, Talk on Tuberculosis. 4.0, See Brno. 5.30, Gramophone Music. 6.0, German Transmission: Programme Announcements; A Heartless Maiden—Radio Play (Oscar Baum); and News in German. 7.0, See Brno. 8.0, La Belle Helène—Operetta in Three Acts (Offenbach). In the intervals at 9.0 and 10.0, Time Signals. 10.15, News. 10.35, Gramophone Music. 11.0 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—9.55 a.m. (from Geneva). Chimes. 10.0 (from Geneva). Protestant Service. 11.0 (from Geneva). Gramophone Music. 12.30 p.m., News and Weather. 12.40, Gramophone Music. 2.0 to 2.30, Interval. 2.30 (from Vevey). Gala Concert for the Twenty-ninth Festival of the Vaudois Singers. 5.30 to 7.0, Interval. 7.0 (from Geneva). Religious Address: God in Nature. 7.30 (from Geneva). News Bulletin. 8.0 (from Fribourg). Talk: The Life of St. John. 8.35, Concert by the Radio Suisse Romande Orchestra. In the interval at 9.0 (from Geneva). Act I of Le Misanthrope—Comedy (Molière). 9.50, News and Weather. 10.0, Concert by the Radio Suisse Romande Orchestra. 10.30 (approx.). Close Down.

RJUKAN. See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—10.10 a.m., News, Sports Notes and Amusement Guide. 10.30, Agricultural Notes. 10.45, Bible Reading. 11.0 to 12 Noon, See Turin. 12.30 to 2.30 p.m., See Turin. In the interval at 1.0, Report on the Cycle Tour of Italy. 3.45 (from Naples). Programme for Children, followed by Weather and Sports Notes. 4.0 to 6.15, Orchestral Concert. In the interval at 4.15, Report on the Last Stage of the Cycle Tour of Italy, and at 5.45, Sports Notes. 6.15, Press Review. 7.30, Sports Report and News. 8.0, Time and Summary of the Day's Results of the Cycle Tour of Italy. 8.15, Gramophone Music. 8.30, Sports Notes. 8.45, Variety Concert. 10.0 (approx.). Signori, si parte! Play in One Act (Messandro de Stefani). 10.30 (approx.). Variety Concert (cont'd.). 10.35, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.0 to 8.45 p.m., New York Relay. 7.0, Wayne King's Orchestra. 7.30, Dr. Ralph W. Sockman in the Radio Pulpit. 8.0, Eddies Three. 8.15, Wildroot Institute. 8.30, Temple of Song. 8.45 (approx.) to 11.45, Interval. 11.45, Horse Sense Philosophy. 12.0 to 2.45 a.m. (Monday), New York Relay. 12.0, Chase and Sanborn Programme. 1.0, Manhattan Merry-go-round. 1.30, American Album of Familiar Music. 2.0, Current Government by David Lawrence. 2.15, Highlights and Shadows. 2.45, Sunday at Seth Parker's, from New York, followed by Programma Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,299 kc/s, 244.1 metres; and Barne, 1,220 kc/s, 245.9 metres.—10.0 a.m. (from Basle). Catholic Service, relayed from Riehen. 10.45 (from Basle). Concert of Chamber Music. 11.30 (from Basle). Review of Books by Swiss Authors. 12 Noon (from Basle). Gramophone Music. 12.28 p.m., Time and Weather. 12.30, News. 12.40 (from Zurich). Concert by the Station Orchestra. 1.30 (from Basle). Agricultural Programme. 2.0 (from Basle). Programme to be announced. 2.30 to 5.0, Interval. 5.0 (from Basle). Programme to be announced. 6.50 (from Basle). Talk in a Foreign Language. 7.0 (from Basle). Time and Sports Notes. 7.5, Concert by the Station Orchestra. 8.0 (from Basle). From Mozart to Beethoven—Programme by Dr. Bernhard Baumgartner. 9.0, News. 9.10 (from Basle). Programme to be announced. 10.15 (from Basle). Sports Notes.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

680 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—11.0 a.m., Divine Service Relay. 12.45 p.m., Weather Report. 2.30, Programme in Memory of Johann Christian Friedrich Haefner, relayed from Göteborg. 3.20, Programme for Children. 4.0, Reading. 4.30, Gramophone Music. 5.30, Talk. 6.0, Evensong. 7.35, Concert of Light Music with Songs by Sven d'Alby. 8.15, After All—a Comedy (John van Druenen). 10.0, Orchestral Concert. Soloist:

ROLA

the World's Finest Reproducers

Always in Line with Latest Design

CLASS B AMPLIFICATION

The following Rola Speakers for valves as under are now ready:

	LIST PRICES
MULLARD PM2B VALVE	
Rola F5-PM-12-Class B	32/8
or Rola F6-PM-08-Class B	49/6
or Rola F7-PM-08-Class B	60/-
COSSOR 240B VALVE	
Rola F5-PM-14-Class B	32/3
or Rola F6-PM-01-Class B	49/3
or Rola F7-PM-01-Class B	60/-
B.T.H. PD220 VALVE	
Rola F5-PM-12-Class B	32/8
or Rola F6-PM-08-Class B	49/6
or Rola F7-PM-08-Class B	60/-

IMMEDIATE DELIVERY

Write to-day for the Rola Folder.

EXTENSION SPEAKERS

There is a correct Rola Extension Speaker for practically all British radio receivers. Write for List.

THE BRITISH ROLA CO. LTD., Minerva Rd., Park Royal, N.W.10. Phone: Willesden 4322-3-4-5.

ROLA SPEAKERS
for better Radio Reception



THE WORLD'S MOST CONVENIENT AERIAL EVER DEvised

DOUBLE LENGTH 36

PIX INVISIBLE AERIAL

No need for unsightly Poles—Loose Wires, etc.

No danger from Lightning: Pix Invisible Aerial is in the form of a narrow self-adhesive metallized tape of remarkable efficiency as a pick-up. It is practically invisible and only requires to be pressed into position.

The 30 ft. Pix Aerial costs only 2/-. A longer length is supplied in 60 ft. rolls which can be run from the room into the hall and up the staircase to the attic, costs only 3/6.

Letter No. 376.

21st January, 1933

Dear Sir,

I have now fixed the aerial round the down-stairs front room and upstairs to the attic, using 60 ft. of Pix Invisible Aerial, and I find that the set works quite as efficiently as it did when using the outdoor aerial.

Yours faithfully,
R.S.

"BETTER THAN HIS OUTSIDE AERIAL."

THE ONLY VALVE

WITH A TRIPLE-COATED NEODYMIUM FILAMENT

4/6

that gives PIX valves long life, long range, loud signals with a pure natural brilliancy of tone. Never before has such a valve masterpiece been sold at such a low price. Every valve is tested and guaranteed and is made in our own valve factory in London.

GUARANTEE.

Every PIX valve carries the usual guarantee. Try one to-day and if it is not better than its equivalent valve in your set we will refund your money immediately. Write for leaflet giving characteristics and comparison tables.

BRITISH MADE IN LONDON

PIX VALVES

2 & 4 VOLT TYPES.

H.F. DET. I.C. or L.F.	4/8
POWER	6/8
SUPER POWER	8/8
SCREENED GRID	11/8
PIXODE	11/8
ALL MAINS (4 Volts).	
H.F. DET. L.F. R.F. or POWER	11/8
SCREENED GRID	15/8
FULL WAVE RECTIFIER	9/3

BRITISH PIX COMPANY, Ltd. (Dept. 533), 118, Southwark St., London, S.E., 1

They recover power while you sleep



The recuperative powers of Pertrix Batteries are amazing—steadily and constantly through the hours when they are inactive they build up their power for the next day's radio. Thus, week after week, month upon month, Pertrix H.T. Batteries continue to give that generous output of steady current so vital to the true rendering of speech and music. IT'S THE PATENT PERTRIX PROCESS THAT MAKES THIS POSSIBLE—NON SAL-AMMONIAC CONSTRUCTION MEANS INFINITELY LONGER USEFUL LIFE.

Fit

PERTRIX

NON SAL-AMMONIAC
H.T. BATTERIES

Complete your equipment with a Pertrix Accumulator. Your Radio dealer can supply you.

BRITANNIA BATTERIES LTD.
233, SHAFTESBURY AVENUE, LONDON, W.C.2.
Works: Redditch (Worcs).



MAY 28th

SUNDAY

continued

Gustav Gründahl (Cello). Concerto in D Minor for Cello and Orchestra (Lalo); Movement from String Quartet in C Minor (Rubinstein); Symphonic Poem (Saint-Saëns); Overture, Meeresstille und glückliche Fahrt (Mendelssohn). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—9.45 a.m., Opening Ceremony of the Esperanto Congress, relayed from the Exeise Hall at Haguenau. 10.45, Protestant Service, relayed from Colmar. 11.30, Catholic Service in German. 12 Noon, Gramophone Music. 12.45 p.m., News. 1.0, Time Signal. 1.1, Variety Music on Gramophone Records. 2.0, Talk in French: Mothers' Day. 3.0, Pianoforte Recital by Mme. Wanda Laudowska from St. Louis-Forêt, relayed from Radio Coloniale (Paris), 15,243 kc/s (19.68 metres). 4.0, Gramophone Music. 5.0, Orchestral Concert, conducted by M. Roskam: March, Hortstein (Fucik); Waltz, Transaktionen (Jos. Strauss); Minuet (Mozart); Overture, Martha (Flotow); Selection from Véronique (Messager); Cello Solo: La Sérénade (Braga); Selection from Les Mousquetaires au concert (Varnex); March (Mezzacapo). 6.0, Medical Talk in French: Children's Clothes. 6.15, Sports Talk. 6.30, Orchestral Concert, conducted by M. de Villers: Overture, The Golden Cross (Brüll); Selection from Faust (Gounod); Elegy (Tchaikovsky); Ballet Music from Masaniello (Auber); Le pas des Fleurs (Delibes); Selection from De Puppenthe (Bayer). 7.30, Time Signal and News. 7.45, Talk with Gramophone Illustrations: Music of our Fathers' Time. 8.15, Press Review in German. Lottery Results, and News. 8.30, Andromaque—Tragedy in Five Acts (Racine). In the interval at 9.30, approx., Press Review in French. 10.30, Dance Music from the Savoy. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—11.15 a.m., Transmission for all German Stations, relayed from Langenberg. 11.45 (approx.), Transmission for all German Stations, relayed from Leipzig. 12.30 p.m. (approx.), Regimental Celebrations of the Baden Grenadiers, relayed from the Castle Square, Karlsruhe; Music and Addresses. 1.0, Topical Talk. 1.15, Gramophone Concert of Songs. 2.25 (from Freiburg), Talk: German Dress Designing. 2.50, Choral Concert, relayed from Schwetzingen. 3.30, Goldapfelburg—Play for Young People. 4.30, Orchestral Concert by the Municipal Orchestra, conducted by Karl Assmus, relayed from Baden-Baden: Turkish March (Mozart); Overture, The Merry Wives of Windsor (Nicolai); Ballet Suite (Pogorelec); First Suite from Peer Gynt (Grieg); Two Irish Folk Dances (Grainger); (a) Shepherd's Boy, (b) Mock Morris; Overture, The Kiss (Smetana); Waltz, The Bear (Okl-Albi). 5.0, Transmission for all German Stations, relayed from Langenberg. 5.45, Concert from Baden-Baden (cont'd.). 6.0, Sports Notes. 6.15, For Whitsun, 1933.—Swabian Programme of Literature and Music. 7.0, Programme of Contemporary Music and Literature, Poems by Gertrud Fündinger, Karl Füss, Franz Hirthle, Manfred von Pinelli and Peter Russ. Songs and Chamber Music by Hermann Fugler. 8.5, See Berlin (Witzleben). 10.0, News. 10.30 to 12 Midnight, See Vienna. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.30 to 7.0 p.m., Programme in English by the I.B.C. W. Brown-Constable announcing. 6.30, Light Music: A Waltz, a Night, a Time; In Santa Lucia; The Girl in the Little Green Hat; Try a little Tenderness; I'll never have to dream again; A Letter to my Mother; Roll along Kentucky Moon; My Darling; Jolly old Ma, jolly old Pa. 7.0, Popular Music. 7.15, News and Racing Results. 7.25, Local News Bulletin. 7.30, Orchestral Music. 8.0, Extracts from Opera: (a) Figaro (Mozart). (b) Messaline (Lara). (c) La Favorita (Donizetti). 8.15, Music by a Mandoline Orchestra. 8.30, Spanish Songs. 8.45, Opera Music. 9.0, Music Hall Programme. 9.30, Concert by a Viennese Orchestra. 10.0, Extracts from opera: (a) Rigoletto (Verdi). (b) Tosca (Puccini). and (c) Carmen (Bizet). 10.15, North African News. 10.30 to 11.30, Programme in English by the I.B.C. 10.30, Light Music: Happy Days are here again; Kathleen Mavroun; On with the Show; Girls of the Old Brigade; Killarney; The Old contemplatives; Remon; Time, Gentlemen, Please. 11.0, Orchestral and Vocal Concert: Pompee valente; Dream a little Dream of me; One little Raindrop; Stephanie Gavoitte; Ständchen; I'll always be true; Life's Desire; Demande et réponse. 11.27, I.B.C. Goodnight. 11.30, Sound Film Music. 11.45, Classical Music. 12 Midnight, News, Weather, and Announcement. 12.5 a.m. (Monday), Hawaiian Guitar Music. 12.15, Light Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—9.45 a.m., See Turin. 9.55, Mass from the Cathedral of San Giusto. 11.0, Religious Report. 11.20, Agricultural Report. 11.40 to 12 Noon, Interval. 12 Noon till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 500 kc/s, 500.8 metres.—9.40 to 9.55 a.m., Giornale Radio. 10.40, Agricultural Report. 11.0, Mass from the Church of the Annunziata, Florence. 12 Noon, Religious Programme. 12.30 p.m., Variety Concert. 1.30 to 2.30, Orchestral Concert, conducted by Ugo Tansini. 4.0, Variety Concert. In the intervals, Report on the Cycle Tour of Italy and Sports Notes. 6.15, Giornale Radio, Football Results, and Sports Notes. 7.45, Time and Dopplavoro Announcements. 7.10, Gramophone Music. 8.0, Announcements and Report on the Cycle Tour of Italy. 8.10, Giornale Radio and Sports Notes. 8.30, Talk on the following Transmission. 8.40, Siberia—Opera in Three Acts (Giordano), conducted by the Composer. In the intervals, Talk, Theatre Notes and Giornale Radio.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 607 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—11.30 a.m., Talk: Mountains and Strongholds in the Valley of the Danube. 11.55, Talk: Farewell to the Rosenhühner Transmitter. 12.5 p.m., The Opening of the Bisamberg High Power Station, relayed from Bisamberg. Addresses by Eduard Heigl, President of the Ravag, and Herr Wilhelm Miklas, President of the Association. 12.40 p.m., Concert by the Vienna Philharmonic Orchestra, conducted by Oswald Kabasta: Symphony No. 2—The London Haydn; The Seventh Symphony in E (Anton Bruckner). 1.40, Radio Report: Austria's High Power Station. 2.5, Time and Programme Announcements. 2.10, Concert of Light Orchestral Music. 3.30, Review of Books. 4.0, Chamber Music: Pianoforte Trio No. 4 in C (Mozart); Pianoforte Trio in B flat, Op. 99 (Schubert). 5.0, Wind Instrument Concert. 6.30, Talk: The History of the Bisamberg. 7.0, Recital of Songs and Arias by Franz Volker. 7.25, Karl Schönherr reads from his own Works. 7.50, Time and Sports Notes. 8.0, The Austrian Homeland—Programme of Literature and Music. 10.15, News. 10.30, Hühner-Hrüber—Play in One Act (Johann Nestroy). 11.10, Variations on the Bundeshymne for Organ and Wind Instruments (Franz Schmidt).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—9.55 a.m., Programme Announcements. 10.0, Divine Service, relayed from Lwów. 11.4, Interval. 11.57, Time Signal and Programme from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Weather Report. 12.15, Concert by the Warsaw Philharmonic Orchestra, conducted by J. Oziminski, and a Choir conducted by T. Mayzner. Soloists: A. Dobosz (Soprano), Mme. L. Nowacka-Iliska (Pianoforte). In an interval, Talk on the Labour Bureau. 2.0, Talk for Housewives. 2.20, Song Recited by Mme. D. Gutowska. 2.40, Agricultural Talk. 3.0, Weather for Farmers. 3.5, Musical Programme. 4.0, Programme for Young People. 4.25, Gramophone Music. 4.45, Talk: The Polish Language. 5.0, Pianoforte Recital by F. Lukasiewicz: Pastorale e capriccio (Scriabini-Tausig); Gigue (Lœillet); Sérénade (Schubert-Liszt); Dedication (Schumann-Liszt); Scherzo in B flat Minor, Op. 35 (Chopin); Berceuse (Chopin); Six Studies from Op. 10 and 25 (Chopin); The Musical Clock (Sauer); In Autumn (Moszkowski); Intermezzo (Leschitzky). In an interval, Announcements. 5.55, Programme Announcements. 6.0, Dance Music and Light Music. In an interval, News. 7.0, Miscellaneous Items. 7.25, Reading. 7.55, Interval. 8.0, Programme relayed from Lwów, 788 kc/s, 381 metres. In the interval, Sports Notes. 8.30, Concert by the Station Orchestra, conducted by J. Oziminski. Soloist: I. Dyzas (Tenor). Overture, Rosamund (Schubert); Amnet (Boloni); Diversissement from Les Erymanies (Massenet); Sérénade from Maseppa (Munchheimer); Parle-moi encore (Karłowicz); Two Songs (Tchertwertynsky); Danse macabre (Saint Saëns); Poem (Eibich); Syrian Scenes (Percy Fletcher); Chanson (Tchaikovsky); Spring (Rimsky-Korsakov); Song (Leoncavallo); Song (Trindelli); Selection from Madame Butterfly (Puccini); Waltz, Dörschwalben aus Oesterreich (Jos. Strauss); Sérénade (Toselli); The Medical Snuff-Box (Nikolaievsky); Mazurka from The Haunted Castle (Moniuszko). 10.30, Dance Music. In the interval at 10.55, News.

ZURICH.—See Schweizerischer Landessender.

MONDAY

MAY THE TWENTY-NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Orchestra: Concert from the National Museum of Wales.

LONDON REGIONAL Military Band Programme.

MIDLAND REGIONAL Bach pianoforte recital. Variety programme.

NORTH REGIONAL "Fire-Accident-Marine," a dialogue by A. A. le Beau and "Bill's Awakening," a comedy by H. R. M. Simpson, "The Night Mail," a play by F. A. Ramsden.

WEST REGIONAL Orchestral concert from the National Museum of Wales.

SCOTTISH REGIONAL "Crieff," a programme of story and song from the Valley of Strathearn.

BELFAST Light Orchestral Concert.

ABROAD

BARI 8.35 p.m. Giuseppe Mulè Concert, conducted by the composer.

BERLIN (Witzleben) 8.15 p.m. Opera: "Iphigenia in Aulis" (Gluck), from the Pergamon Museum.

BRUSSELS (No. 2) 8.0 p.m. Tchaikowsky, Dvorak and Smetana Concert.

HAMBURG 9.0 p.m. Baroque Music of the Hanseatic Towns, from Bremen.

HILVERSUM LAHTI STOCKHOLM 7.40 p.m. Act 2 of Gounod's "Faust."

7.25 p.m. Mozart Duetting Recital.

9.15 p.m. Brahms' Sonata No. 2, in A, for Violin and Pianoforte.

STRASBOURG 8.30 p.m. Extracts from Opera: "Don Giovanni," by Verdi.

BRATISLAVA

1,076 kc/s, 270 metres; 14 kW.—4.10, Concert by the Station Orchestra, conducted by F. Dyk. Soloist, Vera Strelcova-Zachova (Songs). Symphony No. 2 in A Minor, Op. 16 (Mozes). For Orchestra and Voice. Selection from The Secret (Smetana); Scherzo Caprice, Op. 5 (Nedbal). 5.10, See Prague. 5.50, Talk: Art and the Crisis. 6.5, Concert of Chamber Music by the Station String Quartet: Quartet in D (Schubert); Quartet in A Minor (Mendelssohn). 6.55, Talk for Housewives. 7.9, See Prague. 7.10, Talk for Women. 7.25, See Brno. 8.0, See Prague. 8.45, See Brno. 10.0, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—1.15 p.m., Gramophone Concert at Rhapsodies. 2.15, Programme arranged by the Post Office, with Gramophone Music. 3.10, Market Prices. 3.40, Review of Books. 4.0, Concert by the Station Orchestra, conducted by Bruno Janz; Soloist, Gretl Sedlbeck (Soprano); Overture, Ballo in Maschera (Auber); Hymn to the Sun from Le Coq d'or (Rimsky-Korsakov); Hindu Song from Sadko (Rimsky-Korsakov); Selection from the Transpilsuite (E. S. Ozvnicke); Int. mezzo No. 2 in B Flat (Gál); Overture, Nabalunge von Ossian (Gade). 5.0, See Berlin (Deutschlandsender). 5.35, Weather and Talk. 6.5, Talk on Physical Culture. 6.30, Variety Programme with Gramophone Records. 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Orchestral Concert; Soloist, Ernst Tschinner (Flute); Sinfonietta for String Orchestra and Harp (Paul Graener); Suite in B Minor for Flute and String Orchestra (Bach); Suite, Aus Holbergs Zeit (Grieg). 9.0, General News. 9.10, South Sea Flight—A Radio Play (Peter Steinbach). 10.10, Time and News. 10.30, Wireless Technical Talk. 10.40, Talk: Breslau's New Railway Station. 11.9 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.0 p.m., See Prague. 7.25, Concert of Light Music. 8.0, See Prague. 8.45, Mozart in Prague—Radio Play in Two Acts (Slovak and Rurek) by Members of the National Theatre in Brno, a Mixed Choir, and the Station Orchestra, conducted by Jan Janota. 10.0, See Prague. 10.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 503 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans: March (Stoltz); Ballet Music from

Isoline (Messenger); Neapolitan Song, Miramar (d'Ambrosio); Selection from Le Petit Duc (Lecocq); Pianoforte Solo: Menuet varié (Mortelmans); Tango, Jalousy (Gade); Waltz (Sylviano); Qu'est-ce, dans tous les ports du monde (Van Parys). 2.0, Broadcast for Schools. 5.0, Concert by the Radio Orchestra, conducted by F. André. 6.0, Talk: Making Artificial Flowers. 6.15, Gramophone Records: Overture, Idomeneus (Mozart); Dionysiaques (F. Schmitt). 6.30, Recital of French Sonatas for Cello and Pianoforte by M. Pitsch and M. Scharras; Sonata (Boellmann); Sonata (Debussy). 7.15, Talk: The Influence of Literature on Civilisation. 7.30, Film Review. 8.0, Concert by the Radio Orchestra, conducted by Franz André: Overture, Zampa (Hérold); Waltz from Faust (Gounod); Fête polonoise from Le Roi malgré lui (Chabrier); Potpourri of Jazz Music (Candrix); Three Dance Airs; In a Monastery Garden (Kretschky); Le bal masqué (Poulenc). 9.0, Talk. 9.30, Concert (contd.): March, Entry of the Gladiators (Furk); Waltz, Tales from the Vienna Woods (Strauss); Waltz, España (Chabrier-Waldteufel); Railway (Brusselsmans). 10.0, Le Journal Parlé. 10.10, Concert relayed from the Ancienne Belgique.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish, 12 Noon, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Zampa (Hérold); Persian Dance (Günther); Melody (Lindemann); Selection from Boccaccio (Stippé); Prelude in E (Rachmaninov); Suite, La Feria (Lacôme); Neapolitan Song, Canzone Vesuviana (Marucci); Tarantella (Scassola). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert of Italian Music. 2.0, Broadcast for Schools. 5.0, Quintet, Op. 113 (Schubert) on Gramophone Records. 5.45, Programme for Children. 6.30, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Il sogno di Scipione (Mozart); Ukrainian Pieces (Akinenko); Oriental Dance (Donizet); Ballet Music from Borealis (Massenet); Cello Solo: Clanson Louis XIII et Pavane (Couperin); Syncope (Kreisler). 7.15, Talk on Economics. 7.30, Le Journal Parlé. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kumps. Soloist: Mlle. H. Monet (Pianoforte). Part I: Tchaikowsky Programme: Overture, 1812; Allegro from the Concerto in B Minor for Pianoforte; Italian Caprice; Flower Waltz from the Nutcracker Suite. 8.45, Talk: Pigeon Flying. 9.0, Concert, Part II: Smetana and Dvorák Programme: Overture, The Bartered Bride (Smetana); Symphonic Poem, The Moldau (Smetana); Songs; Overture (Dvorák); Humoresque, for Orchestra (Dvorák); Songs; Dances (Dvorák). 10.0, Le Journal Parlé. 10.10, Gramophone Dance Music,

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, Gramophone Music and Results of the Irish Hospital Sweep Draw. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, Talk on Dogs. 7.30, Time Signal. 7.31, Concert by the Station Orchestra. 8.0, Edmund Keane—Play by the Studio Players. 8.30, Talk by Padraic Gregory: The Revival of the Mystery and Miracle Play in Ireland. 8.55, Songs and Readings by Fay Sargent. 9.15, The Station Orchestra. 9.25, Tenor Solos by D. MacGillig. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA

E.A.J.I., 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.20, Sports, Notices, 8.30, Exchange Quotations and Talk in Catalan. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral. Weather Forecast. Exchange Quotations and Market Prices. 10.5, Humorous Review of the Week in Verse. 10.15, Concert of Sardanas. 11.0, Concert by the Station Orchestra. 11.30, Literary and Musical Programme. 12 Midnight, Concert by the Station Orchestra (cont'd.). 12.30 a.m. (Tuesday), Gramophone Music. 1.0 (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Press Review. 8.30, Time Signal and Announcements. 8.35 (approx.), Giuseppe Mulè Concert, conducted by the Composer. Part I: La Baronesse di Carini—Opera in One Act. Part II: Intermezzo and Chorus from Le coeuvre; Dance from Iphigenia in Aulis; Lament and Aria for Soprano and Mzzo-Soprano from I Sette a Tebe. Part III: Symphonic Intermezzo from and Act III of Daboi. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Talk. 7.30, Gramophone Records. 8.0, Programme (not yet announced) relayed from Zagreb. 9.77 kc/s, 307 metres. 10.10, News.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Descriptive Music. 3.0, Talk on Handicraft for Women. 3.30, Weather and Exchange. 3.45, Review of Books. 4.0, See Breslau. 5.0, Educational Talk. 5.35, Recital of German Songs by a Women's Trio: All mein Gedanken; Imstruck, ich muss dich lassen; Schmitter Tod; Es steht ein Lindl; Maria durch ein Dornwald ging; Die hebe Maizenzeit; Drei Laub auf einer Linden; Wenn alle Bräunlein fließen. 6.0, A Poem, followed by Dances and Music of Three Centuries for Violin and Pianoforte. 6.25, Talk: The End of the Middle Class Outlook on Life. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, An Epigram, followed by a Short Introduction to Gluck's Opera Iphigenie in Aulis. 8.10 to 10.0, See Berlin (Witzleben). 10.0, News. 10.25, Topical Talk. 10.45, Weather Report for Shipping. 11.0, Concert from Leipzig. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Concert of Music by Prince Joachim Albrecht of Prussia; The Berlin Wireless Orchestra, conducted by the Composer: Toten-Insel; Reminiscenzen an Wien; Etoile d'amour; Kemal-Pascha-Marsch. 5.10, Flute Recital: Sonata in B Minor for Flute and Thorough-Bass (Johann Mattheson); Quartet in D for Flute, Violin, Viola, and Cello (Mozart). 5.30, Dialogue in a Travel Bureau. 5.55, Wulf Bley reads from his new book, Götzen werden Götter. 6.1, Talk on Music. 6.20, Concerto grosso in D (Handel), by the Berlin Wireless Orchestra, conducted by Eugen Jochum. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations: The Heritage of the Fathers Symbolic Play (Martin Raschke). 8.5, The Watch-Word. 8.10, Talk on the following Transmission. 8.15, Iphigenie in Aulis—Opera in Three Acts (Gluck), relayed from the Pergamon Museum. 10.0, News, followed by Dance Music from the Europa-Pavillon. 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODD.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News, Exchange, and Market Prices. 7.40, Talk: Bordeaux a Century ago. 7.55, Lottery Results. 8.0, Programme for Children. 8.15, News. 8.30, Musical and Dramatic Programme.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert of Military Music. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Clarinet Trio (Beethoven). 8.30, Talk. 8.45, Pianoforte Duets by Mlle. Grünspan and M. Soarec: Suite, Jolly (Faure); Petite Suite (Debussy). 9.15, Light Music and Romanian Music, relayed from a Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.50 p.m. to 12 Midnight. —5.0 p.m., Gramophone Music. 6.30, German Lesson. 7.0, Violin Recital by Alexander Vogh. 7.40, Market Prices. 7.50, Hungarian Folk Songs on Gramophone Records. 8.30, Concert by the Choir and Orchestra of the Coronation Church, conducted by Viktor Sgar, relayed from the Academy of Music; Gregorian Concerto (Respighi); The Szegedin Mass (Dohnanyi). 10.40, News Bulletin. 10.50 (approx.), Concert by the Anton Koeze Cigany Band, relayed from the Café Ostende; Solists: Paul Kahnar (Folk Songs). In the Interval, An Interview with Viscountess Snowden. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Town Hall Chimes. 12.1 to 2.0 p.m., Concert from the Hotel d'Angleterre. 2.50, Talk for Women: Spanish Women since the Revolution. 3.0, Concert by the Radio Orchestra, conducted by Emil Reeson: Overture, The Nuremberg Doll (Adam); Waltz, L'etoile polaire (Waldteufel); Allegretto from the Military Symphony (Haydn); Selection from Javotte (Saint-Saens); Mandoline (Debussy); Fête foraine from Nannoua (Lalo); Reading: Overture, Les Brigands (Offenbach); Selection from The Circus Princess (Kalmann); Three Pieces (Dvorák); (a) Waltz in A, (b) Slav Dance, (c) Humoresque: Morning and in the Hall of the Mountain King, from Peer Gynt (Grieg). 5.0, Gramophone Music. 5.35, Exchange and Market Prices. 5.50 (from the Esbjerg Studio), Talk. 6.20, English Lesson. 6.50, Weather and News. 7.15, Time. 7.30, Talk. 8.0, Polonaise, Operetta in Three Acts (Seibak). 9.0, Pictures of Everyday Life—Training for Horse Racing. 9.30, Verklärte Nacht, Op. 4 (Arnold Schönberg) by the Radio Orchestra, conducted by Fritz Mahler. 9.55, Reading. 10.15, News. 10.30, Pianoforte Duets (Schubert): (a) Diversissement a la hongroise, (b) Marche caractéristique. 11.0, Dance Music from the Nimb Restaurant. In an interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Tuesday), Close Down.

CORK.—See Athlone.

CRACOW

950 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Talk on the Deliverance of Vienna from the Turks. 7.15, Miscellaneous Items and News. 7.30, See Warsaw. 11.0, Concert of Gramophone Music. 12 Midnight, Fanfare from the Tower of St. Mary's Church, Cracow.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and E. McNabb. 5.30, Concert for Hastings and Eastbourne Listeners: In a Japanese Garden (Higgs); Falling in Love again (Hollander); Kashmiri Love Song (Woodforde-Finden); Songs: (a) I bring a Love Song, (b) You will remember Vienna; The Love Waltz (Heymann); Love's Garden of Roses (Haydn); Songs: (a) Because of (Hardenlot), (b) For you alone; Chanson (Friml); Sylvan Scenes (Pletcher); Broken Dreams (Spittaly). 6.15, Vocal and Orchestral Concert for Chichester and Bognor Listeners: Orchestra: Waltz, Très jolies (Waldteufel); Little White Lies (Donaldson); With my Guitar and you (Snyder); Orchestra: (a) African Lament (Gilbert), (b) Mama Inez (Grenel); Absent minded (Summers); Girl of a Million Dreams (Gay); Orchestra: (a) Dreams, (b) Four little Blackberries; In Sleepy Hollow (Robinson); There's another Empty Saddle (Colville); Orchestra: Jungle Drums Patrol (Ketchev). 7.0 to 10.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Bolognians: Toy Town Admiral (Godfrey); Who am I? (Clifford); My Coppette (Andrew); This is the Missus (Brown); Two Little Blue Little Eyes (Vallé); Got a Date with an Angel (Turnbridge); Maybe it's the Moon (Whiting); Who do you love? (Turnbridge); Hang out the Stars in Indiana (H. Woods); What could be sweeter than your Love? (Brook); If you'll beckon with your Finger (Montagne); Give me a Tune (Scott); Eccentric (Caphal); Tea for Two (Votmans); My Baby (Gilbert). 11.0, Orchestral Concert: Rakoczy March (Berlioz); Spring Song (Mendelssohn); Airs from Peer Gynt (Grieg): (a) Morning, (b) Aitira's

MAY 29th MONDAY continued

Dance, (c) Solveig's Song; Minuet (Mozart); Selection from Il Trovatore (Verdi). 11.30, The Studio Chorus in National Songs: Songs of England; Quartet: Loch Lomond; Orchestra: Horripue; Gems of Erin; Quartet: Jolan Peel; Orchestra: The Glasgow Highlanders; Lullaby of Hope and Glory; Songs of Wales, 12 Midnight, Club Concert of Walthamstow Listeners: Overture, Morning, Noon and Night (Suppé); Songs: (a) Goin' Home (Dvorák), (b) Waiting at the End of the Road (Berlin); Bells across the Meadow (Ketchey); Songs: (a) The Two Grenadiers (Schumann), (b) You along o' me (Sanderson), (c) A Hunting Song, (d) Love's Pleading, (e) Come back to Sorrento; For Valour; Duets: (a) Leave the Pretty Girls Alone (Robison), (b) 'Way down in Georgia; Returning Home. 1.0 a.m. (Tuesday), Accordion Solos and Songs: Flor d'Espagne (Vola); La Java de Madame (Padilla); Rosa (Vola); Songs: (a) My Fate is in your Hands, (b) Mona; Donauwellen (Rosas); La Tourterelle (Damare); Au revoir (Cuvellier). 1.30, Songs and Orchestral Selection: Melody Divine; I wish I had died in my Cradle; Mother's Smile; Orchestra: Selection from White Horse Inn; A Convict's Dream; Darling Old Mother of Mine; Golden Gates of Paradise. 2.0, Dance Music by the Belgians: The King's Navee (Leslie); Moon Over Dixie (Koehler); Toasts (Sarony); How do you do, Mr. Brown? (Abraham); I can't write the Words (Marks); Let's all dance the Polka (Lawton); The Lady I love (Young); How are you (Pola); Isn't it Romantic (Hart); Balloons (Shawn); Liszt, Chopin, and Mendelssohn (Nicholls); Ain't cha coming out Tonight (Carson Robison); When they're on the Love Parade (Hogum); Big Ben's saying Goodnight (Murray). 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert. 5.45, Economic Notes. 6.0, Dialogue on the Centenary of the Death of Anselm Feuerbach, the German Writer on Criminal Law. 6.15, Italian Lesson. 6.45, Notes of the Day. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Strauss Concert by the Station Orchestra, conducted by Dr. Reinhold Merten. Gallop, Reise (Joh. Strauss, Sen.); Waltz, Op. 244, Denksprüche (E. Strauss); Waltz, Odeon-Tänze (Joh. Strauss, Sen.); Victoria-Polka, Op. 228 (Joh. Strauss); Waltz, Feenmärchen, Op. 312 (Joh. Strauss); Fest-Marsch (Joh. Strauss); Patronessen-Polka, Op. 266 (Joh. Strauss); Waltz, Die Jubilanten (E. Strauss); Waltz, Ehrenwürde, Op. 277 (Joh. Strauss); Kniekehlen-Marsch (Jos. Strauss); Waltz, Wien mein Sinn (Joh. Strauss); Polka-Mazurka, Nachtschatten (Jos. Strauss); Radezky-Marsch (Jos. Strauss, Sen.). 9.0, Germany honours Schlager. 9.15, Violin Recital by Arrigo Pelliccia with the Station Orchestra, conducted by Hans Rosbund. Gregorian Concerto (Respighi); Concerto in G (Mozart). 10.15, Time and News. 10.45, Programme from Stuttgart. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GDTEBERG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

CALL ha (In Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Talk: From the Germanic Militia to the Standing Army. 6.20, Concert by the Women's Choir of the Municipal Theatre, conducted by Max Thurn. 6.45, Frankfurt Exchange. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Baroque: Musical and Literary Programme. 9.0 (from Bremen), Baroque Music of the Hanseatic Towns. Grete Götte (Harpischord), Dr. Kratzi (Flute), Dr. Budde (Violin), Martin Corssen (Viola da Gamba) and Dr. Stoeker (Cello) and Thorough-Bass). Introductory Talk by Dr. Budde. First Performance: Trio-Sonata in F for Violin, Viola da Gamba and Thorough-Bass (Buxtehude); Toccata for Harpischord (Reinken); Sonata in B Minor for Unaccompanied Flute and Violin (Telemann); Suite from Hortus Musicus (Reinken). 10.0 News. 10.20, Topical Talk. 10.30 (from Kiel), Light Music by the Kiel Orchestra of Unemployed Musicians.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Anna

Bolena (Donizetti); Russian Rhapsody (Mansz); Selection from Coppélia (Delibes); Waltz (Lühr); Two Pieces (Richter): (a) An der Wiege, (b) Sérénade Drolatique; Potpourri, So schön wie's dumaht war (Dauber). In the interval at 1.20, News. 2.30 (Danzig), Exchange. 3.0, Exchange and Market Prices. 3.30, Radio Report from the Königberg Stallion Show. 4.0, Concert by the Königberg Opera House Orchestra, conducted by Karl Hrubetz; Overture, The Bohemian Girl (Balle); Waltz, Rundgesänge (Helmberger); Potpourri, Sänger heraus (Arthur Ostermann); Deutschermeister, Regiments-Marsch (Bayer); Suite, The Minaret (Leopold); Osmerken-Rundfunk-Marsch (Hrubetz). 5.0, See Berlin (Deutschlandsender). 5.35, Talk: Memorable Days of the Week. 5.45 (from Danzig), Talk: The Port of Danzig. 6.15, Market Prices. 6.25, Schubert Song Recital by Hans Eggert; Im Abendrot; Greisengesang; Gesänge des Hartners, Nos. 1 and 2; Gruppe aus dem Tartarus; Dem Unendlichen. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, News. 8.5, Concert by the Small Station Orchestra. Soloists: Ilse Vahlpal (Soprano) and Eugen Wilcken (Tenor). Overture, Fatinizza (Suppé); Popular Songs; Violin Solo, Carmen Fantasia (Sarasate); Catalan Caprice (Albeniz); Woodland Sketches (Macdowell); Songs from New Operettas; Waltz, Die Romantiker (Lanner); Selection from Der arme Jonathan (Müllbacher). 9.15, Egon von Kapher reads from his own Works. 9.45, Elementary English Lesson. 10.15, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. till Close Down. Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Concert by the De Nolenkrakers, with Gramophone Records. 1.40 p.m., Interval. 2.10, Talk on Music by M. P. Tiggers, with Gramophone Illustrations. 3.25, Recitation. 3.40, Gramophone Music. 4.10, Concert by De Fliedridhers. 4.40, Programme for Children. 5.10, Concert (contd.). 5.40, Gramophone Music. 5.55, Organ Recital by J. Jong. Die schöne Galathée (Suppé); Souvenir (Drda); Songs my Mother taught me (Dvorák); Selection from Manon Lescaut (Puccini); Where you are (Connelly). 6.40, Talk on Music by M. P. Tiggers, with Gramophone Illustrations. 7.40, Second Act of Faust—Opera (Gounod), by the V.A.R.A. Orchestra, conducted by E. Bosmans. Soloists: Mlle. F. Honguarts (Soprano), Mlle. I. de Borger (Mezzo-Soprano), J. Sterkens (Tenor), and J. Heirstrate (Bass). 8.25, Extract from Faust (Goethe), by the V.A.R.A. Players. 8.55, Concert by the V.A.R.A. Orchestra and Soloists. 9.25, News. 9.40, Concert (contd.). 10.10, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,876 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.).—12.10 p.m., Organ Recital from the Lutheran Church, Amsterdam. 1.40, Gardening Talk. 2.25, Dressmaking Lessons. 2.55, Programme to be announced. 3.10, Part Relay of the Eighteenth Marathon Conference at Zeist. Programme of Addresses and Sacred Music. 4.40, Concert by the Amsterdam Chamber Orchestra, conducted by D. Kiekens: Mélopie solennelle (Fr. Rossé); Legend (Padarevski); The Caravan Procession (F. L. Rey); Suite, Impressions rustiques (Razigade); Overture, Der Schuphildkrieger (Mozart); Potpourri, Aus Offenbachs Musterkoffer (Urbach); Three Pieces (Robert Naef): (a) Frühlingsblumen, (b) Herbststürme, (c) Märgensgändchen; Waltz, Les Sirènes (Waldteufel); Suite, Hyde Park (Roger Jadowicz); Catalonian Sérénade (Walter Niemann); Marche russe (Ganne). 6.10, Answers to Correspondence. 6.40, Police Notes. 6.50, News. 7.0, Answers to Correspondence (contd.). 7.25, Part Relay of the Eighteenth Marathon Conference at Zeist. Addresses and Sacred Music. 8.40, Concert by the Choir of St. Thomas', Leipzig, conducted by Prof. Karl Straube: Motet Warum ist das Licht geboren dem Mühseligen, Op. 74, No. 1 (Brahms); O Lamm Gottes unsehndlich für Five-Part Choir (Joh. Eccard); Weihnachtslied (Bodenschütz); Motet: Vater unser (Jakob Handl); Deutsches Magnificat—for Two choirs (Heinrich Schütz). 9.20, Concerto No. 7 in D, for Violin and Orchestra (Mozart), on Gramophone Records. 9.50, News. 10.0, Variety Concert on Gramophone Records. 10.50 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin. 8.15, Sports Review. 8.30, Radio Concert. 9.0, Weather and News. 9.15, Literary Talk. 12 Midnight to 1.0 a.m. (Tuesday), Programme in English by the I.B.C., H. K. Hitchcock announcing. 12 Midnight, Songs and Orchestral Music. Orchestra: Just once for all Time (Heymann); One more Kiss

then Good-night (de Rose); It seems all a Dream, but it's true (Wallace); My Bluebird's back again (Friend); You're the one (Field and Marks); Orchestra: Live, Love, and Laugh (Heymann); Little Girl (Hyde and Henry); What's gonna happen to me (Nicholls). 12.30 a.m., Dance Music: I may never pass your way again; I called to say Good-night; Till to-morrow; Street of Dreams; Young and Healthy; Love will find a way; The Japanese Sandman; Butterflies in the Rain. 12.57, I.B.C. Good-night Melody. 1.0 a.m. (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Announcements and Gramophone Music. 7.25, Announcements. 7.30, See Warsaw. 10.15, The Letter Box. 10.30, See Warsaw.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.0 p.m., Time and News. 7.30, Divine Service Relay. 8.0, Announcements. 8.15, Concert. 8.40, Political Review. 9.0, Cello Sonata (Banaitis), by S. Frunkinas. 9.30, Talk: Foreign Trade and the Budget. 9.50, Concert: Ballet Music from Lakme (Delibes); Violin Solo (Wienawsky); Valse appassionata (Ketelbey). 10.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.25 p.m., Concert by the Station Orchestra, conducted by Erkki Linko. Overture, Isabella (Suppé); Tango (Albeniz); Luxembourg Waltz, from The Merry Widow (Lehár). 7.0, Talk. 7.25, Mozart Duetting Recital by Karin Eklund and Erkki Eklund. Two Duettings from Figaro; Duetting from Don Giovanni; Two Duettings from The Magic Flute. 7.45, Sketch (Toivo Raita). 8.20, Concert by the Station Orchestra. Romance (Grünfeld); Waltz, Wo die Zitronen blühen (Joh. Strauss); Viennese Song (Sieczynski); Kleiner Wienermarsch (Kreisler). 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert conducted by Eysoldt. Soloist: August Zimmermann (Baritone). March, In die Freiheit (Gernert); Overture, Indigo and die vierzig Räuber (Joh. Strauss). Baritone Solos: (a) Feldensamkeit (Brahms), (b) O liebliche Wangen (Brahms), (c) Morgen (R. Strauss), (d) Nachtgesang (R. Strauss); Waltz, Flieger-Mädel (Franzen); Selection from Il Natale di Pierrot (Monti); Czardas No. 8 (Michiels); Selection from Wenn Liebe erwacht (Kümcke); Blavone-Mazurka for Flute (Popp); Polka, Zlayvögel (Waldteufel). In the interval at 2.0, News. 2.30, Meat Market Prices. 3.30, Exchange and Time. 3.50, Programme for Young People.—Whitsun Customs in the Country. 4.30, Chamber Music: Horn Trio (Brahms); Scottish Song, Op. 108 (Beethoven); Clarinet Trio (Brahms). 5.50, Reading (Karl Kessler). 6.5, Anecdotes by (Wendunmuth Alverdes). 6.20, Talk: Are all beginnings difficult? 6.45, Time and News. 7.0, Transmission for all German Stations relayed from Berlin (Witzleben). 8.0, First General News. 8.5, Talk. 8.15, Concert of Light Music by the Small Station Orchestra and Soloists. 10.15, News. 10.45, Dance Music from Stuttgart. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Old-Time Dance Music on Gramophone Records, followed by News Bulletin. 2.10, Art and Film Review. 2.30, Talk for Women: The Household Medicine Cupboard. 3.0, Song Recital by Hilde Brand (Soprano). 3.20, Agricultural Notes. 3.35, Exchange and Market Prices. 4.0, Talk: A Thousand Years of German Literature: The Eighteenth Century. 4.20, Concert of Light Music by the Emde Orchestra. 5.50, Exchange, Time, and Weather. 6.0, Educational Talk on Gramophone Records: Christian Instruction in the Elementary Schools. 6.35, An Interview with a Baths Supervisor. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Concert of Viennese Songs and Schrammel Music. In the Intervals, Two Sketches: (a) A Present of Flowers, (b) The Leg of Mutton. 10.5, News Bulletin. 10.20 (approx.), Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Spring Overture (Goetz); Sérénade in E Flat, Op. 7, for Thirteen Wind Instruments (Richard Strauss); Abendlied (Schumann); Burlesque, Harlekinstriche, Op. 83 (Schroeder); Suite, Tanzspiele (Schettler); Overture, The Merry Wives of

Windsor (Nicolaï); Five Minnets (Schubert). 12 Midnight (approx.), Close Down. LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—1.0 p.m., Quintet Concert. 7.0, Esperanto Lesson. 7.30, Serbo-Croatian Lesson. 8.0, Programme relayed from Zagreb, 977 kc/s, 307 metres. 10.0, News and Light Music.

LWOW

788 kc/s, 381 metres; 16 kW.—7.0 p.m., Talk. 7.20, Miscellaneous Items. 7.30, See Warsaw. 10.15, Talk. 10.30, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 15 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Symphony Concert; Soloist, Roland Charry (Violin). After the Concert, News.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—11.30 p.m., Popular Music. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Tuesday), Sports and Bulfighting Notes. 12.40, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EA47, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, and Request Gramophone Records. 9.15, News Bulletin. 9.20 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.30 p.m., German Transmission: Two Talks. 1.0, See Prague. 7.25, See Brno. 8.0, See Prague. 8.45, See Brno. 10.0, See Prague. 10.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather. 3.0, Concert of Music by Glazunov and Tchaikovsky. 3.30, Red Army Programme. 4.0, Talk on Politics. 4.30, Literary Programme: Reading from Diaries and Letters; A Nasty Story—Radio Play, and Readings from the works of Sochenko. 6.30, Dance Music. 9.0, News. 9.30, Programme Announcements. 9.55, Time Signal. 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserlautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—4.5 p.m. (from Nürnberg), Orchestral Concert. 5.0 to 5.35, Programme from Berlin (Witzleben). 5.45, Talk: What everyone should know about the Saar Election. 6.5, Reading from the Works of Ernst Kriek, with Introductory Notes. 6.25, Sonata in E Flat, Op. 7, for Piano (Beethoven), played by Clemens Scheitz. 6.45, Time, Weather, and Agricultural Report. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, Rund um den alten Peter—Old Munich in Literature and Music (arranged Konrad Scherber); The Small Station Orchestra, conducted by Erich Kloss; Soloists: Nini Diehl (Soprano), Hans Schindler (Tenor), Hans Hamer (Baritone), Konrad Scherber (Bass), and Hans Lascher (Recitations). 9.0, Reading of a Short Story (Friedrich Georg Jünger). 9.20, Chamber Music by the Nürnberg Trio: Trio in C Minor (Brahms); Trio in C Minor, Op. 101 (Brahms). 10.20, Time and News. 10.45, Programme from Stuttgart. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert by the Radio Ensemble. 6.0, German Lesson. 6.30, Norwegian Song Recital by Theda Lien. 7.0, News Bulletin. 7.30, Agricultural Talk: Agriculture and the Economic Situation. 8.0, Time Signal. 8.1, A Tour of Trondheim and its Surroundings, relayed from Trondheim, 493.4 metres. 9.15, Political Review. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Jazz on Piano (played on Gramophone Records). 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements. Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.30, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Concert of Chamber Music. 10.58, News.

MAY 29th

MONDAY

continued

PARIS

EIFFEL TOWER, Call FLE, 297.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot signals)—6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Extracts from Operettas (Yvain), by an Orchestra, conducted by M. Flament and Soloists. 10.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.45 p.m., Le Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Tyrolean Music. 8.0, Medical Talk. 8.5, Talk on Aviation. 9.15, Interval. 8.30, song Recital by Max Régnier. 9.0, Interval. 9.15, Sponsored Concert. 10.15, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW. 6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Concert of Opera and Ballet Music by the Radio-Paris Orchestra: Overture, Titus (Mozart); Air (from Fidelio (Beethoven), on Gramophone Record; Selection from Falstaff (Verdi); Two Arias from The Barber of Seville (Rossini), on Gramophone Records; Suite for Orchestra, Caligula (Faure); La Farandole (Debussy). 1.0, Exchange, News, and Weather. 1.5, Chopin Pianoforte Recital by Lucy Vanthorn and Marie Panthois. 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Talk on the Cinema. 7.0, Review of Books. 7.20, Music by the Radio Paris Orchestra: Polichinelle (Rachmaninov); Scènes gitanes (Institute). 7.40, Talk: Touring in France. 7.45, Press Review, News and Weather. 8.0, Variety Concert. 8.30, News, Sports Notes, and Weather. 8.40, Review by Paul Reboux. 8.45, The Damnation of Faust—Opera (Berlioz), on Gramophone Records. In the interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W6XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 8.0, Betty and Bob, from New York. 8.15, Monday Matinee, from New York. 8.58, Baseball Scores. 9.0, Radio Guild—Drama, from New York. 10.0, Market Reports.—10.15, Dick Dating, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Hotel McAlpin Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Sport Review. 11.22, Press News-Feeler. 11.29, Temperature Report. 11.30 to 4.0 a.m. (Tuesday), New York Relay. 11.30, Variety Programme. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15, Al Mitchell's Orchestra, with Everett Marshall (Baritone). 12.30, Mary Brothers. 1.0, Cluquet Club Eskimos. 1.30, Bill Billy Heart Throbs. 1.45, Phil Cook and the Ingram Shavers. 2.0, Sincere Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Time Signal and the Hour Glass.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.55 p.m., Theatre Notes and Programme Announcements. 6.0, Talk. 6.5, Miscellaneous Items. 6.20, Programme for Soldiers. 7.5, News. 7.28, Time Signal. 7.30, See Warsaw. 10.15, Time Signal, Sports, and Police Notes. 10.30 (approx.). Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava. 5.0, Educational Programme. 5.20, Talk: The Training of Teachers for the National Schools. 5.30, Programme for Children. 5.50, Gramophone Music. 6.5, Agricultural Talk. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk: Hunting and its Economic Significance. 7.0, Chimes from the Church of St. Ludmila. 7.5, News. 7.10, English Lesson for Beginners. 7.25, See Brno. 8.0, Talk: The Blind Actor Frantisek Bohuslav his Life and Theatre Reminiscences. 8.15, Round the World on Gramophone Records. 8.45, See Brno. In the interval at 9.0, Time Signal. 10.0, Time signal. 10.2, News. 10.15 (approx.). Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.30 to 3.0 p.m., Gramophone Concert of Variety Music. In the interval at 2.0, Talk: The Battle of Hastings. 5.0 to 6.0, Gramophone Concert. 8.30, Popular Music on Gramophone Records. 9.0, Variety Concert on Gramophone Records. 11.30 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW. and Geneva, 395 kc/s, 760 metres.—12.25 p.m., Time from Neuchâtel Observatory. 12.30, News and Weather. 12.40 (from Geneva), Gramophone Music. 1.0 (from Geneva), Financial Report. 1.10 (from Geneva), Gramophone Music. 2.0 to 3.28, Interval. 3.28, Time Signal from Neuchâtel Observatory. 3.30 (from Lausanne), Concert by the Radio-Suisse Romande Orchestra, conducted by Edouard Moser. 4.0 (from Lausanne), Talk.

4.15 (from Lausanne), Concert (cont.). 5.0 (from Lausanne), Programme for Children. 5.30 to 7.0, Interval. 7.0 (from Lausanne), Talk: The Manufacture of Electric Lamps in Switzerland. 7.30 (from Lausanne), News Bulletin. 7.35 (from Lausanne), Answers to Correspondence. 8.0 (from Lausanne), Chamber Music by the Hertel Quartet. 8.50 (from Lausanne), Songs by Mmes. Dalys and Talaband and MM. Andreuor and Breguet. 9.50, News and Weather. 10.0 (from Geneva), Gramophone Music. 10.30 (from Geneva), Talk: The League of Nations. 10.50 (approx.). Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW. 9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.30, Talk. 11.0, Concert of Popular Music by the Station Quartet with Songs.

RIGA

572 kc/s, 525 metres; 15 kW.—3.0 p.m., Talk: The Importance of Folk Literature in the Life of the Latvians. 3.30, Concert of Popular Music. 4.0, Talk. 4.30, Talk. 5.0, Concert of Wind Instrument Music. 6.0, Talk on Angling. 6.30, English Lesson. 7.5, Concert by the Radio Orchestra: Eine Klein Nachtmusik (Mozart); Serenade (Gomoud); Berceuse (Godard); Nocturne (Beece); Evening (Sinding); Serenade (Drigo); Nocturne (Drigo); La profession nocturne (Rabaud). 8.0, News. 8.15, Pianoforte Recital by L. Reinholdis: Chaconne (Bach-Busoni); Sonata in C (Beethoven). 8.50, Concert of Light Music by the Station Orchestra, conducted by Prof. Medins: Operetta Revue (Petras); Musical Comedy Melodies (Kerker); Waltz, Moonlight on the Alster (Petras). In the interval at 9.0, Weather and News. 9.30, Dance Music. 10.30, (approx.). Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Gramophone Concert. In the interval, from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Soloist Concert: Cesarina Buonera (Pianoforte), Yoshiko Beltramelli (Soprano), Renzo Sabatini (Violin), and Leandro Forti (Baritone); Pianoforte Solos: (a) Trois Mignardises (Pik-Mangiagalli). (b) Minuet in B Minor (Schubert); Four Songs to Poems by Antonio Beltramelli (Pratella): (a) Le sette stelle, (b) Nostalgia, (c) L'ultima folia, (d) Pasqua, Pasqua; Violin Solos: (a) La caccia (Chiabran-Corti). (b) Chanson arabe (Rimsky-Korsakov-Kreisler). (c) Introduction and Humoresque (d'Ambrósio); Soprano Solos: (a) Le ciarrelle (Gaudino). (b) Il girotondo dei goliardi (Castellonovo-Tedesco); Arias by Carissimi and Mozart, for Baritone. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopplavoro Notes. 7.10, Tourist Report. 7.20, Announcements in Foreign Languages. 7.40, Giornale Radio. 8.0, Time, Announcements, and Gramophone Music. 8.15, Song Recital by Maria Valente (Soprano). 8.30, Giornale Radio and Sports Notes. 8.45, Talk. 10.0, Concert of Light Music. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 p.m., Book News by Levere Fuller. 8.15 to 9.0 (approx.). New York Relay. 8.15, Salon Concert Ensemble. 8.30, Three Scamps. 8.45, The Lady Next Door. 9.0 to 11.45, Interval. 11.45, Stock Reports. 12.0 Midnight to 1.30 a.m. (Tuesday), New York Relay. 12.0, Soaring-Land Sketch. 12.30 a.m., Soloists. 12.45, Band of Famous Brands. 1.0, A and P Gipsies. 1.30, WGY Players in One Man's Family. 2.0, Contented Programme from New York. 2.30, Musical Programme from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather. 12 Noon, Swiss Songs and Marches on Gramophone Records. 12.30 p.m., News. 12.40 (from Basle), The Four Ages of Man—A Radio Sequence, with Music arranged by Papa Thoms. 1.25 (from Basle), Exchange, Time, and Weather. 1.30 (approx.) to 5.0, Interval. 5.0 (from Basle), Talk for Women. 5.30 (from Basle), Gramophone Music. 6.30 (from Zürich), Programme for Children. 7.28, Time and Weather. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Song Recital by Salvatore Salvati. 9.0, Weather and News. 9.10 (from Zürich), Organ Recital. 10.15 (approx.). Close Down.

SEVILLE

(EAJ7), 368.1 metres; 1.5 kW.—3.0 to 4.0 p.m., Orchestral Concert, followed by Dance Music. 10.0, Pianoforte Recital: Etude in E Flat (Paganini-Liszt); Mazurka in B Flat (Chopin); Fantaisie-Impromptu (Chopin); Danza del Fante, from El amor brujo (Falla); Minstrels (Debussy); Serenade for the Doll (Debussy); Miramar (Turina); In the Gardens of Murcia (Turina). After the Recital, News, followed by Song Recital and Dance Music. 12 Midnight, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m. (from Östersund), Provincial Programme. 5.45, Concert of Gramophone Music. 6.45, Reading. 7.15, Weather and News. 7.30, Parliamentary Report. 7.50, Military Band Concert, conducted by Ivar Widner. 8.45, Talk, relayed from Uppsala, 662 kc/s, 453.2 metres. 9.15, Sonata No. 2 in A for Violin and Pianoforte (Brahms) by Charles Barkel and Algot Hakulinus. 9.45, Weather and News. 10.0, Concert of Light Music. 11.0 (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 p.m., Overtures from Operas, on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.1, Exchange Quotations. 1.5, Songs by Famous Singers, on Gramophone Records. 2.0 to 4.0, Interval. 4.0, Recital of Compositions by M. Barraud, relayed from Radio Coloniale (Paris), 15,243 kc/s, 19.68 metres. 5.0, Dance Music by the Orchestra, conducted by M. Roskam. 6.0, Fortnightly Literary Review in French. 6.15, Talk: Poets of Alsace-Lorraine. 6.30, Song Recital. 7.30, Time and News. 7.45, Gramophone Music. 8.15, Press Review in German, Lottery Results, and News. 8.30, Extracts from Don Giovanni—Opera (Mozart), by the Station Orchestra and Soloists, conducted by M. de Villers. 9.25 (approx.). Press Review in French. 9.30, Verdi Concert, by the Station Orchestra and Soloists; Selection from Don Carlos; Three Songs from Othello; Overture, Joan of Arc; Song from Falstaff; Selection from Aida. 10.30, Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.15 p.m., Time and News. 1.30, Folk Music on Gramophone Records. 2.0, Programme arranged by the Post Office, with Gramophone Music. 2.30, Spanish Lesson. 3.0 to 3.30, Elementary English Lesson. 4.30, Concert from Munich. 5.0, See Berlin (Deutschlandsender). 5.35, Gramophone Music. 5.50, Time, Weather, and Market Prices. 6.0, Talk: German Leaders and Notabilities: Joseph Goebbels. 6.25, See Frankfurt. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Witzleben). 8.0, War Stories. 8.15, See Berlin (Witzleben). 10.15 (approx.). News. 10.35, Chess Lesson. 11.0, Dance Music. 12 Midnight (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire. 6.0 p.m., News. 6.15, Operetta Music: Selections from La Fille de Madame Angot (Lecocq); Waltz and Air from Die Teresina (O. Straus). 6.30, Sound Film Music. 6.45, Dances from Prince Igor (Borodin). 7.0, Opera Music: Arias from (a) Boris Godunov (Musorgsky). (b) Tannhäuser (Wagner). (c) La Favorita (Donizetti). 7.15, Racing Results, Market Prices, and News. 7.25, Local News Bulletin. 7.30, Accordion Music. 7.45, Light Orchestral Music. 8.0, Extracts from Opera: (a) Carmen (Bizet). (b) Mignon (Thomas), and (c) Lakmé (Delibes). 8.15, Concert by a Viennese Orchestra. 8.45, Popular Melodies. 9.0, Music-Hall Programme. 9.30, Music by an Argentine Orchestra. 9.45, Instrumental Solos. 10.0, Military Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Overture, Martha (Flołow); Selection from Mirella (Gomoud); Melodies from Rose Marie (Friml); Dans la Marine (Bonsquet); Marche des Petits Pierrots (Bose). 11.0, Russian Songs. 11.15, Orchestral Music. 11.30 to 12 Midnight, Programme in English by the I.B.C., W. Brown-Constable announcing. 11.30, Pianoforte Recital. Musical Comedy Memories: The Diver; Mother Macree; Memories of Maurice Chevalier; Go down Moses; I certainly don't need you; The Death of Nelson. 11.57, I.B.C. Good-night Melody. 12 Midnight, News, Weather, and Announcements. 12.5 a.m. (Tuesday), Dance Music. 12.30 (approx.). Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Variety Music 6.35, Giornale Radio, Agricultural Report and Dopplavoro Announcements. 7.0, Time and Tourist Talk. 7.10, Gramophone Records. Bruna Madonna (Lopez); Barea d'oro (Fiorello); Caterinette (Ravasini); Quincee aune (De Latis-Ricciardi); Parles-moi d'amour (Lencoir); Ram pan pan (De Vita). 7.20, Giornale Radio. 7.45, Gramophone Music. 8.0, Announcements, Giornale Radio, Weather and Opera Music on Gramophone Records. 8.45, Chamber Music Concert. Soloist: Arrigo Serato (Violin). 9.45, One-Act Comedy, followed by Gramophone Music. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.25 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.35 p.m., Programme for Young People. 5.0, Talk: Wagner in Bayreuth. 5.25, Instrumental Concert of Old Music: Magda Bailion (Flute), Karl Stumvoll (Viola), and Werner Donnies (Harpisichord). Sonata No. 8, in D, for Flute, Viola, and Harpsichord (Leclair); Sonata No. 3 in G, for Flute and Harpsichord (Handel); Trio in G, for Flute, Viola, and Harpsichord (C. P. E. Bach). 6.5, Theatre Review. 6.25, Reference Books in Connection with the Week's Talks. 6.30, English Lesson. 7.0, From the Far East, Concert by the Vienna Symphony Orchestra, conducted by Max Schönherr. Soloist: Magda Schwell (Soprano); Overture to Schiller's Turandot (Weber); Two Arias from Turandot (Puccini); Overture and Waltz from The Mikado (Sullivan); Song from San Toy (Jones); Song, Dance, little Geisha, from The Geisha (Jones); Japanese Mazurka (Ganne); Chinese Procession and Li-Tsching-Lu's Song from The Yellow Jacket (Lehar); Song from The Land of Smiles (Lehar); Selection from Madame Butterfly (Puccini); Overture, Sakuntala (Goldmark). In the interval at 7.30, Time and News. 8.15, Topical Talk. 8.30, Concert of Modern Viennese Music, with an introductory Talk. The Pepi Weichart Schrammel Quartet. Soloists: Mimi Schön (Soprano) and Franz Hoffmann (Tenor). 10.0, News, Weather, and Announcements. 10.15, Glück muss man haben—Operetta in Three Acts (Marischka and Feiner), relayed from the Municipal Theatre. 11.0, Music from Paper.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.40 a.m., Press Review. 11.50, Weather for Aviation. 11.57, Time Signal and Fanfare from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Music. 1.20, Weather. 1.25, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Answers to Correspondents. 3.30, Interval. 3.35, Answers to Technical Correspondence. 3.50, Gramophone Music. 4.25, Elementary French Lesson. 4.40, Talk on Economics. 5.0, Recital for Two Pianofortes, by E. Steinberger and G. Lefeld: Sonata in D for Two Pianofortes (Mozart); Variations on a Theme by Haydn for Two Pianofortes (Brahms); Le Désir (Chopin-Liszt); Waldesrauschen (Liszt); Tarantella (Liszt). 5.55, Programme Announcements. 6.0, Light Music. In the interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural Correspondence. 7.30, Topical Talk. 7.45, Radio Journal. 8.0, Rigoletto—Opera (Verdi), on Gramophone Records. In the interval, Sports Notes and Radio Journal. 10.15, Answers to Technical Correspondence. 10.30, Dance Music. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—5.55 p.m., Programme Announcements. 6.0, Gramophone Music. 6.40, Lithuanian Talk. 6.55, Miscellaneous Items. 7.0, Daily Reading. 7.10, Miscellaneous Items. 7.15, Sports Report. 7.30, See Warsaw. 12 Midnight (approx.). Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.26 p.m., Book Review. 7.40, Announcements. 8.0, Concert of Music by Dobronie by Maja Cviljusac (Soprano), Ljerka Dobronie (Pianoforte), Alexander Smirnov (Oboe), and Ivan Maretic (Cor anglais). 9.0, Song and Violin Recital by Vera Holesek (Soprano) and Jaroslav Front (Violin): Sonata in D (Handel); Songs: (a) Chanson (Konjovic), (b) Melody (Rubinstein), (c) Aria from Eugene Onegin (Tchaikovsky), (d) Ich liebe Dich (Grieg), (e) Death and the Maiden (Schubert), (f) Aria from Samson and Delilah (Saint-Saëns), (g) Habanera from Carmen (Bizet); Romances in G and F (Beethoven). 10.0, News and Weather. 10.10, Dance Music. 11.0 (approx.). Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc's, 413 metres; 60 kw.; and Cork, 1,337 kc's, 224.4 metres.—1.20 to 2.0 p.m., Time Signal, Weather Report, Stock Report, Gramophone Music, and Results of the Irish Hospital Sweep Draw. 6.0, Programme for Children. 6.40, News and British Market Report. 7.0, Gaelic Talk. 7.15, Recitations by Frances Moynagh. 7.30, Time Signal. 7.31, Concert by the Station Orchestra. 7.50, Gaelic Song Recital by Kitty O'Flaherty. 8.5, Traditional Fiddle Music by Frank O'Higgins. 8.20, Gaelic Songs by T. Flynn. 8.35, Irish Music by the Station Orchestra. 9.0, Cello Solos by Dorothy Clifton. 9.15, The Station Orchestra. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

EAJ1, 800 kc's, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations. 9.0, Gramophone Music and News. 10.0, Chimes, Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. 10.5, Sponsored Programme. 10.30, Two Musical Plays: (a) El Husar de la Guardia (Vives and Jimenez). (b) La Corte de Faraon (Léon). In the interval at 12 Midnight, News. 1.0 a.m. (Wednesday), Close Down.

BARI

1,112 kc's, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopolavoro Announcements. 8.20, Giornale Radio and Press Review. 8.30, Time Signal and Announcements. 8.35 (approx.), Orchestral Concert, conducted by M. Carmelo Preite. Overture: The Italian Girl in Algiers (Rossini); Symphonic Variations (Bizet); Overture, Nita o la Piazza d'Amore (Paisiello); Romo (Paisiello); Adagio (Vivaldi); Intermezzo from I quattro rusteghi (Wolff-Ferrari); Dance from La Fata Colomba (Cesari); Hungarian Rhapsody No. 2 (Liszt); Prelude to Act I of La Traviata (Verdi); Prelude to Act III of Manon Lescaut (Puccini); Intermezzo from Cavalleria rusticana (Mascagni); Dance from Il castello nel bosco (Cesari). In the interval, Sports Talk. 10.30, Gramophone Music. 10.55, News Bulletin.

BASEL.—See Schweizerischer Landessender.

BELGRADE

697 kc's, 430.4 metres; 28 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Folk Song Recital. 7.30, Talk. 8.0, Violin Recital: Sonata in A (Handel); Romance, Op. 50 (Beethoven); Melody (Gluck-Kreisler); Tambourin (Lortz-Kreisler); Prelude and Allegro (Pugnani-Kreisler). 8.40, Recital of Songs from Yugoslav Operas. 9.10, Radio Play. 9.40, News. 9.45 (approx.), Concert by the Station Orchestra: Spanish March, Merida (Gulliani); Overture to an Operetta (Lincke); Nocturne, Einsamkeit (Schubert); Pizzicato Polka (Joh. Strauss); Selection from The Bayadere (Kalmann).

BERLIN

DEUTSCHLANDSENDER, 183.5 kc's, 1,635 metres; to kW.—2.0 p.m., Gramophone Concert of Operatic Music. 3.0, Talk for Young People. 3.30, Weather and Exchange. 3.45, Reading (Ernst von Wildenbruch). 4.0, See Leipzig. 5.0, Talks for Women. 5.25, Topical Talk. 5.35, Violin Sonata in C Minor, Op. 44 (Grieg). 6.0, A Poem. 6.5, Clara Maria Elshorst in a Recital of Songs by Greta von Zieritz, with the Composer at the Piano-forte; Prelude and Fugue; Amor—Six Songs for Voice and Piano-forte. 6.30, Political Press Review. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, An Epigram, followed by Topical Talk. 8.10, See Berlin (Witzleben). 8.45, Talk by Dr. Hans Henningsen. 9.10, Concert of Seventeenth and Eighteenth Century Music, relayed from the Schlüterhof; The Philharmonic Orchestra, conducted by Erich Kleiber. 10.0, News. 10.45, Weather Report for Shipping. 11.0, Concert from Hamburg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc's, 419.5 metres; 1.5 kW.—6.10 p.m., Review of Books. 6.40, The Witzleben Station informs its listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.5, The Watch-word. 8.10 to 12 Midnight, Dance Music by the Berlin Wireless Orchestra, the Hans Schneider Dance Band, and the Berlin Wireless Chorus, directed by Maximilian Albrecht. In the intervals from 9.0 to 9.40, Swedish Humoresques and Songs, and at 10.0, News. 12 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BDDO.—See Oslo.

BRATISLAVA

1,076 kc's, 279 metres; 14 kW.—6.0 p.m., Concert of Choral and Quintet Music, arranged by the Svorodov College. 6.55, Talk for Housewives. 7.0, See Prague. 7.25, Concert by the Station Orchestra, conducted by Josef Odchazel: French Comedy Overture

TUESDAY MAY THE THIRTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL: Icelandic Folk Song recital, Orchestral Concert.
LONDON: The Lancashire Mimmers Concert Party.
REGIONAL: "In my Garden," orchestral concert.
MIDLAND: The Lancashire Mimmers Concert Party.
REGIONAL:
NORTH:
REGIONAL:
WEST: Programme from University College of South Wales and Monmouthshire, Cardiff.
REGIONAL: Instrumental and Vocal concert.
SCOTTISH:
REGIONAL:
BELFAST: Variety programme.

ABROAD

- BERLIN (Deutschland-sender): 9.10 p.m. Orchestral Concert of Seventeenth and Eighteenth Century Music.
LANGENBERG: 7.0 p.m. Comic Opera: "Abu Hassan," by Weber (played by other German stations).
POSTE: 8.30 p.m. Symphony Concert, conducted by T. Mathieu.
PARISIEN: 8.30 p.m. Josef Slavik Concert, for the centenary of his death (relayed from the Smetana Hall).
PRAGUE: 8.45 p.m. Symphony Concert, conducted by Eugene Bigot.
RADIO PARIS: 9.30 p.m. The Württemberg Symphony Orchestra.
TURIN: 8.45 p.m. Operetta: "Girolle-Girolle," by Lecocq.
VIENNA: 9.0 p.m. Serenade by the Vienna Philharmonic Orchestra and State Opera Choir.

(Keller-Bla): Potpourri (Mascagni); Waltz (Kasik); Gavotte (Czibulka); Intermezzo (Lapodda); Melody of Songs (Blaser); March (Balling). 8.20, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc's, 325 metres; 60 kW.; and Gliwitz, 1,184 kc's, 253 metres.—1.15 p.m., Concert of Folk Songs and Dances on Gramophone Records. 2.15, Programme arranged by the Post Office, with Gramophone Music. 3.10, Market Prices. 3.40, Songs for Children. 4.10, Review of Books: German Political Novels. 4.30, Piano-forte Recital. 5.0, Reading of Legends. 5.20, Orchestral Concert, conducted by Bruno Janz. 6.25, Edwin Erich Dwinger reads from his new book: Wir rufen Deutschland. 5.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Topical Talk. 8.30, Concert by the Station Orchestra, conducted by Franz Marszalek. Overture, Norma (Bellini); Precioso (O. Lindemann); Waltz, The Wedding of the Winds (Hall); Potpourri, Deutscher Kampf im Lied (Stepauf). 9.20, Animal Stories (arr. Erich Köhler). 10.0, Time and News. 10.25, Political Press Review. 10.45, Talk: A Silosian in the Polonaises. 11.0, Programme from Hamburg. 12 Midnight, Close Down.

BRNO

878 kc's, 342 metres; 35 kW.—6.15 p.m., Talk for Workers. 6.25, German Transmission, News and Talk on Gardening. 7.9, See Prague. 7.10, Talk: American Negroes. 7.25, See Moravsko-Ostrava. 8.20, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc's, 509 metres; 15 kW.—12 Noon, Mozart Concert by the Small Station Orchestra, conducted by P. Leemann; Overture, Don Giovanni; Serenade from Don Giovanni; Andante for Flute; Largo from a Quintet; Rondo for Violin; Turkish March; Minuet for Violin; Eine kleine Nachtmusik; Ballet, Les Petits Riens. 1.0 p.m., Le Journal Parle. 1.10, Gramophone Concert, Part I—Symphonic Marches. Part II—Records of Yehudi Menuhin. 5.0, Concert by the Radio Orchestra, conducted by E. André; Rhapsody d'abonnement (De Bock); Persian Dance (Gulliani); Exotic Suite (Belmas); Hindu Song (Rin-ky-Korsakov). 5.30, Programme for Children. 6.5, Literary Review. 6.15, Song Recital by Mlle. Lucie Dufrenoy: La Procession (Franck); Le chapelain soupait encore (Dupin); Von ewiger Liebe (Brahms). 6.30, Concert of Suites by the Small Station Orchestra, conducted by Leemann. 7.15, Catholic Review and Film Notes. 7.30, Review for Women and Notes on Art. 8.0,

Concert of Waltzes by the Station Symphony Orchestra, conducted by Meulemans; Invitation to the Waltz (Weber); Waltz (Mars); Valse Caprice for Flute (Chopin); Waltz from Faust (Gounod); Flower Waltz (Tchaikovsky); Soirée d'été (Waldteufel); Waltz (Strauss). 8.45, Talk. 9.0, Concert by the Radio Orchestra, conducted by Franz André; Soblist; Lucie Dufrenoy (Songs); Pastoral for Five Wind Instruments (Pierce); Paysage (Hahn); Reverie du Soir (Saint-Saëns); Pastorale from L'Arlesienne (Massenet); Two Arias from Les Femmes de Bonheur (Mendelssohn); A Midsummer Night's Dream (Bach); Airs from Les Vacances (Bataille); Airbale (Lalo). 10.0, Le Journal Parle. 10.10, Gramophone Records. 10.40, Chronographic Concerto, Andante (Poulenc) for Orchestra and Eighteen Solo Instruments. 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Organ Recital on Gramophone Records. 1.0 p.m., Le Journal Parle. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemann; Overture, Les Héroïdes (Hirschmann); Selection from Hérodote (Massenet); Gramophone Records: Serenata (Gounod), sung by Gurnau; Russian Rhapsody, Moscow (Leemann); Piano-forte Solo: Tarantella (Chopin); Gramophone Record: Tiempo Antico (Gounod), sung by Gurnau; Waltz (Stepauf); Foxtrot (Mann-Weise). 5.0, Concert by the Symphony Orchestra, conducted by Meulemans; Overture, The Mastersingers (Wagner); Fantasia No. 3 (Benoit, arr. Broeck); Concert Waltz (Glazunov); Naples (Charpentier); Ballet of the Seasons (Verdi). 5.45, Music from Many Lands (Gramophone Concert. 7.15, Talk: The Aim of the Radio Co-operative Society. 7.30, Le Journal Parle. 8.0, Concert by the Radio Orchestra, conducted by Walpot; Russian March (Gounod); Waltz Potpourri, Was die Donna erzählt (Mozart); Two Arias (Stolze) on Gramophone Records; Potpourri, Contrasts (Robrecht); Duet and Song from The Land of Smiles (Lohar) on Gramophone Records; Potpourri of Russian Folk Songs (Eisler); Two Arias from The Land of Smiles (Lohar) on Gramophone Records; Potpourri, Das beste vom besten (Dobslal). 9.0, Waar Liefde woont Radio Sketch. 9.15, Concert by the Symphony Orchestra, conducted by Meulemans; Soblist; M. Goldstein (Bass-Baritone); Overture, Figaro (Mozart); Two Arias from Don Giovanni (Mozart); Waltz, Wiener Bonbons (Strauss); Aria from Martha (Florent); Aufenkaht (Schubert); Selection from Lilar Time (Schubert-Berté). 10.0, Le Journal Parle. 10.10, Gramophone Concert.

BUCHAREST

761 kc's, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Motoi

Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. In the interval at 7.20, Gramophone Music. 8.0, Song Recital by Adolphe Kotlar. 8.20, Concert by the Station Orchestra; Soblist; D. Teodoru (Violin); Carnival Overture (Dvorak); Suite, Conte d'Avril (Vidor); Selection from The Girl of the Golden West (Puccini); Selection from The Gipsy Baron (Joh. Strauss); Tchaikovsky Potpourri (Urbach); Waltz, Les Sirenes (Waldteufel); Symphonic Poem, The Moldan (Smirnova); Waltz from Rhapsodie (Glazunov); Violin Solo, Le Cygne (Saint-Saëns); March (Schubert). In the interval at 9.0, Talk. 9.45, Radio Journal. 10.0, Talk in French on Romania.

BUDAPEST

645 kc's, 550.5 metres; 15.5 kW.—Also relayed on 840 metres from 7.10 p.m. to 12 Midnight.—5.0 p.m., Piano-forte Recital by Irene Marik. 5.30, Talk. 6.0, Song Recital by Alexander Turkas. 6.30, Talk. 7.0, Exchange. 7.10, Renter Abend. 8.10, Concert by the Budapest Concert Orchestra, conducted by T. Polgar; Selection from The Carnival Party (Kálmán); Selection from Cinderella (Botycai); Ballet Scene (Grieg); Strauss Potpourri (Mascagni); Hungarian Dance (Molnar); Selection from Der lauhende Ehemann (Eisler); Song from Madame Pompadour (Fall); Hungarian Rhapsody (Liszt). 9.40, News Bulletin. 5.50, Gramophone Music. 10.10, Weather. 10.20, Trio Concert from the Café Simphon. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc's, 281 metres; 0.75 kW., and Kalundborg, 260 kc's, 1,153 metres; 75 kW.—12 Noon, Town Hall Chimes. 12.1 to 2.0 p.m., Concert from the Bellevue Grand-hotel. 3.10, Modern Swedish Piano-forte Music. 3.30, Concert from the Wive Restaurant. 5.0, Programme for Children. 5.35, Exchange and Market Prices. 5.50, Talk (from the Aarhus Studio). 6.20, German Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Talk: Population and Provisions. 8.0, Town Hall Chimes. 8.1, German Folk Melodies, arranged by B. Bahus, sung by Margrit Franke; In stiller Nacht; All mein Gedanken; Die Sonne scheint nicht mehr; Da drüben im Tale; Feinsliebchen, du darfst mir nicht hartnäckig sein; Schwesterlein; Mein Mädel hat ein Rossmund. 8.20, Rose Brand Play in Five Acts (Gerhart Hauptmann). 10.5, News. 10.30, Manufactory Concert: Comedy Overture (Keller-Bla); Spieluhr (Josef Leiss); Paris-souire (Maritot); Russian Fantasia, Siberia (Charles Féry); March (Mascocchi). 10.50 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc's, 225.9 metres. 5.30 to 7.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. M. Nade. 5.30 p.m., Trio Concert for Tongue and Ejecter Listeners; Selection from Cavalleria rusticana (Mascagni); Pearl of mine; Vocal Duets: (a) Only one Girl in the World for me. (b) Star of the Night; Chanson triste (Tchaikovsky); Cavatina (Raff); Naxosus (Nevin); Vocal Duets: (a) The Keys of Heaven (Broadwood). (b) A Paradise for Two (Fate); Friend o' mine (Sanderson); Even-song (Eustache-Martin); Loves, Old Sweet Song (Melloy). 6.15, Concert of Popular Songs for Plymouth and Devonport Listeners: Orchestra: The Mighty Deep (Guy); I'll stay with you (Woods); Let's put out the Lights (Berlin); Try a little Tenderness (Woods); Horses carry tails (Redmond); Orchestra: (a) Die Spieluhr der Pompadour (Noelke). (b) The Song of the Nightingale (Ahlborn); Always in my Heart; How deep is the Ocean (Hupfeld); I'll never be the same; Thomson's old grey Mule (Picard); Orchestra: Pale Volga Moon (Bergovoy). 7.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Bedouins: I want to be happy (Vommes); Today I feel so happy (Abraham); Oh Mona (Washington); Oh a cold and misty Morning (Hargreaves); Music (Abraham); Home (Stedson); London Madame (Abraham); Lullaby of the Leaves (Petkov); It's a Girl (Oppenheim); When Work is through (Sherman); Sweet and Lovely (Armstrong); Heaven for Two (Pepet); Love, here is my heart (Ross); From Saturday Night till Monday Morning (Dublin); Deep in my Lady's Eyes (Cartman). 11.0, Welsh Concert: Welsh Melody car. Somers; Chorus; Hen wlad y cyfarllan; Solo: V Bore Glas; song: Land of my Fathers; Solo: All through the Night; Cymric Pass; chorus: Buthen Tyrysog Cymru; Accordion Duet: Medley of Welsh Airs. 11.30, Light Concert: Sleepy Valley (Hanky); Memories of Paris (Christie); Glockenspiel Solo: The Black Forest (Young Clock (Doppelert); Urban Serenade (Herbert); Oriental Serenade (Herbert); Last Night I dreamed of you (Kálmán); Piccolo Solo: Deep Blue Sea (Brewer); Gipsy Moon (Bergovoy); Barcarolle (Waldteufel). 12 Midnight, Club Concert for Harwich Listeners: Hands across the Sea; Song: The Rebels

MAY 30th

TUESDAY

continued

are out (Tunbridge); Trio: To-day's a Sunny Day; Song: March of the Musketeers (Friml); Commander of the Legion; Choral Selection from Miss Hook of Holland; Song: A Beggar can sing the Song of a King (Guest); Xylophone Solo: Spanish Dance (Moszkovsky); Song: River stay away from my Door (Dixon Woods); Thunder and Blazes; Choral Selection from Cavalcade (Howard); Songs: (a) The Hiker's Song (Longstaffe); (b) The Old Inns of England (La Touche); On the Mall, 1.0 a.m. (Wednesday), Concert by a Hawaiian Band; Palikiko Blues (Traditional); Kilima (Traditional); Somelow (Hackforth); Steel Guitar Solo: Hear Old Pal of Mine (Robe); Song of the Islands (King); Land of the night have been (Adeler); Hawaiian Hotel (Traditional); Sleep Head (Hackforth), 1.30, Concert of Popular Songs: Only for you (Wienberg); Mammy is gone (Henderson); My Song of the Nile (Mayer); Orchestra: Miracle Melodias: A Banjo Song (Homer); Just keep on on (Carter); Wild de Moon, Moon, Moon (O'Neil); 2.0, Dance Music by the Doolmans; Oh you Sweet Thing; What have you to lose; Leave a little for me (Abraham); Hyde Park Corner; Sloppy Joe; Moon Song; Hot Feet; Twenty Million People; Mad Moments; What did I get in return; Hot and anxious; Hold up your hands; If I ever get a job again; The Girl in the little green hat, 2.57, I.B.C. Goodnight Melody, 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; and Cassel, 245.9 metres; and Trier, 259.3 metres.—4.30 p.m., See Langenberg. 5.50, Economic Notes, 6.0, Talk: The Work of a Prison Chaplain, 6.30, Variety Programme, 6.45, Notes of the Day, 6.50, Time and News, 7.0, Transmission for all German Stations relayed from Langenberg. 8.0 to 10.10, See Stuttgart. 10.10, Time and News, 10.45, Programme from Stuttgart, 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., (from Hanover), May Songs from the Hanover District, 6.45, Frankfurt Exchange and Hamburg Market Prices, 6.50, Weather Report, 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Herbert Ernst Groh Farewell Concert, The Station Orchestra and Choir, conducted by Adolf Secker, Herbert Ernst Groh (Tenor) and Erna Kroll-Lange (Soprano), Overture, William Tell (Rossini); Tenor Songs: (a) Irena's Aria from Scaramis (Rossini-Secker), (b) Max's Aria, Durch die Felder, durch die Auen, from Der Freischütz (Weber); Tambourin (Rameau-Mottl); Tenor Songs: (a) Nacht und Träume (Schubert), (b) Ständchen (Schubert); Overture, The Barber of Bagdad (Cornelius); Tenor Solos: (a) Flower Song from Carmen (Bizet), (b) Radames' Aria from Aida (Verdi); Festival March from Aida (Verdi); Tenor Solos: (a) Canio's song from I Pagliacci (Leoncavallo), (b) Wadler's Prize Song from The Mastersingers (Wagner); Overture, Banditenstrolche (Suppe); Soprano and Tenor Duet with Chorus from The Bird-Fancier (Zeller), (b) Duet from Act I of Gasparone (Müllacker); Dream Waltz from Der Feldprediger (Müllacker); Tenor Solos: (a) Song from Act III of The Count of Luxembourg (Lehár), (b) Song from Act I of The Czarevitch (Lehár); March from The Gipsy Baron (John Strauss); Duet from Act II of The Czarevitch (Lehár), (b) Duet from Act II of Paganini (Lehár); Waltz from The Ge-sha (Jones); Tenor Song, You are my Heart's Delight, from The Land of Smiles (Lehár), 10.0, News, 10.20, Time Signal, 10.30 (from Hanover), Concert by the Symphony Orchestra of Unemployed Musicians, conducted by Otto von Sosen.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres. 1.5 p.m., Gramophone Concert of Popular Music. In the interval at 1.20, News, 2.30, Programme arranged by the Post Office, with Gramophone Music, 3.0, Exchange and Market Prices, 3.30, Programme for Children, 4.0, Concert by the Königsberg Opera House Orchestra, conducted by Werner Franz; Overture, Die Marketenderin (Humperdinck);

Suite from Sigurd Jorsalfar (Grieg); Polonaise from His Life for the Czar (Glinka); Prelude to the Second Act of Der Kühnreiter (Kienzi); Slav March (Tchaikovsky); Ballet Overture, Sirene (Humperdinck); Selection from The Gipsy Princess (Kálmán); Waltz, Espana (Waldteufel); Overture, The Land of Smiles (Lehár). In the interval at 5.0, Review of Books, 5.45, Talk: Modern Systems of Defence, 6.15, Market Prices, 6.25, Dialogue for Architects, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, News, 8.10, The Sea—Programme of Literature and Music (arr. Gort Randolf-Schummann), 9.0, Programme from Vienna. News after the Programme.

HILVERSUM

1,013 kc/s; 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40 a.m., Concert by the Wireless Orchestra, conducted by Nico Gerharz; March from The Queen of Sheba (Gounod); Overture, La Fête du Village voisin (Boieldieu); Selection from La Pêchiche (Offenbach); Two Pieces for String Orchestra (Gillet): (a) Loin du bal, (b) Entr'acte gavotte; Selection from The Black Domino (Auber); Interlude on two Concertinas; Ballet music (Lungini); Two Pieces (Ganne); (a) Réverie, (b) Patronnie enfantine; Selection from La dame blanche (Boieldieu); Waltz, Morgenblüthe (Strauss); Pizzicato (Morena); Fünf Uhr Tee im Puppenhaus (Rosen); Straßlichter (Morena), 1.55 to 2.10, Interval, 2.10, Pianoforte Recital by Greet Wortman; Waltz in C Flat (Chopin); Fantaisie-Impromptu (Chopin); Nolette (Schumann); Aufschwung (Schumann); Two Arabesques (Debussy); Cordoba (Albeniz), 2.40, Fashion Talk, 3.40, Gramophone Music, 4.10, Recital by a Children's Choir, 4.40, Programme for Children, 5.10, Organ Recital by Pierre Palla, relayed from the Kurhaus, Scheveningen. Soloists: Piet Vanderbilt (Songs) and Boris Lensky (Violin); Organ Solos: (a) Rigodon from Ernesteine (Philidor), (b) Minuet from Orpheus (Gluck), (c) Le camp de grand pré (Gossec); Songs: (a) Song de Be-sly, (b) Torna amore (Buzzi-Peccia), (c) Slumber Song (Gretchenhof); Violin and Organ Duets: (a) Andante from the Concerto for Violin (Mendelssohn), (b) Mazurka (Mlynarski); Organ Solo, Dancing Doll (Poldini); songs, with Violin and Organ accompaniment: (a) Caro mio ben (Papini), (b) An Old Violin (Fish), (c) Gipsy Melodies (Borjanov); Organ Solo, Oriental Suite (Popy), 6.10, Talk, 6.40, Organ Recital (contd.); Organ Solo, March from The Queen of Sheba (Gounod); Violin and Organ Solos: (a) Cradle Song (Brahms), (b) Valse blinette (Drigo-Auer), (c) Hymn to the Sun; Organ Solo, Second Hungarian Rhapsody (Liszt), 7.10, Talk on Holidays, 7.40, Time and News, 7.45, Concert by the Wireless Orchestra, conducted by Nico Gerharz. Soloist: Evert Meelma (Tenor); Overture, Il Seraglio (Mozart); Aria from Il Seraglio (Mozart); Eros-saises (Beethoven); Aria from Der Freischütz (Weber); Dance of the Hours from La Gioconda (Ponchielli); Two Arias from Tosca (Puccini); Humoresque (Dvorak); Songs: (a) Maenshila (Dermot), (b) Lolita (Buzzi-Peccia), 8.40, The Fifth Avenue Murder Case—Detective Play (Komer Kleinj), 8.55, Popular Music by Kovacs Lajos and his Dance Orchestra. In the interval from 9.10 to 9.30, Songs, 10.40, News, 10.50, Gramophone Concert, 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. (ill Close Down), Programme of the Catholic Radio Society (K.R.O.), 11.55, Concert by the K.R.O. Sextet, 1.25 to 1.40, Interval, 1.40, Programme for Women, 2.40, Vocal and Instrumental Concert, Mlle. Ogier (Violin), Mme. Brautigan-Ides (Soprano), and Mue. Luns (Pianoforte). Hymn (Diepenbroek); Nocturne (Boulanger); Three Pieces (Haydn); Pianoforte Sonata in D (Haydn); Hendertje (v. Rennes); Zick gewest (v. Rennes); Two Pieces (Nicolaï); Gramophone Music: Sonata for Violin and Pianoforte (Pierne); Three Songs: Tambourin (Rameau); Solvay's Song (Grieg); Mit einer Primula Veris (Grieg); Rheinlegenden (Mahler); Wo die schön'n Trompeten blasen (Mahler), 4.40, Gramophone Music, 5.10, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer, Soloist: J. Mossel (Songs), 5.40, Recitations, 5.55, Concert by the K.R.O. Boys (contd.), 6.40, Police Notes, 6.55, Religious Address, 7.15, Gramophone Music, 7.25, Talk, 7.40, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. Soloists: M. Boshart (Pianoforte), M. Hartvelt (Violin), and M. Brill (Cello), Overture, The Ruins of Athens (Beethoven); Triple Concerto, Op. 56 (Beethoven); Extras from the Haller's Serenade (Mozart), 8.25, News, 8.30, The Virgin Mary and the Poor Street Sweeper—Radio Play (van de Eynde), 9.10, Concert (contd.): Festival Overture (Leutner); Ballet Music from Sylvia (Delibes); Melody (Arezzo), 9.40, Sports Talk, 9.50, Concert (contd.): Overture, Berlin, wie es

weint und lecht (Conradi); Selection from Der Bettelstudent (Müllacker), 10.10, News, 10.15, Concert (contd.): Overture, Im Reiche des Indra (Limecke); Waltz, Manöverklänge (Fetras); Clair de lune (Ketelbey); Gavotte (Eitelberg); March, Frisch voran (Blankenburg), 10.40, Gramophone Music, 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin, 8.10, Agricultural Talk, 8.20, Radio Notes, 8.35, Radio Concert, 9.0, Weather and News, 9.15, Gramophone Concert, 12 Midnight to 1.0 a.m. (Wednesday), Programme in English by the I.B.C. H. K. Hitchcock announcing, 12 Midnight, Vocal and Orchestral Concert: The Vicar of Bray (arr. Tall); The Crocodile (Maitland); The Lincolnshire Poacher (Barrett); Orchestra, Selection of Jerome Kern's Songs; The Leader of the Town Brass Band (Longstaffe); Bonnie wee thing (Fox); One of the Guard (Longstaffe); Orchestra, George Gershwin Medley, 12.30 a.m., Dance Music; What a perfect combination; A Letter to my Mother; Look what you've done; Standing in the Corner; I'm playing with Fire; Do you recall; I may never pass your way again; A Boy and a Girl were dancing, 12.57, I.B.C. Goodnight Melody, 1.0 a.m. (Wednesday), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres, 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Talk, 6.40, Song Recital by Alma Kuula, 7.5, Recitations by Sakari Piilsi, 7.30, Concert by the Station Orchestra, 8.45, News in Finnish, 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf. Soloist: W. Winterberg (Baritone), Overture, Sein Lied (Stierlin); Second Suite from L'Arlesienne (Bizet). Baritone Solos, Dance of the Nations (Mantred); Three Pieces (Schmalstieg); Waltz, Abendsterne (Lanner). In the interval at 2.0, News, 2.30, Sponsored Programme, with Gramophone Music, 3.0, Programme for Children, 3.30, Talk: Exchange and Time, 3.55, Talk: Legends and Stories of the Rhineland and Westphalia—The Cross in Westphalia, 4.20, Talk, 4.30, Concert, conducted by Eysoldt; Overture, Die Fabler (Langert); Two Pieces (Reger); (a) Liebeswalzer, (b) Gavotte; Bolero from Don Quixote (Kienzi); Trümmerei (Schütt); Hungarian Rhapsody No. 6 (Liszt); Der blaue Vogel (Spies); Waltz, Marienklänge (Strauss), 5.50, Talk: Inherited Talent, 6.20, Italian Lesson, 6.45, Weather, Time, Exchange, and Sports Notes, 7.0, Transmission for all German Stations; Abu Hassan—Comic Opera in One Act (Weber), 8.0, News, 8.5, Concert by the Station Orchestra, conducted by Kühn; Overture, Genova (Schumann); Three Pieces from the Music to Sigurd Jorsalfar (Grieg); Waltz, Die Romanfiker (Lanner); Selection from The Miracle (Humperdinck); Reiter-Marsch (Schubert), 9.0, Der Doktor Eisenbarth—Radio Picture in Four Scenes (Josef Winkler), 10.15, News and Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Popular Instruments on Gramophone Records, followed by News, 2.10, H. W. Stein-Saaleck reads from his own works, 3.35, Exchange and Market Prices, 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber, Soloist: Richard Sturzenegger (Cello), Scherzo romantico (Gillmann); 'Cello Concerto (Sturzenegger); Shakespeare Suite No. 1 (Humperdinck); Comedy Overture (Grosch); Norwegian Dances Nos. 1 and 2, Op. 35 (Grieg); Polonaise in E Flat, No. 2 (Liszt). In an interval, Talk: Italy's North-African Colonies, 5.50, Exchange, Weather, and Time, 6.0, Talk: Recent Publications of the German Sängerbund, 6.20, Talk for Parents; German Fairy Tales as an Educational Influence, 6.45, Programme Announcements, 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Radio Report: The Life and Work of the German Police Force, 9.0, See Vienna. News in the interval at 10.0, 10.30, News Bulletin, 10.45 (approx.), Gramophone Concert: Overture, Donna Diana (Reznicek); Aria from Der Wildschütz (Loetting); Selection from Tiedland (d'Albert); Two Brahms Songs (Brahms): (a) Die Mainacht, (b) Vergeliches Ständchen; Two Marches, Op. 57 (Richard Strauss); Swedish Dance Melodies, Op. 36 (Jonon); Saltarella, Op. 105 (Sitt); Annenpolka (Job. Strauss); Suite, The Flute of Sans-Souci (Graun); Two Songs for Maje

Voice Choir (Schubert): (a) Liebe, (b) Die Entenruten; March, Frühlings Einzug (Blou), 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW., 11.30 p.m., Concert of Popular Music. In the interval at 11.45, Radio Chronicle, 12.35 a.m. (Wednesday), Talk, 12.45, Light Music, 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EA47, 707 kc/s, 424.3 metres; 2 kW., 8.0 p.m., Chimes, Exchange, Radio Journal, and Request Gramophone Records. In the interval, Talk, 8.30, Talk by Joaquin Espana Cantos, 8.40, Scientific Talk, 9.0, Talk on the Municipal Bank, 9.15, News and Political Review, 9.30 to 10.0, Interval, 10.0, Linguaphone English Lesson, 10.30, Chimes, Time Signal, and Political Review, 10.45 (approx.), Guitar Recital by Trinidad Garcia Agnado, 11.30, Relay from the Theatre, 12.45 a.m. (Wednesday), News, 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—4.30 p.m., Concert by the Station Orchestra, conducted by J. Plichta, 5.10, See Prague, 5.50, Gramophone Music, 6.0, Talk: Russian Literature, 6.15, See Brno, 7.0, See Prague, 7.25, Light Music by the Station Orchestra, 8.20, See Prague, 11.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—10.0 a.m., Carmen—Opera (Bizet), relayed from the Grand Theatre, 2.15 p.m., Review of Literature and Art, 2.45, Weather, 3.0, At Grips with Life—Play (Knut Gamsun), relayed from the Moscow Art Theatre, 3.30, Red Army Programme, 4.0, Talk on Agricultural Machinery, 4.30, Soviet Literature—Part I: Reading from the Works of Lavrenev, Part II: Literature of the Past. In the interval, Light Music, 6.30, Tchaikovsky, Delibes, and Liszt—Concert, relayed from the Radio Theatre, 9.0, News, 9.30, Programme Announcements, 9.55, Time Signal, 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres. 4.30 p.m., Concert, conducted by Erich Kloss, Comedy Overture (Köler-Béla); Berceuse and Caprice (Dvorak); Polonaise (Huber-Anderech); Selection from Die toten Augen (d'Albert); Waltz, Geheime Anziehungskräfte (Jos. Strauss); Sextet from Lucia di Lammermoor (Donizetti); Potpourri, Eislumen (Leuschner); Maikäfer-Marsch (Becker), 5.45, Talk: The Struggle for Oil in Asia Minor, 6.5, German Aviation—A Discussion with Bruno Loerzer, Gerd v. Hoepfner, and Major Baur de Betz, 6.25, Popular German Songs on Gramophone Records, 6.45, Time, Weather, and Agricultural Report, 7.0, Transmission for all German Stations, relayed from Langenberg. 8.0, Harpsichord Recital by Li Stadelmann; Chromatic Fantasia and Fugue (Bach); Sonata (Searlatti); Variations on Fortuna (Scheidt), 8.25, Provincial Programme, relayed from Coburg, 9.30, Talk: Art under the National Socialist Government, 10.0, Zither Concert, 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Concert of Light Music, relayed from the Grand Café, 6.0, Programme for Women, 6.45, Popular Music on Gramophone Records, 7.0, News Bulletin, 7.30, English Lesson, 8.0, Time Signal, 8.30, Concert by the Station Orchestra, conducted by Hugo Kramm, 9.38, Agricultural Report, 9.40, Weather and News, 10.0, Topical Talk, 10.15, Paul Gjerdahl reads from his own works, 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio, 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements, 8.45, Concert of Opera Music, conducted by F. Russo. In the interval, Talk: The Doctor, 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 297.5 kc/s, 1,455.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals), 6.45 p.m., Theatre Talk, 7.0, Le Journal F.R.,

Orchestral Concert of Eastern Music, conducted by M. Plament; Soloist, M. Maki (Japanese Songs). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc s, 328.2 metres; 60 kW. 6.45 p.m., Le Journal Parle. 7.0, Sponsored Concert. 8.0, Talk on the Cinema. 8.5, Legal Talk. 8.15, Interval. 8.30, Symphony Concert, conducted by M. Théodores-Mathieu. Soloists: Mlle. Marcelle Herrmann-Schmitt (Pianoforte) and Jean Hazart (Soprano). Overture and Airs from Figaro (Mozart); Concerto in F, No. 49 for Piano-forte and Orchestra (Mozart); Suite, A quoi rêvent les jeunes filles (Fragoli); Songs (Fragoli); (a) L'âme d'âne, (b) Avec ton parapluie blanc, (c) Nessus, La métamorphose d'Ève (Inghelbrecht); Melodies (Inghelbrecht); Chimes Noirs (Philippe); Feux follets (Philippe); First Suite from The Pearl Fishers (Bizet). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW. 6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Concert by the Kretzky Orchestra. Part I, Classical and Romantic Music. Concert in G (Bach, arr. Dillard); Andante and Minuet from the Symphony, La Reine (Haydn); Turkish March from The Ruins of Athens (Beethoven); Overture, Die Heimkehr aus der Fremde (Mendelssohn); Waltz in A Minor (Chopin); Mazurka in D (Chopin); Ballet Music from Rosamund (Schubert); Pieces from the Quartet (Beethoven). Part II, Opéra-Comique Music. Overture, Masaniello (Auber); Selection from Le postillon de Longjumeau (Adam); Overture, The Secret Marriage (Massenet); Selection from Thérèse (Massenet); Invocation à la nuit from Julien (Charpentier); Selection from Madame Butterfly (Puccini). Part III, Music from Abroad. A Brown Bird Singing (Haydn-Wood); Elegy (Sibelius); A Bitter Courtship (Eric Coates). 6.10 p.m., Agricultural Talk. 6.30, Market Prices. 6.35 (approx.) English Lesson. 6.50, Theatrical Review. 7.5, Talk on Art. 7.20, Music by the Kretzky Orchestra, En Tapissois (Philippe); Valse des blondes (Ganne); Stanza (Razigade); Carosse Musicale (Sudnessi); Chanson de Marinette (Tagliabue); Budapest (Leon); Sérénade nippoise (Valpatti). 7.45, News. 8.0, Programme by Paul Wall. 8.30, News, Sports Notes and Weather. 8.45, Symphony Concert, conducted by M. Eugène Bigot. Prelude, Don Quixote (Toumanovitch); Concerto No. 5 (Beethoven); Songs; (a) Aria from Il Seraglio (Mozart); (b) Aria from Figaro (Mozart); (c) Aria from The Flying Dutchman (Wagner); Symphony (Gossec Frères). In the interval at 8.40, Review by Pierre Seize and at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Programme to be announced. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, Congress of Clubs Period. 8.58, Baseball Scores. 9.0, Meredith Wilson's Orchestra, from New York. 9.15, Programme to be announced. 9.45, Programme to be announced. 10.0, Baseball Scores. 10.5 to 10.45, New York Relay. 10.5, Harold Stokes' Orchestra. 10.15, Dick Darling. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Village Band Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Riggs and Moke. 11.45 to 2.59 a.m. (Wednesday), New York Relay. 11.45, Today's News, by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m. (Wednesday), National Advisory Council on Radio in Education. 12.45, Irene Borden and Emil Coleman. 1.0, Crime Chimes. 1.30, Adventure in Health. 1.45, From the Composer to You, with Herman Hupfeld. 2.0, Deep River Orchestra. 2.30, Time Detective. 2.45, Pickett Sisters. 2.59, Time Signal. 3.0, Home-hold Musical Memories, from New York.

PORSGRUND.—See Oslo.

PRAGUE

614 kc s, 488.6 metres; 120 kW.—4.0 p.m., Report from the Vysehrad Cemetery on the Interment of the Remains of Josef Slavik the Famous Violinist, transferred from Budapest to Czechoslovakia after a Century. 4.30, See Moravská-Ostrava. 5.10, Talk on Industry. 5.20, Czech Lesson for Germans and German Lesson for Czechs. 5.50, Gramophone Records. 6.5, Agricultural Market Prices. 6.15, Typical Talk for Workers. 6.25, News in German. 6.30, German Tri-mission: Humorous Recitations and Reading from Turgenev's Works. 7.0, Chimes and News. 7.10, Medical Talk. 7.25, See Moravská-Ostrava. 8.20, Introductory Talk to the Following Transmission. 8.30, Josef Slavik Concert for the Centenary of his Death, relayed from the Smetana Hall; The Conservatoire Orchestra, conducted by Pavel Dědeček; Movement from the Violin Concerto in B Minor; Caprice for Violin; Violin Solo: Variations on the G String; Grand Fantasia for Violin and Pianoforte; Rondo (Paganini, arr. Slavik); Violin Con-

certo in A Minor. In the interval at 9.0, Time Signal. 10.0, Time, News, and Sports Notes. 10.5, Orchestral Concert of Contemporary Music, conducted by Jeremias; Soloist: Karl Reimer (Pianoforte); Symphony No. 1 (Vuckovic); Pianoforte Concerto (Reimer). 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

RADIO-SUISSE ROMANDE

SOTTENS, 742 kc/s, 403 metres; 25 kW. and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Geneva), Talk for Stamp Collectors. 7.30 (from Geneva), News Bulletin. 7.45 (from Geneva), Answers to Correspondence. 8.0 (from Geneva), Reading from the Diary of Anna-Magdalena Bach. 8.20 (from Geneva), Cantata No. 106 (Bach), by the Bach Society Choir and the Radio Suisse-Romande Orchestra, conducted by Francis Golay; Soloists, Gabrielle Badet (Soprano), Nelly Gretillat (Contralto), Ernest Bajer (Tenor), and Joseph Lombard (Bass). 8.55 (from Geneva), Variety Programme by the Broadcasting Secretaries, conducted by J. Pasche. 9.50, News Bulletin. 10.0 (from Geneva), Concert. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

ROME

Call IRO, 660 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Concert from Turin. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.15, Orchestral Concert: Com'è bella la vita (Bivio); Melody from a Sound Film (Carabella); Sognando (e Giardini); La canzone sei te (Tagliabue); Selection from Manon (Massenet); Melody (Mohr); Spanish Caprice (Malvezzi); One Step, Radio (Piorillo). 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Dopelavoro Notes. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.2, Talk: The Heavens in June. 8.15, Songs by Elena Cheli (Soprano). 8.30, Sports Notes. 8.45, Barco in Toscana—Operetta in Three Acts (Ronato Brogi). In the intervals: Talk on Art, and Reading of Poems by Giovanna Scotti. After the Operetta: Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.43 metres and by W2XAD on 19.56 metres. 11.45 p.m., Musical Programme. 12 Midnight to 2.30 a.m. (Wednesday), New York Relay. 12.0, Blackstone Plantation. 12.30, Wayne King's Orchestra. 1.0, Ben Bernie's Blue Ribbon Orchestra. 1.30, Ed Wayne and the Five Chief Band. 2.0, "Eyes at Stake." 2.30, National Radio Forum from New York, followed by Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres, 10 kW.; Basle, 1,229 kc/s, 241.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Schenectady Observatory, and Weather. 12 Noon (from Zurich), Light Orchestral Concert. 12.30 p.m., News. 12.40 (from Zurich), Orchestral Concert (contd.). 1.25 (from Zurich), Exchange, Time and Weather. 1.30 (approx.) to 5.0, Interval. 5.0 (from Zurich), Concert by the Small Station Orchestra. 5.53 (from Basle), Dance Music on Gramophone Records. 6.0 (from Berne), Programme to be announced. 7.0 (from Berne), Time, Weather, and Broadcast for Schools. 7.10 (from Berne), Programme to be announced. 8.0, Talk: A Journey in the Alps. 8.50, Concert by the Station Orchestra. 9.0, News. 9.10 (from Berne), Programme for the Swiss at Home and Abroad. 10.50 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,223.5 metres; Goteborg, 932 kc/s, 322 metres; Morby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Ostersedund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Programme for Children relayed from Norrköping. 1.292 kc/s, 232.2 metres. 5.45 (from Goteborg), Programme of Light Music. 6.45, French Lesson relayed from Malmo. 1,301 kc/s, 231 metres. 7.15, Weather and News. 7.30, Talk. 8.0, Orchestral Concert; Soloist, A. Bernström (Bassoon); Overture, Raymond (Thomas); Gipsy Suite (Coleridge-Taylor); Nocturne (Sedström); Homage (Sedström); Scherzo and Ballad for Bassoon and String Orchestra (Wiessenhorn); Waltz, Wine, Woman and Sun (Joh. Strauss); Sätterjäntens Söntag (Ole Bull); Offenbach Melodies (Offenbach-Senger); March, Pomp and Circumstance (Elgar). 9.15, Talk relayed from Malmo. 1,301 kc/s,

231 metres. 9.45, Weather and News. 10.0, Concert of Gramophone Music. 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Light Music on Gramophone Records. 12 Noon, Orchestral Concert, conducted by M. de Villers. Music by Saint-Saëns; Heroic March; Overture to a Comic Opera; Selection from Proserpine; A Night at Lisbon; Algerian Suite. 12.45 p.m., News. 1.0, Time Signal. 1.1, Exchange Quotations. 1.5, Concert (contd.).—Russian Music. Overture, Russian and Ludmilla (Glinka); Caucasian Suite No. 2 (Ippolitov-Ivanov); Prelude, Waltz and Serenade (Rachmaninoff); Russian Rhapsody (Gretchanov); Intermezzo (Tcherepennin); Polovtsian March (Borodin). 2.0 to 4.0, Interval. 4.0, Quintet Concert, relayed from Radio Colonial (Paris), 15,243 kc/s, 19.68 metres. 4.45, Talk: Martinique. 5.0, Orchestral Concert of Light Music, conducted by M. Roskam. 6.0, Talk: La Fronde. 6.15, Legal Talk: Present Problems. 6.30, Chamber Music by the Soloists of the Station Orchestra. Quartet No. 2 (Beethoven); Pianoforte Quintet (Schumann). 7.30, Time Signal and News. 7.45, Light Music on Gramophone Records. 8.15, Press Review in German, Lottery Results and News. 8.30, See Paris (Eiffel Tower). After the Relay, Press Review in French.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 70 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.0, Gramophone Music. 1.15, Time and News. 1.30, Gramophone Records of Famous Tenors. 2.0, Programme arranged by the Post Office, with Gramophone Records. 2.30, Advanced English Lesson. 3.0, Talk on Flowers. 3.30, Talk for Women. 4.0, Hugo Wolf Song Recital by Käthe Ivers (Soprano); In der Frühe; Neue Liebe; Schlatendes Jesuskind; Frühling über Jahr; Die Spröde; Die Zigeunerin. 4.30, see Langenberg. 5.45, Time and News. 6.0, Talk: A Carpet of Flowers and Ice and Snow. 6.25, Talk on the Author, Gorch Fock. 6.50, Time and News. 7.0, Transmission for all German Stations relayed from Langenberg. 8.0, Concert of Folk Music by the Freiburg Mandolin and Guitar Society, relayed from Freiburg; Spanish March (Mena); Dance Suite (Hense); Tarantella (Mil-Rieker-Köhler); Caprice (Sartori); Potpourri, Die Justizen Wambvögel (Köhler); Bundesgruss und Festmarsch (Köhler). 8.30, For Whitsun, 1933: Swabia and Germany Gern, August Linnde and Martin Langt, with Address by Prof. Megeathaler. 9.30, Concert by the Württemberg Symphony Orchestra, conducted by Gustav Gorch; Soloist, Bruno Müller (Baritone); Overture, Le roi d'Yvetot (Adam); Aria from La Favorita (Donizetti); Ballet Music from William Tell (Rossini); Aria from La Favorita (Donizetti). 10.10, Time and News. 10.30, Talk on the Theatre. 10.45, Dance Music. 11.0, Dance Music. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—6.0 p.m., News. 6.15, Accordion Music. 6.30, Symphonic Poems, Till Eulenspiegel's Merry Pranks (R. Strauss). 6.45, Sound Film Music. 7.0, Opera Music: Prelude to Act III of Parsifal (Wagner); Selection from The Huguenots (Meyerbeer). 7.15, Racing Results, Market Prices and News. 7.25, Local News Bulletin. 7.30, Airs from Opéra-Comique: (a) Cavalleria rusticana (Mascagni); (b) La Traviata (Verdi); and (c) Marouf (Rabaud). 7.45, Music by a Vienna Orchestra. 8.15, Popular Melodies. 8.30, Music by an Argentine Orchestra. 8.45, Arias from Opera: (a) The Bartered Bride (Smetana); (b) The Magic Flute (Mozart); (c) Siegfried (Wagner). 9.0, Concert by the Toulouse Symphony Orchestra, conducted by M. Tartane. In the interval: Popular Melodies. 10.15, North African News. 10.30, Concert for Listeners in Morocco; Selection from Lisztens in Thomas; March from Tannhäuser (Wagner); Danse des Phéniciens (Magnet); En parlant en peu de Paris (Moret); Histoire from Carmen (Bizet); Overture, Si j'étais Roi (Adam). 11.15, Chansonnettes. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Light Music: Selection from On with the Show; My Heart is where the Mohawk flows; When it's Springtime in the Rockies; Gold Diggers of Broadway; Sophie Tucker's Songs; Little Old Church in the Valley; Apple Blossom Time; Selection, Say it with Songs. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News, Weather and Announcements. 12.5 a.m. (Wednesday), Military Music. 12.15, Orchestral Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.15 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35 to 7.45, Interval. 7.45, Talk: The Cathedral

of San Giusto. 8.0 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 559 kc/s, 312.8 metres; and Florence, 500 kc/s, 500.8 metres. 5.15 to 6.0 p.m., Dance Music from the Select Savoia Dance Hall. 6.35, Giornale Radio, Agricultural Report and Dopelavoro Announcements. 7.0, Time and Report of the Royal Geographical Society. 7.10, Songs on Gramophone Records. Quando due cuori nell'amor (Caddini-Mancini); Mal d'amore (Buzzi-Pecchia); Melody (Gilbert-Heymann); Musica proibita (Gas-faloni). 7.20, Giornale Radio. 7.45, Gramophone Music. 8.0, Announcements. Giornale Radio and Weather. 8.10, Gramophone Music. 8.45, Girolli-Girolia Operetta in Three Acts (Lecocq). In the intervals, Scientific Talk and Announcements. After the Operetta, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.25 metres (Evening); 0 kW. 11.0 to 11.15 a.m., Religious Information in English. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

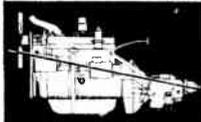
581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,658 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.5 p.m., Song and Pianoforte Recital by Nelli Cabussi (Soprano) and Rita Liblisch (Songs); (a) Wanderers' Nachtlied, (b) Neunterne, (c) An einen Herbstwald; Songs, Nachtgesang (R. Strauss); Songs (Wolf); (a) Denk' es, o Siedl, (b) Ich wähl, Pianoforte Solo; (c) Preludes, Op. 23, No. 5, in G Minor, No. 6 in E Flat, and No. 7 in C Minor (Rachmaninoff); (d) Perpetuum mobile (Weber). 6.5, Reading. 6.15, Agricultural Talk. 6.35, French Lesson. 7.0, Concert of Folk Music by the Silvester-schneider Orchestra. In an interval at 7.30, Time and Weather. 8.15, Talk: The Story of a Heroic Regiment, for the Two Hundredth Anniversary of the Linz House Regiment. 8.35, Reading. 9.0, Vienna Festival Week. Serenade by the Vienna Philharmonic Orchestra and State Opera Choir, relayed from the Josefplatz. Conductor: Robert Heger. Symphony No. 3 in D (Schubert); Songs, Op. 17, Nos. 1 to 3 (Brahms), for Women's Choir, with Two Horns and Harp Accompaniment; (a) Es taut ein voller Harrenklang, (b) Come away Death, (c) Der Gärtner; Wellington's Victory, or the Battle of Vittoria, Op. 91 (Beethoven); German Folk Songs for Four-Part Choir (Brahms); (a) Mit Lust tät ich ausreiten, (b) In stiller Nacht, (c) Die Wollust in den Mägen; Waltz with Male Voice Choir, Wine, Woman and Song, Op. 383 (Joh. Strauss); Katzen-Musik, Scherz-polka (Joh. Strauss); Turkish March (Mozart). In an interval at 10.0 (approx.), News, Weather and Announcements. 10.30, Variety Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—12.15 p.m., Gramophone Music. 1.20, Weather. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Aviation Report and Anti-Gas Drill. 3.30, Announcements. 3.35, Book Review. 3.50, Gramophone Music. 4.25, Talk for Teachers. 4.40, Talk, relayed from Lwow, 788 kc/s, 381 metres. 5.1, Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by Grégoire Filiberg; Soloist: A. Kapuscinski (Pianoforte); Symphony in G minor (Mozart); Pianoforte Concerto in C minor (Mozart); Lesora Overture No. 3 (Beethoven). 5.55, Programme Announcements. 6.0, Concert of Light Music. In the interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural Notes. 7.30, Programme from Cracow, 950 kc/s, 312.8 metres. 7.45, Radio Journal. 8.0, Concert by the Station Orchestra, conducted by J. Ozimski; Soloist: R. Wraga (Bass). Selection from La Traviata (Verdi); Dance from Fanoms (Rubinstein); Spanish Rhapsody (Lalorier); Aria from Il Seraglio (Mozart); Aria from Figaro (Mozart); Aria from Don Giovanni (Mozart); Ballet Suite from The Swan Lake (Petukovskiy); Two Pieces (Sinding); (a) Canto patetico, (b) Andante religioso; Le Printemps (Debussy); Rapsodie chèque (Gabriel Marie); Three Polish Songs; Symphonic Poem from the Suite, My Country (Smetana); Barcarolle (Rossini); Berceuse (Taubert-Maifred); Ukrainian Dance (Nevskovskiy); Marche Militaire (Saint-Saëns). In the interval, Sports Notes and Radio Journal. 10.0, Reading. 10.15, Song and Pianoforte Recital by Lidia Blumentals and L. Barkath; Impromptu in B flat in the Form of Variations (Schubert); Aria from Madame Butterfly (Puccini); Aria from La Bohème (Puccini); Three Pieces (Withold); (a) Etude, (b) Berceuse, (c) Fantasia on Latvian Songs; Three Songs. 10.55, Weather for Aviation and Police Notes. 11.0, Dance Music.

ZURICH.—See Schweizerischer Landesender.

The Wonderful Reception of the NEW CITROËN



FLOATING POWER



ENTIRELY NEW TYPE FRAME



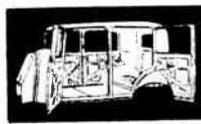
SYNCHRONISED GEAR BOX



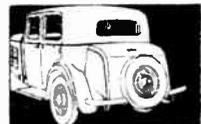
FREE WHEEL (On "Twelve" & "Twenty")



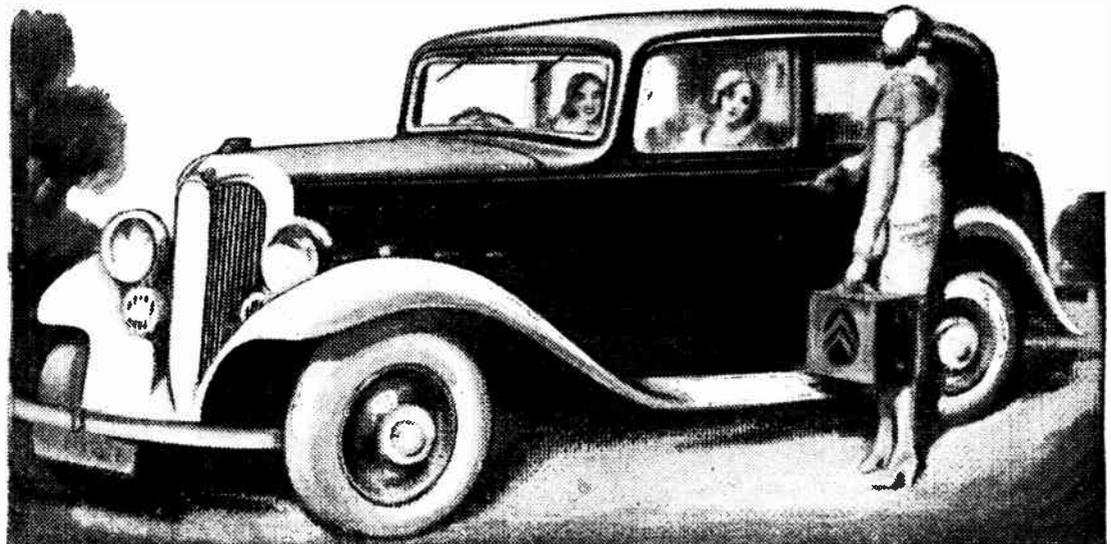
HYDRAULIC SHOCK ABSORBERS AND DUO-SERVO BRAKES



MONOPIECE SAFETY BODY



LUGGAGE TRUNK
BUMPERS
SLIDING ROOF
LEATHER UPHOLSTERY



... has been due to the most successful & advanced design ever introduced—
including

• FLOATING POWER

The greatest advance ever made! All vibration eliminated, giving a wonderful sensation of smoothness and flexibility.

- ENTIRELY NEW TYPE FRAME
- SYNCHRONISED GEAR BOX
- FREE WHEEL
- MONOPIECE SAFETY BODY — Beautiful modern lines; strong and soundproof.
- SUPER COMFORT TYRES
- HYDRAULIC SHOCK ABSORBERS — Automatically and thermostatically controlled.
- DUO SERVO BRAKES ● BUMPERS
- SLIDING ROOF ● LUGGAGE TRUNK
- ADJUSTABLE BONNET SHUTTERS
- LEATHER UPHOLSTERY

Except for its streamlined body the Citroën "Ten" which has put up the wonderful record of 92,896 miles in 65 days ... an average speed of over 58 m.p.h. ... is exactly the same as the car you buy. This amazing car has compressed into two months the equivalent of five to six years average motoring ... and is still running ... this, too, under the very severe conditions imposed.

NEW "TEN" £198

<i>Saloon de luxe</i>	
"BIG TWELVE" <i>Saloon de luxe</i>	£230
"LIGHT TWELVE" " "	£225
"TWENTY" " "	£295
"LIGHT TWENTY" " "	£275

CITROËN CARS LTD., BROOK GREEN, HAMMERSMITH, LONDON, W.6

Please send me Catalogue No 11

NAME.....

ADDRESS.....

PRODUCT OF CITROËN WORKS · SLOUGH · BUCKINGHAMSHIRE

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

Are you taking full advantage
of your electric light?

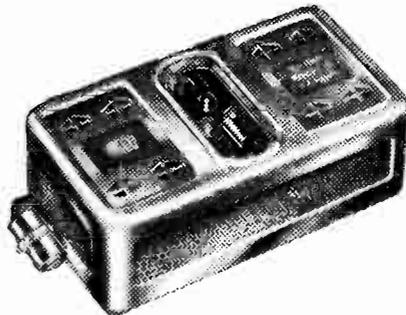
**Radio reception
now costs only
1/- a year!**

★Based on 3 hours daily use of an average 3-valve set. The equivalent cost of batteries is 50/-!

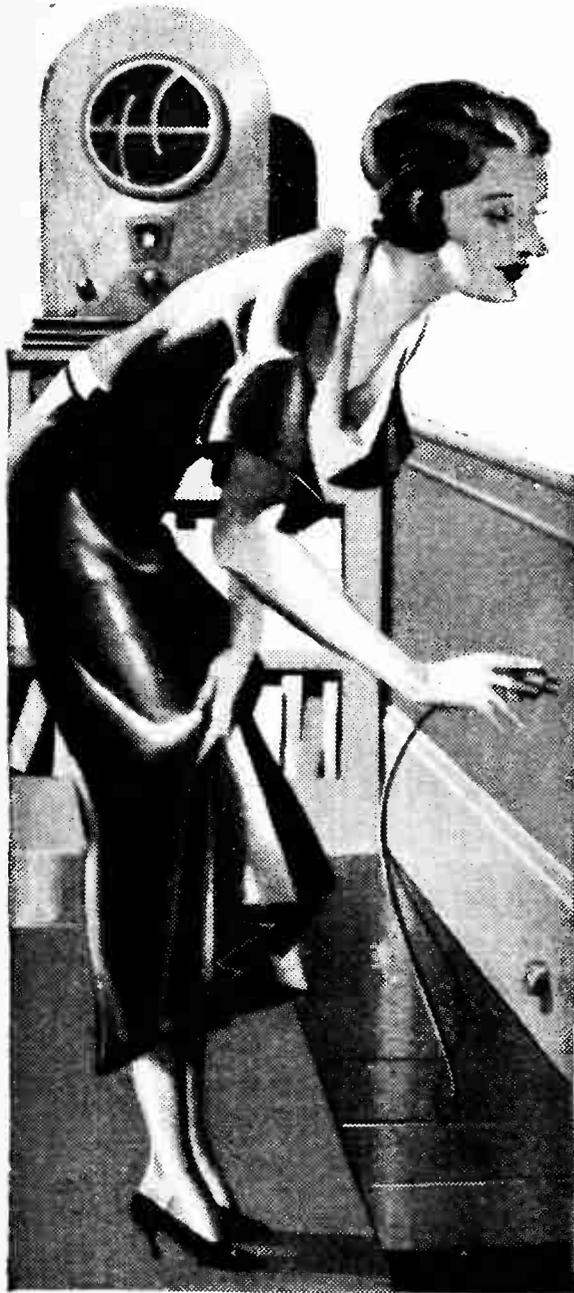
Do you still run your radio from batteries? If you do, you are behind the times—and paying a lot more than you need pay. Provided you have electric light you can reduce your set's costs to a negligible amount, and at the same time get constant unvarying power!

All you have to do is to connect the suitable EKCO Power Unit in place of the battery, plug into the electric light, and switch on—that's all! No alterations to set, valves or wiring. Consult your dealer or write for free illustrated literature.

Prices from 39/6, or by Easy Payments.



All Ekco units are similar in size and design. Size 9 ins. × 5 ins. × 3½ ins.



To E. K. COLE, Ltd., Dept. W.10,
Ekco Works, Southend-on-Sea.

Please send me full illustrated details of
Ekco All-Electric Radio

Name.....

Address.....

EKCO
RADIO POWER UNITS

The Wireless World

THE
PRACTICAL RADIO
JOURNAL
23rd Year of Publication

No. 717.

FRIDAY, MAY 26TH, 1933.

VOL. XXXII. No. 21.

Proprietors: ILIFFE & SONS LTD.

Editor:
HUGH S. POCOCK.

Editorial,
Advertising and Publishing Offices:
DORSET HOUSE, STAMFORD STREET,
LONDON, S.E.1.

Telephone: Hop 3333 (50 lines)
Telegrams: "Ethaworld, Watloo, London."

COVENTRY: Herford Street.

Telegrams: "Cyclist, Coventry." Telephone: 5210 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.
Telegrams: "Autopress, Birmingham." Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester." Telephone: Blackfriars 4112 (4 lines).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND
CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other
countries abroad, £1 3s. 10d. per annum.

*As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.*

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp. 1-XXV	
Editorial Comment	367
Five-metre Work for Amateurs	368
Unbiased	370
Choosing the Right Resistance	371
"Plan de Lucerne"	373
Laboratory Tests	374
News of the Week	375
Practical Hints and Tips	376
Broadcast Brevities	377
How the Superhet Works	378
Letters to the Editor	380
Alba Superheterodyne	382
Readers' Problems	384

EDITORIAL COMMENT

Empire Broadcasting

Reception Lags Behind

EMPIRE Broadcasting is not making the progress which it was hoped would result as soon as regular programmes were inaugurated.

Although the service is undoubtedly appreciated in many parts of the Empire, the station is not so consistently and satisfactorily received on individual sets as to encourage any but the more enthusiastic sections of the population to invest in a short wave receiver and try to get the programmes regularly.

Frankly, our sympathies are largely with the people who, although they would like to hear home transmissions, do not feel justified in acquiring a special set for the purpose until they can be satisfied that reception will be reasonably satisfactory.

The B.B.C. has gone to considerable expense and effort to establish the short wave transmitter and distant reports indicate that the station is capable of giving a very good average account of itself.

It seems to us that the next step is really up to the broadcasting organisations situated locally throughout the Empire. It is for them to arrange for adequate reception facilities so that the Empire programme can be relayed on their local transmitters as required. Reception on a proper basis, where space and facilities are not restricted, can be very much more satisfactory than reception by private persons on individual short wave sets.

If in the Empire local broadcast authorities are apathetic towards the Empire station in principle, then it is not of much use to try to flog the scheme into activity from this end. If the nature of the programmes is responsible for lack of enthusiasm, then let us know about it so that

something may be attempted to remedy the state of affairs.

Whatever may be the cause of the apparent lack of warmth of reception accorded to the Empire station in some places, let us get to the bottom of it and not allow apathy to kill a scheme so long projected and of which such great things were hoped.

International Broadcasts

A Good Example

WE may, we hope, be entitled to take to ourselves some small measure of credit for certain recent activities of the B.B.C. In February of this year we called attention to the motto of the B.B.C. "Nation Shall Speak Peace Unto Nation" and asked whether the Corporation were living up to this motto as fully as they might.

We said that there was ample scope for the B.B.C. to make their motto effective by arranging for talks to be broadcast in languages other than those of the country of origin.

The B.B.C. gave us, last week, another excellent example of what can be done in this way when they relayed from Berlin a description, in English, of the scene at the assembly of the Reichstag on the occasion of the pronouncement by the German Chancellor, Herr Hitler, of the German Government's policy and an account of the speech itself. We congratulate the B.B.C. on the truly excellent way in which this broadcast was conducted, although we regret that as, no doubt, this broadcast was fixed up only at a late hour, insufficient publicity for it may have resulted in the speaker having a far more limited audience than would otherwise have been the case. May we hope that the B.B.C. will do all in its power to encourage more broadcasts of this nature.

Five-Metre Work for Amateurs

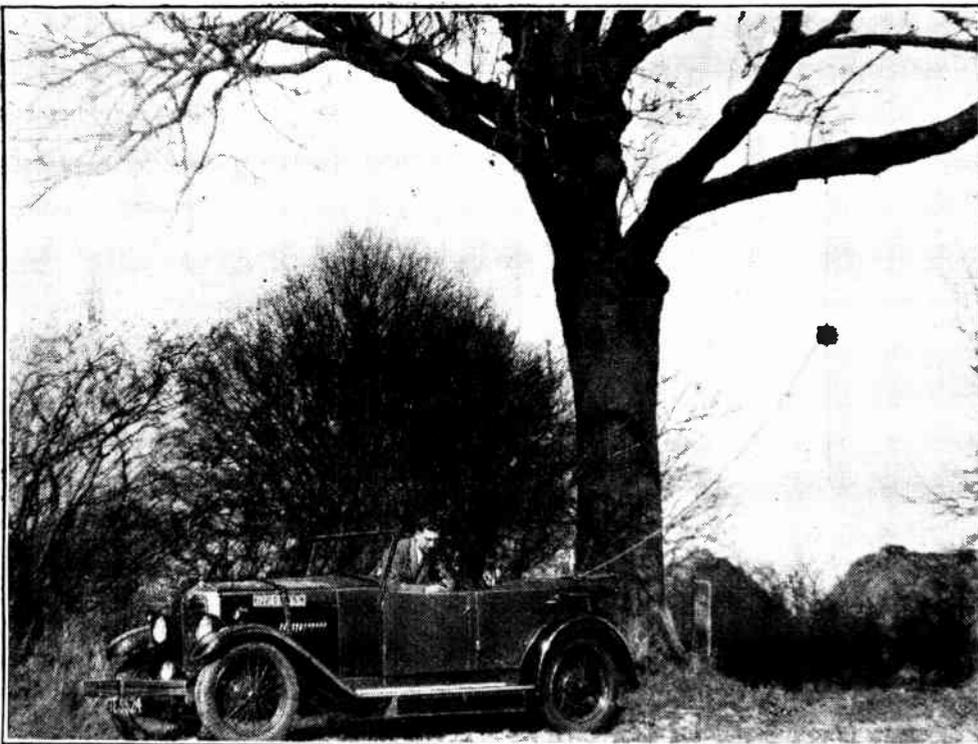
THE approaching summer will offer great opportunities for amateur tests on the ultra-short waves in the open air. The writers of this article, who have done much pioneering work on the 56 megacycle band, here describe some practical arrangements both for transmitters and receivers. The super-regenerative receiver, in their experience, is the pre-eminent type for work on the very high frequencies.

Practical Hints on Ultra-Short Wave Operation

By H. L. O'HEFFERNAN (G5BY)
and S. G. MORGAN (G6SM)

THE ultra-short waves offer to the amateur experimenter such a tempting field of research that it is thought that it would be appropriate to give a brief outline of some of the major problems tackled by the writers during their work on the 56 megacycle (5-metre) band. It is only possible, within the scope of this short account, to touch lightly upon these features, and practicalities are chiefly dealt with in order to encourage others to emulate our example.

Let us begin, in logical sequence, with modulating systems. The method used almost exclusively up to the end of 1932 has been the straightforward Heising, or constant current, system (Fig. 1a). Until recently the great bugbear of field work has been the need for the provision of an adequate source of H.T. current for such modulation, which imposes a steady, heavy drain on the H.T. supply. Moreover, to secure 100 per cent. modulation of the high-frequency carrier, the modula-



An impromptu aerial which has been found effective. It consists of a half-wave antenna with the transmitter mounted in the centre, fed with filament and modulated high-tension current through a three-wire cable.

by somewhat expensive dry batteries. Both of these disadvantages are removed at one fell swoop by the employ-

ment of Q.P.P., or Class "B" amplification. As has already been explained in *The Wireless World*, the H.T. consumption of these systems is proportional to the depth of modulation handled. The writers have used Class "B" with marked success; and now that British manufacturers are producing special valves for this purpose, it should prove extremely popular for the modulation of low power transmitters. (Fig. 1b.)

The push-pull circuit described in an earlier debasing of the valves, and by keeping down stray capacities to the minimum, still greater efficiency has been obtained. (Fig. 2.) The use of such self-excited oscillators, in conjunction with the aerial system mentioned later, is the only practicable apparatus for a mobile station; but for a fixed station something more stable is desirable. Self-excited oscillators are very susceptible to fluctuations in supply

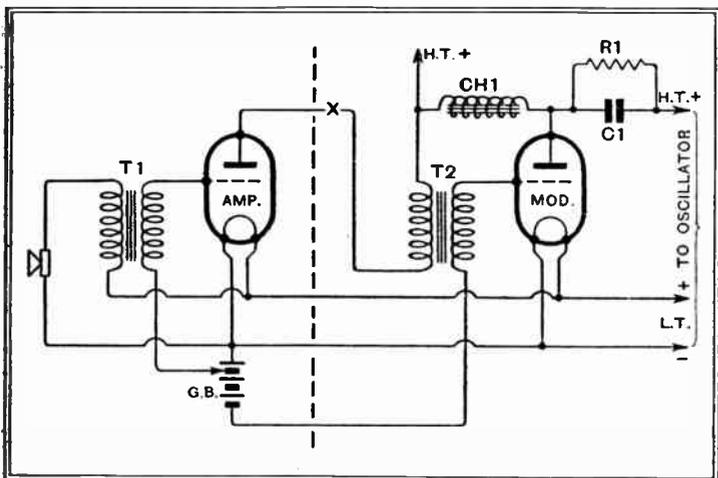


Fig. 1a.—Heising modulation, as used up to the end of last year. C1, 2mf.; T1, microphone transformer; T2, intervalve transformer; CH1, heavy duty 30-henry choke; R1, 1,000-5,000 ohms, according to oscillator load characteristic.

tor valve has to be operated at a higher mean anode potential than does the oscillator; hence the resistance R1 (Fig. 1). Here we have two sources of waste of very valuable H.T. current, especially if—as is generally the case—it be supplied

article' has proved itself a firm favourite, and by the insertion of radio frequency chokes in the filament leads, the

1. "Practical Five-Metre Working," by H. L. O'Heffernan and S. G. Morgan, *The Wireless World*, June 8th, 1932.

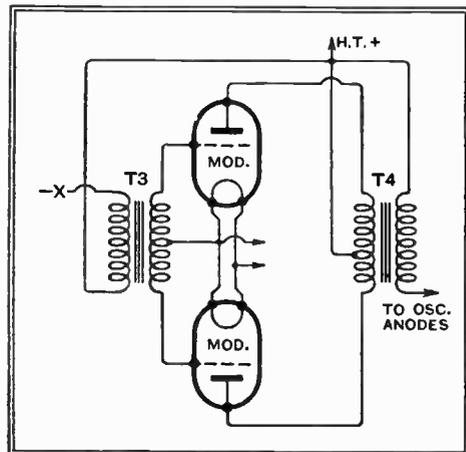


Fig. 1b.—Class "B" modulation. This arrangement is substituted for apparatus shown to the right of the dotted line in Fig. 1a. T3, Class "B" input transformer; T4, output transformer.

Five-Metre Work for Amateurs—

voltages; quite a low percentage of modulation, for instance, causes the emitted frequency to swing between wide limits.

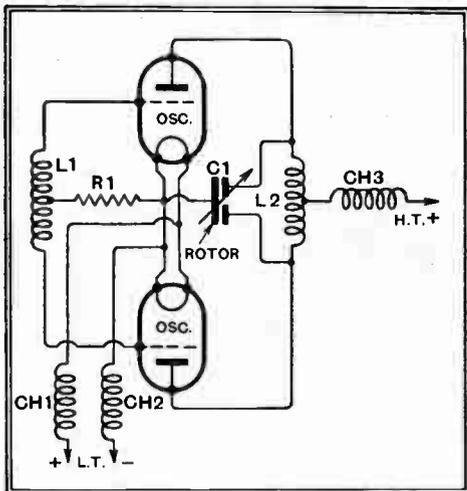


Fig. 2.—Push-pull self-excited oscillator. C1, double stator variable condenser, approximately 50 mmfd. each section; R1, 10,000 ohms; L1, 20 turns 16 S.W.G. copper wire, 1in. diameter; CH1, CH2, 30 turns each 20 S.W.G. 1/2in. diameter spaced; CH3, 50 turns 32 S.W.G. D.S.C. 1/2in. diameter spaced.

The ideal method of frequency stabilisation, crystal control, becomes a most cumbersome business at 56 mc/s.

Electron-coupled Oscillators

The solution seems to lie in the employment of "electron-coupled oscillators," which are becoming very popular in the United States. This system produces oscillations and strong harmonics which

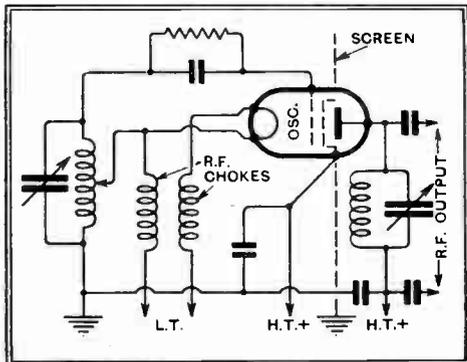


Fig. 3.—"Electron coupled" (screen-grid) oscillator.

possess a degree of frequency stability comparable with that of the crystal oscillator. This development employs a power type of screen-grid valve in a circuit such as Fig. 3. Wide variations of anode voltages and loads have little effect on the generated frequency. While the writers have not yet heard of the employment of this system on the ultra-high frequencies, and have hitherto been prevented from acquiring first-hand knowledge on the subject, because these special valves are not available to British amateurs, the evidence suggests that there is no reason why its utilisation should not be attended by complete success.

The aerial that has been most employed

in the past has consisted of a half-wave antenna with the transmitter mounted in the centre, the whole outfit being hoisted up in the air and fed with filament and modulated high-tension current through a three-wire cable. This has proved most adaptable. The half-wave aerial gives, however, a high-angle radiation, which is undesirable in short-wave work. An ideal low-angle radiator would consist of a vertical wire, as many half-waves long as possible, carrying a uniform current in the same phase. The current distribution in aerials of various lengths is shown diagrammatically in Fig. 4. It must be borne in mind that the middle portions of each half wave (i.e., those portions carrying the greatest current) are productive of most of the radiation. In (b), (c) and (d) the currents in adjacent half-waves are in phase opposition, and thus tend to neutralise each other at low angles. If, therefore, some means of suppressing the radiation from alternate half-waves could be devised, the desired low-angle radiation would result. This can be done by folding up alternate half-waves as in (e), but the best plan is to fold them as in (f). Now, the previously unwanted currents actually assist the radiation from adjacent sections. This, the "Uniform" aerial, is the nearest approach to the idea mentioned above, and is due to the genius of C. S. Franklin. It will form the basis of a great deal of work by the writers this summer.

Super-regenerative Sets

And now for a few words regarding receivers. The super-regenerative receiver has firmly established itself as the pre-eminent type for work on the 5-metre band. Its only drawback is the high

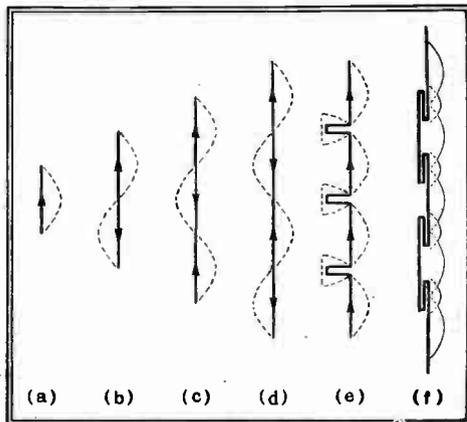


Fig. 4.—The current distribution in aerials of various lengths. The lengths of wire, from left to right, are respectively 1/2, 1, 1 1/2, 2, 3 1/2, 4 1/2 wavelengths.

noise level due to the quenching action and consequent terrific amplification of valve noises. When a transmission is tuned in, however, the noise ceases and the station is heard comparatively free from background! In addition, the broadening effect which negative resistance, like positive resistance, has on positive tuning is a great advantage, as

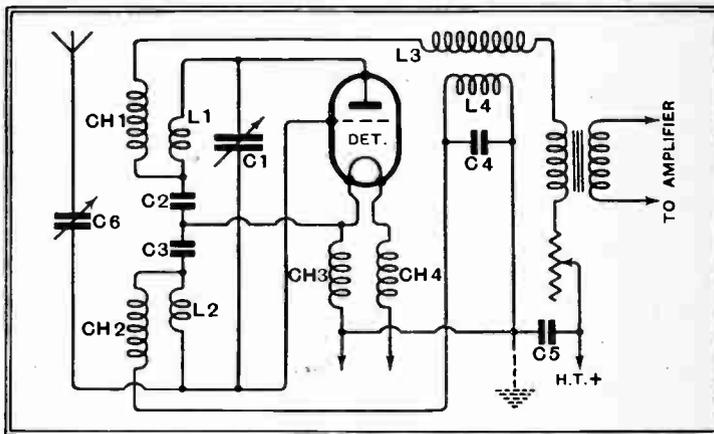


Fig. 5.—A super-regenerative ultra-short wave detector. C1, 50 micro-mfd.; C2, C3, .0001 mfd. each; C4, .002 mfd.; C5, 1 mfd.; C6, 50 m.mfd.; L1, L2, 5 turns 16 S.W.G. 1/2in. diameter; L3, 1,500 turns of 38 D.S.C. on 1in. core; L4, 800 turns of 38 D.S.C. on 1in. core; CH1, CH2, 50 turns of 38 D.S.C. 1/2in. diameter spaced; CH3, CH4, 30 turns 20 D.S.C., 1/2in. diameter spaced.

it makes the otherwise tricky task of tuning, in the vast frequency band under consideration, an easy matter.

At 60SM a single valve is made to serve the dual purpose of detector and quencher without any noticeable difference from the results obtained by the use of separate valves. The circuit developed is shown in Fig. 5, and, provided that the radio frequency end of the set is carefully laid out, nobody can fail to obtain good results. An HL type of valve is the most suitable. The anode voltage, which will be found to be fairly critical, is about 50 or 60, and the aerial coupling should be adjusted until regeneration can be controlled over the whole dial. Regeneration is characterised by the commencement of the loud rushing noise, at which point the receiver is in its most sensitive condition. An aerial about 16 feet long is all that is necessary provided that it is fairly high and clear; otherwise, a normal broadcast receiving aerial can be employed.

"THE WIRELESS ENGINEER"

THE June number of *The Wireless Engineer* is of special interest to the more technically minded readers of *The Wireless World*. A contribution of particular practical value deals with the design of a valve voltmeter for audio-frequencies calibrated by direct current.

A new point of view on Ferrocarril coils is discussed in the leading article.

In addition to other contributions, the issue contains abstracts of the world's wireless literature and patents of importance.

Order your copy now from your news-agent, or direct from the publishers of *The Wireless World*.

UNBIASED

Painful

IS it, or is it not, the duty of a newspaper Editor or his underlings to correct errors of spelling and grammar perpetrated by readers in letters intended for publication?

The thought is prompted by the continued misuse by correspondents in the lay press of the verb "to oscillate," which is too often regarded as transitive. Thus, in a newspaper from a western land there appears an indignant letter from a reader complaining that his listening is spoilt because his neighbours on either side persist in "oscillating his set."



Oscillating his set.

Now, in the first place, the obvious grammatical error should have been corrected. In the second place, the letter should have been passed along to the B.B.C. for transmission to the P.M.G. who, with his customary helpfulness where complaints are concerned, would have speedily sent a detector van down to track down the delinquents and haul them before the beak. I must confess, however, that it is the grammatical rather than the technical aspect of this matter which pains me most.

"The Light that Never was on Sea or Land"

FROM America comes a truly astonishing story which only shows, as my Aunt Matilda used to say anent the aeronautical experiments of the Wright brothers in 1903, what happens when mere man attempts to meddle with the affairs of Providence.

It appears that a well-known radio amateur who spends his life delving deeper and deeper into the realms of higher and higher frequencies, had suddenly tired of transmitting and receiving on such childish long wavelengths as a centimetre or so, and had determined to build a *real* short-wave receiver capable of tuning down to a micrometre and below. What a micrometre is I don't know, my education in the decimal system of weights and measures having been sorely neglected, but I presume that it is some sort of poor relation of the metre.

At any rate, the results which he obtained were so astounding that I feel I must quote the actual words of the

By FREE GRID

American journal from which I learnt this startling news.

"No sooner," says the writer, "had the bozo got everything lunky dory and sat on the key than he was almost blinded by a glare of light rivalling in candle power even that which, as Willie Shakespeare, a well-known British publicity man, reports, B.B.C. engineers use to flood-light the throne of England when King George is sitting there doing his stuff."

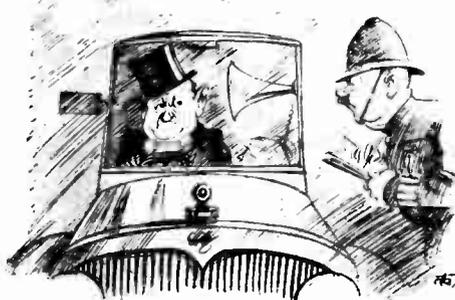
The paper goes on to say that, despite the glare of the light, no part of the apparatus was found to be in a state of incandescence "when investigated by the liquor squad, who scrambled up from the nearest precinct station to see why the old shack was all lit up."

As far as I can see, the whole thing seems to have been a newspaper stunt so beloved of our friends over the water, as I can scarcely believe that the youth can have successfully constructed a transmitter of light waves, using the ordinary principles employed in radio.

Record Runs

THE other day I was beguiled into taking a ride in an outside in cars. The only thing that induced me to accept the invitation was the fact that the car was fitted with all the latest gadgets, including "built-in" wireless, which I had not hitherto had a chance to try out.

I was disappointed at not being able to find anything amiss with either the receiver itself or with its performance, which was really excellent. At the last moment, just as I had despaired of discovering a fault and was about to give a grudging assent to the joyful strains sung by its owner, I found the clunk in his armour and thrust hard home.



In the early hours.

"And how," I remarked, "do you amuse yourself in the early hours of the morning when nothing is on the air, for I perceive that no folding turntable and automatic record changer are provided to fill in these awkward gaps?"

He was, of course, forced to admit that this had not been thought of, but so far

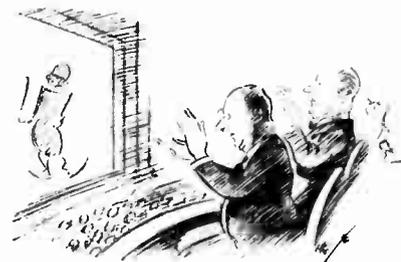
from being depressed about it, the idea seemed to brighten him up. He said that he would get into touch with the maker forthwith, and so be the first motorist with a complete radiogramophone installation in his car.

I was able (as I thought) to take the wind out of his sails once more by pointing out that the motion of the car would joggle the needle off the record. He countered by saying that this would undoubtedly be true of some cars to which average members of the public are accustomed, but would scarcely hold good in the case of his own.

He is now negotiating with the gramophone manufacturers, so prepare for the worst.

Loud Clapping

SAY what you will, nothing can convince me that the land of hooch and hustle does not take the cake, the waffle or whatever other offensive article of food is customary over there, when it comes to ideas.



Couple of large clappers.

It appears that the manager of a local leg-show, tiring of paying out high fees to the members of his clique, evolved a scheme whereby he might reduce their number to two. He first fixed up a large number of loud speakers at strategic points in the theatre and coupled them to the input of a large amplifier. The input of the latter device was hooked up to a small microphone cunningly concealed at the back of two stalls behind which sat a couple of large clappers who were the remnant of the original clique.

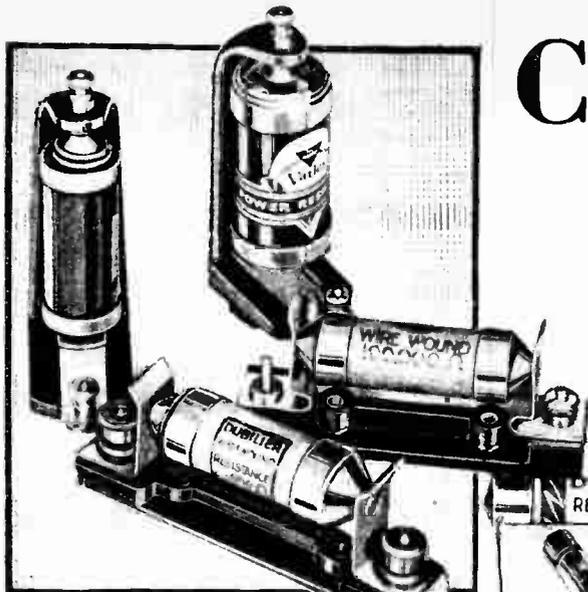
The efforts of these puppets were, of course, amplified and distributed to the various loud speakers, which owing to their aforementioned scientific positioning gave to the assembled mob the impression that a large number of people were applauding, and naturally the mob, with the yes-men complex associated with all crowds, vigorously followed suit.

Now I cannot fathom why they still retained *two* of the original clique unless they went to extreme limits, as they usually do across the Atlantic and insisted on providing an understudy even for the professional applauder.

The thing that really sticks in my gullet, however, is why they couldn't have fed the loud speakers from a gramophone record.

Choosing the Right Resistance

The Importance of the Current-carrying Capacity



A MODERN mains receiver may contain more than thirty resistances and the choice of the correct watts rating for each of them is often a laborious process. By the use of the table accompanying this article, calculation becomes unnecessary and the current carrying capacity and voltage rating of a large range of 1, 2, 3 and 5 watt resistances are to be found at a glance.

By
L. E. T. BRANCH,
B.Sc.

THE recent introduction of inexpensive fixed resistances chiefly of the composition type has made necessary a knowledge of watts rating. In the old days almost all fixed resistances were of generous proportions and would carry all currents likely to be met in wireless, but, of course, this meant a very great waste in many cases because one found that one was using a resistance made to carry quite large currents for a purpose in which a very small current only passed through it. For instance, a well-made wire-wound resistance of 100,000 ohms will carry up to about 6 milliamperes, as will be seen by referring to the catalogue of any well-known maker such as Varley or Ferranti, whose names are household words in these matters.

Now more often than not, a high resistance such as 100,000 ohms is only required to carry one or two milliamperes, so that clearly a resistance made on less generous proportions can be used, and it will usually have the advantage of economy in size as well as price. However, to derive full value from the advan-

tages of the new types of resistances, which are usually made to stand a maximum dissipation of either 1 watt, 2 watts, 3 watts, or 5 watts, it is clearly necessary to be able to find quickly and easily the wattage from either the voltage or the current alone, as usually only one of these will be known without making a calculation for the other.

In the usual way, if one of them is known the other can be calculated and then their product gives the wattage. When one is working on a set and there are numerous resistances to be provided, it is better to be able to take a short cut in each case from the known quantity to the wattage. This can best be done by evolving a table of maximum currents and

to note how such a table is compiled, and the following simple application of Ohm's Law gives this in full. At the same time it is at once obvious why the maximum wattage dissipation of a resistance does not vary in the same proportion as the voltage or current; thus a 2-watt resistance will not carry double, but only 1.4 times the current that a 1-watt resistance of the same value will carry. Likewise the maximum voltage is only increased 1.4 times for double wattage. These are small points and quite obvious when pointed out, but they are frequently overlooked, no doubt because they are small. The practical man cannot be too familiar with Ohm's Law and its numerous applications which arise at every turn in set designing and frequently in their upkeep. The present case is a very interesting and instructive example of such use of Ohm's Law, and it will pay many new readers to study it.

MAXIMUM CURRENTS AND VOLTAGES

Ohms Resistance	CURRENT CAPACITY (in Milliamperes).				VOLTAGE CAPACITY.			
	1 Watt	2 Watts.	3 Watts.	5 Watts.	1 Watt.	2 Watts.	3 Watts.	5 Watts.
1,000,000	1	1.4	1.7	2	1,000	1,400	1,700	2,200
500,000	1.4	2	2.5	3	700	1,000	1,200	1,600
250,000	2	2.8	3.5	4.5	500	700	870	1,100
100,000	3	4.5	5.5	7	315	450	550	710
50,000	4.5	6.5	8	10	220	315	390	500
30,000	6	8	10	13	170	250	300	390
20,000	7	10	12	16	140	200	240	310
10,000	10	14	17	22	100	140	170	220
7,500	12	16	20	26	87	120	150	200
5,000	14	20	25	32	70	100	120	160
3,000	18	26	32	41	55	78	95	120
2,000	22	32	39	50	45	63	78	100
1,000	31	45	55	70	31	45	55	71
750	37	52	63	82	27	38	47	62
500	45	63	78	100	22	32	39	50
300	59	82	100	130	17	24	30	39
200	72	100	120	160	14	20	24	32
100	100	140	175	220	10	14	17	22
50	140	200	250	320	7	10	12	16

voltages for all the usual values of resistances of the 1-watt, 2-watt, 3-watt, and 5-watt types, and then merely choose the component so that it does not exceed the specification for wattage dissipation. The writer has found such a table to be extremely useful, and he suggests that those who, in any case, find calculations rather a nuisance will welcome it.

It is interesting

Application of Ohm's Law

Now Ohm's Law is nothing more nor less than a simple relationship which is found to exist *always* between current, voltage, and resistance; thus, if a voltage E exists across the ends of a resistance R ohms the current in amperes which will flow through the resistance is E divided by R ; that is to say, if I is the current in amperes, then $I = \frac{E}{R}$. Hence, since there are 1,000 milliamperes in one ampere we can work this formula for milliamperes by using I for milliamperes and then $I = \frac{E}{R} \times 1,000$. Now power or heat, generated electrically as when a current flows down a resistance, is expressed in watts and is found simply by multiplying the

Choosing the Right Resistance—

voltage across the ends of the resistance by the current in amperes flowing through it. Hence if W is the wattage we have simply $W = E \times I$. Now we know that according to Ohm's Law I is E/R , which is only another way of saying that $E = I \times R$, so that $W = I \times R \times I$: that is, $W = I^2 \times R$. From this formula we can, therefore, find very easily the wattage which a resistance must be capable of carrying if the current is known, and the table conveniently

given here is obtained in this way. If W is one watt the permissible current is $\frac{1}{\sqrt{R}}$,

while for a two-watt resistance the permissible current will be $\frac{\sqrt{2}}{\sqrt{R}}$; and so on.

Similarly, since $W = E \times I$ and $I = E/R$, we see that $W = E^2/R$, which enables us to find the wattage immediately providing we know only the voltage across the ends of the resistance.

DISTANT RECEPTION NOTES

Are Atmospherics on the Wane?

A GOOD many readers, I expect, have heard Vienna's new Bisamberg transmitter during the last week or two without knowing that they were doing so. I did not at first realise what was happening when Vienna after many evenings of feeble reception suddenly appeared with about the same strength as Langenberg, relapsing on the next night into weakness. The powerfully received programmes were undoubtedly experimental transmissions from Bisamberg. The official opening of the new station is due to take place on the day on which this issue of *The Wireless World* appears. Bisamberg should be a very popular station this summer, for some fine programmes are to be sent out, including not a few relays from the State Opera House.

That troublesome giant, the new Moscow transmitter, has been a real nuisance on several recent occasions. On one evening it was working apparently right on Huizen's wavelength and practically blotted out the Dutch station. On others it has caused trouble by using wavelengths from 1,480 metres upwards. A 500-kilowatt broadcasting station is a monstrosity which should not be tolerated within the limits of either the medium- or long-wave broadcasting

bands. The output rating is, of course, vastly in excess of the maximum agreed upon at the recent Madrid Conference.

I am sorry to hear that the French Government has dropped the Broadcasting Bill of which so much was expected. The situation is rather complicated, but, so far as I understand it, the abandonment of the Bill means that the Government has now no powers to prevent the erection of new private stations or to control the doings of those which are already in operation. Apparently, though, it can prevent a station built without permission from broadcasting regularly.

"All Dressed Up . . ."

This is what has happened in the case of Radio Toulouse. The new station at St. Agnan appears to have been built without the Government's sanction. The old one was burnt down some weeks ago and permission to broadcast is still refused to the new one, though it is ready in every respect to take up the full programme service at a moment's notice.

France was the first country in the world to give a regular broadcasting service. Old hands will remember the daily transmissions from the Eiffel Tower at a time when there

was nothing else to listen to in the way of wireless telephony with the exception of airways messages from Crocydon, Lympe St. Inglevert and Le Bourget, the conversations (usually highly technical) between enthusiastic amateurs, and the Tuesday evening programmes, lasting just one hour, from the old half-kilowatt station at Writtle. It is both curious and unfortunate that despite her pioneer work France should have caused so much trouble in European broadcasting by the uncontrolled and apparently uncontrollable wavelength wanderings of her small private broadcasting stations.

We have had rather a large dose of atmospherics in the course of nearly three weeks of unsettled and rather thundery weather. At the moment of writing the signs are that conditions are improving in this respect, and by all the indications a quiet spell is approaching. Except for the fact that some of the smaller and more distant stations are not worth bothering about, long-distance reception is little affected by summertime conditions. Daylight reception of several stations is still possible on the medium waveband, and in the evening the choice is far wider than it was in winter-time two or three years ago.

The Pick of the Foreigners

Radio-Paris, Zeesen, Huizen, Warsaw and Metala are the best long-wave stations at the moment. Kalundborg is still not too good and Oslo is unaccountably weak.

The two Brussels stations, Florence, Langenberg, Lyons Doua, Rome, Katowice, Strasbourg, the Poste Parisien, Breslau, Göteborg, Hilversum, Heilsberg, Turin, Trieste and Nürnberg are the pick of the medium-wave stations.

D. EXER.

MAKING FERROCART IN BRITAIN

Licences for Coil Manufacture

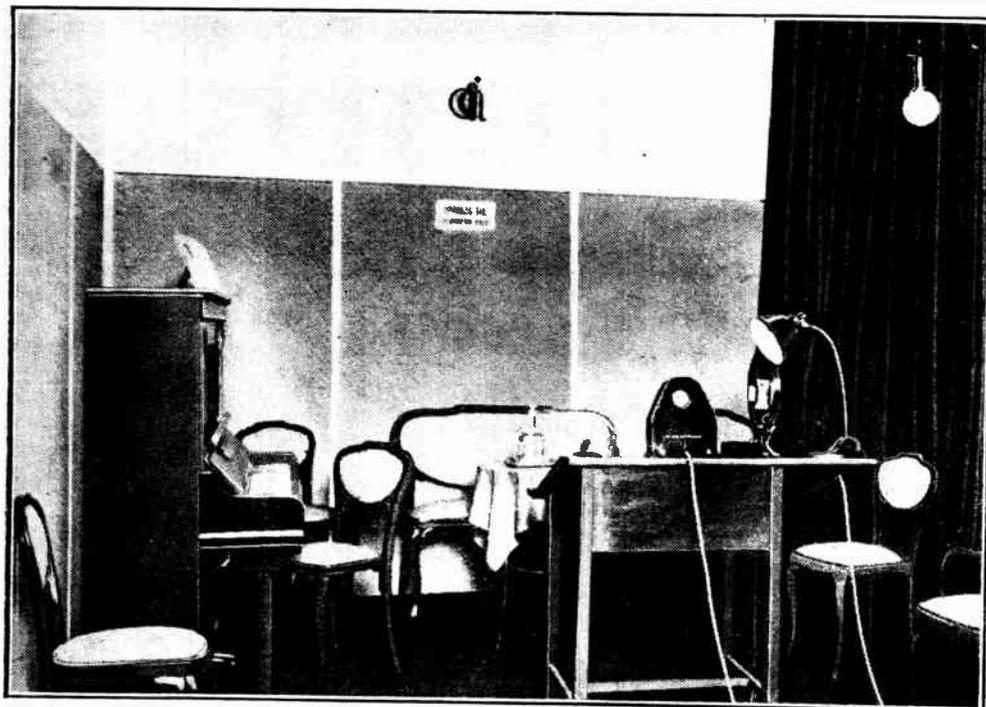
READERS will be interested to learn that Ferrocart, the material which has revolutionised radio coil design, is to be manufactured in this country by the General Electric Co., Ltd.

Definite arrangements for the commercial development of Ferrocart in this country have now reached an important stage. Messrs. Colvern, Ltd., Mawney's Road, Romford, Essex, have acquired the sole right for making and selling Ferrocart components and kits. The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2, have acquired (a) the sole right of manufacturing Ferrocart material; (b) the sole right to use Ferrocart material for electric communication by wire; and (c) a licence for making Ferrocart coils for their own receivers.

More Licences Pending

A licence for making Ferrocart coils for their own receivers has been acquired by Electrical and Musical Industries, Ltd., Blyth Road, Hayes, Middlesex, while a licence for the use of Ferrocart material for radio transmitting purposes and commercial receivers has been obtained by Marconi's Wireless Telegraph Co., Ltd.

We understand that licence agreements for Ferrocart receiver coils are under negotiation with other prominent firms.



IN POLAND. Space is at a premium in the small studio at Lwow (Lemberg) which serves mainly as a relay to the famous high-power station at Warsaw. Lwow's wavelength is 381 metres and the power is 16 kW.

"Plan de Lucerne"

Secrecy at Europe's Biggest Wavelength Conference

By Our Representative at Lucerne

WITHOUT doubt the Lucerne Conference is the most important yet held in the history of European broadcasting. Significant though it was, the Prague Conference was an affair of European administrations; Lucerne is one of Governments. The Prague Conference tried to sort out existing stations, whereas Lucerne has asked all countries to make their maximum demands as regards stations, waves and power. The countries have responded, and what Lucerne decides will "stay put" until the next world-wide conference five years hence, unless somebody discovers a new type of wave.



The badge worn by delegates at the "Conférence Européenne des Radiocommunications."

The Lucerne Plan is to be a solemn Government undertaking which will be adhered to, not to be discarded at will like the Prague Plan. *No station will be permitted to change its power or its wave without due notice of from three to six months and without the approval of all concerned.*

The Conférence Européenne des Radiocommunications opened on May 15th and will, it is hoped, close on June 1st. The first formality was the appointment of M. Muri, head of the Swiss delegation, as president. M. Keller, head of the radio department of the Swiss Post Office, is vice-president.

Five Committees at Work

The work of the Conference is being done by five committees. The first, presided over by Mr. Philipps, head of the British delegation, is considering the fundamentals of wavelength distribution; the second, under the Italian head delegate, is discussing which stations shall be placed outside the broadcasting band. The third committee, presided over by the Czech chief delegate, is concerned with power limitation. Ministerialdirektor Giesecke, the German chief delegate, is president of the fourth committee, which is actually apportioning the wavelengths; while the fifth committee, under the chief Russian delegate, is looking after juridical questions.

It is regrettable that the Conference has decided to meet almost in secrecy. The Press representatives have to rely largely on official communiqués, which are more formal than informative.

So that readers may be prepared for the "Plan de Lucerne" when it is published in a fortnight's time, I append the tentative plan which was prepared by the Union Internationale de Radiophonie at their last meeting. I understand that the new plan will conform very closely to this proposed list, which clearly indicates that practically every



The B.B.C.'s Chief Engineer, Mr. Noel Ashbridge (in centre), "snapped" with the British Post Office representative, Colonel A. S. Angwin (on right), outside the Conference Hall.



Admiral Sir Charles Cappendale, President of the U.I.R., sharing the optimistic outlook of Dr. Giesecke (Germany) and the Danish delegate, M. Lerche (on right).

European station will undergo at least a small wavelength modification.

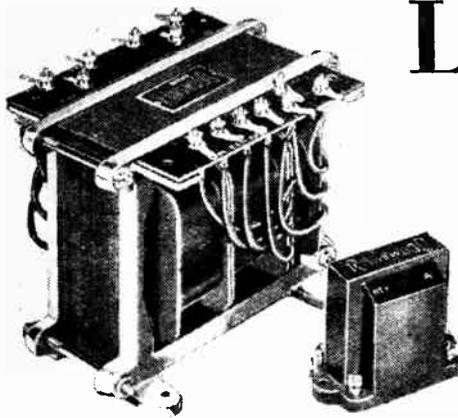
PROPOSED ALLOCATION OF FREQUENCIES

kc s	Stations	kc s	Stations
152	Moscow R.V.I.	835	Toulouse PTT, Simferopol
161	Huizen	901	Brno
170	Radio Paris	913	Solla
179	Lahti	922	Brussels II, Onkhta
188	Zeesen	931	Barcelona, Moscow
198	Daventry	940	Breslau
207	Moscow RVB, Madrid	949	France, Leningrad
216	Warsaw	958	Göteborg, Groyssil
226	Motala	967	West Regional, Gomel
235	Bucharest, Reykjavik	976	Geneva, Torun
244	Oslo	985	Hilversum, Elista
253	Kiev, Boden, Porto	991	Zagreb
262	Kalmaborg	1003	North National, Dnepropetrovsk
271	Minsk, Porto	1012	Viipuri, Valencia
279	Leningrad, Ankara	1021	Heilsberg
287	Moscow, Beronimster	1030	Rennes PTT, Louckarola
340	Smolensk	1040	Scottish National, Smyrna
349	Kharkov, Finmark	1049	Bari
358	Petrozavodsk, Budapest II.	1058	Bratislava
367	Samara	1067	France
376	Saratov	1076	Naples, Falun
385	Sverdlosk, Austria	1085	Madrid
394	Voronej, Monte Ceneri	1094	Kosice, Oran
403	Slovakia	1103	Limoges PTT
412	Moscow	1112	Cernatti
421	Rostov, Osterund	1121	Hörby
430	Oulu	1130	Turin
520	Ljubljana, Krakov, Hamar	1139	Moravská-Ostrava
528	Slovakia, Bolzano	1148	Lille PTT
536	Lwow, Grenoble, Skoplje (Serbia)	1157	Copenhagen
546	Budapest	1166	London National, Alexandria
555	Ivanovo, Athlone, Palermo	1175	Trier, Frankfurt, Cassel, Freiberg
564	Munich	1184	Nice PTT
573	Madono (Riga), Seville	1193	Prague II.
583	Vietna	1202	Bellast (219.6 metres)
592	Sundsvall, Rabat, Cairo	1211	Trieste
601	Brussels I, Astrakhan	1220	Gleiwitz
611	Flounee, Orenburg	1229	Montpellier PTT, Istanbul
619	Tromsø, and Norway relays	1238	Abania
628	Prague	1247	San Sebastian, Kuthliga
628	Lyons PTT, Archangelsk, Valdivka	1256	Nürnberg
647	North Regional, Stalingrad	1265	Norwegian National Common Wave, Salonika
657	Langenberg, Kazan	1274	Belgian N.C.W.
666	Stockholm	1283	Austrian N.C.W.
675	Beronimster, Makhatch Kala	1292	North German N.C.W.
684	Boegrad	1301	Luxembourg
693	Paris PTT, Oufa	1310	Hungarian N.C.W.
703	Rome	1319	Swedish N.C.W.
713	Mühlacker, Mourmansk, Krasnodar	1328	Loz
722	Tallinn, Lisbon	1337	Danzig, Sombor (Yugoslavia)
731	Marseilles PTT, Tchernigov	1346	Norwegian N.C.W.
740	Katowitz	1355	Swiss N.C.W.
749	Sottens	1364	French relays
758	Midland Regional, Odessa	1373	Warsaw II.
768	Bordeaux PTT, Vinnitsa	1382	Swedish N.C.W., Algarve
777	Leipzig	1391	Finnish N.C.W.
786	Helsinki, Coruna, Athens	1400	Romanian N.C.W.
795	Scottish Regional, Nijui-Novg	1409	Spanish N.C.W.
804	Milan, Syktyvkar	1418	International N.C.W.
813	Bucharest	1427	French N.C.W.
822	Hamburg, Naltelik	1436	German N.C.W.
831	Wilno, Algiers	1444	British N.C.W.
840	Strasbourg PTT, Pokrovsk	1452	Hungarian N.C.W.
849	Poznan	1460	International C.W.
858	London Regional, Tiraspol	1468	International C.W.
867	Graz	1476	International C.W.
876	Bergen, Tunis, Norway relays	1484	International C.W.
885	Berlin	1492	International C.W.
		1500	International C.W. (200 metres)

LABORATORY

NEW RADIO PRODUCTS REVIEWED

TESTS



Rawswood mains and intervalve L.F. transformers.

RAWSWOOD TRANSFORMERS

THE mains transformer sent in for test by the Rawswood Electrical Co., Preston New Road, Blackpool, is designed for use in receivers with a maximum of four valves. It is intended to be used with a "C" class full-wave rectifying valve, and carries an H.T. winding giving 350-0-350 volts at a nominal load of 80 mA. The two L.T. windings are rated at 4 volts 4 amps. and 4 volts 2.5 amps. respectively. Tappings are provided on the primary to suit supply mains of 200, 230, and 250 volts at 50 cycles A.C.

The coil is of generous dimensions and rigidly clamped by cast aluminium end-plates with the terminal battens supported on projecting lugs.

Tested with a CU120, 350 rectifying valve it provided the following H.T. voltages after smoothing, using a choke of 100 ohms resistance, the output being measured across the second 4-mfd. condenser in the smoothing circuit.

Current.	D.C. Volts.	Current.	D.C. Volts.
mA.		mA.	
10	460	60	382
20	442	70	378
30	423	80	370
40	408	90	362
50	397	100	354

The H.T. winding shows good regulation for a component of this type, and both L.T. windings are satisfactorily adjusted for the respective loads. For example, on full load the 4-amp. winding gave 3.9 volts while the rectifier filament was operated at 3.95 volts. The price of this model is 29s. 6d.

We have tested also a small intervalve transformer made by this firm. It has a step-up ratio of 1 to 3, and the primary inductance was found by measurement to be 13.7 henrys with no D.C. flowing, 10.6 henrys with 2 mA., and 8.6 henrys with 4 mA. passing through the primary winding. Whether connected in the anode cir-

Selection of Goltone components including H.F. coupling unit, push-pull switches and flexible lead-in strip.

cuit of the valve or used in a parallel-feed circuit, the best results will be obtained with valves of comparatively low impedance. It is available, also, with a 1 to 5 ratio and the price in each case is 4s. 11d.

PIX INVISIBLE AERIAL

EVEN where facilities permit the erection of an outdoor aerial, it is not uncommon to find this aid to reception dispensed with and one located within the building used in its place. For, owing to the high sensitivity of modern receivers, exceptionally good results are possible under these conditions. An aerial for indoor use, which is easy to install and quickly changed if need be, is the Pix Invisible aerial.

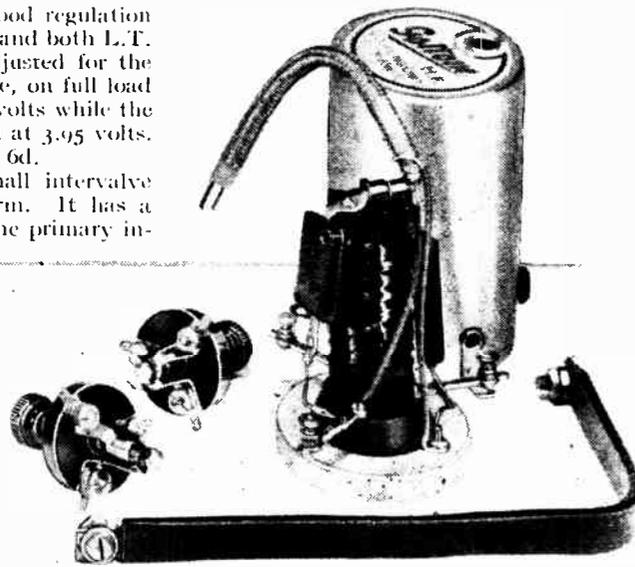
It consists of an adhesive ribbon one inch wide, having attached to its inside surface a strip of aluminium insulated on both sides and terminating in a flexible lead for connection to the receiver.

The Pix aerial should prove very useful in flats, for it can be installed in out-of-the-way corners or run just above or below the picture moulding. The makers are the British Pix Co., Ltd., 118-120, Southwark Street, London, S.E.1, and the price is 2s. for a roll containing 60ft.

GOLTONE COMPONENTS

THE Goltone H.F. coupling unit has been developed especially to simplify the assembly of receivers in which the tuned grid or parallel-feed H.F. transformer circuits are employed. It consists of an H.F. choke of high inductance, a 0.0003 mfd. mica coupling condenser, a 600-ohm decoupling resistance, and a non-inductive 0.01-mfd. by-pass condenser, the whole housed in a cylindrical screened container. In addition, the lead joining the high potential end of the unit to the anode terminal of the H.F. valve is fully screened and earthed. The unit is very compact and requires no more baseboard space than a single valve holder, and the price is 9s.

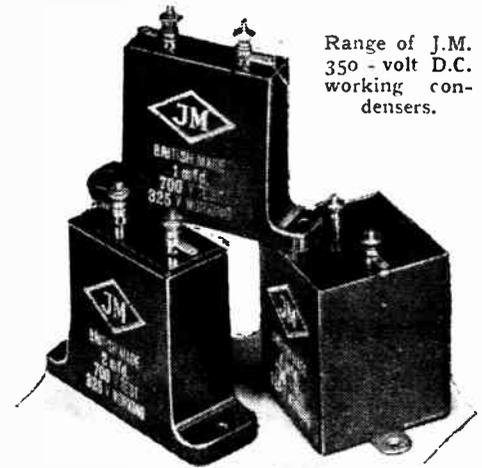
Goltone push-pull switches are now obtainable in several types; all, however, embody a similar style of fitting. A single hole fix-



ing bush is used with a screwed shank for mounting on panels varying in thickness from 1/32in. to 1/2in. Fibre insulating washers for use with metal panels are included. The contact springs are particularly

robust, and are maintained in correct alignment by shoulders moulded on to the base plate. The single-pole on-off pattern costs 9d., a three-point switch 1s. 3d., and a four-spring single-pole change-over model retails at 1s. 6d.

The latest addition to their components is an insulated lead-in strip. This consists of a tinned wire-woven ribbon encased in tough rubber, and, since it is very flexible, can be located where the rigid-type tube lead-in could not be employed. It is available in 6in., 9in., and 12in. lengths; the price of the 6in. model is 6d. The makers are Ward and Goldstone, Ltd., Frederick Road (Pendleton), Salford, 6, Lancs.



Range of J.M. 350-volt D.C. working condensers.

J.M. CONDENSERS

A RANGE of condensers suitable for use in battery eliminators and mains sets has been introduced by J. Millet, 39, Farringdon Road, London, E.C.1. Known as the J.M. series, they are made in five values, namely, 0.01 mfd., 0.1 mfd., 1 mfd., 2 mfd., and 4 mfd., capacities, the prices being 1s. 3d., 1s. 7d., 1s. 9d., 2s. 6d., and 4s. 9d. respectively.

The normal working voltage is 350 D.C. and they have an adequate factor of safety for they are tested at double the working potential. Tests were made with a specimen of each value and in every case the condenser stood up, without a trace of leakage, to a D.C. potential of 700 volts.

The 4-mfd. size is mounted in a metal case finished green, while the smaller values are contained in moulded bakelite cases also coloured green. Soldering tags are provided in addition to small terminals.

IN NEXT WEEK'S ISSUE

will appear a review of components for Class "B" amplification. A table will be given classifying the driver and output transformers under suitable headings so that correctly matched components can be chosen for the various Class "B" valves now available.

News of the Week

Events of the Week in Brief Review

120 kW from Brittany

THE projected 120 kW. broadcasting station at Thourie, near Nantes, is expected to begin testing at the end of the year.

Short Waves from Uruguay

THE Republic of Uruguay has begun regular short-wave transmissions at midnight (G.M.T.) daily, telephony being on a wavelength of 26.39 metres.

Radio Saves Journeys

IN the Swiss canton of Vaud an Order has been passed prescribing broadcast lessons for certain categories of apprentices who cannot conveniently attend classes in the towns. Fifty receivers have been distributed to various radio educational centres.

More Power from Algiers

RADIO ALGIERS has always striven to be heard outside its own frontiers, and in order that the new European high-power stations shall not drown the programmes, steps are to be taken to increase the power of the transmitter, which at present works with 13 kW.

Better French Sets

NO real novelties were on view at the Paris Fair. Most modern trends in design were represented, including anti-fading devices and automatic volume control. According to a correspondent, the general standard of construction has noticeably improved, while prices show a downward tendency.

Unexpected Visitors

A FEW days ago, when the Belgian station, Radio La Louvière, was transmitting its afternoon programme, the Deputy Public Prosecutor, an examining magistrate, a court clerk, two Post Office technicians, and a police commissioner suddenly invaded the studio, stopped the transmission, and put seals on all the apparatus.

This drastic step might be incomprehensible but for the fact that Radio La Louvière is an unauthorised transmitter, operated in political party interests.

No Licences by Instalments

IN the House of Commons last week Colonel Baldwin-Webb asked the Postmaster-General whether he would be prepared to sanction the payment of the wireless licence fee by quarterly instalments in cases of persons registered as unemployed. Sir E. Bennett, the Assistant Postmaster-General, said, in reply, that the objection to a system of this kind was that it would very greatly increase the cost of collection and accounting. The suggested discrimination in favour of unemployed persons would also lead to difficulties and anomalies in practice. The Postmaster-General regretted that he was unable to make the desired concession.

Real Running Commentaries

ON the summer tourist trains in Belgium loud speakers are now used for running commentaries on the landscape.

Five and a Half Million

THE number of wireless licences in force at the end of April was 5,536,300, an increase during the month of 38,700. During the month 177 prosecutions of "pirates" were successfully undertaken by the Post Office, the total fines amounting to £166.

The R.A.F. Display

WIRELESS will play an important part at the fourteenth Royal Air Force Display, which will take place at Hendon on Saturday, June 24th. No fewer than 200 aircraft will participate, the principal novelty being a new Auto Gyro, in which control is obtained solely by the use of the rotating vanes. The fastest plane at the display will be an experimental high-speed Hawker "Fury," estimated to be capable of nearly 250 miles an hour.

Bear on the Ether

SHORT-WAVE receivers have been installed on 100 beer lorries in New York, the object being to enable orders to be transmitted from the central brewery, thus obviating the distressing spectacle of lorries returning with their tanks half full.

Honest Belfast

ACCORDING to the Belfast postal authorities, there are practically no wireless "pirates" in the Ulster area. In the past eighteen months the number of licence holders has increased by over 12,000, making a total for the Belfast area of over 35,000.

Should Valves be Marked?

WHETHER imported wireless valves and rectifying valves should be required to bear an indication of origin will be discussed at a public enquiry by the Board of Trade at 11.30 a.m. on June 19th and (if necessary) at 10.30 a.m. on June 20th. The enquiry will be held at the Board of Trade Office, Great George Street, London, S.W.1.

Radio and Riots

A NEW risk has been legislated against by the Czechoslovakian Minister of Posts and Telegraphs. The danger lies in the possibility that disturbance of the peace might result from collective listening to propaganda broadcasts from abroad. Therefore the Minister has forbidden reception on loud speakers in public places of speeches emanating from Germany. At present, presumably, listeners may tune in what they like in their own homes.

Echoes from Space

A CLEVER acoustic analogy demonstrating how wireless waves are reflected from the upper atmosphere was shown by the National Physical Laboratory at the Conversazione of the Royal Society at Burlington House on May 17th. At about four feet below a suspended metal plate, representing the Appleton Layer, a ticking device was placed close to a microphone. By means of a cathode-ray tube, the wave form was reproduced visually, and it could be seen at a glance how the wave produced by the direct pick-up of sound by the microphone was followed by the "echo" reflected from the plate above.

Outlaw Stations in U.S.

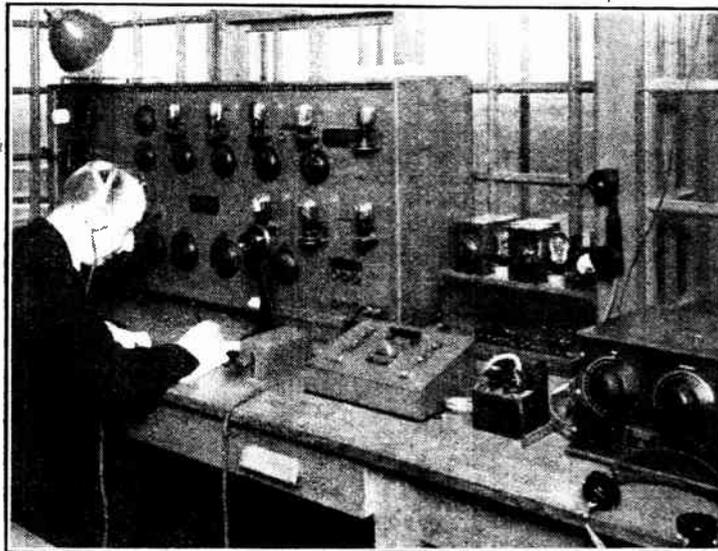
TEXAS is the land of wireless outlaws. According to the American Federal Radio Commission there are at least sixty unlicensed broadcasting stations in the U.S., and half are reported to be in Texas, with Pennsylvania a good second. Many of the stations are on very low power, and it is even believed that in some cases their owners are unaware of the regulations. But ignorance is no excuse, and the Radio Commission, armed with seven high-precision receiving sets and four recording units, intends to wipe out the outlaws and police the wavelengths more thoroughly.

New U.S. Radio Chain

ON or about June 1st America will have a third broadcasting network, the Amalgamated Broadcasting System, Inc., which will compete with the National Broadcasting Company and the Columbia Broadcasting System. The Amalgamated will comprise three New York stations—WCDA, WBXX, and WMSG—to be linked together under the call-sign WMET; WTNI, Trenton; WPEN, Philadelphia, and other transmitters in Wilmington, Baltimore, and Washington.

"Small Ads." at Whitsun

THE advent of the Whitsun holiday necessitates slight alterations in our printing schedule. Miscellaneous advertisements intended for *The Wireless World* of Friday, June 9th, should reach the Advertisement Office, Dorset House, Stamford Street, London, S.E.1, not later than first post on Friday, June 2nd.



AN AERIAL TELEGRAPH OFFICE. The Marconi directional receiver installed in the control tower of the new Manchester Air Port at Barton Moss. Telegraph and telephone messages are picked up from aircraft in flight.

Eyesight Saving

THE Gramophone Company has solved a problem. Up to a few weeks ago the factories had experienced great difficulty in obtaining girls with fine enough eyesight to see the wire—0.0016 of an inch thick, finer than a hair—which is employed in the coils incorporated in H.M.V. receivers. Now a member of the staff has devised a machine in which the wire is passed through spring pulleys which fly back as soon as a breakage occurs enabling the coils to be wound twenty times quicker.

An official said: "It costs us over £50 per worker for training before the girl is efficient enough to be employed on coil winding. At the moment we have over 250 operatives engaged on this work."

India and the B.B.C.

NEW life has been given to many smaller broadcasting stations centred around the Empire since the inauguration of the short-wave programmes from Daventry. According to an Indian correspondent, the Calcutta and Bombay stations now frequently relay the Empire programmes, and have, in consequence, secured a larger audience. Out of twenty relayed programmes the Calcutta station director classified ten as being well received throughout, nine in which reception was good but marred by fading, and only one in which reception was definitely unsatisfactory. At Colombo, Ceylon, a new station is being erected specially to relay the B.B.C. programmes each evening.

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

IN the Class "B" Ferrocart receiver (*Wireless World*, April 7th) the reaction control condenser C₄ is inserted at the high potential end of the reaction circuit, and therefore its rotor must be insulated from the metal supporting

Reaction Condenser Insulation

bracket. This insulation is actually effected by means of a pair of bushes. Constructors who are using a different type of condenser should bear this point in mind, and if insulating bushes are not available must devise other means of preventing contact between the one-hole fixing bush and the bracket.

WHEN constructing a coil or similar component it is usual, if the job is to be nicely finished, to bring out the connections more or less in the manner shown in Fig. 1 (a). Separate single-ended soldering tags are used as terminal points for the internal and external wiring.

Soldering Tags

This procedure is correct enough, and makes for neatness, but for electrical continuity contacts made by a pair of nuts must be depended upon; it is possible that one or both of these may work loose, especially in a portable receiver, which may be subjected to vibration. To avoid this possibility the use of a double-ended soldering tag (Fig. 1 (b)) is recommended, although the finished job may not be quite so neat. When this type of tag is employed its fixing screw serves merely to anchor the tag in position, and does not have to carry any current; even if it works slightly loose, no harm will be done.

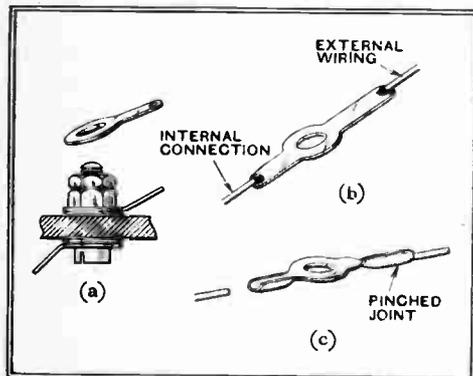


Fig. 1.—Types of commercially produced soldering tags.

To make an extremely strong and permanent joint, double-ended tags, with troughs pressed in their ends (see Fig. 1 (c)) may be used. Extra mechanical strength may then be given to the joint by "pinching" the wire into the trough before soldering.

IN dealing with a superheterodyne, there is a real risk of confusing instability (uncontrollable self-oscillation of H.F. or I.F. valves) with severe second-channel and similar forms of interference. The symptoms are similar, and it is none

Second-channel Interference

too easy to distinguish between them. Incidentally, it may be remarked that true instability is not a common fault in a superheterodyne; this is one of the advantages of that system of reception.

If it happens that instability is really the cause of the trouble, this fact can be confirmed fairly easily by manipulation of the volume control. As intensity is gradually reduced, whistling will stop suddenly, and will not occur again when other stations—at any rate, those operated at a higher wavelength—are tuned in.

WHEN the lowest wavelength to which a gang-tuned receiver may be adjusted seems to be excessively high, the first thing to do is to see whether it is not possible to reset the trimming condensers to a lower capacity all round.

Trimmer Adjustments

This should be fairly obvious, but it would appear that many amateurs, having made a satisfactory trimming adjustment from the point of view of alignment, do not realise that less capacity might be employed without prejudice to accuracy.

Experience shows that when this scheme is put into effect in a haphazard manner by adjusting one trimmer at a time, the final settings often come back to almost exactly the original values. It is sometimes better to slacken off each trimmer screw by an amount that will bring about roughly the same change in capacity before tuning to a signal and making the final critical adjustment.

WHEN it is observed that signal strength may be momentarily increased by touching the grid terminal of a valve or any of the high-potential wiring associated with its grid circuit, it may invariably be concluded that there is an interruption in the leakage path of the grid circuit of that valve, and that a charge is accumulating.

Accumulated Grid Charge

The reader may be reminded that the grid circuit of every valve, whatever its function, must be completed to cathode or filament through a path which is conductive for D.C. current.

As an example of what may happen in practice, attention may be drawn to

Fig. 2, which represents a fairly common type of input filter circuit with double-capacity coupling. A disconnection in the resistance R, through which bias is applied to the H.F. valve, will leave the grid "in the air," as the necessary con-

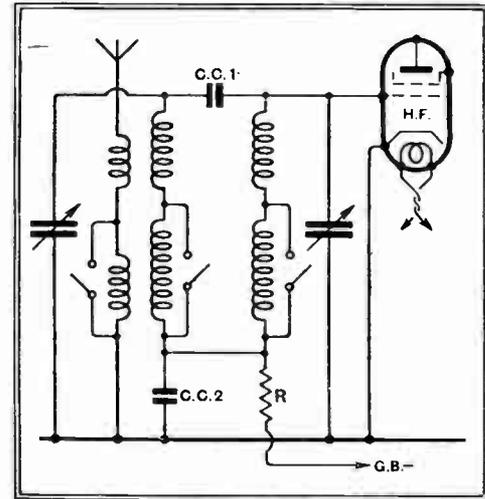


Fig. 2.—A typical arrangement in which interruption of the bias feed system results in a "choked" grid circuit. A charge will accumulate in the coupling condenser C.C.2.

dition laid down in the preceding paragraph no longer exists. Of course, the interruption might exist in any part of the grid-bias circuit.

IT is usually recommended that, when measuring voltage or current in a mains-operated set, all the valves should be working normally, in order that the power supply equipment loading may be the same as under ordinary working conditions.

More Accurate Voltage Measurements

This is a good general rule, but there are occasions where a little finesse may be employed with advantage. If, for example, the voltmeter resistance is on the low side it will impose an appreciable excess load on the rectifier, etc., and so a reading of total H.T. voltage will be more or less inaccurate.

In order to compensate for the extra current taken by the meter, it is often a good plan to remove one of the receiver valves before making the measurement. Of course, the valve chosen for removal should be one which normally takes about the same current as the meter, but even if its consumption is not exactly the same the reading will be sufficiently accurate for all practical purposes.

The same idea may be applied with advantage to a battery set, especially when the H.T. battery begins to develop an increasing internal resistance with age.

Broadcast Brevities

By Our Special Correspondent

The Organ

ALTHOUGH, as first exclusively announced in *The Wireless World*, the inaugural concert with the new organ in Broadcasting House will be given on June 16th, the instrument has already figured unofficially in the programmes. The first chords were actually broadcast during the Epilogue on Sunday evening, May 14th, as a special tribute to the memory of the late Mr. J. C. Stobart.

Pipes Missing

Actually the organ is still incomplete, as a number of pipes have to be added, but between now and the inaugural concert it may be used for simple accompaniments.

Mr. Berkeley Mason, I hear, is likely to be the official organist.

The Fun Will Begin

SUNDAY next, May 28th, will see Western Regional take over the complete service on 309.9 metres and the consequent fade-out of the old transmitters at Cardiff and Swansea.

Within a week the first tests on West National should begin, the wavelength being 261.6 metres. We shall then see whether London National, on the same wavelength, will look kindly on this "little grey home in the West."

Mr. Gladstone Murray's Return

ACCORDING to the Press prophets, no one who sets out from Broadcasting House to cross the Atlantic is ever likely to return. When Mr. Gladstone Murray, the B.B.C. Publicity Chief, went forth on his recent mission to Canada, the pens at once got busy to show why he would find a Dominion post too alluring to let slip.

Mr. Gladstone Murray has crowded a tremendous amount of organising work into the last three months, and Canada, now equipped with the framework for an efficient broadcasting system, will be sorry to drop the pilot; nevertheless, the B.B.C. will have its Publicity Chief back again in a month's time. Mr. Gladstone Murray sails for England on June 10th.

Henry Hall's American Visit

And now we have these rumours anent Henry Hall, who has innocently planned a summer holiday in the States. It has been alleged that, once on American soil, Henry will be unable to turn his back on "God's own country."

Busman's Holiday

Henry Hall has no intention of leaving the B.B.C. Indeed, it is not even definitely settled that he will go to America, for much will depend upon whether the Corporation can dispense with his services for the four weeks which (quite rightly) he considers the minimum time necessary for a carefree vacation. At the best it will be a sort of busman's holiday, for he is determined to hear as many dance bands as possible, and to renew friendships with all the best-known American dance leaders and composers. Irving Berlin is a close friend of Henry Hall's.

"Say, Folks . . ."

It is, of course, quite probable that the B.B.C. Dance Band may take on a new flavour when its leader returns. It will probably be hotter than ever, and I guess that Henry's announcements may be infected with that Yankee flavour which seems to be inseparable from syncopation and saxophony.

Sir Charles Carpendale

ONCE more Admiral Sir Charles Carpendale has been re-elected President of the International Broadcasting Union, and he will hold this post until 1934, when, I understand, he will also be retiring from the Controldership of the B.B.C.



NATURE'S "EFFECTS" DEPARTMENT. B.B.C. officials conducting a rehearsal for last week's Zoo broadcast. The success of this venture suggests that a permanent "Zoo studio" should be installed.

A Master of Tact

Although some European countries would have liked to see a change in the Presidency, it is universally agreed that Sir Charles has filled his very difficult office with distinction; his admirable tact and understanding in ticklish situations has provoked general admiration.

The Great Share-out

It is likely that the next President will be a German. The new plan for securing fair representation on the Council provides for four Vice-Presidents, the positions of President and two Vice-Presidents being divided between the largest contributors to the funds of the Union. Great Britain and Germany both pay equal amounts, while France comes next, so that these three nations will invariably hold important positions. The two remaining Vice-Presidencies will be shared by nations which contribute smaller amounts to the funds; this year the Vice-Presidents are from Denmark and Italy.

That Theme Tune

MANY listeners have written and telephoned to Broadcasting House to enquire the title of the theme tune that has introduced the performances in the "Stars in their Courses" series on Saturday evenings. The chords that have been heard are excerpts from Gershwin's "Rhapsody in Blue," and a Paul Whiteman record is used for their reproduction. An exception was made on the evening when Fay Compton was the subject of Mr. Agate's talk. In this case the talk was introduced by the incidental music to "Mary Rose."

More "Stars in their Courses"

Future broadcasts by Mr. James Agate in the "Stars in their Courses" series will be as follows: May 27, Sir John Martin-Harvey; June 3, Hilda Trevelyan; June 10, Matheson Lang. Mr. Agate will probably select Marie Tempest as his subject for June 17 and Edith Evans for June 24.

An Ibsen Play

ELIZABETH BERGNER, the well-known cinema actress, is to play the part of Hedvig in the microphone version of "The Wild Duck," which the B.B.C. will broadcast to National listeners on May 31 and to Regional listeners on June 2. Leon Quartermaine will be Hjalmar.

Production will be in the hands of Val Gielgud.

Why Not B.B.C. "Serenades" ?

IT has always been a mystery to me why the B.B.C. should imagine that people are most anxious to dance at the end of a long day. That the B.B.C. think so is apparent from the fact that for the last ten years there has rarely been any alternative to the dance broadcasts after 10.30 p.m. Yet this is the hour when many people are best able to appreciate the soothing influence of quiet music.

The other evening I listened to one of those delightful "Serenade" hours from Munich, which begin at 10.45. The atmosphere is informal; just a few instrumentalists are collected together under the direction of an amiable compère who introduces each selection with a brief chat.

"Bravo, Mr. Smith!"

Sometimes two or more speakers have something to say on the characteristics of each piece, and the leader will go so far as to commend a player when the selection is finished.

Imagine a B.B.C. announcer exclaiming "Bravo, Mr. Smith!" in the manner of Herr Erich Kloss at Munich on Thursday last!

I believe an informal hour once or twice a week would be very acceptable to B.B.C. audiences.

"Daventry International"

THE Empire is asking for more. So Mr. Cecil Graves, Director of the Empire Broadcasting Department, is responding to the demand by arranging omni-directional broadcasts from the Daventry short-wave station every day from 11 a.m. to 1 p.m. (G.M.T.) and on Sundays from 11.30 a.m. to 1 p.m. These new transmissions, which commence on June 11th, will consist mainly of relays of the National programme, and they will be available to anyone who can pick them up.

It looks as if the "National" programmes will soon have to be labelled "International."

How the SUPERHET WORKS

A Simple Explanation of the Signal-frequency Stage

By W. T. COCKING



EVEN to those who are thoroughly familiar with the straight set and are unafraid to tackle the most ambitious design, the superheterodyne often remains something of a mystery, an assembly of apparatus to be regarded with proper reverence, but too complicated for general use. In actual fact, there is nothing mysterious about the superheterodyne, and it functions in a perfectly straightforward manner in accordance with known laws. So far from being complex, it offers the simplest means of obtaining the best combination of quality, selectivity, and sensitivity.

The theory of the superheterodyne, however, is certainly more advanced than that of the straight set, and in the following it is assumed that the reader has at least a broad knowledge of how the latter type of receiver operates. If he has not he is advised to read the series of articles entitled "The Signal Through the Re-

ceiver,"¹ for he will then be in a much better position to appreciate the essential differences of the superheterodyne, and much recapitulation will be saved.

In this series of articles dealing with the theory and practice of the modern superheterodyne receiver, Mr. W. T. Cocking, the well-known authority on this subject, explains in simple terms the function of each essential component. The present instalment covers the signal-frequency tuning system and stresses the importance of avoiding grid current.

The general outline of the superheterodyne will already be familiar, and it will

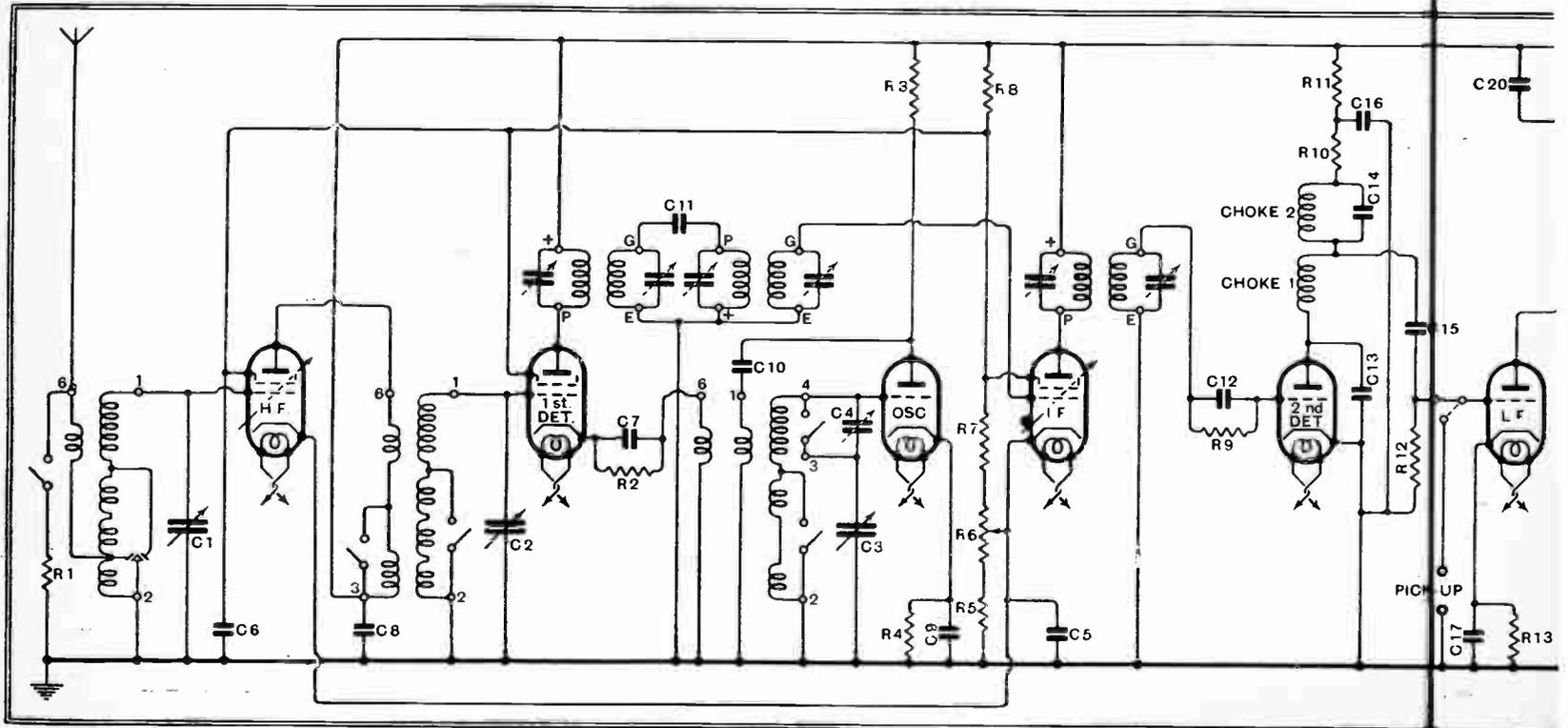
¹ *The Wireless World*, October 7th, 14th, 21st, 28th, November 4th, 18th, 25th and December 16th, 1932.

be remembered that the initial circuits are usually identical with those of a straight set, often even to the inclusion of an H.F. stage. Instead of coupling the detector to the output of the H.F. stage, however, a piece of apparatus known as the frequency changer is incorporated. As its name implies, this changes the frequency, or wavelength, of the incoming signal to some other value. Another amplifier is then used, operating at this different frequency, and only after this is the detector proper included.

The operation will perhaps be best understood by tracing the course of a signal through a set, and in Fig. 1 is shown the circuit diagram of a modern A.C. superheterodyne of the most advanced type.

In this diagram all those details peculiar to the superheterodyne are included, but for simplicity's sake the apparatus required solely for providing the operating current from the mains has been omitted. It should be understood that this latter equipment differs in no

Fig. 1.—The complete circuit diagram of a modern high-sensitivity superheterodyne. This includes all apparatus peculiar to this type of receiver such as the frequency changer, the intermediate frequency amplifier and the fixed tone-corrector.



way from the practice employed in straight sets. This circuit is actually that of the Monodial A.C. Super². Throughout this series of articles constant reference will be made to this diagram, and when reading succeeding instalments it should be kept handy for reference, since it will not be repeated.

As a preliminary to a complete discussion of the superheterodyne principles, we shall trace the course of a signal step by step through the receiver, and return later to a more detailed consideration of certain very important points in the correct functioning of the apparatus. At first, consider the operation with all the coil switches closed, for the receiver is then set to work on the medium waveband. The signal from the broadcasting station which we wish to receive sets up a current in the aerial which is very similar, save in magnitude, to that in the transmitting aerial. The signals from all other broadcasting stations also set up currents in the aerial. The total aerial current, therefore, is of an exceedingly complex nature, since it is composed of a multitude of different currents set up by the different stations. The problem of reception thus resolves itself into three things: the selection of the particular current due to the desired station to the exclusion of all other currents; the amplification of this to the required degree; and the carrying out of these processes without adding to, or subtracting from, the original modulation of the desired carrier.

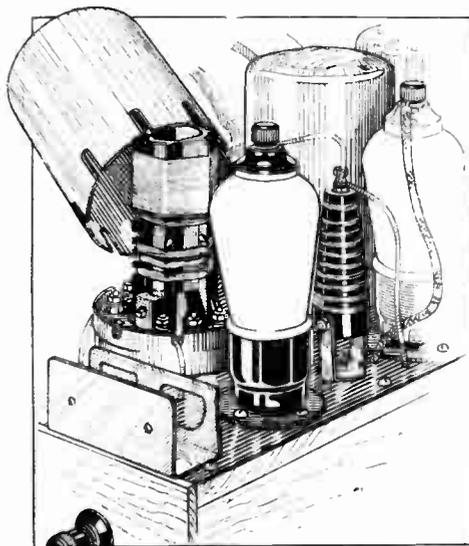
Station Selection

When the switch in series with R1 of Fig. 1 is open, the currents in the aerial flow through the coil between the points 6 and 2 of the aerial coil assembly, and since this coil is in inductive relationship with the tuned secondary (points 1 and 2), there is also a current flow in this secondary circuit.

Now this secondary current is not identical with the original, for the tuned circuit responds more readily to currents of certain frequencies than to others. If the voltage set up in the aerial by a signal were held constant, and the signal frequency gradually varied while the voltage developed across the secondary tuning condenser C1 were measured, it would be found that for one particular frequency the voltage would be a maximum. The results, in fact, could be plotted in the form of a curve such as that

shown in Fig. 2, in which it will be seen that the response at one frequency is greater than at any other.

This frequency of maximum response, or resonance, is dependent upon the values assigned to the coil inductance and



The principal components in the signal-frequency stage of a modern superheterodyne.

condenser capacity, and it is inversely proportional to the square root of their product. Since we obtain maximum signal strength when resonance in the tuned circuit coincides with the frequency of the desired station, we naturally choose this point in tuning, and in practice this is carried out almost universally by varying the capacity of the condenser. By tuning the circuit to resonance with the desired signal, however, not only do we obtain the greatest efficiency, but we increase the strength of that station relatively to the strengths of all other stations. If, in the absence of any such circuit, two broadcasting stations gave signals at the receiver of identical strength, their relative strengths at the grid of the first valve when such a circuit is employed can be read off from the resonance curve (Fig. 2) for their particular frequency separation. Thus, if they are separated by 10 kc/s, the unwanted station becomes only 25 per cent. as strong as the wanted signal, while if they are separated by 40 kc/s it is only 6.7 per cent. Away from resonance the response quickly falls off.

The tuned circuit, therefore, is selective, for it tends to select the desired signal to the exclusion of others. It is by no means completely selective, however, for it gives quite an appreciable response to frequencies different from resonance. In practice, the value of the coil inductance is fixed by the band of frequencies, usually 550-1,500 kc/s, which must be covered with a given variable condenser. When this is the case the absolute response of a tuned circuit of this nature at a frequency remote from resonance is substantially a constant factor, for it is not appreciably influenced by the efficiency of the circuit. The response at resonance, however, is determined by the efficiency.

Some losses must occur in every prac-

tical circuit, and these are usually considered as taking the form of a resistance connected in series with the tuning coil. The lower the value of this resistance the greater will be the response at resonance, and hence the better the signal strength which we shall obtain from the wanted station. Since the response at a frequency different from resonance is not greatly dependent upon the circuit resistance, however, the wanted signal will not only be increased in absolute strength, but also relatively to the strength of an unwanted station, so that the selectivity becomes greater.

Low coil resistance, high efficiency, and great selectivity thus become almost synonymous terms in a circuit of this nature, and it is obvious that efforts to reduce the resistance to a reasonably low figure will be well repaid. There is one other point, however: the wanted signal does not consist of a single frequency, but rather of a band of frequencies extending some 10,000 cycles on either side of the carrier frequency. For reasons which are too lengthy to go into here, it is usually considered that high quality reproduction is obtained if audible frequencies up to 5,000 cycles are fully reproduced, although there is no doubt that for the best quality higher frequencies must be included. In distant reception this is usually impossible on account of interference, and for the present we may say

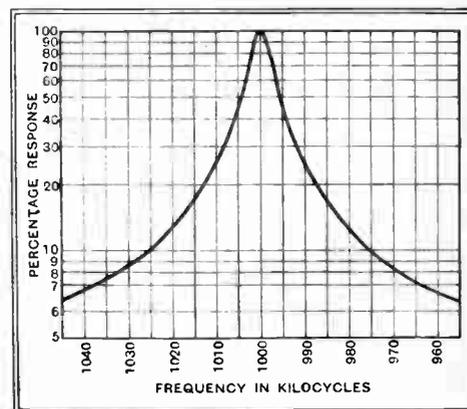
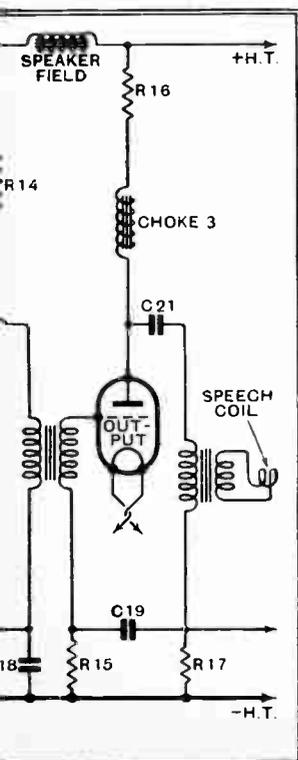


Fig. 2. The resonance curve of a single-tuned circuit of good efficiency is shown for a wavelength of 300 metres, corresponding to a frequency of 1,000 kc/s.

that the wanted carrier has sidebands up to 5 kc/s only.

A modulated carrier, therefore, on 1,000 kc/s would really embrace the band of 1,005 kc/s to 995 kc/s, and a glance at Fig. 3 shows us that the selective action of the tuned circuit acts upon the wanted station. Frequencies remote from the carrier by 5 kc/s are reproduced in this case with a strength only 45 per cent. of that of the carrier, and the practical meaning of this is that an audible note of 5,000 cycles would be reduced to this value after the modulated carrier has passed through the tuned circuit. There is thus distortion, for it will be obvious that low audible frequencies are barely affected.

Fortunately, it is possible to correct for this effect in subsequent circuits of the receiver, but complete correction is hardly



² The Wireless World, April 13th, 20th and 27th, 1932.

How the Superhet Works—

possible, since the amount of sideband cutting which occurs is not constant at all wavelengths. Thus, if there is 45 per cent. at 300 metres (1,000 kc/s), the reduction at 200 metres may only be to 70 per cent., and at 500 metres it may be as much as to 20 per cent. It so happens, however, that the ear is very tolerant of this form of distortion, and the reduction of an audible frequency by as much as 50 per cent. is often barely detectable. In general, therefore, correction must be for the loss at about the middle of the tuning range; at higher wavelengths the correction will not be sufficient, and the higher audible frequencies will be somewhat reduced; at lower wavelengths the correction will be excessive, and the higher notes will be reproduced at abnormal strength. Provided that the variation of selectivity of the tuned circuit with wavelength is kept moderate, however, the ear cannot detect the imperfections. Since the ear is always the final arbiter, this is all that is necessary.

It will now be apparent that we obtain across C_1 of Fig. 1 potential variations which are different from those in the aerial. The potentials due to the wanted station are enhanced relatively to those of the unwanted stations, and the modulation of the desired carrier is somewhat reduced at the higher audible frequencies. The condenser C_1 is connected between the grid of the H.F. valve and the earth line, but for this valve to act as an amplifier the potentials must be applied between its grid and cathode. A large-capacity condenser C_5 , therefore, is connected between the valve cathode and the earth line to complete the connection, since such a condenser offers a very low impedance to high-frequency currents. The voltages developed across C_1 , therefore, are applied between the grid and cathode of the H.F. valve practically in their entirety.

Avoid Grid Current.

If the tuned circuit is to retain its normal efficiency when connected in circuit, it is obvious that the resistance of the valve grid-cathode path must be infinite, for any resistance in parallel with C_1 has the effect of increasing the effective coil resistance. The internal grid-cathode path of the valve has a value approaching infinity only under certain conditions. If the grid is positive with respect to the cathode, the grid-cathode path of the valve is conductive, and the grid A.C. resistance has a value depending partly upon the valve structure and partly upon the potential applied. Under this condition, of course, there is a flow of grid current round the external grid-cathode circuit. This effect may be avoided by so arranging the circuit that the valve grid is always negative with respect to its cathode. In the case of an indirectly heated cathode valve, however, grid current may flow with a negative bias applied to the grid. The region of grid current with a negative bias is usually quite small, and normally it will suffice if the grid potential is always

more than one volt negative with respect to the cathode.

In a mains receiver it is usual for negative bias to be applied by biasing the cathode positively with respect to the grid, and in Fig. 1 it will be seen that the H.F. valve cathode is connected to the slider of a potentiometer R_6 , which is in the H.T.

circuit at a point positive with respect to the earth line, and, therefore, the grid. The bias can thus be adjusted at will, and over a large range to suit varying conditions. A fixed resistance R_5 is included in order to prevent the bias from ever being too low to avoid grid current flow in the absence of a signal.

Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents. Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Stamford Street, London, S.E.1, and must be accompanied by the writer's name and address.

Short-wave Reception

I AM sure you will be glad to know that the W.W. "Short-wave Two" is most successful here. The ratio of signal strength to background is without equal in my long experience of short-wave work. It excels in "Morse" reception, and is more powerful than a recent and quite good "four-valve set."
J. S. DUNN.
Cape Town.

Automatic Volume Control

HAVING recently built *The Wireless World* A.C. Monodial with A.V.C., I am most surprised at Mr. Haynes' letter in criticism of A.V.C.

The loss of sensitivity is absolutely nil, as the A.V.C. cuts clean out when the signal falls below a strength which nearly overloads the second detector.

On the medium waveband there is no space between stations to get any "mush," while on the long waves the noise suppressor is very effective.

After using a milliammeter for a day or two tuning is quite easy without it, while range and wonderfully silent background accompany almost perfect quality.

I fail to see how A.V.C. can introduce noise, but if used on a noisy, insensitive set it can hardly be expected to remedy these troubles.

If A.V.C. operated on the modulation as Mr. Haynes appears to suggest, we should receive the whole of a musical programme at exactly the same volume, irrespective of the number of instruments performing, bringing up solo passages out of all proportion to the conductor's intentions! How horrible!
G. F. CHAMBERS.

Chesterfield.

I WAS very interested in the letter from F. H. Haynes on automatic volume control, which appeared in your issue of May 5th, and should like to put forward the following points against certain of his statements:

If the receiver is to compensate fully for fading it must be sufficiently sensitive to provide a power output of, say, 1 watt from the weakest parts of the carrier of any station of "entertainment value" at the time. It is admitted that all transmissions of greater field strength will be cut down to this level by the A.V.C., but this can by no means be called a "weak level." If a receiver of this sensitivity was not fitted with A.V.C., the detector and output stages at least would be very much overloaded on any signal of what might be called normal strength.

The statement that a weak signal is repre-

sented at the second detector of a superhet as a carrier of low modulation is not correct. The output from the oscillator of a superhet is not, as a general rule, modulated by the incoming signal, but is used to "beat" with it at the prearranged intermediate frequency. Obviously, if the incoming signal is weak the I.F. beat will be weak (cf. oscillation in a straight receiver, producing an audio-frequency beat). If Mr. Haynes' statement was correct, then no incoming signal would be represented by an unmodulated carrier at the second detector. This is impossible since, if there is no incoming signal the intermediate beat frequency cannot be produced by the oscillator unless the H.F. stages are in a state of self-oscillation. Thus, A.V.C. arranged to work on the carrier amplitude at the second detector is quite in order. If, as Mr. Haynes seems to suggest, the A.V.C. valve was controlled by the depth of modulation of the carrier imposed on the second detector, all musical passages, not to mention speech, would be smoothed out to the same volume level, irrespective of relative loudnesses originally.

The statement that "some measure of A.V.C. is useful in limiting tuning-spread due to detector overloading" seems to be somewhat ambiguous. It is admitted that A.V.C. will obviate detector overloading, but it will increase, not limit, the tuning-spread; the selectivity of the receiver will not, however, be in any way affected. As the receiver is detuned from a station, the carrier amplitude on the detector and on the A.V.C. valve is reduced. The bias on the H.F. stages will, therefore, be automatically reduced, increasing the gain, and bringing the volume up to the previous level. This action continues as the station is further detuned, until the whole of the A.V.C. bias on the H.F. stages has been removed, after which the station rapidly disappears. This holds good only if there is no adjacent station working at the time. If a station is working adjacent to the one being received, at a separation of, say, 9 kc/s, then as the set is detuned from one to the other the total power output will remain fairly constant, but will dissolve from one station to the other. With a modern tuning circuit no interference will be experienced from the adjacent station.

On the other hand, a properly arranged Q.A.V.C. system will definitely limit tuning-spread, in some cases to a matter of 1 kc/s above and below the frequency of any station. Even in these cases the quality of reproduction is not impaired by high note cut-off.

The statement that the "set will no longer possess those essentials—range with silent background" implies that the addition of an A.V.C. system to a receiver restricts the

range and introduces background noise. The range of a receiver is exactly the same if fitted with A.V.C. or not, since when working all out the H.F. stages are not at all over-biased, but are at their maximum working mutual conductance. Background noise is brought up to its maximum level between stations on a receiver fitted with simple A.V.C., but is reduced immediately a carrier is received. When receiving a station background noise is no more if the set is fitted with A.V.C. than if it is not. If the noise is objected to, it can be overcome by Q.A.V.C.

Finally, a listener's receiver certainly does not require to be working at maximum sensitivity for all stations other than the "local" in this district, where the field strengths from many Continental stations average several times those of the National and Regional transmitters after dark. The greatest advantages of A.V.C. is that the sensitivity of the receiver is automatically varied inversely as the field strengths of the stations received, providing exactly the correct amount of gain is arranged to give an output of comfortable strength in all circumstances.

R. S. HODGSON.

Hull.

Prices

I HAVE read with much interest in *The Wireless World* your editorial comments regarding the prices of radio goods, and I must say that I am in total agreement with what you have said.

The present prices are far too high for the majority of components offered for sale today. Granted that the British radio goods are in the front ranks of the industry, but that does not give the manufacturers the

FOREIGN BROADCAST GUIDE**RADIO LUXEMBOURG**

(Grand Duchy of Luxembourg).

Geographical position: 49° 36' N.; 6° 08' E.

Approximate air line from London: 310 miles.

Wavelength: 1,190.5 m. Frequency: 252 kcs. Power: 150 kw.

Standard time: Greenwich Mean Time (adopts B.S.T.).

Standard Daily Transmissions.

18.00 G.M.T. (or B.S.T.) (week days), 19.00 (Sundays),
gramophone records; 19.45, weather, concert; 20.30,
English talk (Sun.); 20.40, records; 21.15, news
(French), music; 22.00, news (German); 22.10,
Variety or dance music.

Concerts destined for foreign listeners are broadcast according to following schedule: Great Britain (Sunday); Italy (Monday); Germany (Wednesday, Thursday); France and Belgium (Tuesday, Saturday); Holland (Friday).

Announcers: Man and woman (announcements are made in German, French and in the Alsatian dialect).

Call: *Hier Versuchsender Luxembourg; Ici poste expérimental Radio Luxembourg; Ici a der Luetzburger, versuchsender*; occasionally, *Radio Luxembourg calling*.

Opening signal: Siren.

Closes down with good night greetings in various languages followed by Anthem.

right to "stick on the price." While probably many months of experimenting on their part is entailed, it is also up to them to turn out the best possible, but why should the ultimate purchaser be charged up with the "dog work."

Naturally, one does not want the electrical efficiency to suffer if prices are cut, but

taking for example one of the numerous nice-looking transformers on the market, do the makers really consider that the pretty bakelite shrouding in any way enhances the efficiency of the component other than in appearance? The shrouding has to be made, and naturally paid for, but it is totally unnecessary. With the present-day cabinet the "innards" are very seldom put on show, so what does appearance matter? Why can't we have the crude article?

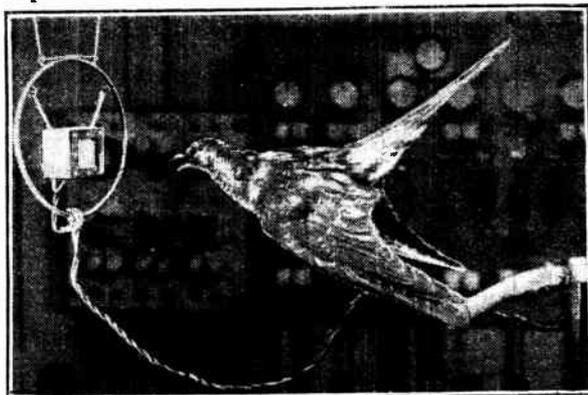
Again, the home constructor is at a decided disadvantage compared to the manufacturer in building a compact receiver; the stripped parts are unobtainable, so the home builder has to make his set very much larger than he really need do. It is also the present fashion to cellulose the various parts with a nice grey paint; beyond adding to the price, what's the use of it?

The Wireless World has done a lot for the home constructor. I hope your present "few words" will sink in where needed.

May I add another "grouse," which I am sure *The Wireless World* will agree with—that is, the terrible delays that occur after placing an order. A delivery by return is almost an unheard-of thing; two weeks or more is far more usual. This particularly applies to any new component which is ordered. There seems to be a mistaken policy in the trade that the demand creates the supply; surely it is the supply which creates the demand, with the usual "boosting," of course. It is most disappointing to be held up in the construction of a new set for some unobtainable part which has been advertised perhaps for weeks.

Wishing *The Wireless World* all the best — it certainly is the best.

Bournemouth. E. J. B. CURTIS.

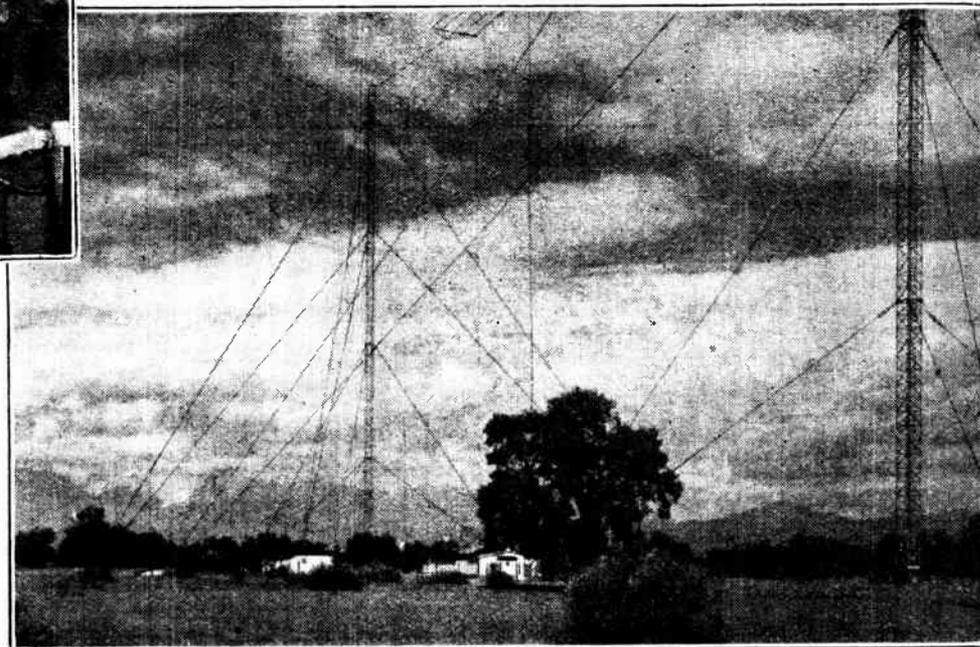


FOR THE BENEFIT OF VISITORS Ljubljana displays this stuffed cuckoo before a microphone in the control room. Actually the famous call is produced mechanically.

VIII—Ljubljana, 522 kc., 574.7 m.,
7 kW.

RADIO LJUBLJANA, famous for its cuckoo call, is situated some miles from the town of that name, at a village called Domzale, in the shadow of the Alps. It is operated by the Roman Catholic authorities, primarily for public education purposes, the Director, Abbé Zor, being a notable figure in religious circles. The Chief Engineer is Professor Ossana, of Ljubljana University, and to him goes the credit for the invention of the cuckoo call. Needless to say, the call is mechanically produced despite rumours that a specially trained bird resides on the premises!

When I visited the station in mid-winter the heating was by means of primitive iron



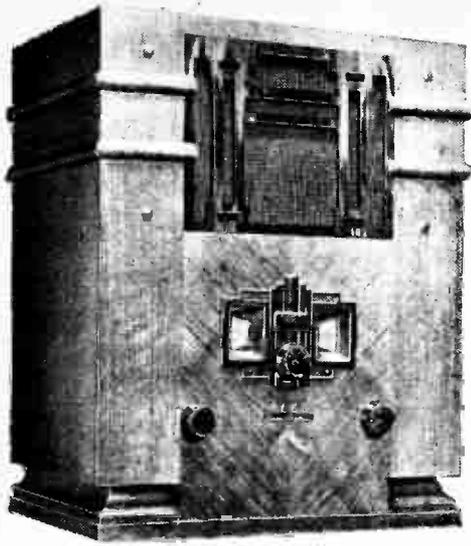
The station is beautifully situated near the Austrian Alps at Domzale, some miles from the University town of Ljubljana.

stoves; the whole station, in fact, wore an unpretentious appearance.

Despite its fame, Ljubljana cannot at the moment be serving more than some 10,000 paying listeners. Nevertheless, the cuckoo

call has won for the station enduring fame and the certainty of at least an occasional hearing from everybody in Europe who can manage to tune it in.

WANDERING WAVE.



ALBA Superheterodyne

MODEL 56

A Set Exemplifying the Advantages of a High Intermediate Frequency

FROM the technical point of view the chassis embodied in this receiver is of more than usual interest. Superficially, the circuit, for a superheterodyne, is simple, and the manufacturing costs are correspondingly low, yet the performance, from the point of view of range and selectivity, challenges comparison with sets employing many more stages. Further, the set for its type is singularly free from heterodyne whistles and background noise.

The choice of an intermediate frequency of 473 kilocycles, as compared with the more usual figure of 110 kilocycles, is responsible for the simplification of the circuit in relation to performance. As the intermediate frequency is raised, those stations causing second channel interference on the medium waveband are farther removed from the resonant frequency of the aerial input circuit and the whistles to which they give rise are correspondingly reduced. It is unnecessary, therefore, to legislate for a signal frequency H.F. stage or even a band-pass filter, as a simple tuned circuit gives for all practical purposes complete immunity from second channel interference on the medium waveband. Another advantage of a high intermediate frequency is the ease

with which stray H.F. currents can be filtered from the output of the second detector.

The adoption of 473 kilocycles for the I.F. stage is not without its disadvantages from the designer's point of view, but these are well worth the trouble of overcoming when the prize of success is a medium waveband free from second channel whistles. In the first place, the intrinsic selectivity of the I.F. coils is not so high as that of the more conventional 110 kc. amplifier, but any lack of selectivity from this cause is effectively countered in the Alba set by the use of reaction in the I.F. stage. The degree of reaction is under the control of the user, and a small knob is provided at the back of the set for this purpose.

The I.F. stage works on a wavelength of the order of 600 metres, and interference from ships' spark transmitters must be carefully guarded against. Direct pick-up on the coils is avoided by careful screening, and a wave-trap takes care of any residue of off-tune interference coming in through the aerial circuit. The series resonant trap across the long-wave section of the aerial coupling coil is included to suppress certain second channel whistles on long waves due to harmonics of the oscillator.

The oscillator coupling coils are included in the cathode return lead, and both sides

of the input I.F. transformer are tuned. With reaction on the output I.F. transformer only the secondary is tuned. A resistance-capacity filter is used to suppress H.F. in the output from the anode bend second detector, which is, in turn, resistance-coupled to the output pentode.

In the mains transformer a single layer of wire (open-circuited) serves the dual purpose of providing a mains aerial, and, when earthed, an efficient electrostatic screen for the primary winding.

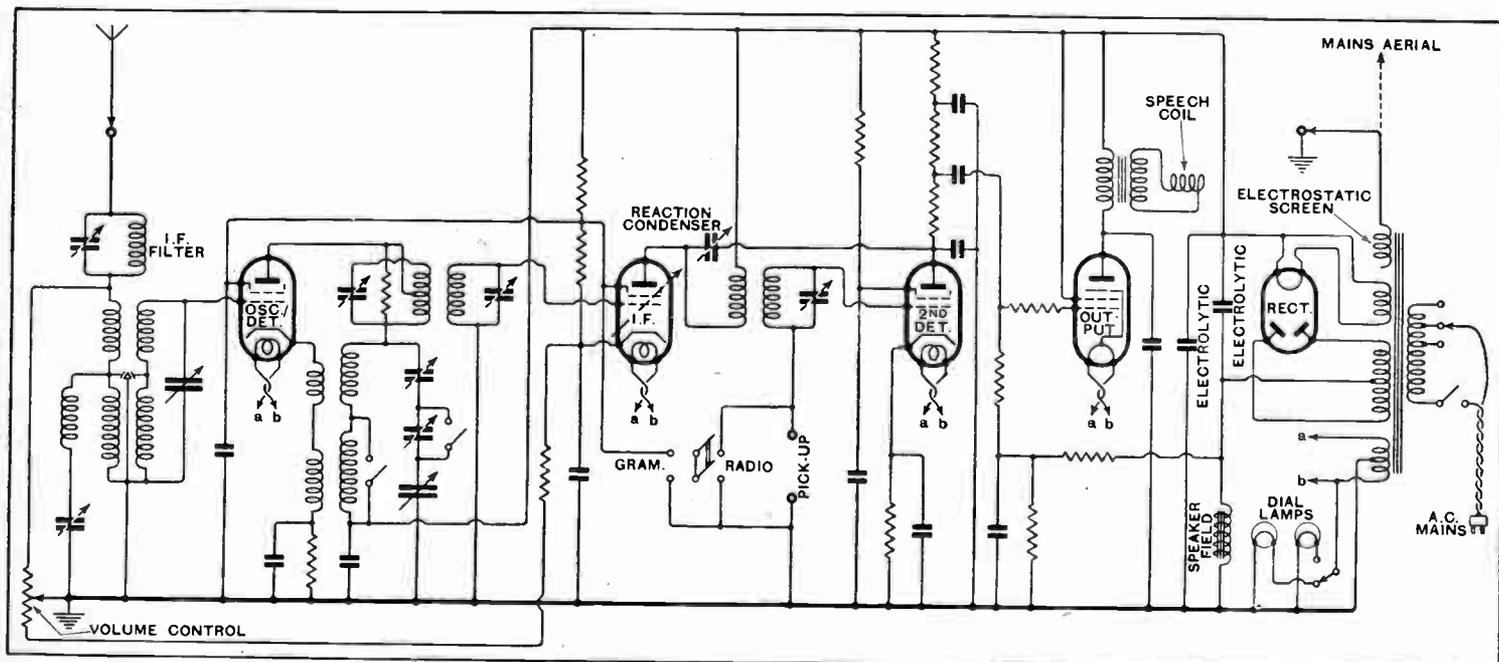
The usual three controls of wave-range, tuning, and volume are arranged on the front panel, and a separate snap switch is provided at the back of the chassis to change over to gramophone reproduction. The circular tuning dial carries an up-to-date calibration in stations as well as wavelengths. Long

and medium-wave stations are marked on opposite sides of the dial and viewed through two windows in the escutcheon plate. Contacts on the waverange switch automatically illuminate the appropriate scale.

The performance as regards freedom from second channel whistles is fully in accordance with the theory of the design. A diligent search resulted in the discovery of only two whistles—one on medium waves between Sötens and Midland Regional, and the other on long waves near Zeesen.

FEATURES

Type: Table model four-valve superheterodyne with moving-coil loud speaker. Provision for gramophone pick-up. **Circuit:** S.G. detector-oscillator, variable-mu I.F. with reaction, S.G. second detector, pentode output. **Controls:** (1) Tuning with dual dial calibrated in stations and wavelengths; (2) Volume; (3) Waverange. **Price:** 16 gns. **Makers:** A. J. Balcombe Ltd., 52-58, Tabernacle Street, London, E.C.2.

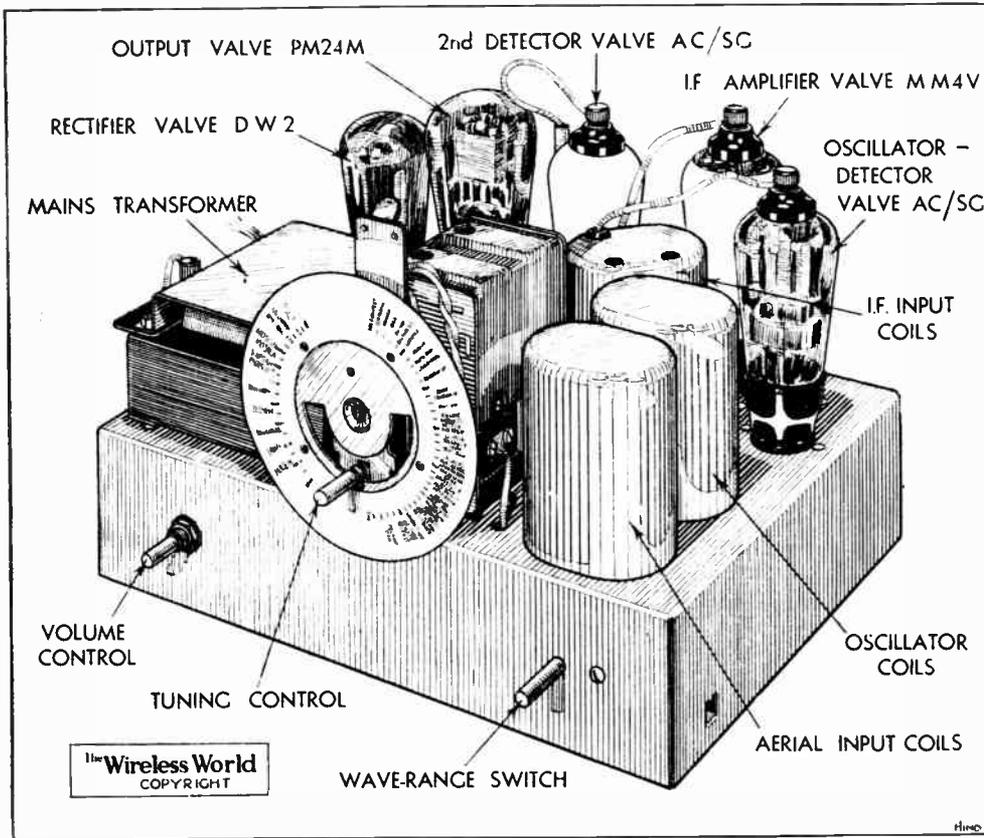


Circuit diagram of the Alba superheterodyne receiver. The radio volume control adjusts the bias of the I.F. stage and also shunts the aerial input.

Alba Superheterodyne —

Neither of these is sufficiently strong to cause the loss of a station, and in the normal course of tuning would probably be completely overlooked.

has a good minimum. It consists of a potentiometer, which simultaneously reduces the aerial input and increases the bias on the variable-tune I.F. valve. Any evidence of "double-hump" tuning indi-



A compact chassis layout is obtained as the circuit only calls for a two-gang tuning condenser. The subsidiary control knob for I.F. reaction projects through a hole at the back of the metal base.

Selectivity is good having regard to the number of tuned circuits employed, and while four or five channels are lost on either side of the Brookmans Park transmitters in Central London, there is no difficulty in separating distant stations, such as Langenberg and North Regional on adjacent channels.

On long waves the selectivity is perhaps not quite so good as one would expect from performance on medium waves. Eiffel Tower comes in clear of Daventry, but a background from the latter station is heard on Zeesen, and extends as far as Radio Paris, but is then sufficiently weak to be negligible except during intervals in the French programme. This is in Central London, of course, and under more favourable conditions, say, on the South Coast, no interference from Daventry should be experienced on the Continental long-wave stations.

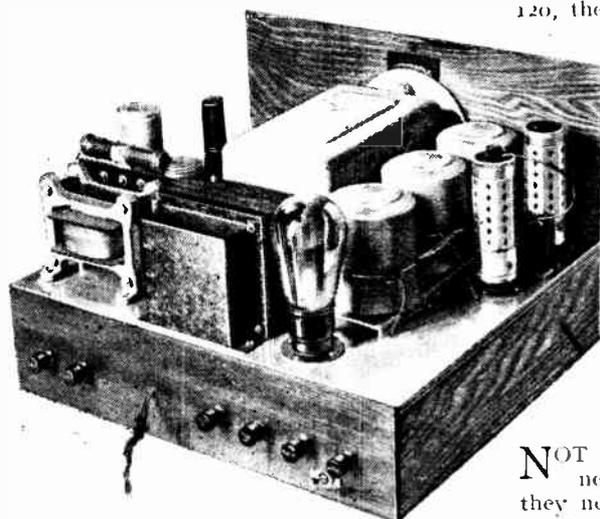
Reaction on I.F. Circuit

The I.F. reaction slightly improves selectivity, but has a greater effect on the sensitivity of the set. If pushed too far quality of reproduction suffers, and the lower notes predominate. However, all the range and sensitivity one could wish for are available with the reaction set at less than half its full range, and the quality is then bright and well balanced. At the same time, the quality is affected slightly by tuning, and a final adjustment of the tuning control may make all the difference between first-rate and merely satisfactory reproduction. The volume control is well graded, and

states that the volume control is advanced too far, and is not due to maladjustment of the tuned circuits. Overloading the detector causes a diminution of volume.

For gramophone reproduction an additional volume control, preferably incorporated in the pick-up itself, will be required.

In appearance the Alba cabinet is neat and well finished, while the set as a whole is exceptionally light in weight. A D.C. model and a battery version with Class "B" output are also available.



A "Wireless World" Ferrocart III Receiver fitted with the new Catkin valves. The types shown are the VMS4, MH4 and MPT4.

**NEW MAZDA
CLASS "B" VALVE**

A CLASS "B" battery valve of moderate filament and anode consumption has been added to the range of Mazda valves. It is styled the P.D.220 with a filament rated at 2 volts 0.2 amp, and a maximum H.T. voltage of 150, under which conditions, with a suitable driver valve, it is capable of delivering up to about 2½ watts speech. At all anode potentials the valve may be operated with zero bias, but a welcome reduction of quiescent anode current may be obtained by applying a grid potential of less than one volt from a single dry cell which must be discharged whilst the set is in operation.

Choosing the Driver

As the power output of all Class "B" valves is primarily dependent upon the power output of the driver, it is most important that this valve should be chosen with care and that its bias be correctly set.

Two valves are recommended as drivers, the L.2 and P.220. In the case of the first-mentioned valve with an anode voltage of



The P.D.220 Class B valve with low anode consumption.

120 the total quiescent feed current of the output valve will be 2 milliamperes, the power output 1 watt, the driver transformer overall ratio 2 to 1, and the anode-to-anode load 17,000 ohms. Using the P.220 valve as a driver and assuming an H.T. voltage of 120, the total quiescent feed current of the output valve will be 2 milliamperes, the power output about 1½ watts, the driver transformer overall ratio 1.5 to 1, and the anode-to-anode load 11,500 ohms.

The P.D.220 valve is undoubtedly of highly efficient design, since to obtain a power output of 2½ watts only 65 milliwatts are required from the driver valve.

CATKIN.CUM.FERROCART

NOT the least important feature of the new all-metal valves is the fact that they necessitate no special circuit arrangements or modifications in existing sets. Catkins are available in the leading types and are interchangeable with ordinary valves in A.C. mains receivers.

READERS' PROBLEMS

Free A.V.C. Voltage

WHEN one appears to be well on the way towards getting something for nothing in the radio art, there is generally a "snag" somewhere. We are afraid that a suggestion put forward by a reader with regard to the A.V.C. Unit is no exception to this axiom.

Briefly, it is proposed to construct the unit on the lines described in *The Wireless World* of March 31st, but to obtain H.T.

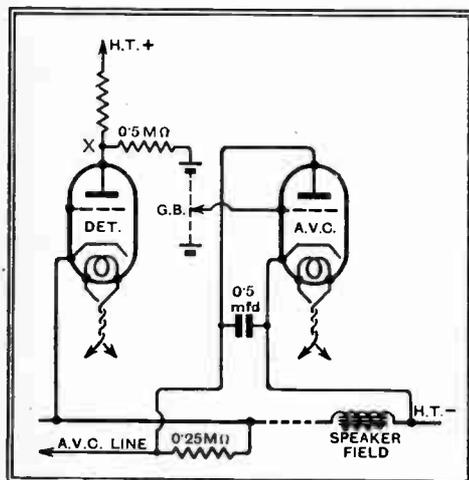


Fig. 1.—Obtaining H.T. voltage for the A.V.C. Unit by inserting the speaker field in the H.T. negative lead.

supply for the controlling valve from the drop in voltage across a high-resistance loud speaker field inserted in the negative H.T. lead of his A.C. receiver. What our querist intends to do is illustrated in a skeleton diagram reproduced in Fig. 1.

This scheme is basically sound, and could be made to work, but our querist has overlooked the fact that "free" H.T. voltage for the A.V.C. valve will be obtained only at the expense of an increased bias voltage for its grid. In fact, the "free" voltage developed across the speaker field will be added to the difference of potential between point X and the A.V.C. cathode, and, in order to obtain the right working conditions, exactly the same amount of extra grid bias voltage will be needed.

Accordingly, there will be no reduction in the total voltage of the batteries required for the unit; the only gain will be that no current whatever will be drawn from these batteries except that required for a potentiometer by which critical adjustment of grid voltage may be made.

The Balancing Battery

ONE or two constructors of the A.V.C. unit (March 31st) have not fully appreciated the point that the G.B. battery required for this device must have a sufficiently high voltage, not only to bias the A.V.C. valve to the point where anode current is entirely stopped, but also to balance out the "standing" H.T. voltage on the detector anode.

So far as grid bias is concerned a mere half a dozen volts or so will generally be sufficient, but to this voltage must almost always be added at least 50 volts—and often much more—which represents the detector

anode voltage which has to be balanced out. In addition, it must be remembered that the unit offers the advantage of "delayed A.V.C." By making the A.V.C. grid still more negative, the control does not come into operation until signal strength has risen to a value that may easily be determined by trial. This is another reason for using a bias battery with a fair margin of extra voltage.

Combined G.B.-H.T. Battery

A SPECIAL high-tension battery, fitted with end-cells for grid bias, was specified for use with the Class "B" Ferrocart receiver. A querist now asks whether it would be permissible to use separate batteries for these purposes.

There is not the slightest objection to this course, and no difficulty should be experienced. Instead of running a single wire from the set to the common "H.T. - G.B. +" socket of the battery, two leads must be taken; one will, of course, be connected to the negative socket of the H.T. battery and the other to the positive pole of the separate grid bias battery.

Matched Loud Speaker

SEVERAL querists have asked whether an existing moving-coil loud speaker of the permanent magnet type could be used satisfactorily with the Class "B" Ferrocart receiver.

So far as the loud speaker itself is concerned, requirements are not abnormal, but it must be remembered that the usual type of output transformer, built into the instrument, will not be suitable. A special type of transformer may be substituted, or the existing transformer may be fed through a tapped choke.

A.V.C. Valve Adjustment

A READER who has fitted A.V.C. to his Monodial receiver, in the manner described in recent issues, is not quite satisfied that he is obtaining the original sensitivity on weak signals, and asks whether this is normal. He also enquires as to how the operating conditions of the A.V.C. valve may be checked with the help of a milliammeter.

Normally, sensitivity should not be impaired in any way. To make a test, a

The Wireless World INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Stamford Street, London, S.E.1, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

milliammeter should be inserted in such a position that a reading may be made of the anode current flowing in one of the controlled valves—say, at point X—in the published circuit diagram of the modified receiver. The aerial should then be disconnected, and, in the absence of a signal, the reading of the meter should be noted. Then, on removing the A.V.C. valve from its socket, this current reading should remain unchanged. If, on the other hand, an increase in current is observed, we have an indication that the A.V.C. valve requires more bias. Extra bias may easily be applied by making a slight increase in the value of R13.

Volts on the Anode

IN a recently published reply it was recommended that measurement of the anode voltage of an output valve should be made directly between anode and cathode. If the meter be connected between anode and earth line (metal chassis), it is probable that the reading may be misleading, as the voltage developed across the bias resistor will be included.

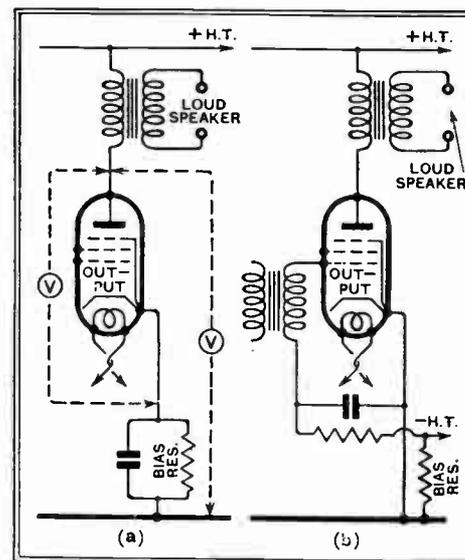


Fig. 2.—When bias voltage is developed across a resistor in the cathode lead, anode voltage must be measured directly from the cathode terminal, and not from the earth line.

A correspondent, who has read this reply, has applied the suggestions made to his own set, and finds that the voltage reading is precisely the same whether the negative terminal of the meter be connected to earth line or cathode. He wonders whether this is an indication that something is wrong with the bias system.

If the valve is self-biased by the flow of its own anode current through a resistor (as in Fig. 2 (a)), it would certainly appear that there is a fault; the bias resistor or its shunt condenser might be short-circuited. If, on the other hand, the valve is biased by the drop in voltage across a resistor in the common negative H.T. lead (Fig. 2 (b)), the effect is quite normal, and no difference in voltage reading is to be expected.

"I was amazed... station after station rolled in..."

The original of this letter may be inspected at our Head Office, Cossor House, Highbury Grove, London, N.5.

Bolton,

Dear Sirs,

I am using a well-known Set which is noted for the way it brings in stations. I recently borrowed a Cossor Metallised Screened Grid Valve to try. I first tried three other makes of S.G. Valves and there was not much difference between them. Then I tried the Cossor. I was amazed—station after station rolled in. I set the dials to a certain station, took out the Cossor and tried the other S.G. Valves, result—flat nothing—only a whisper. I put back the Cossor and without touching the dials the Set was roaring the place down. You cannot give a better test than this.

Yours faithfully,

Signed



THE simplest and most economical way to increase the efficiency of your Receiver is to replace your old Screened Grid Valves with Cossor. The right type of Cossor Screened Valve will make your Set like new again — restore its vigour. Thousands of Wireless Users are rejuvenating their Sets with Cossor — Britain's most efficient Screened Grid Valves. You should too.



KINGS OF THE AIR

To A. C. COSSOR LTD., Melody Department, Highbury Grove, London, N.5.

Please send me, free of charge, a copy of the 40-page Cossor Valve and Wireless Book B.17.

Name.....

Address.....

W.W. 20 5/33

COSSOR SCREENED GRID VALVES

A. C. COSSOR LTD., Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield, Belfast, Cardiff and Dublin.

2895 ♡

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is 12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST on MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Stamford Street, London, S.E.1. or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 260, Deansgate, Manchester, 3; 26, Renfield Street, Glasgow, C.2.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **LIFFE & SONS Ltd.**, and crossed & Co. Notes being untraceable if lost in transit should not be sent as remittances.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

For particulars of Box Number Advertisements and Deposit System see previous issues.

IMPORTANT NOTICE.

Owing to the Whitsun Holidays, the issue of "THE WIRELESS WORLD" for June 9th must be closed for press earlier than usual.

MISCELLANEOUS ADVERTISEMENTS for insertion in that issue can be accepted up to **FIRST POST FRIDAY, June 2nd.**

RECEIVERS FOR SALE.

BBETTER Part Exchange at Appleby's, 109, Edgware Rd., Hyde Park, London, W. [2650]

MICHAEL Latest Battery Shortwave Set, value £15, only used few times, as new; what offer? Bargain!

"W.W." Monodial Battery Set, with Q.P.P. output and Edison P.M. moving coil Q.P.P. speaker; perfect working, bargain! Value about £30; what offer? Scott Sessions and Co., Muswell Hill, N.10. [2693]

MACNAMARA 3-valve All-electric 12 Guinea Model, 3 months old, £7.-. Bewick, 6, Kenmore Grove, Manchester 10. [2711]

UUSED 1933 Ferranti 7-valve Superhet, 25 guineas, clock type; £15, or near offer.—Ward, 12, Tredegar Rd., Bow, E.5. [2752]

ZEPAVOX Table Model, new, perfect; list 19 guineas, accept £9.10.—16, Wakenams Hill Parade, Colindale, N.W.9. [2740]

MICHAEL D.C.3 Calibrated Scale Magnavox, new condition, perfect, cost £25; accept £12.—Callers only, 12, Cherridon Place, W.11. [2700]

QUALITY Amplifier, in steel safety case, with massive output transformer, and all complete, less valves, 6 watts output, undistorted; £6.

DET-PESTODE Set, 2 1/2 W output, plenty stations, chassis built, Magnavox speaker, solid oak cabinet; 69/6.

BOTH 200/250 A.C.—Enquiries to R. A. Arnell, 8, Fishponds Rd., S.W.17, Streatham 8209, 10 a.m. to 8 p.m. [2710]

MORE Part Exchange Receiver Bargains for Disposal; state approximate requirements for quotation.—Gentis, Wireless Engineers, Horley. [2613]

MARCONI A.C.246 3-valve, £4; Atlas A.K.22 combined A.C. eliminator and charger, list £3/17/6, new, £2.10; S.T.300, all parts, Lewcos, etc., half list.—3, Seaside Ave., Blackpool. [2744]

JUMOPHON 7 1/2 Super Hets., M.C., 1933 models, £12.10; Console 2 S.G., pentode, M.C., £8.10; A.C. or D.C.; guaranteed one year; nothing like them at double the price; part exchange, Butlin, 143b, Preston Rd., Brighton. [2739]

PHILLIPS 3-valve D.C. All Mains Set, absolutely new condition, owner moved to A.C. district, cost £23; first offer of £10 secure; sent on approval for cost of packing and transit.—Budge, Walton Lodge, Parkstone, Dorset (Parkstone 181). [2703]

CHARGERS AND ELIMINATORS.

MDANIEL—See last issue "W.W." Press report.

MDANIEL—Any "W.W." specification transformer.

MDANIEL Accumulator Chargers from 1 amp. at 17/-, with metal rectifiers.

MDANIEL—Any type of choke.

MDANIEL—Write your queries, 154, Hainault Rd., Romford. [2751]

EARN £5 a Week Charging Batteries (from your A.C. mains).

SERADEN V.R.328 Charger Charges up to 200 D.T.G.s per week and costs only £3.2/6 complete.

SERADEN V.R.1326 Charges up to 400 D.T.G.s per week; price complete £4.3/6.

DEPAVOX from your Dealer, or direct from makers, Trevor Pepper, 48, Wake Green Rd., Birmingham. [2717]

... for
'SOUND' AMPLIFYING EQUIPMENT

- Special P.A. Speakers suitable for all outputs.
- Power Amplifiers suitable for DANCE HALLS, SPORTS MEETINGS, FETES, ETC.
- The most up-to-date apparatus for outdoor or indoor sound reproduction and Radio reception.

TANNOY PRODUCTS

DALTON ST., WEST NORWOOD, LONDON, S.E.27.
Manchester Branch:—
2, Whitworth St. West, Deansgate, Manchester.

SHORT WAVES!

Announcing the new
SCOTT SESSIONS' "EQUATOR - SUPER"

An advance design for
Overseas Battery users.
SPECIAL FEATURES:—

CIRCUIT:
7-valve Super-Heterodyne incorporating Westinghouse Metal-Oxide 2nd Detector, with Automatic Volume Control.

OUTPUT:
2 watts A.C. (Class B).

WAVE RANGE:
12 to 80 metres and 220 to 550 metres with no coil changing.

H.T. BATTERY CONSUMPTION:
Approx. 15 m/a only.

SPEAKER:
Fitted with latest "Celestion" P.M. Class "B" Moving Coil Speaker.

CABINET:
Teak, specially designed and finished for Tropical use.

COMPONENTS:
Specially selected and constructed for Overseas requirements.

PRICE £33 (plus £2-2-0 Royalties)
Specially packed for overseas.

Write for full details and specification.

SCOTT SESSIONS & CO.

RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No.: Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

BOOKS on WIRELESS

Write for complete list to
LIFFE & SONS LTD.
Dorset House, Stamford St., London, S.E.1. w.w.1

Chargers and Eliminators.—Contd.

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

TRICKLE Chargers, 2-6v., incorporating Westinghouse rectifiers, ready for immediate use, 4 amp., 11/9; 1 1/2 amp., 19/11; Tantalum chargers, 7/6; postage 3d.; send for list and guarantee.—Arden Agency, Wokingham, Wellingborough. [2617]

VORTEXION, Wimbledon, for the latest type transformer, all with screened primaries and 12 months' guarantee, absolute reliability (we supply talkie equipment); regulation guaranteed within 5% all models except supers, which are 2% (you cannot buy more reliable or better looking transformers, not a pressed shrouding, but a substantial casting free from hum).

VORTEXION.—Specified for A.C., quality amplifiers, 400 volts 110 m.a., 4v. 3, C.T., 4v. 2, 4v. 1, C.T. terminals, 24/-; tagged leads, 20/-; shrouded, 24/-.

VORTEXION.—Ferretart III, 350-0-350, 60 m.a., 4v. 2.5, C.T., 4v. 3.5, C.T.; open type 17/6, shrouded 16/-; post 9d.

VORTEXION.—250-0-250, 4v. 1 to 2a., 4v. 2 to 4a.; open type 10/6, shrouded 12/6; post 9d.

VORTEXION.—Open type H.T.B. model, 4v. 4a.; 2/6; post 1/-.

VORTEXION.—Super model for H.T.B. or 9 or 1, 4v. 1 to 2, 4v. 2 to 4; open type 14/6, shrouded 6/6; post 1/-.

VORTEXION.—Parallel fed intervalve transformer for increasing bass response, large mu-metal core, and 5 to 1, 180 henries, 7 and 9 to 1, 120 henries or to specification, in neat bakelite case terminals; 10/6.

VORTEXION.—2 1/2-watt Monodial A.V.C. model; open type 14/6, shrouded 16/6; post 1/-.

VORTEXION.—5-watt Monodial A.V.C. model, 400-0-400, 120 m.a., 4v. 6a., 4v. 3 1/2a., 4v. 2, 4v. 1a., super screened; 20/-, shrouded 24/-.

VORTEXION.—350-0-350, 120 m.a., 4v. 2 to 5a., 4v. 2 to 4a., 4v. 2.5a.; open type 14/6, shrouded 17/6.

VORTEXION.—400 or 450 or 500v., 120 m.a., 4v. 2 to 5, 4v. 2 to 5, 4v. 2 to 5; open type, 19/-, shrouded 23/-.

VORTEXION.—400 or 450 or 500, 150 m.a., 4v. 4a., 4v. 2.5, 4v. 2, 4v. 2, 4v. 2, core size 2 1/2 in., 1 1/4 in., a super job, 2/- regulation; 35/-, shrouded, with terminals, less terminals, 30/-; open type 26/-; post 1/3.

VORTEXION.—Autos to B.E.S.A. specification, 100 or 110 volts to 200 or 220 or 240 volt, 60 watts, 7/5; post 9d.; 120 watts, shrouded 12/6, open type 10/6; post 1/-; 200 watts, open 14/6, shrouded 16/6, post 1/3; 2,000 watt autos, £4.10.

VORTEXION.—Chokes, 20 h. at 120 m.a., 8/6; 30 h. at 60 m.a., 5/6; 30 h. at 150 m.a., open type 10/6, shrouded 12/6; post 1/-.

VORTEXION.—1,000 volt 600 m.a. transformers, weight 34 lb., £4.10, or similar wattage; carriage free.

VORTEXION.—4 1/4 mf. 500 peak electrolytics; 4/6.

VORTEXION.—Transformers made to your specification.

VORTEXION (S. A. Brown), 182, The Broadway, Wimbledon, Tel.: Liberty 2814. [2779]

CABINETS.

RADIOGRAM Cabinets; fully illustrated list free, remarkable values.—Gilbert, Cabinet Maker, Swindon. [2786]

DYNAMOS, ETC.

CONVERTERS, E.D.C., 230v. D.C. to A.C., various outputs, third to half list price; excellent condition.—Gerry, Bank St., Newquay. [2719]

ML. Anode Converter, 8-12 in., 150-200v., 30-40 m.a. output, little used; £5, or part exchange H.T.10 and transformer.—Swan, Baslow Rd., Tonley, Sheffield. [2704]

ROTARY Converter, 1 kW, input 50v. D.C., output 2,500v., 400 m.a., D.C.; as new, £7; dynamo, 2,000v., 500 m.a., 100v. field excitation, £3.10; A.C. generator, 100v., 20a., self exciting, £4; dynamo, 100v., 40a., £2.6.10m., 35, Tywhitt Rd., Brockley, London, S.E.4. [2749]

LOUD-SPEAKERS.

CHAL-ELECTRIC Offers Brand New Set Manufacturers' Surplus—Speakers, all postage paid; cash with order or card.

LAMPLUGH Silver Ghost, 90 130 volts (2,200 ohms), 1 1/2 with transformer, listed 35/-, at 14/-; Rodas (30 ohms), P.G. 90 130 volts (2,500 ohms), 110 175 volts (2,000 ohms), 150-200 volts (4,700 ohms), 200-240 volts (6,500 ohms), listed 35/-, at 18/-; F.7, in above voltages, listed 45/-, at 25/-; permanent magnets, F.6 P.M., listed 49/6, at 28/6; F.7 P.M., listed 60/-, at 37/-, state if power or pentode transformer. Chal Electric, 6, Gaudin St., London, W.1. [2725]

TREVON Loud-speakers for P.A. or Cinema, large & potential type.—Advertiser, Kilworth, Maresfield, Sussex. [2727]

COLUMBIA A.C. and D.C. Moving Coil Speakers, fitted cabinets; from 37/6 complete.

ALL Types of Moving Coil Speakers, parts and windings, etc.; going cheap. R. Newman, 309, Roman Rd., Bow, E.3. [2488]

3,000 Blue Spot 100 V. Inductor Units, guaranteed brand new, unpacked; price 15/-, post paid.—Northern Radio, 13, Aston St., Birmingham. [2762]

RICKLELOG Senior Loud-speaker, A.C., complete with valve, rectifier, etc., Rolls Royce of reproduction; offered at £3.5.—Melody Shop, The Colonnade, Maidstone. [2733]

13/6 Celestion Soundex P.M.; Lamplugh Silver Ghost P.M. (list 42/-), 25/-; Celestion 21/2 chassis, 12/6, brand new; good 4-pole B.A. units, 4/6.—Butlin, 143b, Preston Rd., Brighton. [2769]

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Loud-Speakers.—Contd.

30/-!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6!!—6v. D.C. speaker, as above; £2/7/6, speaker as above for 100-250 A.C.

SIMPSON'S Electric Turntables, 25/-; carriage paid; cash with order, or c.o.d.

B.T.H. Brand New Public Address Amplifiers, 4-stage, including microphone stage, 2 types, 12 watts and 6 watts outputs, 12-watt type has 2 P.P.5, 400s in output, 6-watt type has 2 P.P.3 425s in output, 12-watt type price £15, 6-watt type £12 10; B.T.H. cinema type pick-up, 16in. tone arm, brand new, 17/6.—Ward, 12, Tredegar Rd., Bow, E.3. [2608

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30v. also A.C. models, £2 10/-; carriage paid, cash, or cash with order; the best value in speakers obtainable to-day.—Seekamp, 46, Farringdon St., London, E.C.4. [1425

TRANSMITTERS.

RAYMART Transmitting and Receiving Equipment, designed by specialists; all our staff licensed operators, one with years' tropical short wave experience.—Radio Mart, 44, Holloway Head, Birmingham. [2721

VALVES.

NEW American Valves, 45, 248.G., 36.M.U.; 7/6 each.—Raymart, 44, Holloway Head, Birmingham. [2724

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged, all latest types.

A.C. Pens., P.T.4s, G.U.1s, A.C.S.G. V.M.s, Pen.4V.s, P.T.625s, V.M.S.4s, D.C.2 Pens., D.P.T.s, M.P.T.4s, V.M.4V.s, A.M.81 V.M.s, P.M.24Bs, D.C.28.G./V.M.S., 11/-; M.S.4s, M.S.4Bs, A.C.S.G.s, 84V.A.s, 84V.B.s, M.S.G. L.A.s, D.S.B.s, A.C.S. 2s, P.N.4s, D.C.28.G.s, 9/6; F.14s, 10/-

M.L.4s, A.C. P.s, 41M.P.s, P.M.24s, 8/-; A.C./H.L.s, 164V.s, 353V.s, A.C.2 H.L.s, 41M.H.L.s, H.10s, H.U.60 250s, M.H.4s, M.H.L.4s, 7/6; V.S.2s, 215S.G.s, 220S.G.s, P.M.12s, P.M.12As, 9/-; 442 B.U.S. H.W.3s, 8/6

ALL Types of Brand New American Valves in Stock, first class makes: 247s, 255s, 224s, 256s, 237s, 235s, 244s, 12/-; 227s, 226s, 280s, 245s, 9/6; 242s, 232s, 11/-; U.X.210s, 15/-

U.X.250s, 7 watts output, 16/-; 281s, 14/6; for quickest delivery send telegraph money order.

OVER 4,000 Valves Always in Stock for Immediate Delivery; carriage paid; cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2609

ANOTHER New Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the makers' characteristic exchanged free.

210 H.L.s, 210H.F.s, 210L.F.s, P.M.11H.F.s, P.M.11L.F.s, H.L.210s, H.210s, L.210s, 3/9; 215Ps, 220Ps, L.P.2s, P.215s, D.E.P.215s, P.M.2s, P.220s, P.M.2A, 4/9; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C. H.L.s, A.C./211.L.s, 353V.s, 904V.s, D.C.3 H.L.s, 7/-; 41M.P.s, M.S.4s, A.C./P.s, 7/6; P.T.4s, P.T.41, P.E.N.4V, M.P./P.E.N.s, A.C./P.E.N.s, 12/-; latest metallised 84V.B.s, M.S.4B.s, M.S.G. H.A.s, A.C. S.G.s, 9/-; Coso M.V.S.G., 12/-; 442 B.V., 1807s, 7/9; 1821s, 7/-; D.O.60s, 40/-

4,000 Valves are Always in Stock for Immediate Dispatch; prompt attention, for cash or c.o.d.

NEWMAN, 309, Roman Rd., E.3. [1659

EXPERIMENTERS' Surplus, guaranteed, as new, one each M.S.G.L.A., A.C. S.G.V.M., A.C./S.G., A.C./H.L., A.C. 2H.L., Pen 4V, A.C. 82, A.C. Pen., D.W.3, H.U.60 250, U.C.120 500, P.P.5 400; half price.—Box 7029, c/o The Wireless World. [2747

COMPONENTS, ETC., FOR SALE.

HOYNE'S Transformers and Chokes.

250-0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T.; 10/-, post 9d.

250-0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 2-4a., C.T., 4v. 1a., C.T.; 12/6, post 1/-

350-0-350v. 60-70 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., Ferricart. III model; 12/6, post 1/-

350-0-350v. 70-80 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T., 4v. 1-2a., C.T.; 13/6, post 1/-

350-0-350v. 120 m.a., 4v. 2-3a., C.T., 4v. 4-6a., C.T., 4v. 1-2a., C.T.; 16/-, post 1/-

400-0-400v. 90 m.a., 4v. 2-3a., C.T., 4v. 3-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/-

500-0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v. 2a., C.T., 4v. 2a., C.T.; 27/6, post 1/3

WESTINGHOUSE Model 0, 110, 135v. 90 m.a., 4v. 2-4a., C.T., suitable for H.T.6 or 7; 10/-; post 9d.

WESTINGHOUSE Model 0, 200, 240v. 200 m.a., 4v. 2-5a., C.T., 4v. 1-2a., C.T.; 14/6, post 1/-; suitable for H.T.8 or 9

LINE Transformers (auto-wound), 0, 100, 110, 200, 220, 240v., 60 watt, 8/-, post 9d.; 120 watts, 11/-, post 1/-; 180 watts 15/-, post 1/3

HOYNE'S Chokes, 2Ch., 30 m.a., 3/6, post 6d.; 30h., 60 m.a., 5/6, post 9d.; 30h., 120 m.a., 9/6, post 1/-; 40h., 150 m.a., 12/6, post 1/-

CLASS B Transformer: ratio 1/1, inductance 60 25h., 0-15 m.a., secondary resistance 100 ohms each half, 11/6, post 9d.; output transformer; ratios 1/1, 1.5/1, 2/1, 11/6, post 9d.

PARALLEL Fed Nickel Iron Audio Transformers, ratio 1/1 or 5/1 primary inductance 80h.; 3/6 post 4d.

HOYNE'S Transformers are Used Exclusively by Well-known Set Manufacturers.

HOYNE'S Transformers for Perfect Insulation regulation and reliability; all components are clamped in solid cast aluminium clamps, and fitted with well marked terminal strips; power transformer primaries are tapped and screened; better components are not available at any price, be safe and use Hoyne's guaranteed transformers.

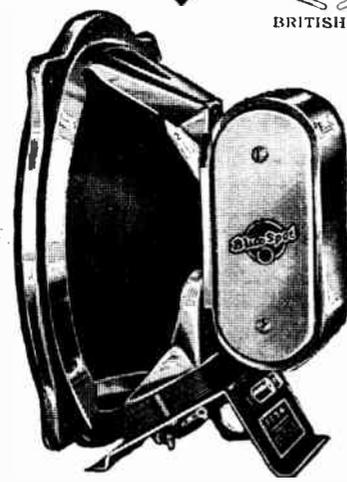
HOYNE'S for the Quickest Service, all from stock.

HOYNE'S Transformers Built to Your Specifications.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbeldon, S.W.19. Tel.: Liberty 3303. [2537



BRITISH MADE



45!

The quality of the performance is positively thrilling. What complete mastery of all frequencies! How rich and pure every note and word! What a delight to listen to programmes so faithfully and perfectly reproduced!

Write for Catalogue No. W.W.75.S.

A FEW OF THE SPECIAL FEATURES High quality output transformer with special plugs and sockets for easy valve matching in place of troublesome solder tags. Suitable for all ordinary Output stages and Class B. Q.P.P. Pentode Model 2/6 extra. Specially designed Magnet fitted with side plates to exclude dust and magnetic particles from the air gap. Specially designed moisture proof cone and speech coil—no warping or fouling in the gap. Extremely fine response throughout the musical scale.

In luxurious cabinet of Mahogany or Walnut (62 P.M. 67/6). Prices do not apply to E.S.S.

THE BRITISH BLUE SPOT COMPANY LTD.

94/96 Rosoman St., Rosebery Ave., London, E.C.1 Distributors for N. England, Scotland and Wales: H. C. RAWSON (Sheffield and London), Ltd., 100 London Road, Sheffield.



Components, etc., for Sale.—Contd.

R. SELECTED Parts for Sale, as new; any c.o.d. or "Wireless World" deposit system, which we recommend in doubt as to the splendid value offered; we take risk of damage in transit to our customers; goods tested for callers and guaranteed.

WE Hold a Large Stock of First Class Radio Apparatus, meters, resistances, condensers, heavy chokes, etc., in addition to goods advertised.

VALVES, all guaranteed as new, full emission.—P.X.4, 10/-; A.C. P.1, 8/6; A.C. H.L., 6/6; M.H.F., 7/-; A.C./S.2, 9/-; 84V.A., new, 12/-; M.S.4B., 9/-; D.W.2, 7/6; U.10, 7/-; D.W.3, 8/-; 164V., 7/6; P.V.4200, rect., 7/6. Following callers only: P.625, 5/-.

R.I. Hypercore Chokes, second-hand, 10/6; R.I. 7/14H choke, 10H at 100 m.a., second-hand, 10/6; Colvern T.G.S.C. coils, 3/-; Burndept needle armature pick-ups, 25/-; Ferricart 6 m.f. blocks, 3/-; Parmico mains transformers for A3 rectifiers, tapped to 14v., 10/6.

RYALL'S Mains Transformers, new goods.—250v. 60 m.a., 4v. 1 amp., 4v. 3 amp., 10/6; ditto super type, with 4v. 3-5 amp., tapped at 150/150v., 15/6; 350v. 60 m.a., 4v. 2 amp., 4v. 4 amp., 12/9; step up or down transformers, 60 watt 110v. to 250v., tapped 10/-; H.T.6 or H.T.7, with 4v. 4 amp., 10/9; filament, 4v. 3-5 amps., 8/9; H.T.8, 12/9.

RYALL'S Chokes, 20h., 120 m.a. resistance, 260 ohms, 8/9; 40h. at (C.T.) 100 m.a. resistance, 600 ohms, 10/6; 25h. at 60 m.a. resistance, 260 ohms, 6/9; constant inductance chokes; 200h. at 5 m.a., resistance 1,200 ohms, 8/9; 60h. 60 m.a., 2,500 ohms, 12/9.

B.T.H. Universal Senior Gramophone Motors, A.C. or D.C., brand new, complete with auto stop and all fittings, 55/-; Radiophone 4-gang condensers, 12/6; Polar Uniknob 2-gang, 7/6.

TRANSFORMERS.—Ferranti A.F.4, 8/-; A.F.6, 18/6; O.P.M.1, 16/6; O.P.M.2, 13/-; O.P.M.4, 14/-; Igamic 7-1, G type, 7/6; B.I. choke, new, 14/-; O.P.M.4, 16/-; A.F.5, 21/6; A.F.5c, 21/6; A.F.3, 10/6.

R.I. Q.P.P. Transformer and Choke, second-hand, 19/- pair; R.T.H. Senior P.M., latest type, £3; Polar Star 3-gang superhet. condenser, 18/-; Lotus set, Lotus B.P. and H.F. coils on base, latest, 15/6; "W.W." 2v. short wave set, without valves, 25/-.

TENSEN Multi Ratio Output Transformer, 6/6; Telsen 3H. chokes, 3/-; Telsen 5-1, 3-1 Radiograms, 4/6; Westinghouse H.T.4 and A4 rectifiers with Varley transformer, £2; H.T.1, 25/-; Cylbon twin 0.0005 extender, double thumb, 15/6; ditto disc, 8.M., 17/6; single, 10/6; single extender, 7/6.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or tram to Savoy St.), Holborn 3529. Open Saturday afternoon, close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R. [2715

MILDMAY RADIO EXCHANGE Offers the Following sound and perfect:—

FERRANTI A.F.3, 10/-; A.F.5, 17/-; A.F.5c, 20/-; A.F.5c, 22/6.

VARLEY Push-pull; input 14-, output 10/-.

POLAR 3-gang Tubs, 12/- each; 2-gang ditto, with drum drive, 12/-.

CYLDON 2-gang Extenser Condensers; 15/- each.

EDISON Bell Pick-ups, with tone arms; 15/- each.

PYE Tapped Output Transformers; 7/6 each.

WEARITE Triple Coil Unit; 20/-.

LISSEN 3-gang Coil Unit; 16/6; screened.

W.W. Station Finder Kit; 22/6.

PARAFEED Second-hand Transformers; 4/- each.

VARLEY Rectatone Transformers; 8/6 each.

MULTITONE Transformer; 9/-; 4-1.

BENJAMIN Transceeds; 6/6 each.

JUNIOR B.T.H. Pick-ups; 14/- each.

SENIOR B.T.H. Nickel Pick-ups; 17/6 each.

COSSOR Pick-ups; 10/- each.

VARLEY Nicore 1 Transformers, 9/- each; Varley Nicore II transformers, 6/6 each.

R.I. Hypercore Chokes (second-hand), 30-20 henrys, 50 m.a., 7/6.

AMPLION Six Receivers, complete with valves, A.C. mains; 49/-.

CULMAX Type 44A A.C. Mains Radio Grams, complete; 49/-.

MCMICHAEL Dimic Three A.C. Mains Receiver, complete, with speaker, listed £25 4.

A.L. Post Paid, Open Thursday, closed Saturday.—24, Mildmay Grove, Islington, London, N.1. [2742

CHAL-ELECTRIC Offers Brand New Boxed Set, manufacturers' surplus.

T.C.C. Condensers, Electrolytic 8 mfd. 500 working, listed 9/-, at 6/-; C.E.C. condensers, 750 test, 250 A.C. working, 1 mfd., 1/1; 2 mfd., 1/9; 4 mfd., 2/6; 1,500 test, 500 A.C. working, 1 mfd., 1/8; 2 mfd., 2/4; 4 mfd., 4/-; blocks, 1,500 test (separate tappings) 4+4+2+2+2+2+2+1+1 (20 mfd.), 11/-; 4+2+2+2+1 (11 mfd.), 6/9.

VARIABLE Condensers.—Polar Star (1933), few only, with disc drive, trimmers, neon-tungsten light, etc., listed 30/-, at 17/- complete; J.B. Nu-Gang, 3-gang, as above, 15/-.

COILS.—Colvern Ferricart (31, F1, F2, F3, ganged, listed 50/-, at 37/6; Class B transformers, Multitone driver, listed 9/6, at 7/-; driver, with tone control, listed 17/6, at 12/-; output, listed 17/6, at 12/-.

TRICKLE Chargers, 200-250 A.C. charge, 2 or 4 volt accumulators, listed 32/-, at 17/6.

RADIOGRAM Cabinets, walnut (approximately 36x24x18), Marconiphone, felt lined lid; £8, at 50/- (London only); ask for special quotations for your requirements, all carriage paid; cash with order, or c.o.d.—Chal-Electric, 6, Conduit St., London, W.1. [2737



RATED 20 WATTS

FOR LARGE AMPLIFIERS.

Bulgin Power Resistors have been completely redesigned and improved. The compound wire element comprises a non-ferrous nickel-chrome resistance wire spiralled on a special heat-resisting core so that it retains itself on the grooved porcelain former, the tapping leads being only incidental to the actual connection. They can thus be moved if it is desired to adjust the resistor to a non-standard value. All values will comfortably dissipate the rated 20 watts.

- 300 to 5,000 ohms, 3/6 each.
- 7,500 to 40,000 ohms, 3/9 "
- 50,000 4/- 60,000 4/6 "
- 75,000 5/- 80,000 5/6 "
- and 100,000 ohms, 6/- "

Send 2d. postage for 80 p. Catalogue "W"



A. F. BULGIN & Co. Ltd., Abbey Rd., Barking

Telephone: Grayswood 3266, 3267.

London Showrooms: 9, 10, 11, Currier Street, E.C.

Telephone: Holborn 2072.

The DIX - MIPANTA

is the latest A.C. Multimeter. Bakelite Case. Worth Two Guineas, but only **19/6**



Ask for Leaflet M.A.

ELECTRADIX BARGAINS

Scrap that dud cheap pocket "any ohms per volt" iron meter taking 30 m.a. to give a reading, that has ruined your H.F. battery.

GET A DIX-ONEMETER

The ideal of multi-range moving coil meters. Micro-amps to 20 amps., milli volts to 1,000 volts. 50 ranges on one meter. Two clear scales with mirror and knife-edge pointer.

ONLY **60/-** A remarkably low price for a meter worth £10. For Notice or expert. Test Booklet free.

BELLS British circular desk or wall, 2/6. Large square mahogany case, 5/6 and 7/6. Cheaper bells, 1/6. Small Leclanche cells, 6d. Sun telescopes, 17/6. Photo cells, 15/-. Cosor trickle-chargers, less valve, 5/9. Mains transformers, output 4 volts 3 amps., 3/6. 6,500 condensers, British, 4d., post 2d., or 3 - doz. Telescopes 7/6.

PARCELS of experimental odd coils, magnets, wire chokes, condensers, switches, terminals, etc., post free. 10 lbs. 7 - 7 lbs. 5 - , 1,000 other Bargains in New Sale List "W."



ELECTRADIX RADIOS
218 UPPER THAMES ST., LONDON, E.C.4

Components, etc., for Sale.—Contd.

SERVICE RADIO and SUPPLY Co. Offer Hundreds of Wireless Bargains at Genuine Cut Prices:—

MAJNS Transformers, fully tapped primary, 200 250 volts 50 cycles, centre tapped I.T.: 250 250 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 10 6; 350 350 60 m.a., 4 volts 2 amps., 4 volts 4 amps., 12 6; 550 350 120 m.a., 4 volts 1 amp., 4 volts 2 amps., 4 volts 4 amps., 17 6; 450 450 120 m.a., 4 volts 2.5 amps., 4 volts 4 amps., 4 volts 2 amps., 18 6; 500 500 120 m.a., 4 volts 2.5 amps., 4 volts 5 amps., 19 6.

SMOOTHING Chokes, 40 henries 40 m.a., 700 ohms, 6 6; 20 henries 60 m.a., 480 ohms, 7 6; 15 henries 100 m.a., 330 ohms, 8 6; 20 henries 30 m.a., 7 -; 20 henries 120 m.a., 270 ohms, 9 -

SPECIAL Transformers Quoted for and Delivery Given within 3 Days of Receipt of Order; transformers for all metal rectifiers and valves in stock; all transformers and chokes are unconditionally guaranteed for 12 months.

SET Manufacturers' Guaranteed Supplies. Rola permanent magnet speakers, P6, 28/- (listed 45 6); Rola D.C., all voltages, 17 6 (listed 35 -); please state voltage required when ordering; Celestion Soundex permanent magnet, 16 - (list 27 6); Ebsen 2-valve Collosus battery sets, less valves, 15 6, with 2 specified valves, 26 - (list 42 19 6); Utility 2-gang condensers, 0.0005, with trimmers, shrouded and complete with dial, oscilloscope and knob, 10 6 (list 27 -); condensers, 4 mfd., 750-volt test, 2 6; 2 mfd., 750 volt, 1 9; 1 mfd., 750-volt, 1 - each; condenser blocks, 1,500 volt test, 10 mfd., 2+2 1+1+1, 6 3 each; 12 mfd., 4+2+2+2+1+1, 6 9 each; 20 mfd., 4+4+2+2+2+2+1+1, 11 - each; Radio for the Million 3 valve A.C. kits, complete with 3 Mullard A.C. valves (Pen. 4V, 84V, and 354V.), £3 10 (list £6 10); all goods guaranteed new, in original sealed cartons; carriage paid. Service Radio, 46, Lisle St., London, N.W.1. Phone: Gerrard 6653. [2714

RAYMART'S Weekly Bargains. Largest stocks in Midlands surplus radio, electrical, and P.A. gear.

ROTARY Convertors, M.L. 200v, 90 W., £5; 220v, 50 W., £4; E.D.C. 230v, 50 W., with filter, £7; Crypto, 110v, 600 W., £7 10; all silent double wound and 200-230 A.C. output.

MOTORS, New B.T.H. 1/4hp, D.C., £2 10; 1/2hp, £2; ditto, generators, 720v, 120 m.a., £2; 440v, 200 m.a., £1 10; M.L. 12v, to 500v, audio converter, £4.

WAJNANT Radiogram Cabinets, with brown felt lined lid by famous gramophone company, cost £8 10 to make; our price 50/-; many others in stock, callers only.

RESISTANCES, Eric, H.M.A., etc., 100 to 50,000 ohms, 3 - doz. Note: Our selection only. Raymart's famous 2 1/2in. flush millimeters, 20 m.a. upwards, 5/9.

VARLEY or Pye H.F. Chokes, 1 6; Radiophone screened ditto, 1 9; short wave series zap condensers, 2 6; Colson Cosmic coils, dual range and shortwave, 2 6 pair.

CONDENSERS, Radiophone screened superhet, 4-gang, 10 -; Pola screened 2-gang, 9 6; Ameco semi-screened 3-gang, 10 -; T.C.C., 4+4+1, 3 9; Wego, 4+4+1+2+2+2, 2, 6 6.

SEVEN Floors of Bargains at Radio Mart, 44, Holloway Road; and 19, John Bright St., Birmingham. [2725

PEPPIER Offers More Stocktaking Bargains, on 3 Days' approval, cash or credit; carriage paid on orders over £2.

VALVES, as new, all tested before despatch: P.M.2, etc., 4 3; P.M.252, etc., 5 5; P.M.1D, G.S., 8 6; P.M.41D, G.S., 8 11; A.C. 8 6; P.M.24, P.M.24H, M.S.4, D.C. 8 6; D.C. pair, D. S. 6, etc., 9 3.

P.M.16, P.M.26, P.M.14, P.M.24, 6 11; P.M.64, P.M.54, P.M.58, P.M.8, P.M.5b, P.M.256, Tungston P.44, P.415, P.614, P.615, etc., 1 11.

MULLARD P.M.256c, Osram P.P.25a, P.P.3 425a, M.A.C.064, A.C.084, A.C.104, 4 11; Cosmos A.C. 2, A.C. r, S.P. 41u, S.P. 45u, 4 6 each.

AMSCO 2-gang Condensers, semi-screened, with trimmers, similar to Radiophone brand new; listed 21 - last few at 3 11.

J.R. R.18, 4 6; ditto, R.2, 9 6; Lyons 4-gang, boxed, 2 6; Ormrod ditto, 8 11; all above fully screened.

J.R. chassis-mounts, with drum drives, singles, 3 11, 5-gangs, 6 6; Cylcon Extensors, 3-gangs, 8 11; many unused.

SPECIAL Offer of Brand New Manufactured Mains Transformers, primary tapped 200 230 250, all I.T. centre tapped, fully guaranteed.

250 0-250v, 60 m.a., 4v, 2a., 4v, 4a.; 8 11; postage 9d.

350 0-350v, 80 m.a., 4v, 2 1/2a., 4v, 2 1/2a.; 11 9; postage 1 -.

500 0-500v, 120 m.a., 4v, 2 1/2a., 4v, 2a., 4v, 4a.; £2 3 c; carriage 1 6.

240 v, 200 m.a., centre tapped 200v., for H.T.B. and H.P.O., 4v, 4a.; 12 11; carriage 1 -.

300 v, 550 m.a., for H.T.11 4v, 4a., 4v, 2a.; 22 6; carriage 1 6.

MONODIAL Transformers, Few only, for 2.5-watt chassis, terminal type, £1 1, (tapped 18 6; ditto, for A.V.C. 2 6 extra; carriage 1 6.

400 0-400v, 120 m.a., for Monodial or A.C.P.A.; 19 11; carriage 1 6; terminal type, 2 6 extra.

LAST Few, Seradex transformers, shop soiled, H.T.10, 4 with I.T.S., 12 6; ditto, no I.T., 9 11; offers also listed for remainder of stocks advertised on page 5, cols. 1 and 3, or issue for 12 5 3s.

SERADIX Filter Condensers, tubular type, non-inductive, 400v, D.C. working, 0.005 to 0.1 mfd., 5d.; 0.25 mfd., 9d.; 0.5 mfd., 1 -; 1.0 mfd., 1 3; 2.0 mfd., 1 9.

TYPE B Condensers, 400v, working, 1 mfd., 1 9; 2 mfd., 2 3; 4.0 mfd., 4 5; 4-4 mfd., 7 3; 3-8 mfd., no Westinghouse elements, 14 6.

SERADIX Range of Resistances Offer the following: Exclusive Features:

FINER Limits of Accuracy, M-150, within 4%, stress-wound types within 2 1/2%.

RELIABILITY. Our record of no faults is still un-qualified.

PRIOR. The only range to offer a 1/2 watt resistor at 3d.

SERADIX M-150 Resistors, 1/2 watt rating, wire coils, most values, from 100 ohms to 2 megs.; 8d. each.

SERADIX Glass-wound Resistors, type G-125, 2v, 1,500 ohms, 9d.; 5,000 ohms, 1 -; 10,000 ohms, 1 3.

SERADIX G-250 2 1/2-watt Resistor, as tested by "Wireless World," and loaded to 5 watts without excessive overheating, 25 to 1,500 ohms, 1 -; 5,000 ohms, 1 3; 20,000 ohms, 1 6.

SERADIX Glass-wound Resistors are also supplied in 1/2, 3/4, 1 1/2 and 30 watt ratings; lists for Lamp TRIUMPH PEPPER, 44, Wake Green Rd., Moseley, Birmingham 13. [2716

A Remarkable MAP OFFER

Open to all Motorists and Prospective Car Buyers



ROAD MAP For Motorists

20 Coloured SECTIONS

On Stout Card Complete in Case for the nominal price of

1 1/4 post free

The maps are specially prepared for "THE AUTOCAR" by John Bartholomew & Son Limited, Edinburgh. Scale: 8 miles to an inch. Main roads shown in red with mileage between towns, altitudes indicated in colours. Each of the 20 sections covers approximately 85 by 65 miles, with key on back to facilitate choice of section required.

Full particulars of this exceptionally generous offer to the motoring public appear in the current issue of "THE AUTOCAR"

BE SURE TO BUY "THE AUTOCAR"

For PERFECT VOLUME CONTROL — WATMEL POTENTIOMETERS

Our Policy this year is to specialise in Potentiometers. You can, therefore, be certain when purchasing a Watmel Potentiometer that you are obtaining the very best from a firm that is concentrating on this type of component.

This resistance meets with the requirements for a volume control which will have an equal variation of volume for the rotation of the knob. This is specially important for the control of the grid bias of the new variable-Mu valves.

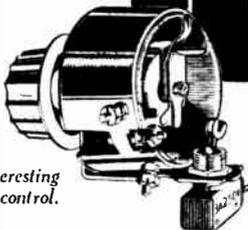
Here is illustrated the Watmel Type 2 Potentiometer with mains switch.

Price.

Square Law Winding 8/6
Without Mains Switch 6/6
Type 1.

Standard Winding 5/8

Please write for the interesting Watmel book on volume control. Free.



WATMEL WIRELESS Co., Ltd., Imperial Works, High Street, EDGWARE. Telephone: Edgware 0323

M.C.92

Components, etc., for Sale.—Contd.

EVERYTHING for Movies and Talkies.—Phone, write, or, better still, call and inspect immense stock of bargains

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621

MAINS RADIOS Second Great Clearance Week of Set Manufacturers' Surplus, guaranteed as new; carriage paid, or call.

UTILITY 2-gang Condensers, trimmers, shrouded, 6/-; 3-gang, trimmers, shrouded, 7/6; Polar 0.0003 reaction condensers, 1/-; Telsens Radiogram transformers, 6/-; Benjamin 5-pin chassis v. holders, 1/2 half dozen; 0.25 meg. leaks, 4d., or 1/3 half dozen. All following condensers are 250v. A.C. working: T.C.C. blocks, 4x4 mfd., 3/6; Cossor blocks, 4x2 mfd., 2/6; Helsby blocks, 2x2x1 mfd., 2/3; 2 mfd., 1.250v. test, 1/4; 1 mfd. ditto, 1/-; T.C.C. latest 0.0001 flat type, 4d. each, 1/6 half dozen; T.C.C. 2 mf. 100v. electrolytics, 1/3; valves, as new, L210's, 3/8; 210H.F.'s, 3/3; P.M.24's, 4/9.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2720

10/- Each.—A.F.5. O.P.M.3c. O.P.M.4c. B.I., Polar Star, 0.0005 3 gang.—S. G. Lewis, 49, Clifton Rd., Liverpool 6. [2750

BRITISH Radiophone Radiopak Super Het 4-gang., 0.0005, fully screened with trimmers; list 37/6, our price 9.11; c.o.d., postage paid.—Kay, 167, City Rd., London, E.C.1. [2542

VARNISHED Insulated sleeving, all colours.—Send P.O. for 1/- for 24ft. in 3ft. lengths, of any colour; will take all standard wires; separate your circuits.—Small Tools, Ltd., 400b, Caledonian Rd., N.1. [2689

MOVING Coil Milli-Ammeters, 0-50, 10/6 each; 2 milliamps and 120v. 17/6 each; other ranges in stock; alterations, repairs of every description.—The Victoria Electrical Co., 47, High St., Battersea, S.W.11. [0355

PREMIER SUPPLY STORES Offer the Following Manufacturers' Surplus Brand New Goods at a fraction of the original cost; all goods guaranteed perfect, carriage paid over 5/-, under 5/-, postage 6d. extra. (Ireland, carriage forward.)

SPECIAL Offer of Mains Transformers, manufactured by Philips, input 100-115 volts or 200-250 volts, output 180-0-180 volts, 40 m.a., 4v. 1a., and 4v. 3a., 4/6.

ALL Premier Guaranteed Mains Transformers have engraved terminal strips with terminal connections, input 200-250 volts, 40-100 cycles, output 135v. 80 m.a., for voltage doubling, 8/6; 4v. 3-4a., c.t. L.T., 2/- extras; Westinghouse rectifier for above, giving 180v. at 30 m.a., 8/6.

PREMIER H.T.8 Transformer, 250v. 60 m.a., rectified, with 4v. 3-5a., c.t. L.T., and screened primary, 15/-; with Westinghouse rectifier, 25/-.

PREMIER H.T.9 Transformers, 300v. 60 m.a., rectified, with 4v. 3-5a., c.t. L.T., and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER H.T.10 Transformers, 200v. 100 m.a., rectified, with 4v. 3-5a., c.t. L.T., and screened primary, 15/-; with Westinghouse rectifier, 26/-.

PREMIER Mains Transformers, output 250-0-250 volts 60 m.a., 4v. 1-2a., 4v. 2-3a., 4v. 3-4a. (all c.t.), with screened primary; 15/-.

PREMIER Mains Transformers, output 350-0-350 volts 90 m.a., 4v. 3-5a. (c.t.), and 4v. 2-3a. (c.t.), with screened primary; 15/-.

PREMIER Mains Transformers, output 400-0-400 volts 100 m.a., 4v. 4-5a. (c.t.), and 4v. 2-5 amps. (c.t.), 15/-.

PREMIER Mains Transformers.—4 volts 3 amps., C.T., 7/6; 4 volts 5 amps., c.t., 8/6; 6 volts 2 amps., 7/6; 9 volts 1 amp., 7/6; 12 volts 1 amp., 7/6; 14 volts 4 amps., 12/6; 22 volts 1 amp., 10/-.

PREMIER Auto Transformers, 100-110 200-250 volts, or vice versa, 60-watt, 7/9; 100-watt, 10/-; 180-watt, 15/-.

SPECIAL Offer of Manufacturers' Type Mains Transformers, any input, output 250-0-250 volts, 60 m.a., 4v. 1a. (c.t.) and 4v. 3a. (c.t.), 8/6; 175v. 50 m.a., 4v. 4a., 4v. 1a., 5/6; H.T.8 transformer, with 4v. 3-4a. (c.t.), 8/6; with rectifier, 18/6.

AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts, 120 m.a., 4v. 5a., 4v. 2a., and 6v. 1a. (all c.t.); 17/6.

PREMIER Chokes, 40 m.a., 25 henries, 4/-; 65 m.a., 30 henries, 6/-; 150 m.a., 30 henries, 10/6.

PYE Chokes 20 or 32 henries, 4/-; Premier multi ratio output transformers, 6 taps, giving 15 different ratios, 7/6.

PREMIER Eliminators, input 200-250 volts 40-100 cycles A.C., incorporating Westinghouse metal rectifiers; output 250v. at 60 m.a., S.G. and 120v. taps, 42/6; with 4v. 4a. c.t. L.T., 7/6 extra.

PREMIER Eliminator, output 150v. at 30 m.a., S.G. and 100v. taps, with 4v. 3-4a. c.t. L.T., 37/6; or with trickle charger, 42/6.

PREMIER Eliminators output 120v. at 20 m.a., S.G. and 100v. taps, 27/6; with L.T. trickle charger incorporated, 35/-.

PREMIER D.C. Eliminators, output 120v. at 20 m.a., S.G. and 100v. taps, 15/-; larger model, output 200v. at 50 m.a., S.G. and 120v. taps, 25/-.

ACCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse rectifiers; 2v. at half-amp., 8/6; 2, 4, and 6v. at half-amp., 17/6; 2, 4 and 6 volts at 1 amp., 22/6; 12v. at 1 amp., 27/6; 6v. or 12v. at 2 amps., 35/-; 12v. at 1.5a., 30/-; 6v. at 3a., 39/6; 12v. at 3a., 52/6; three separate 12v. 1a. circuits, 75/-.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 80 hys. 60 m.a.; 5/6.

WESTINGHOUSE Metal Rectifiers, 120v. at 20 m.a., 6/6; 180v. at 30 m.a., 8/6; 250v. at 60 m.a., 10/-; 200v. at 100 m.a., 11/-; 300v. at 60 m.a., 11/-; 8v. at half-amp., 6/6; 6v. at 1a., 9/6; 12v. at 1a., 12/6; 6v. at 2a., 20/-.

KOLSTER Blander Electric Gramophone Motors, complete with turntables and automatic stop; 100-250 volts A.C. and D.C., list price £5, to clear £2.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250 volts; 30/- complete.

(This advertisement continued on next page.)

PILOT AUTHOR KITS

Exact to Specification

CLASS "B" FERROCART RECEIVER

KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled Polished Oak Panel, Ready Assembled and Drilled PLYMAX Baseboard, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet. CASH or C.O.D. Carriage Paid £8-10-0 or 12 monthly payments of 15/7.

KIT "B" exactly as Kit "A" but including Valves only. CASH or C.O.D. Carriage Paid £10-16-3 or 12 monthly payments of 19/10.

KIT "C" as Kit "A" but including Valves and Peto-Scott Cabinet, CASH or C.O.D. Carriage Paid £12-1-3 or 12 monthly payments of 22/3.

BUILD YOUR CLASS "B" FERROCART into the beautiful PETO-SCOTT WALNUT CABINET described and illustrated in "Wireless World" April 28. Complete with Shelf and Speaker Buffer. CASH or C.O.D. 25/-

A.V.C. MONODIAL SUPER

KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled Polished Oak Panel, Ready Assembled and Drilled PLYMAX Baseboard, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet. CASH or C.O.D. Carriage Paid £11-10-6 or Deposit £1-10-6 and 11 monthly payments of £1

A.C. SHORT WAVE CONVERTER

KIT "A" Author's Kit of FIRST SPECIFIED Components including Peto-Scott Ready Drilled Plywood Panel and PLYMAX Baseboard, Ready Assembled, but less Valves. CASH or C.O.D. Carriage Paid £8-11-6 or 12 monthly payments of 15/9. 1 Peto-Scott Ready Drilled PLYMAX Baseboard 10 0

Prices of all "Wireless World" Finished Instruments Broadcast Tested available on application.

PETO-SCOTT Co. Ltd. 77, City Rd., London, E.C.1. West End Showrooms: 62, High Holborn London W.C.1.

A small but important Component



The humble Terminal seldom receives the attention it merits. It is an important point of CONTACT—and CONTACT in any receiver, transmitter or mains unit should be PERFECT and above suspicion.

Take care in your choice of terminals—specify CLIX and obtain thoughtfully designed and soundly made components.

CLIX PANEL TERMINALS.

- Extremely robust.
- Hexagonal Shoulder greatly facilitates mounting.
- Insulated and non-removable head
- Provision for solderless connection if desired.
- Clear markings, easily read.

Type B 4d.

Type A without Hexagonal Shoulder. 2 3d.



CLIX SPADE TERMINALS Positive metal-to-metal wiring is fully protected from creeping acid by a specially designed collar making corrosion impossible. Contact is perfect.

Large size: Nickel-plated or lead-coated. 2d. Small size: Nickel-plated. 1d. CLIX "MASTER" PLUG Also has positive METAL-to-METAL wiring. Widely variable and non-collapsible prongs give firm grip and full contact with ANY battery socket. Specially curved ends for easy insertion. Clearly engraved. PRICE 1 1d.



Folder "W" gives full details of the whole CLIX range of Contact Components. Write for a copy.

LECTRO LINX Ltd., 79a, Rochester Row, London, S.W.1

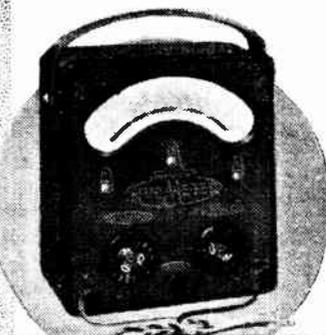
EVERY TEST WITH ONE INSTRUMENT ONLY

D.C. AND A.C.

The Avometer is indispensable to the Service men of leading radio manufacturers as the only instrument which adequately meets their needs. It is the only complete testing instrument giving direct readings in amps, volts and ohms without the necessity for mathematical calculations.

Two models: One for D.C. only, 8 Gas, and the Universal Avometer, giving both D.C. and A.C. readings (60 cycles), 12 Gas. Delivered Terms if desired.

Fully descriptive pamphlets free on application.



The AVOMETER

REGD. TRADE MARK THE AUTOMATIC COIL WINDER AND ELECTRICAL EQUIPMENT CO., LTD., Winder House, Douglas Street, London, S.W.1. Phone: Victoria 3406-7

BRITISH MADE

EPOCH

MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.G. It is free.

EPOCH RADIO MANUFACTURING CO. Ltd.
Exmouth House, Exmouth St., London, E.C.1
*At the Junction of Rosbury Avenue and Farringdon Road.
Phone: Chalkwell 6098 (4 lines).*

THE INSTITUTE OF WIRELESS TECHNOLOGY

(Incorporated)

1933 EXAMINATIONS

The Associateship and Associate Membership Examinations of the Institute of Wireless Technology will take place on the 29th and 30th of June, 1933, in Edinburgh, London, Sheffield and South Africa, and at other centres if necessary. Candidates taking either examination next year should obtain a copy of the revised regulations operating from the 1st of January, 1934.

Applications on Form E must be sent to the Secretary at 72 Oxford Street, London, W.1.

FIRST CLASS REPRODUCTION

AN UNREPEATABLE OPPORTUNITY TO SECURE A REAL B.T.H. **R. K. LOUDSPEAKER**

GUARANTEED NEW AT BARGAIN PRICES

Specification—6 in. diameter cone Moving Coil Loudspeaker giving full bass response and handling the output from the heaviest power valve. Far superior to many small modern moving coil speakers. Weight 30 lbs. Field winding to suit 6, 100, or 250 volts D.C. Send cash with order or C.O.D.



R. K. SPEAKER
Originally listed at £6. 6. 0
Now offered for **30/-**
A.C. MODELS £2. 10. 0

O. H. SEEKAMP, 46, FARRINGDON ST., E.C.4

Grippleshell Aerial Brackets

are simple and economical to install and avoid unsightly poles. Write for leaflet to:—

PARTRIDGE WILSON & CO.,
Dep't. 29, Davenset Works, Leicester.

ERIE

Write for NEW Technical Brochure

● THE RADIO RESISTOR CO
1, Golden Sq., Piccadilly Circus, London, W.1

SPEED — SAFETY — SATISFACTION

Radio Apparatus — Despatched to all parts of Great Britain and Abroad.

All Types and Makes. C & G

FREE DELIVERY Home Order: value 5/- and over. Cash with order or C.O.D. All goods BRAND NEW and GUARANTEED.

Post your Orders to C. & G.

THEY DELIVER THE GOODS!

CITY & GENERAL, Mail Order Department,
199, DEANSGATE, MANCHESTER.

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

ROLA 6,500 ohms, type F6, moving coil speakers; 17 6.

AMPHON Moving Coil Speakers, type E.M.644, dual field, 2,500 and 5,000 ohms (100-250v.), with output transformer, 12 6; ditto, 200-250v., A.C., 22 6.

AMSCO 3-gang 0.0005 Condenser, with trimmer—(listed 30/-), but price 7 6; Polar 0.0005 and 0.00035 bakelite dielectric condensers, with knob, 1/-.

POLAR 3-gang Variable Condensers, fully type, fully screened, split end vanes, and disc drive 0.0005, 10/-; Ormond all-brass 2-gang condensers, semi-shielded, 0.0005, 3 6.

WESTERN Electric Condensers, 250 volts working, 1 mfd. 6d., 2 mfd., 1/-.

TA.C. Condensers, 750v. working, 2 mfd. 4/-, 4 mfd. 6/-; 400v. D.C. working (300v. A.C. working), 4 mfd., 4/-.

TA.C. Condensers, 250v. working, 4 4 1 mfd., 5/-; 300v. working 4 4 2 2 2 mfd., 7/-; 375v. working, 6 1 2 2 2 mfd., 10/-; 300v. working, 4 4 2 2 1 mfd., 6/-.

400 Volts Working, 3 separate 4 mfd. condensers, 8 6; Western Electric 400v. working, 0.01, 0.01 mfd., 1/-.

SPECIAL Offer of Wire Wound Resistances: 4 watts, any value up to 10,000 ohms, 1/-; 8 watts, any value up to 15,000 ohms, 1 6; 15 watts, any value up to 20,000 ohms, 2/-; 25 watts, any value up to 50,000 ohms, 2 6; 50 watts, any value up to 50,000 ohms, 3 6.

WIRE Wound Potentiometers, 15,000 ohms, 1 6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; wire wound Charlot potentiometer, 50,000 ohms, 2 6; Colverson logarithmically wound potentiometers, 6,000 ohms, 1 9.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms quarter amp, and 500 ohms half amp, 5/- each.

FOR Callers Only. The following valves, guaranteed as new, P.T.625, M.P. Pen., D.C.S.G., V.D.S., V.M.S., S.A.V.A., A.C.S.G., A.C.S.G.V.M., V.M.S.G., 41M.S.G., V.M.S.L., M.S.4B, F5, 904V, A.B.S.G.L.A., M.S.G.H.A., M.H.L.4, M.L.4, M.L.4, U.14, S.A.V.C., D.W.3, P.T.4, D.S., D.S.W., M.S.4, 41M.L.S., M.A.S.G., A.C.H.L., at half list price.

THE Last Few Western Electric 4211-D Valves, 10v. 3a. filament, 750-1,000 volt plate, 50-65 m.a., impedance 3,500 ohms, amplification factor 12; cost £5, to clear at 15/-.

500 Volt 125 Milliamp Full Wave Rectifying Valves, 4v. 2a. filament; 7 6.

PHILIPS 325 Valves for A.T. charging, 5 6; 329 Barreter lamp, 2/-.

ALL the Following Lines, 6d. each or 5/- per doz. assorted: Shielded S.G. or Pentode leads, Polymet 0.01 condensers, 2d.; lengths of screened wire, 5 pin valve holders, Gridlock 5 amp. sink systems T.C.C. 0.1 mfd. condensers, 0.5 condensers.

ALL Orders to The Premier Supply Stores, 20-22, High St., Chapham, S.W.4 (Maceday 2188), Closed 1 o'clock Wednesdays. Open to 9 o'clock Saturdays. Nearest Station, Chapham North Underground. [275]

KREXO, the new plug-in low frequency stabiliser, is constructed in accordance with modern radio practice, and will definitely improve any battery receiver; send for one now; price 2/- post free. Krexo Radio, 20, Union Street, Jersey, C.I. [2701]

HAND Telephones, 4 6; pedestal telephones, 7 6; bell ringing magnets, 4/-; twin gang phone bells, 3/-; large ditto, 5/-; microphones, 1/-, 2 6, and 4 6; microphone transformers, 2 6; earphones, 9d.; automatic switching dials, 2/- Below.

2-VALVE Transmitting Sets, with valves, C.W., 15/-; T.V.T. high tension units, to suit, 7 6; Morse wireless transmitting sets, 12 6; 2 valve receiving sets, 7 6; mine exploding hand generator, 25/-.

VACUUM Cleaners, small hand model, Starrite, complete with handle, bag, switch, and long cord and plug, for A.C. or D.C. 220-volts, 12 6 each, post free; also Vacuum cleaner hair driers, with bag, heating element, plug and cord, etc., small plate missing, nothing important, for 110 or 220v. A.C. or D.C., as new, 10/- each, post free. Below.

SPARK Coil, 10in., complete with hammer break and condenser, good condition, £3 10; ditto, 10in. coil, sound windings and condenser, wants adjusting, £2 10; 1in. spark coil, complete, 6 6, post free; 12in. spark coil, complete, 10/-, post free; large X-ray tubes, 10/-, post free. Below.

MORSE Inker, sound, complete with key and sounder, £3; solenoid relays, mains voltage, 3 6; acetylene lamps for campers, lamp, new burner, reflector, carbide container, compact and complete in mahogany box, new 3/- each, post free.—Below.

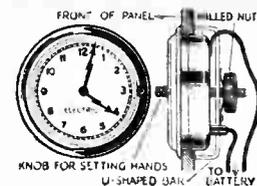
ROTARY Converters, input 6 to 12v. D.C., output 30v. 1a. A.C., 15/-; ditto, 50v. D.C. input, 75v. 75 m.a. A.C. output, 17 6; ditto, 220v. D.C. input, 30v. 6a. D.C. output, 50/- Below.

TALKIE Reduction Gears, ratio 40 to 1, silent drive, 2 flexible shafts, one 5ft. long, easily transmit a 1/2hp. on any purpose, 9/-; large dimmer rheostats 110 or 220v., 15/-; 110v. A.C. motor, 1/2hp., 35/-; 1/2hp. 110v. A.C., 15/- Below.

CHARGING Dynamos, all hand wound for charging, 100v., 40 amps., £7 10; 220v. 15a., £8 10; 220v. 12a., 45/-; 50v. 5a., 37 6; 60v. 15a., £5, etc.; 0.3 amp-meter 7 6; 0-20 ammeter, 12 6; shunt regulators, 15/-; charging resistances, 10/-; 110v. D.C. motor driven pumps, for water, etc., 35/-; 1 kW. 100v. transformer, output 10,500 volts, 12 6 and 25/-, etc., etc.; please state requirements, anything electrical, Below.

GALPIN, 23, Terwhite Rd., Brockley, London, S.E.4. Nearest Station, St. John's, Lewisham. All goods cash with order, or C.O.D. (charge extra). Three days' approval from date of delivery, all goods guaranteed. [2749]

CONDENSER Blocks 6d. per mfd., 650 volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units, 2 years' guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Waltham-tow, E.17. Phone: 3134. [0396]



FIT THIS ELECTRIC CLOCK TO YOUR SET!
NO MAINS NEEDED!
KEEPS CORRECT TIME!
NO WINDING!

Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/4" dia. in any panel up to 1/2" thick. Easy to fix—no screws required. Only 1/2" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.

RIVERSIDE MFG. CO., LTD., COMPLETE WITH BATTERY
Dept. 20, Crisp Rd., Hammersmith, W.6.
Telephone: Riverside 0302.

12/6
POSTAGE 6D

SAVAGE FOR MAINS TRANSFORMERS

56 58, CLERKENWELL ROAD, LONDON, E.C.1.
Phone: Chalkwell 3088 9.

Famous Maker's Offer: **£5** Radio-Gram. CABINET for **65/-**

7 DAYS' FREE TRIAL (OR 10 - MONTHLY)

Plans built first class, the finest in tone brings a fine thrill (Piano, Gram., Radio-Press, H.F.C., 2,500 Model.) Models from 35/- to £15. List FREE.

Send for photographs, detail drawings, Piano-Tone Cabinets, Albion Rd., (w.w.) Bexley, Kent.

Picketts £6-15-0

BAKER

WRITE NOW FOR OUR NEW BOOKLET & LEAFLET

75-77 SUSSEX ROAD, CROYDON, SURREY
Phone: Croydon 3441-2
FOR QUALITY MOVING-COIL SPEAKERS.

SCRATCH FILTER CHOKES; TONE-CORRECTOR CHOKES; SCREENED H.F. CHOKES; SHORT WAVE CHOKES; HETERODYNE FILTERS.

LISTS ON REQUEST. POSTLETHWAITE Bros., KINVER, STOURBRIDGE.

The **ELEMENTARY PRINCIPLES** of **WIRELESS TELEGRAPHY** and **TELEPHONY** by **R. D. BANGAY**

Third Edition
Revised by O. F. Brown, B.Sc. (1930)

THE standard book of instruction for wireless beginners and students. This new and revised edition brings the whole subject into line with modern developments in wireless. The style is clear and simple and attention is given to the theoretical elements of electricity and magnetism; to the dynamo; and to the properties of waves. A leaflet which gives full particulars of the volume, including a synopsis of the chapters, will be sent on request.

PRICE
7/6 net By post 8/-

From all leading Booksellers or direct from the Publishers
LIFFE & SONS LTD.
Dorset House
STAMFORD STREET, LONDON, S.E.1
W.W.97

Components, etc., for Sale.—Contd.

CASH Wanted.—Set, Ferrocart coils, 38/; Colvern K.G.C., K.G.R., 4/- each; Kolster-Brand Universal electric motor, 25/; Columbia 100, D.S. motor, 15/; H.M.V. pick-up, 19/; Jackson shielded 5-gang condenser and Dial, 8/-; Wood, 36, Weston Park, London, N.8. [2725]

EXPERIMENTERS' Surplus.—"W.W." single dial super, complete, £5, nearest; 50 watt amplifier, battery console, £5; A.P.S., 12.6; A.F.50X.N., 15/-; Pyc heavy choke, 7.6; Baker's S.P.A.C. speaker, 25/-; Volt Tractrix horn, 15/-; 2 Garrard U.S. motors, 7/-; Board, 8, Marlborough Rd., South Croydon. [2702]

GILBERT INDUSTRIES offer a Further Batch of A Parcels, containing one each of the following high grade components: 1 platinum plated chassis, 1 heavy mains transformer, 350.0-350 at 60 ma., 4 v., 4 m., C.T., 4 v., 2 m., rect. and H.M.V., 2-gang, with trimmers, and 2 coils, one electrolytic 8 mfd., 455 working, one H.M.V. screened H.P. choke, one volume control, one screening choke, 50 h., 50 ma.; complete parcel, post paid, 4/-. [2712]

ALSO B Parcels, containing one each of the following high grade components, suitable for building Class B or straight 30 ma., 150-180 v. A.C. eliminators: One Westinghouse rect., voltage doubler; one transformer; one condenser pack, 4.4/2 (1.1); one choke, 50 h., 50 ma., 4 resistances; complete parcel, post paid, 4/-. by return. Gilbert Industries, 519, London Rd., Westcliff-on-Sea, Essex. [2734]

THREE Amplin Moving Coil Speakers for 100-250 D.C., 19/- each; 1 Elico AT60 A.C. eliminator, 25/- only; 1 pair Mignox or det balanced moving coil speakers, only used few days, perfect, £2.9.6 only; 1 Ferranti A.F.3, 17/-; 1 Ferranti O.P.M.6, 12/-; 1 Ferranti O.P.M.4C, 12/-; 2 Varley 20 h., 100 ma. chokes, as new, 10/- each; 1 P.M.24, 1 P.M.24, 1 P.M.25, 1 V.D.S., only slightly used, 10/- each.—Scott Sessions and Co., Muswell Hill, N.10. [2599]

CLEARANCE. A large stock of Siemens Halske P.A. equipment and components, comprising the following: Two 200 watt undistorted amplifiers, complete with valves, motor generators, etc., 10, 15 and 25 watt power amplifiers, valves, Grant Blottaller speakers, Blimp speakers, 200 Prolo. supercans, loud-speakers, ideal for relay work, moving coil loud-speakers, pick-ups, moving coil microphones, electric turntables, 5,000 condensers, sizes from 0.1 mfd. to 10 mfd., up to 3,500 A.C. test. [2709]

PRICE Lists on Application. Callers are requested to phone before calling. Special quotations for large quantities.

H. FRANKS, 421, St. George's St., Commercial Rd., London, E.1. Nearest Underground, Abgate Station. Phone: Royal 8546. [2712]

1933, brand new, tested, guaranteed British radio at half price; P.M. moving coil speakers, 41/-; "Class B" super model, 25/-; oak and walnut speaker cabinets, 12/6; 20 ma. A.C. eliminators, 30/-; trickle charger models, £2; D.C. eliminators £1, 15 ma. models, 15/-; 120v. H.T. batteries, 7.6; Amplin Guinea cone speakers, complete, 10/-; dual range coils, 2/11; transformer, 5.11; 20 A.H. accumulators, 2/11; 40 A.H., 5.11; D.C. all-mains units, 39/-; A.C. ditto, 55/-; all-electric and battery sets at very special prices; cash refunded if not approved; trade enquiries invited. Collins' Depot, 9.11, Riversley Rd., Nuneaton, Warwickshire. Phone: 76. [2400]

MAYFAIR RADIO offers Brand New Surplus.—Mains transformers, screened and topped primary, all L.T. windings. C.T., 500.0-500 at 120 ma., 4v., 2.5a., 4v., 2a., 4v., 5a., 19/-; 450.0-450 at 120 ma., 4v., 2a., 4v., 2.5a., 4v., 5a., at 18/-; 400.0-400 at 80 ma., 4v., 2a., 4v., 4a., at 14/-; 400.0-400 at 120 ma., 4v., 6a., 4v., 2a., 4v., 3.5a., at 24/-; 350.0-350 at 120 ma., 4v., 2.5a., 4v., 5a., 4v., 2a., at 17/-; 250.0-250 at 60 ma., 4v., 1a., 4v., 5a., at 10/-; for H.P.G. rectifiers, 200v., 180 ma., 4v., 3.4 amp., at 9/-; or H.P.G., 240v., 200 ma., 4v., 4.5a., at 12.6/- ask for quotations, any specifications, all carriage paid; cash with order or cash. Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2731]

SOUTHERN RADIO Wireless Bargains;—A manufacturer's guaranteed surplus. Ready Radio constructors' kits: 303 3-valve battery kit, less valves, 18.6, with three Mullard valves (P.M.I.L.P., P.M.2D.N., P.M.2), 36/- each (list 70/-); Meteor screen grid 3-valve kit, less valves, 26/-, with three Mullard valves (P.M.12a., P.M.2D.N., P.M.2), 49/- each (list £57/7/6); Meteor screen grid 3-valve "A" kit, including cabinet, Colston permanent magnet speaker and kit of parts, less valves, £5.7.6, with three valves as above, £4/12/6 (list £5.17.6); please note all kits advertised by us are brand new, and contained in original sealed cartons; the valves advertised with these kits are the manufacturers' specified valves. [2713]

CELESTION Permanent Magnet Soudbox Speakers, brand new and boxed, 15/- each (list 27.6); Cyclon three-gang condensers, 0.0005, shielded and trimmers, 8.9 each (list 32/-); genuine Amblion loud speaker units, 2.9 each (list 12.6); screen I chokes (H.M.V.), 1/- each; condensers: 4 mfd., 2.6 each; 2 mfd., 1.9; 1 mfd., 1/- each, all 750 volt test; inductors, 12 mfd. (2.2), 2.12 (2.1), 1.1, 6.9 each; 10 mfd. (2.2), 2.12 (2.1), 1.1, 6.3 each, all 1,500 volt test; mains transformers, all capacities, in stock; and specials quoted for all goods guaranteed in every way and carriage paid; hundreds of bargains in units and battery valves, ganged condensers, resistances, etc.—Southern Radio, 323, Enston Rd., London, N.W.1 (near Warren St. Tube). Phone: Museum 6324. [2713]

MISCELLANEOUS.

WOODEN Bobbing, 27ins. x 37ins., with centre hole, price 9/- per 1,000, immediate delivery; send 2d. stamp for sample.—Toys, Ltd., 63, Newgate St., Newgate-on-Tyne. [2705]

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months. Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2. [2337]

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [20395]



CLASS 'B' AMPLIFICATION MAINS UNITS — PERFECT VOLTAGE REGULATION!

Current demands are constantly fluctuating with Class 'B' amplification or Q.P.P., and it is therefore essential that there should be a constant voltage output from the mains unit. The most satisfactory method of ensuring practically perfect voltage regulation in the unit is by incorporating the Neon Stabiliser Tube produced by Cosors. This tube has a self-adjusting action and, no matter what current is taken from the unit, the voltage remains the same. Heayberd are the first to manufacture and market units for use with this tube. A complete unit is available for D.C. mains—price 55/- and a Kit of parts for A.C. mains costs 89.3. Write for particulars NOW.

.....POST NOW FOR FREE FOLDER.....

Please send me FREE folder 971 describing Heayberd Class 'B' Mains Units.

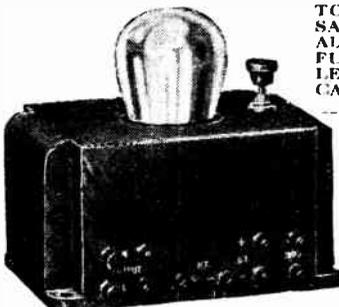
Mr. W.W. Address

F. C. HEAYBERD & CO. 10, FINSBURY STREET, LONDON, E.C.2 (Minute from Moorgate Stn.)



Specified by the Experts SOUND SALES CLASS "B" UNIT

The "Wireless World," May 19th, said: "Connecting the unit to a receiver is simplicity itself . . . nearly seven times the normal output is obtained for a small increase in H.T. consumption."



NEED COMPENSATED. SUITS ALL SPEAKERS. FULLY DECOUPLED. BAKELITE CASE.

Price 35/- only (less valve).

The Unit which will convert any battery set to CLASS "B"

If you require more details, write Dept. B.W.

SOUND SALES LTD., Tremlett Grove Works, Junction Rd., Highgate, N.19

THE MOTOR CYCLE Every Thursday 3d. w.w.15

PATENT AGENTS.

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central C682. 47 years' experience. Advice Handbook free. [20381] PATENTS and Trade Marks, British and foreign.—Geo and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.P.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [2001]

REPAIRS.

REPAIRS to Loud-speakers, transformers and head-phones, 4/- each; Blue Spots or Wires, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-speaker Repair Works, 2, Shopka Rd., Balham, London, Streatham 6618. [20394]

GUARANTEED Repairs by Experts; specialists for repairs to S. G. Braun and Amblion radio apparatus, also loud-speakers, head-phones, pick-ups. Blue Spots, any type rewound, re-adjusted and adjusted; 4/-; post best mains transformer repairs; terms to trade.—Howell, 51, Motley Hill, Enfield, Middlesex. [2716]

TUITION.

RADIO Engineering.—Day, evening, and postal courses. This school is fitted with most modern apparatus. Prospects free. Valuable recommendations given to qualified students.—Northern Counties Wireless School, Preston. [20399]

EXCHANGE.

LADY, having Fluo R.S.2 D.C. set, wishes to exchange for similar model, A.C. Melody Shop, Colonnade, Marlborough. [2732]

WANTED.

CONVERTED, 12-400v. D.C., 150 ma. Bennett, Fakenham, Norfolk. [2735]

WANTED, 60 panels for 1922 Super 60.—E. Ford, 18, North St., Havant. [2728]

FERRANTI Weston meters, microphones, valves; cash or exchange.—Raymont, 44, Holloway Road, Birmingham. [2722]

HORN Loud-speakers for P.A. Western Electric preferred; must be good; approval.—Wood, Bull Ring, Gimsly. [2709]

HIGH Class Radio Sets and Parts Wanted for Cash.—Melbury Radio Exchange, 24, Melbury Grove, London, N.1. [2743]

WANTED Urgently, E.T.H. or similar, carbon microphone.—Lowest price to Farnham's, 112a, Aston Rd., Birmingham. [2726]

REQUIRED, private evening instruction in wireless and electricity. Write full particulars, fees, Box 2696, c/o The Wireless World. [2697]

RYALES RADIO, 33, Chancery Lane, London, purchase modern radio parts for cash; send list for quotation; goods taken in part payment for brand new. [2616]

WANTED, electrical gramophone, complete with A.C./205 230 amplifier and M.C. speaker, suitable for pleasure garden or church hall.—Fox 7022, c/o The Wireless World. [2746]

WANTED, Brown public address speakers, A.C. boxes, or similar types; one rotary converter, 12v. or 24v. D.C., 1/2 500 v. 3 amp. D.C.—Retail and prices to Bel Royal Radio, Jersey. [2707]

SITUATIONS VACANT.

AMBITIOUS Men Should Apply for Free Particulars of A Training of Appointments in Radio or Talking Engineering; valuable introductions.—Radio Training Institute, St. John St., Newcastle-on-Tyne. [1907]

PROGRESSIVE Provincial Firm has Vacancies for Assistant Service Engineers, must be fully experienced, to overhaul mains receivers, radiogram sets, etc., and own motor cycle; salary 45/- per week.—Melody Shop, Colonnade, Marlborough. [2731]

WANTED, man with thorough knowledge of radio shop management, hire purchase, selling and service business, to take over a shop and work on own initiative. Write, stating experience, age and wage required, to Box 7023, c/o The Wireless World. [2718]

If You Wish to Enter the Wireless Profession with a Thorough Training or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [20388]

ENGINEERS!—Are you earning less than £6 per week? If so, you cannot afford to carry on without reading "Engineering Opportunities." In this 250-page handbook Professor A. M. Low indicates where worthwhile vacancies are constantly occurring. The book also explains the methods of our unique appointments dept., gives details of all leading examinations (A.M.I.Mech.E., I.E.E., G.P.O., etc.), and outlines modern home study courses in every branch of engineering. In your own interests, investigate; send P.C. for handbook today, free of charge.—British Institute of Engineering Technology, 87, Slagtergate House, 29-31, Oxford St., London. [2583]

SITUATIONS WANTED.

ENGINEER, 24, 8 years' experience, managed service dept. (no repairs), requires situation.—Box 7027, c/o The Wireless World. [2745]

YOUNG Man (26) seeks Position, radio or talking, any capacity; particularly experienced in service work.—Box 7014, c/o The Wireless World. [2708]

FIRST Class P.M.G. Certificate Holder, educated, aged 26, requires post, 8 years on broadcast receivers; references.—25, Crossways, Romford. [2729]

Need we say more?

Read the following report by an independent authority on

The New **PEAK** ELECTROLYTIC CONDENSERS

Reprinted from "The Wireless Trader" May 13th, 1933.

TEST RESULTS.—Two samples of the Wilburn "Peak" 8 μ F condensers were tested for capacity by measuring the impedance with 50 c.p.s. A.C. The D.C. leakage with various applied voltages was also measured after the samples had been given time to "form." The results obtained are given in the table below.

Specimen No.	Capacity μ F.	D.C. Leakage (mA) with Various Applied Voltages.					
		300 V.	350 V.	400 V.	450 V.	500 V.	550 V.
1	7.6	0.05	0.075	0.1	0.15	0.225	1.3
2	7.7	0.075	0.125	0.175	0.225	0.75	3.5

It will be noticed that the capacities found only differ from the rated values by amounts within the possible error of measurement by this method, namely, \pm 7.10 per cent., and the condensers are therefore entirely satisfactory from this point of view.

In the matter of leakage, these Wilburn products are some of the best we have tested, the leakage at the full rated voltage being only 0.15 and 0.225 mA respectively.

The voltage rating appears to be very conservative, since even at 100 V over the rated value the leakages were only 1.3 and 3.5 mA. With some similar condensers we have handled, it has been found that almost immediately after the rated voltage is exceeded, more or less violent gassing takes place, and the leakage current rises considerably.

These "Peak" condensers can therefore be recommended as very good examples of this class of product, while the prices are very reasonable.

Write for new list ready shortly.

Wheatstall House,
Carmelite Street,

WILBURN & COMPANY

London, E.C.4
Phone: CENTRAL 6810

Northern Distributors: W. Andrew Bryce & Co., Bury, Lancs.



CAPACITY
8 mfd.
PRICE
4/9 ea.
Delivery from Stock.

A SUPER AERIAL LEWCOS

REGD. BRAIDED AERIAL WIRE

Having a backing of over 50 years' wire-manufacturing experience behind it, Lewcos Braided Aerial Wire is the most efficient obtainable. This Aerial is moisture resisting and does not discolour wallpaper, woodwork, etc. Suitable for inside or outside use.

Ask your Dealer for it by name — "LEWCOS"!

The London Electric Wire Company and Smiths Limited
Church Road Leyton
London, E.10.

The World-famous range of Lewcos Radio Components transform even the most indifferent receivers into instruments of outstanding brilliance. They are the most modern and efficient units obtainable.

Stocked by all reputable Dealers.

Prices:
50ft - 1/6
75ft - 2/2
100ft - 2/9

THE BELLING-LEE CLIP-ON Unit Pick-up

ELECTRIC REPRODUCTION from your PORTABLE gramophone without loss of portability.

Clips on and off in an instant. With self-contained volume control **35/-**

Write for Booklet

BELLING-LEE
Cambridge Arterial Road, Enfield, Mdx.

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists

CRESSALL MANUFACTURING COMPANY,
31-32, TOWER STREET, BIRMINGHAM.

PARIMA SELENIUM CELLS

FOR ALL PURPOSES.

Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. **5/-**

PARIMA MANUFACTURING CO.
1, BROMLEY ROAD, S.E.3. *Hitler Green 3625*

FOR HIRE RADIO, MICROPHONE & GRAMPHONE AMPLIFIERS

ALEXANDER BLACK.

WIRELESS CONSULTANT

55, EBURY STREET, LONDON, S.W.1.

ESTABLISHED IN 1925 SLOANE 1655 Trade Inquiries Invited.

SERVICE SETS OF ALL TYPES

Supplied, Serviced and Visited in any district, or may be sent for Full Test and Report, at 2/- per valve-holder; portables, 1/6 per valve-holder.

INDEX TO ADVERTISEMENTS:

	PAGE
Automatic Coil Winder & Elec. Equipment Co., Ltd.	7
Baker's "Selhurst" Radio	3
Barber & Colman, Ltd.	10
Belling & Lee, Ltd.	10
Birmingham Sound Reproducers, Ltd. Inside Back Cover	
Black, Alexander	10
Britannia Batteries, Ltd.	vi.
British Blue Spot Co., Ltd.	5
British Institute of Eng. Technology	v.
British Pix Co., Ltd.	v.
British Radiophone Co., Ltd.	v.
British Robt. Co., Ltd.	v.
Byre, W. Andrew, & Co.	6
Bulgin, A. F. & Co., Ltd.	6
Carrington Manf. Co., Ltd.	
Citroën Cars, Ltd.	1
City Accumulator Co., Ltd. Inside Front Cover	
City & General Equipment Co.	8
Cole, E. K., Ltd.	2
Columbia Gramophone Co., Ltd.	
Culver, Ltd.	
Cuscor, A. C., Ltd.	3
Cressall Manf. Co., Ltd.	10
Dubilier Condenser Co. (1925), Ltd. Front Cover	
Eastick, J. J., & Sons	
Electradix Radios	6
Electrical Trading Association, Ltd. Inside Front Cover	

	PAGE
Epoch Radio Manf. Co., Ltd.	8
Gambrell Bros., Ltd.	
General Electric Co., Ltd.	
Haynes Radio	
Hayward, F. C. & Co.	9
Ignonic Electric Co., Ltd.	
Institute of Wireless Technology	3
Jackson Bros.	
Kendin, Ltd. Inside Back Cover	
Lectro Linx, Ltd.	7
Lever, Eric J. (Trix), Ltd.	
London Electric Wire Co. & Smiths, Ltd.	10
London Radio Supply Co.	
Milnes Radio Co.	
Multitone Electric Co., Ltd.	
Osborn, Chas. Inside Back Cover	
Parima Manf. Co.	10
Partridge, Wilson & Co.	8
Pepper, Trevor (Seradex)	
Peis-Scott Co., Ltd.	7

	PAGE
Picketts	3
Pills, Ltd.	
Postlethwaite Bros.	3
Radio Gramophone Development Co., Outside Back Cover	
Radio Restor Co.	3
Reproducers & Amplifiers, Ltd. Inside Front Cover	
R.L., Ltd.	
Riverside Manf. Co., Ltd.	3
Relax, Ltd. (M.L. Equipment) Front Cover	
Savage, W. Bryan	3
Scott Sessions & Co.	3
Sookamp, D. H.	3
Sonocels Electric Lamps & Supplies, Ltd.	
Sonschrie Reproducers, Ltd. Front Cover	
Sound Sales, Ltd.	9
Tenny Products	4
Telegraph Condenser Co., Ltd.	
Telsen Electric Co., Ltd. Front cover	
Thompson, T. W., & Co.	
Varley (Oliver Pell Control, Ltd.)	
Ward & Goldstone, Ltd. Inside Back Cover	
Watson Wireless Co., Ltd.	7
Westinghouse Brake & Saxby Signal Co., Ltd. Inside Back Cover	
Wilburn & Co.	10

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

ATHLONE

725 kc/s, 413 metres, 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Gramophone Music. 2.45 (approx.), Relay of the Running Commentary on the Derby. 6.0, Programme for Children. 6.45, News. 7.0, Gaelic Talk. 7.15, German Lesson. 7.30, Time Signal. 7.31, Band Concert. 8.30, Tenor Solos by Peter Dima. 8.45, Violin Recital by Nora Richardson. 9.5, Literary and Musical Programme. 9.35, Programme to be announced. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Talk. 8.30, Exchange. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Orchestral Concert, conducted by J. Pla. 11.0, Talk on Astronomy. 11.15, Duets from Opera by Josepina Blanch (Soprano) and Miguel Mulleras (Tenor). In the interval at 12 Midnight, News. After the Programme, Gramophone Music. 1.0 a.m. (Thursday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopp-lavoro Announcements. 8.30, Giornale Radio and Press Review. 8.30, Time Signal and Announcements. 8.35, Concert of Chamber Music. Soloists: Milena Barberio (Soprano), Ita Lombardo d'Angelo (Pianoforte), Nicola delle Fiole (Cello), and Luigi de Grandi (Violin). Selection from Figaro (Mozart); Soprano Solo: La strada bianca (Pratella); Pianoforte Solo: Sicilienne (Ignoto); Third Movement from the Suite La figlia di Jorio (Franchetti); Soprano Solos: (a) Il viandante (Casavola). (b) Che sperti, bambola? (Guarino); Cello Solos: (a) Intermezzo from Goyescas (Granados). (b) Scherzo (Chabrey); Pianoforte Solos: (a) Berceuse (Tcherepnin). (b) Badinage (Tcherepnin); Seventeenth Century Suite, Al lison (Schimelli); Soprano Solo: Confidenze (Corsini); Pianoforte Solos (Debussy): (a) La fille aux cheveux de lin. (b) Clair de lune; Soprano Solo with Violin Obligato: A lei (Muller); Pianoforte Solo: Sonatina (Ravel). In the interval, Talk: The Royal Harems of Persia. 10.30, Gramophone Music. 10.55, News Bulletin.

BASEL.—See Schweizerischer Landessender.

BELGRADE

497 kc/s, 480.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Concert by the Station Orchestra. 8.0, Pianoforte Concerto No. 3 in C Minor, Op. 37 (Beethoven). 8.45, See Prague. 10.0, News.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Concert of Music of the Time of Frederick the Great. 2.45, Talk for Young People. 3.10, Programme for Children. 3.30, Weather and Exchange. 3.45, Günter Rich reads from his own works. 4.0, See Hamburg. 5.0, Recital on the Wurlitzer Organ relayed from the Ufa Palace of the Zoo, Arabian Gold (F. W. Rust); Liebes-walzer (Brahms); Aus fremdländischer Zeit (Christoph); Variations on Kuckuck, Kuckuck, ruff's aus dem Wald (Reutter); Serenata (Puccini); Selection from La Bohème (Puccini). 5.30, Friedrich Kayssler, from the Works of torch Fock, who fell in the Battle of Jutland. 6.0, A Poem. 6.5, Liszt Pianoforte Recital, Au der Teilschappelle; Am Waldbusen; An einer Quelle; Heimweh; Die Glocken von Genf. 6.55, Talk on Wireless Technique. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations relayed from Hamburg. 8.0, An Epigram. 8.5 (approx.), Concert by a German Marine Band, on the anniversary of Jutland Day; Admiral Stosch-Marsch (Lataun); March Potpourri, Die Wache zieht auf (Kochmann); Intermezzo, Einzug der Frühlings-blumen (Kockert); Der Gott, der Eisen wachsen liess (Brase); Potpourri of German Songs, Aus deutschen Gauen (Christern); March Märkische Heide (Lincke); March, Heil Deutschland (Hauffstaengl); Helmsman's Song and Sailors' Chorus from The Flying Dutchman (Wagner); Valk aus Goeckel (Pardun); Horst-Wessel-Lied. 9.0, Concert by the Station Orchestra, conducted by Edwin Lindner and Hans Cdo Müller; Soloist, Gerhard Hüsch (Songs); Ballet Music from Don Juan (Glück); Songs: (a) Angellini vengo e canoro (Gaspard); (b) Amarilli mia bella (Caccini); (c) Par diesti (Lotti); (d) Monologue from Lucile (Gétry); (e) Two Arias from Julius Caesar (Handel); Serenade for String Orchestra op. 21 (Robert Fuchs). 10.0, News. 10.45, Weather Report for Shipping. 11.0, Concert from Heilsbrunn. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.10 p.m., Concert relayed from the Café Corso. 6.40, The Witzleben Station

WEDNESDAY
MAY THE THIRTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Running commentary on the Derby. "The Wild Duck," a play by Ibsen. Dvorak programme, orchestral concert.
- LONDON REGIONAL** "In reply to your request," orchestral programme.
- MIDLAND REGIONAL** Organ recital from the College of Technology, Manchester.
- NORTH REGIONAL** Orchestral concert from the National Museum of Wales.
- WEST REGIONAL** "Homeward Bound," an Oceanic divertissement.
- SCOTTISH REGIONAL** Opening of the New Law Courts for Northern Ireland by the Duke of Abercorn.
- BELFAST**
- ABROAD**
- BELGRADE** 8.0 p.m. Beethoven's Pianoforte Concerto No. 3 in C Minor (Op. 37).
- BERLIN (Witzleben)** 8.10 p.m. Brahms' German Requiem (Op. 45).
- BRO-MUNSTER** 8.35 p.m. Act 2 of "The Mastersingers" (Wagner) from the Municipal Theatre, Zurich.
- HAMBURG** 10.5 p.m. Haydn's Symphony in D Minor.
- LEIPZIG** 8.45 p.m. The Symphony Orchestra.
- MUNICH** 8.0 p.m. The Philharmonic Orchestra.
- OSLO** 8.1 p.m. Orchestral Concert.
- STUTTGART** 9.25 p.m. Brahms' String Quintet, No. 1, in F (Op. 88).
- VIENNA** 7.0 p.m. Concert of Millocker's Music.

informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations relayed from Hamburg. 8.5, The Watch Word. 8.10, Berlin Art Week—The German Requiem Op. 45 (Brahms), relayed from the Philharmonic; The Berlin Philharmonic Orchestra, conducted by Bruno Kittel; The Bruno Kittel Choir; Adelheid Arnold (Soprano), and Fred Drissen (Baritone). 9.30, Talk, The German Section of the International Exhibition in Chicago. 10.0, Weather, News and Sports Notes. 10.25 (approx.), Radio Report on the Football Match, Berlin v. Paris, on Gramophone Records. 10.30 (approx.), Concert by the Station Orchestra, conducted by Dr. Rudolf von Schmittreck; Waltz, Hofballtänze (Lanner); Serenade No. 4 for Strings and Two Horns (R. Fuchs); On hearing the First Cuckoo in Spring (Debussy); Frilichter und Kobold (Hofmann); Two Pieces for Strings, Two Oboes and Two Horns (Nicodé); (a) Ein Mädchen, (b) Auf dem Lande; Frühlingstimmer-Walzer (John, Strauss). 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.45 p.m., Hungarian Programme; Three Plays. 6.45, Talk for Housewives. 6.50, See Prague. 7.15, See Brno. 10.0, See Prague. 10.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 263 metres.—1.15 p.m., Opera Music on Gramophone Records. 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.35, Educational Talk. 4.0, Violin Recital of Music by Max Regner; Suite in G Minor; Wiegendorf; Romance in G. 4.30, Review of Books on Johannes Brahms. 4.50, Talk; Practical Weather Rules for Sport and Hiking. 5.10, Agricultural Prices. 5.12, Song Recital by Elisabeth Berndt: Wie sollt' ich's lassen (Handel); Du armes kleines Bäcklein (Hassse); Frühlingsglaube (Schubert); Stille Tränen (Schumann); Geister-nähe (Schumann); Im Herbst (Franz); Die Mainacht (Brahms); Dein blaues Auge (Brahms); Morgen (R. Strauss); Mädchen (M. v. Schillings). 5.40, Talk on Birds' Nests. 6.0, Zither Recital by Ernst Rummel. 6.20, May Service relayed from St. Anthony's Church. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Hamburg. 8.0 (from

Gleiwitz). Music from the Time of Frederick the Great—Concert by the String Orchestra, conducted by Franz Kauf; Soloists, Anni Bernert (Soprano) and Liesbeth Bernert (Pianoforte); Sonata in D Minor (Fasch); Two Pieces for Pianoforte; Rigandon (J. Ch. Bach); Solfeggietto (Ph. E. Bach); Singt dem göttlichen Propheten (Graun); Toccatina for Pianoforte (Ph. E. Bach); Aria from H-re-pastore (Mozart). 6.50, News. 9.0, Recital of Sea Slanties by a Nazi Choir with Humorous Sailors' Yarns, by Willy Koch. 10.0, Time and News. 10.20, Talk. 10.40, See Heilsberg. 12 Midnight, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—7.15 p.m., Gramophone Music. 7.25, Brno—Literary and Musical Programme. 8.15, Recital of Songs by Rachmaninov, Tchaikovsky, Gliere, Chopin, and Tchernyevsky. 8.35, Concert by the Station Orchestra conducted by Bakala; Soloist: F. Kudlacek (Violin); Concert Overture (Anatol Provanzani); Ballad (Hradzira); 9.20, Military Programme of Literature and Music. 10.0, See Prague. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert, conducted by A. Felleman, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert. 1.5, Dance Music relayed from the St. Sauveur Palais de Danse. 6.0, Talk. 6.15, Song Recital by Frédéric Anspach; Nocturne (Frank); La Procession (Frank); Sur une Tombe (L. Keet); Rondo (Leken); Oraison (Mocet); Soloists chantants (Mawet); Des Femmes on Pleurant (Busine); Guitar (Busine); Villanelle (Jongen); Bal de fleurs (Jongen). 6.45, At the Antiquary's—Sketch (Louvillé). 7.0, Ballad, Op. 24 (Grieg), on Gramophone Records. 7.15, Talk: The Belgian Palmor, Emile Wauters. 7.30, Medical Talk. 8.0, Concert by the Radio Orchestra, conducted by C. Walpot; Soloists: Germaine Marville (Songs) and Joséasco (Humorous Items); March, sambre et Meuse (Planquette); Overture, The Thieving Magpie (Rossini); Scene and Waltz from Gretia Green (Guiraud); Songs; Selection from Dédé (Christini); Humorous Items. 8.45, Reading of Poems (Paul Claudel). 9.0, Concert (cont'd): Suite, A Mediterranean Cruise (Jadovszky); Idylle passionnelle (Razigade); Songs; Potpourri, Extravaganza (Morena); Humorous Items; Selection from On with the Show (Nicholls). 10.0 Le Journal Parlé. 10.10, Dance Music relayed from the St. Sauveur Palais de Danse.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Basque Music on Gramophone Records. 1.0 p.m., Le

Journal Parlé. 1.10, Concert, conducted by Felleman, relayed from the Grand Hotel, Antwerp. 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot; March of the Marionettes (Hulshoeck); Invitation to the Waltz (Weber); Overture, The Bohemian Girl (Balfe); Romance for Violin (De Taey); Selection from Lilac Time (Schubert-Berte); Spanish Dances (Moszkowsky); Three Oriental Miniatures (Fischer); Selection from The Sleeping Beauty (Tchaikovsky). 6.0, Gramophone Records; Bourée Fantastique (Chabrier); Pax Vobiscum (Johnson). 6.15, Talk. 6.30, Gramophone Concert. 7.0, Talk on Tinel's Oratorio, Franciscus, with Pianoforte Illustrations. 7.30, Le Journal Parlé. 8.0, Franciscus—Oratorio (Edgard Tinel); Words by Lodewyk De Koninck; The Symphony Orchestra, the Station Choir, and Soloists; Conductor, Meekmans. In the interval at 8.45 (approx.), Recitations. 10.15, Le Journal Parlé. 10.25, Gramophone Concert: Selection from Monnaeun (Beyl); Tarantella and Napolitana (Popezki); Hearts and Flowers (Czibulka); Selection from (a) Rip van Winkle (Planquette), and (b) Phi-Phi (Christine); Tajana (Lindsay); Selection from La Belle Hélène (Offenbach).

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., The Station Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Violin Solos by Nina Alexandresco; Sonata No. 1 (Schumann); Romance (G. Hüe); Cortège (Lilly Boulanger). 8.30, Talk. 8.45, Cello Recital by S. Seidmann; Kolndrei (Bruch); Romance (Rubin-Grin); Bagatelle (Tanciet); Tarantelle (Spue). 9.15, Flute Solos. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 8.20 p.m. to 12 Midnight.—4.0 p.m., Concert by the Sergej Sibirinov Balalaika Orchestra. 5.0, Reading. 5.30, Hungarian Folk Song Recital by Marja Sandor, accompanied by the Bela Racz Cigány Band. 6.30, Italian Lesson. 7.0, Exchange Quotations. 7.10, Cello Recital by Eugen Kerpels. 7.50, Talk: Shakespeare's Influence on Hungarian Literature. 8.20, An Interview with the President of the International Journalists' Association on the Occasion of the Association's Meeting in Budapest. 8.35, Haydn—Radio Play (Bares). 10.35, News Bulletin. 10.40 (approx.), Concert by the Alexander Brna Cigány Band, relayed from the Hotel Dunapalota. 11.15, Dance Music from the Luna Park. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12 Noon, Town Hall Chimes. 12.1 to 2.0 p.m., Concert from the Wivex Restaurant. 3.0, Gramophone Records of Classical and Light Music. 3.30, Instrumental Concert; Spanish March (O. Gylmark); Waltz, Tales from the Vienna Woods (John, Strauss); Entr'acte from Dalbor (Stetman); Selection from Gianni Schicini (Puccini); Waltz from Die Kaiserin (Fall); Talk for Women; French Comedy Overture (Kéler-Béla); Valse triste (Sibelius); Selection from Sunny (Kern); Berceuse (Järnefelt); Der Rosenkranzszug (Jessel); Minuet (Gudrun Hermannsen); Scandinavian Cradle Song (Gudrun Hermannsen); March, Obl Contrades (Teike). 5.35, Exchange and Market Prices. 5.50, Talk in English; Charlotte Brontë. 6.20, French Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Review of Politics for the Month of May. 8.0, Town Hall Chimes. 8.2, Orchestral Concert, conducted by Launy Gröndahl; Three Pieces (Fahrbach); (a) March, Standarten-träger. (b) Waltz, Land meiner Träume. (c) Knapk Polka; Two Pieces (Gungl); (a) Waltz, Hesperus-klänge. (b) Czardas; Two Pieces (Fahrbach); (a) Polka, Mazurka. (b) Mazurka, Du meine Welt; Waltz, Amoretten-tänze (Gungl); Landsturm Galop (Fahrbach). 8.50, Talk on Unemployment. 9.20, Recital of Songs of Jutland. 9.40, Reading (Alfred Kjerulf). 10.0, News. 10.15, Scandinavian Rhapsodies and Folk Dances—Concert by the Radio Orchestra, conducted by Launy Gröndahl; Two Norwegian Dances (Grieg); (a) No. 3 in G. (b) No. 4 in D; Two Icelandic Dances (Jon Leifs); Norwegian Rhapsody (Halvorsen); Danish Folk Dances, arranged for Chamber Orchestra (Launy Gröndahl); Swedish Rhapsody, Midsommarvaka (Hugo Alfvén). 11.0, Dance Music from the Lodberg Restaurant. In an interval at 12 Midnight, Town Hall Chimes. 12.30 a.m. (Thursday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Talk. 7.15, Miscellaneous Items and News. 7.30, See Warsaw. 10.25, Gramophone Music. 10.35, Talk in Esperanto; Polish Spas. 10.55, See Warsaw. 12 Midnight (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C., T. St. A. Ronald and B. McNabb announcing. 5.30, Concert by a Tango Band for Portsmouth and Southsea Listeners: Todaya; Adios Juvenil; Corazon; Violin Solo; Fandango; Mamam, yo quiero un novio; Madrid; Violin Solo; Caprice Basque; Tesoro mio; Two Songs: (a) Tu sais, (b) Déjà; Plegaria; La Paloma 6.15, Orchestral and Vocal Concert for Isle of Wight Listeners: Gipsy Moon (Borganov); Serenade (Heykens); Three Songs: (a) To Mary, (b) Mairo, my Girl, (c) Beauty's Eyes; Waltz, Gold and Silver (Lehar); The Woman in the Shoe, from What Price Melody; Three Songs: (a) Heather Moon, (b) Passing by, (c) On a Dreamy Summer Night; Memories of Paris (Moretti); Valencia (Padilla), 7.0, Programme in French, 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Beolians: Deep Night (Vallee); Jericho (Myers); Underneath the Russian Moon (Kendis); Sleepy Valley (Sterling); Granny's Photo Album (Greer); Loving them all (Coming-by); Speak to me of Love (Lemoir); I got Rhythm (Gershwin); Lover come back to me (Gouberg); Run Tum Rhythm (Aitch); Toymaker's Dream (Golden); Sing, Brothers (Tombridge); Trees (Rasbach); With Summer coming on (Turk); Sleep on (Kornigold), 11.0, Military Band Concert: Selection from Rigoletto (Verdi); Rider of the Flag; Post Horn Gallop (Koenig); Golden Jubilee March; The Bull-fighters' March (Kottaux); Brighton Camp (Traditional); General Mulcahy (Brace), 11.30, Song Recital: Wine, Women and Song (Joh Strauss); The Lass with the Delicate Air; One Morning very early; Modern Conception of Russian Melodies (di Filippi); The Last Rose of Summer (Moore); When the House is asleep; Little Brown Owl; Mignonette (Friml), 12 Midnight, Club Concert for Saffron Walden Listeners: Brahazon; My Old Dutch; Beware of the Maidens; Became (d'Hardelot); Bravest of the Brave; Our little Nipper; Selection from Wild Violets (Stolz); After the Ball; Two little Girls in Blue; By the Blue Hawaiian Waters; Cuban Love Song; Song, Nelly Grey; I know of Two Bright Eyes; Entry of the Gladiators, 1.0 a.m. (Thursday), Pianoforte Recital, with Songs: Piano Medley (Ray); Magic Notes (Steininger); Monte Carlo Medley (Robin); Two Songs: (a) For You, (b) Many Happy Returns of the Day; Duet, When the Circus comes to Town (de Rance); Whoop Medley; Potpourri of Popular Tunes (Ray), 1.30, Vocal Duets: Paradise; In an Old-World Garden; Keeping out of Mischief; Orchestra: Song of the West; Liza Lee; Now I'm in Love; My Baby just cares for me, 2.0, Dance Music by the Beolians: White Lightning; Sweetheart; Wild Waves; Deep Forest; Jungle Nights in Harlem; Rosa Mia; Swane Shuffle; Let me explain; The London Fire Brigade; Wanderer; A Bed-time Story; Open up dem Pearly Gates; Nightfall; Saffron on the Robert E. Lee, 2.57, I.B.C. Good-night Melody, 3.0, Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,159 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Concert by the Station Orchestra, conducted by Reinhold Merten; Two Piedmontese Dances (Sinigaglia); Selection from The Queen of Spades (Tchaikovsky); Tarantella from Venezia e Napoli (Liszt); Norwegian Dances, Op. 35 (Grieg); Suite from Der Rosenkavalier (R. Strauss); Ballet Music from Ritter Pasman (J. Strauss); Waltz, Wiener Bouhous (J. Strauss), 5.45, Economic Notes, 6.0, Reading (Alf. Teichs), 6.25, Topical Talk, 6.45, Notes of the Day, 6.50, Time and News, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, see Munich, 9.0, A Humorous Interlude, 9.25 (approx.), See Stuttgart, 10.0, A German Almanac, 10.15, Time and News, 10.45, See Munich, 12 Midnight (approx.), Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres, and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m. (from Hanover), Orchestral Concert, conducted by Richard Grille; Overture; Oberon (Weber); Selection from Undine (Lortzing); Procession to the Minster from Lohengrin (Wagner); Bridal Chorus from Lohengrin (Wagner); Lagoon Waltz from A Night in Venice

MAY 31st

WEDNESDAY

continued

(Strauss), 5.0, Educational Discussion, 5.30, Hamburg, Bremen and Lübeck Report on Events in the Societies and House of Burgesses of the Hansa-Sea Free Cities, 6.0, Programme of North German Folk Songs, with Commentary by H. Dieckmann, The Station Male Voice Quartet and Soloists, 6.40, Frankfurt Exchange, 6.50, Weather Report, 7.0, Transmission for all German Stations: The Battle of the Skagerrak—Radio Sequence (Wulf Bley and Fritz Busch), 8.0 (from Kiel), Concert of German Music by the "Grüss Gott" Double Quartet, Ernst Beise (Cello) and Hans Büning (Pianoforte), Songs: (a) Kanarod komu (Klughauf), (b) Sturm-beschwörung (Bürner); Canzonetta, Op. 88, for Cello and Pianoforte (Heischnann); Folk Song, Es war auf Jütlands Auen Schleswig-Holstein (Bellmann), 8.30, The Sanctity of Labour—Musical and Literary Programme in Honour of German Manual and Intellectual Workers, 9.30 (from Kiel), The Zoological Gardens—Song sequence for Solo Voices, Choir and Small Orchestra (Erwin Zillinger), relayed from the Municipal Theatre at Schleswig, Conductor: The Composer, 10.5, Symphony in D Minor (Haydn), by the Station Orchestra, conducted by Dr. Sandberger, with Introductory Talk, 10.45, News, 11.5, Topical Talk, 11.45, Dance Music by the Hoffmann Band from the Faun.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Gramophone Concert of Light Music, In the interval at 1.20, News, 2.30, Programme arranged by the Post Office, with Gramophone Records, 3.0, Exchange and Market Prices, 3.20 Talk for the Housewife, 3.30, Programme for Children, 4.0, Talk for Parents, 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Le Caid (Thomas); Melody (Hermann Löhr); Waltz Intermezzo (Ralf); In a Fairy Realm (Kettelbey); Torero-Walzer (Translatour); Selection from Gaudeamus (Humperdinck), 5.30 Talk: To the Memory of Fritz Mallien, 5.50, Bridge Lesson, 6.15, Market Prices, 6.25 (from Danzig), Concert by the Koenenkaup Vocal Quartet: Two Melodies (Haydn); (a) Alles hat seine Zeit (b) Die Harmonie in der Ehe; Three Songs, Op. 92 (Brahms): (a) Abendlied, (b) Spätherbst, (c) Warum; Four Nocturnes, Op. 22 (Heinrich von Herzogenberg): (a) Wirt's dunkel, ich läge im Walde, (b) Nacht ist waldstills, Meer (c) Zwei Musikanten ziehn daher, (d) Wie schön hier zu verträumen die Nacht, 6.50, Weather, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0 News, 8.10, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken, and Paul Glatzel and his Band, 9.45 (from Danzig), Max Halbe reads from his own Works, 10.15, News, 10.25 (approx.), Concert of Classical Operetta Music by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Der Bettelstudent (Müllerkert); Waltz from Das Spitzentuch der Königin (Joh. Strauss); Potpourri of Suppé's Operettas (Suppé/Rhode); Selection from Don Cesar (Dellinger); In Chambre, séparée—Intermezzo from Der Opernball (Heuberger); Melody from The Bird Fancier (Zeller); Selection from Der Obersteiger (Zeller); Selection from Frühlingluft (Jos. Strauss); Overture, Die Landstreicher (Zieliner), 12 Midnight (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.), 11.40, Concert by the Small Station Orchestra, conducted by H. de Groot, 12.10 p.m., Gramophone Music, 12.20, Organ Recital by J. Jong, 12.50, Gramophone Music, 12.55, Orchestral Concert (cont'd), 1.25, Interval, 1.40, Talk for Women, 2.40, Programme for Children, 5.40, Concert by De Plieders, In the intervals at 5.30 and 6.0, Gramophone Music, 6.40, Talk, 7.0, Song and Pianoforte Recital, 7.40, Talk, 8.0, Concert by a Women's Choir; Belle Rimate (Songs), P.v.d. Hurk (Flute), and G. Emmerlé (Pianoforte); Sonata for Flute and Pianoforte (Schubert); Czech Songs; Soprano Song (Janacek), 8.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot; Adagio and Rondo (Mozart); Children's Corner (Debussy); Ballet Music from Coppélia (Delibes); Overture, Hamlet (Bach); Suite, Language of Flowers (Cowen); Czech Polka (Balling); Il Bacio (Arditi); Gardas from Der Geist des Wajwooden (Grossman). In the intervals at 9.5, Gramophone Music; and at 9.40, News, 10.40, Gramophone Music, 10.45, Orchestral Concert: Overture, La Belle Hélène (Offenbach); Adagio from L'Arlesienne (Bizet); La Kermesse (Lacôme); Boston (Nick); The Grasshopper's Dance (Bucalossi); Du wirst der Kaiser meiner Seele sein (Stolz); Intermezzo from The Arabian Nights (Joh. Strauss); Internationale (de Geyster), 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.K.V.), 12.10 p.m., Concert by the Van der Horst Trio, 1.40, Agricultural Talk, 2.25, Programme to be announced, 2.40, Reading, 3.10, Concert, 4.40, Programme for Children, 5.40, Violin and Cello Duets, 6.30, Talk arranged by the Department of Buildings and Roads, 6.40, Police Notes, 6.55, News, 7.10, Potpourri of Moody and Sankey Hymns, 7.25, Talk by Heer Stapelkamp, 7.40, Concert by the Resonant String Orchestra, conducted by A. van Harskamp; Overture, Joseph (Méhul); Chamber Sonata in E Minor (Vivaldi, arr. Braun-Burmeister); Sinfonietta (Mozart, arr. Braun-Burmeister); Male Voice Choir; Seltsucht (Schneek-Eichendorff), on Gramophone Records; Five German Dances (Schubert); Die Mühle am Walddal, Op. 227 (Neckel), 8.40, Talk; Dogma and Enthusiasm, 9.10, Organ Recital, 10.30, News, 10.20, Gramophone Concert of Popular and Sacred Music.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., News Bulletin, 8.15, English Lesson, 9.0, Musical Programme with Commentary, 9.45, News Bulletin, 12 Midnight to 1.0 a.m. (Thursday), Programme in English by the I.B.C., H. K. Hitchcock announcing, 12 Midnight, Songs and Orchestral Music: Was that the Human Thing to do? (Fanny); The Specialist (Sale); Just Friends (Kemper); Taught me how to play the Second Fiddle (Dahl); Orchestra, Speak to me of Love (Lemoir); Trees (Rasbach); The Song of Songs (Moya); Orchestra, Granny's Photo Album (Greer), 12.30 a.m., Dance Music: Can't we meet again? Dip your Brush in the Sunshine; Kazoo; Let a little Pleasure interfere with Business; Washboards get together; My Darling; Sweetheart; One little Word led to another, 12.57, I.B.C. Goodnight Melody, 1.0 a.m. (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Estonian Lesson, 6.40, Concert by the Sinfoniet Choir, 7.5, Talk, 7.20, Talk: A Visit to the Police Station, 7.50, Dance Music by the Rapido Orchestra, 8.10, Humorous Talk, 8.20, Dance Music, 8.45, News in Finnish, 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Eysobit; Soloist: Gertrud Freimuth (Contralto). In the interval at 2.0 (approx.), News, 2.30, Sponsored Programme with Gramophone Music, 3.0 to 3.30, Interval, 3.30, Economic Notes and Time, 3.50, Programme for Children, 4.30, Choral and Orchestral Concert: Overture, Euryanthe (Weber); Wanderer-Suite (Knüppel); German Folk Songs: (a) Wach auf, du Handwerksknecht, (b) Nach Süden nun sich lenken, (c) Mir ist ein feins brauns Maidelein, (d) Der Jäger längs dem Weiler ging (arr. Gernshelm); (e) Zwischen Berg und tiefem Tal (arr. Othegraev); Selection from Der Waffenschmied (Lortzing); German Folk Songs: (a) Regiment sein Strassen zieht, (b) Drei Lilien, (c) Es litten itzt die ungrischen Husaren, (d) Ein Schiffelein sah ich fahren; Strauss Operetta Potpourri (Schlögel), 5.50, Talk for Women, 6.15, Müller's Garden, Lehmann's House—A Radio Play (Theo Rausch), 6.45, Weather, Time, Economic Notes, and Sports Report, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, News, 8.5, Political Talk, 8.15, In Memory of the Battle of Skager Rack, Part I—Two who were there, Part II—Address and Reading of Gerd Fock, 9.0, Organ Recital by Jakobus Menzen, relayed from the Concert Hall, Düsseldorf; Prelude and Fugue in C Minor (Bach); Choral Prelude, Liebster Jesu, wir sind hier (Bach); Choral Prelude, Schmecke dich, o liebe Seele (Brahms); String Quintet in G Minor, Op. 111 (Brahms); Organ Concerto in A (Handel), 10.15, News and Sports Report, 10.45, See Munich, 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres, 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.5 p.m., Concert by the Halle Concert Orchestra, conducted by Fritz Zschilling; Neponank Suite, Op. 49 (Möllerndorf); March, Junos Blut, frischer Mut (Vardner); Intermezzo and Waltz Song from Das süsse Mädel (H. Reinhardt); Fan Polonaise (Ziehrer); Three Bavarian Dances (Pachernegg); March from Jung Hildberg (Möllerndorf); Overture, Gipsi (Lincke); Modern Viennese Folk Music (Kouzak);

Catalonian Rhapsody (Albort); Selection from the Oriental Suite (Popy). In the interval at 1.0, News, 2.0, News Bulletin, 3.0, Pianoforte Recital by Irene Fretsch; Tocata in E Minor (Bach); Minute in C (Haydn); Romance in A Flat (Mozart); German Dance No. 1 (Beechoven), 3.25, Exchange and Market Prices, 4.0, Programme for Young People, 5.50, Exchange, Weather, and Time, 6.0, Book Review, 6.20, Talk: The Middle Classes in Industry and Society, 6.45, Programme Announcements, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, Talk and Readings on the Battle of Jutland (31st May, 1916) by Manfred von Killinger, 8.45, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blunert; Soloist, Friedbert Sammler (Harpisichord); Overture, Egmont (Beethoven); Concerto grosso in B Flat, No. 1 (Handel); Three Movements from the Serenade in D, Op. 18, for Oboe, Two Horns, and String Orchestra (Mozart), 10.15, News Bulletin, 10.30 (approx.), Concert from Heilsberg, 12 midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C. F. Miklavcic announcing, International Broadcasting Club Concert: Accordion Band: (a) Flower of Spain, (b) Ziganette; Monologue, In charge of a Bookstall; Trio: (a) Come along with me, (b) Coming round the Mountain; Orchestral Selection from The Count of Luxembourg (Lelair), 5.30, Readings, 6.0, Gramophone Records, 6.30, Talk: Modern Homes, 7.0, Russian Lesson, 7.30, Literary Talk, 8.0, Talk on Politics, 8.30, Brahms Concert, with Introductory Talk, 9.30, News and Gramophone Records.

MADRID

ARANJUEZ (EAO), 9,860 kc/s, 30.43 metres; 20 kW.—11.30 p.m., Popular Music, in the interval at 11.45, Radio Chronicle, 12.15 a.m. (Thursday), Talk, 12.40, Light Music, 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Talks for Women and Dance Music, 9.25, News and Political Review, 9.30 to 10.30, Interval, 10.30, Chimes, Time Signal, and Political Review, 10.40 (approx.), Dramatic Programme, 12.30 a.m. (Thursday), News, 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.10 p.m., The Forest Tale—Opera for Children (Novotny), 6.5, Agricultural Report, 6.30, Gramophone Music, 6.15, See Prague, 6.25, Music for Chromatic Accordion, 6.5, See Prague, 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 230 kc/s, 1,304 metres; 100 kW.—2.45 p.m., Weather, 3.0, Extract from Figaro—Opera (Mozart), 3.30, Red Army Programme, 4.0, Talk on Harvesting, 4.30, Programme for Children, 6.30, Concert, 9.0, News, 9.30, Programme Announcements, 9.55, Time Signal, 10.5, Press Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.55 p.m., Concert, conducted by Erich Klöss; Overture, Aetion (Auber); Andante, Dance and Rondo (Weber); Selection from La Gioconda (Ponchielli); Finale from Arielle (E. Bach); Selection from The Gipsy Baron (Joh. Strauss-Weinger); Two Old Folk Melodies (Mach); Liebespiede (Rust); Serenade (Drda), 6.5, Talk: The Early History of Bavarian Towns, 6.25, Talk: The National Socialist Economic Policy, 6.45, Time, Weather and Agricultural Report, 7.0, Transmission for all German Stations, relayed from Hamburg, 8.0, Concert by the Munich Philharmonic Orchestra, conducted by Adolf Mennerich, relayed from Bad Kissingen. Huldigungsmarsch (Wagner); Festival Overture (Lassen); Symphonic Poem, Les Préludes (Liszt); Wexenlied (Schubert); Ständchen (Schubert); Selection from A Masked Ball (Verdi); Waltz, The Blue Danube (Joh. Strauss), 9.0, The Stargard Verdict—Radio Play (Roskopf), 10.20, Time and News, 10.45, Serenade conducted by Erich Klöss, 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2

MAY 31st

WEDNESDAY

continued

metres; and RJUKAN, 671 kc/s, 447.1 metres.—5.0 p.m., Gramophone Music. 6.0, French Lesson. 6.30, Programme for Young Girls. 7.0, News Bulletin. 7.30, Talk: Social Problems. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Hugo Kramm; Overture, The Flying Dutchman (Wagner); Symphonic Poem, The Moldau (Smetana); Andalusian Romance (Sarastate); Norwegian Rhapsody No. 2 (Sveinsson); Dance of the Hours, from La Gioconda (Pouchitel); Italian Caprice (Tchaikovsky). 9.0, Stein Balstad reads from his own works. 9.30, Weather and News. 10.0, Topical Talk. 10.15, Light Music. 10.45, Gramophone Dance Music. 12 Midnight (approx.). Close Down.

DSTERSUND.—See Stockholm.

PALERMO

556 kc/s, 537.6 metres; 3 kW. 8.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.35 (approx.). Concert. Soloists: G. Gagliano (Cello) and M. Diamante (Flute). Overture, Ruy Blas (Mendelssohn); Cello Solos: (a) Aria Propria. (b) Minuet (Haydn); Scena de farfalle (Zamboni); Flute Solo: Sonata No. 4 (Bach); Cello Solos: (a) Suite (Chopin); (b) Madrigal (Albeniz); Berceuse (Plek-Maugiagalli); Scherzo (Sintagaglia); Flute Solos: (a) Piccola Ballata (Scanzoni). (b) Dance of the Marionettes (Köhler); Overture, Euryanthe (Weber). In the interval, Talk. 10.0 (approx.). Song Recital. 10.55 (approx.). Close Down.

PARIS

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by Otakar Párik. Overture (Vlach-Vraticky); Suite for Grand Orchestra (Masek); Waltz, Thelin (Kaam). 5.0, Talk. 5.30, See Moravská-Ostrava. 6.5, Talk for Bee-keepers. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission; Programme for Workers and Talk. 6.50, News Bulletin. 7.0, Talk. 7.15, Talk on the following Transmission. 7.30, A Dream Betrothal—Opera in Two Acts (Krasa), relayed from the German Theatre. In the interval at 9.0, Time Signal. 10.0, Time Signal. 10.1, News Bulletin. 10.15, Announcements in French for Foreign Listeners. 10.30 (approx.). Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., Concert by the Station Orchestra, conducted by Otakar Párik. Overture (Vlach-Vraticky); Suite for Grand Orchestra (Masek); Waltz, Thelin (Kaam). 5.0, Talk. 5.30, See Moravská-Ostrava. 6.5, Talk for Bee-keepers. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission; Programme for Workers and Talk. 6.50, News Bulletin. 7.0, Talk. 7.15, Talk on the following Transmission. 7.30, A Dream Betrothal—Opera in Two Acts (Krasa), relayed from the German Theatre. In the interval at 9.0, Time Signal. 10.0, Time Signal. 10.1, News Bulletin. 10.15, Announcements in French for Foreign Listeners. 10.30 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Talk: X-Rays and their Industrial Uses. 7.30 (from Lausanne), Talk: Milk. 8.0 (from Lausanne), Cello Recital by M. d'Archembault; Sonata (Haydn); Adagio (Bach); Le Papillon (d'Hervey-Clouet); Prayer (Bloch); Neapolitan Serenade (Scambati); Dance of the Elves (Popper). 8.30, See Paris (Eiffel Tower). 10.35, News and Weather. 10.45 (approx.). Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres.—1.10 to 2.15 p.m., Orchestral Concert of Light Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Children's Radio Review. 5.10, Announcements. 5.15, Announcements. 5.30 to 6.15, Orchestral Concert: Barcellonita (D'Anzi); Visione di Liti (Ricciardi); Scherzo (Giannini); Rapsodia lombarda (Verri); Valzer capriccioso (Floridia); Mignardises (Plek-Maugiagalli); Seguidilla (Albeniz); Rumba d'amore (Tagliarini). 6.40 (Naples), Shipping and Sports Notes. 6.50, Announcements. 6.57, Report of the International Institute of Agriculture (in Italian and English). 7.10, Tourist Report. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time, Announcements, and Gramophone Music. 8.15, Medical Talk. 8.30, Giornale Radio and Sports Notes. 8.45, Concert by the Rome Quartet: Soloist, Maria Senes (Soprano); Quartet in D Minor, Death and the Maiden (Schubert); Four Spanish Songs: (a) Eres in Olego, (b) Te quiero (Serrano), (c) Sorendade (Albeniz), (d) La paloma (Trader); Romance and Saltarello, Op. 16 (Grieg). 10.0 (approx.), L'arabesque—Comedy in One Act (Laurio d'Antonio). 10.30 (approx.), Gramophone Music. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 40 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 to 9.0 p.m., New York Relay. 8.0, Pop Concert. 8.30, Texas Cowgirl. 8.45, Claris Musical Review. 9.0 (approx.) to 11.45, Interval. 11.45, Stock Reports. 12 Midnight to 1.30 a.m. (Thursday), New York Relay. 12.0, Family Brief and George Olsen's Orchestra. 12.30, Woodbury Programme. 1.0, Band of Famous Brands. 1.15, Rocking Chair Memories. 1.30, Variety Programme. 2.0, Corn (Old Pipe Club of Virginia, from New York). 2.30, Dance Hits of Yesterday, from New York, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 40 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory, and News. 12 Noon (from Berne), Gramophone Music. 12.30 p.m., News. 12.40 (from Berne), Gramophone Music (cont'd.). 1.25 (from Berne), Exchange, Time, and Weather. 1.30 (approx.) to 5.0, Interval. 5.0 (from Berne), Programme for Children. 5.30 (from Berne), Gramophone Music. 6.30 (from Zürich), Talk. 7.0 (from Zürich), Time, Weather, and Market Prices. 7.5 (from Zürich), Concert by the Station Orchestra. 7.30 (from Zürich), English Lesson. 8.0 (from Zürich), Concert of Russian Music. 8.20, Introductory Talk to the following Transmission. 8.35 (approx.) (from Zürich), Act II of The Mastersingers—Opera (Wagner), relayed from the Municipal Theatre. In the interval at 9.35 (approx.), Weather and News.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 369 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., The

Practical Corner. 5.20, Concert of Light Music. 6.15, Concert of Gramophone Music. 7.15, Weather and News. 7.30 (from Göteborg), Microphone Report. 8.15, Vocal and Instrumental Concert. Anita Harrison (Pianoforte), Karl Hellgren (Songs) and Carl Christiansen (Cello). Sonata No. 3 in D, Op. 10, for Pianoforte (Beethoven); Ich grölle nicht (Schumann); Wenn ich in deine Augen seh' (Schumann); Sonata in G for Cello and Pianoforte (Sammartini); All my Love (Pannocka); The House of my Dreams (Pannocka); Early Spring (Clari); Autumn (Clari); Serenade for Cello and Pianoforte (Granados). 9.15, Talk. 9.45, Weather and News. 10.0, Modern Dance Music. 11.0 (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Music. 12.45 p.m., News. 1.0, Time. 1.1, Exchange Quotations. 1.5, Gramophone Music. 2.0 to 4.0, Interval. 4.0, Organ Recital, relayed from Radio Coloniale (Paris), 15,243 kc/s (19.68 metres). 5.0, Dance Music by the Orchestra, conducted by M. Roskam. 6.0, Concert of Variety Music, relayed from Lille, 1,130 kc/s (265.4 metres). 7.0, Legal Talk in French. 7.15, Talk in German on Electricity. 7.30, Time Signal and News. 7.45, See Paris (Eiffel Tower). 8.15, Press Review in German. Lottery Results, and News. 8.30, Gramophone Music. 8.45, Symphony Concert by the Municipal Orchestra, conducted by H. E. G. Münch, relayed from the Orangerie; Pastoral Symphony No. 6 in E, Op. 68 (Beethoven); Leonora Overture No. 3, Op. 72a (Beethoven). In the interval at 9.30 (approx.), Press Review in French. 10.30, Orchestral Concert, conducted by M. Jeanine, relayed from the Grand Kleber Inn. 11.30 (approx.). Close Down.

STUTTGART

MUHLACKER, 532 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Folk Songs and Songs of the Highroad on Gramophone Records. 2.0 to 2.15, Programme arranged by the Post Office, with Gramophone Music. 3.0, Programme for Children. 4.0, Talk: Evangelical Women Workers come to Stuttgart. 4.10, Song Recital by Helwig Pliard (Soprano). An den Mid (Heinrich Rücklos); Auf einer Wanderung (Heinrich Rücklos); Arnes Lied (Heinrich Rücklos); Gebet (Heinrich Rücklos); Reiselied (Schoeck); Ich möchte still am Wege stehn (Joseph Haas); Regenwetterlied (Joseph Haas); Tanzlied (Martin Frey). 4.30, See Frankfurt. 5.45, Time and News. 6.0, Talk: National or International Films? 6.25, Talk: Rays. 6.50, Time and News. 7.0, Transmission for all German Stations relayed from Hamburg. 8.0, See Munich. 9.0, The Ladies introduce themselves—a Monologue (Jochen Klepper). 9.25, String Quintet No. 1 in E, Op. 88 (Brahms). 10.5, Time and News, followed by Gramophone Music. 10.45, See Munich. 12 Midnight (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire. 6.0 p.m., News. 6.15, Music by an Argentine Orchestra. 6.30, Military Music. 6.50, Popular Music. In the interval, Talk. 7.15, Racing Results, Market Prices, and News. 7.25, Local News Bulletin. 7.30, Opera Music: Airs from (a) The Magic Flute (Mozart), (b) Sigurd (Kreyer), (c) L'Attaque du Moulin (Brument). 7.45, Music by a Viennese Orchestra. 8.15, Sound Film Music. 8.30, Accordion Music. 8.45, Popular Melodies. 9.0, Concert, conducted by M. Cantens. In the interval, Light Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco; Selection from Faust (Gounod); Air from La Basoche (Messager); March from Aida (Verdi); Melody (Erwin); Waltz, Quand l'amour meurt (Crémieux); Espagnoles (Marchand). 11.0, Orchestral Music. 11.15, Opera Music: Airs from (a) Hamlet (Thomas), (b) Marouf (Rabaud), (c) Carmen (Bizet), (d) Resurrection (Alfano). 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Comstock announcing. 11.30, Dance Music; Me; It always starts to rain; Springtime reminds me of you; Ali Baba's Camel; I found you; Got a Date with an Angel; Dancing with Tears in my Eyes; When the Guards are on Parade. 11.57, I.B.C. Goodnight Melody. 12 Midnight, News, Weather, and Announcements. 12.5 a.m., Opera Music. 12.15, Dance Music. 12.30 (approx.). Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 p.m., Vocal and Instrumental Concert. Arnaldo Benvenuti (Pianoforte), Giovanni Anaudi (Bass), and Dalfia Fortuni (Mezzo-Soprano). Pianoforte Solos: (a) Sonata in D (Scarlati), (b) Etude, Op. 25, No. 12 (Chopin); Bass Solos: (a) In questa tomba oscura (Beethoven), (b) Song (Tchaikovsky), (c) The Prisoners (Gretchaninov); Mezzo Soprano

Solos: (a) Aria (Brahms), (b) Prayer to Saint Sergio (Donati), (c) Der Jagers Abschied (Schumann); Pianoforte Solos: (a) Dance (Plek-Maugiagalli), (b) Allegro bar-baro (Bartok); Bass, Solo, Aria from Don Carlos (Verdi); Mezzo-Soprano Solos: (a) Aria from Samson and Delilah (Saint-Saëns); Habanera from Carmen (Bizet); Pianoforte Solo, Fireworks (Debussy). 6.0 to 6.35, Interval. 6.35 to 10.0, See Turin. 10.0, Orchestral Concert arranged by the Dopplavoro Society, conducted by Franco Gulli; Concerto grosso (Corelli); Elegy (Tchaikovsky); Passo del groni (Repin); Valse triste (Sibelius); Scherzo (Jonksson). 10.30, Concert by the Piets Dopplavoro Choir, conducted by Angelo Capello; Giovinetta (Blanc); I banditi (Merlato); Dammi la man (Seghizzi); Lis ciamparis (Zardini); Don di viole (Marzuttini); Dardis' co biele (Pian); La Morinella (Smico).

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Soprano and Tenor Song Recital. 6.35, Giornale Radio, Agricultural Report and Dopplavoro Announcements. 7.0, Time and Tourist Talk. 7.10, Gramophone Records: Ideale (Tosti); O sole mio (Di Capua); La mia canzone (Tosti); Lasciati amar (Leoncavallo). 7.20, Giornale Radio. 7.45, Gramophone Music. 8.0, Announcements, Giornale Radio and Weather. 8.15, Medical Talk. 8.30, Comedy in Three Acts, followed by Variety Music. 11.0, Giornale Radio. 11.5 (Florence only), Dance Music from the Chez moi Bajola.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.25 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.0 p.m., Concert of Music by Friedrich Bayer. Soloist: Rudolf Lustig (Tenor). Songs: (a) Erinnerung, (b) Lied Quartet in B Flat for Oboe, Horn, Cello and Pianoforte. 5.45, Health Talk—Smoking. 6.10, Talk for Workers. 6.35, Talk: The Turks in Austria. 7.0, Concert of Music by Millicker by the Josef Holzer Orchestra. Soloists: Lilly Claus (Soprano), Franz Zwönik (Tenor) and Dario Medina (Tenor). Overture, Gasparone; Drinking Song from Das verwunschene Schloss; March, In Reih' und Glied from Der Probekuss; Dream Waltz from Der Feldprediger; Polka, Klop' an, from Die Sieben Schwaben; Glida-Walzer from Der Viceadmiral; Duet, Ich setz den Fall from Der Bettelstudent; Ländler for Two Violins, with Orchestral Accompaniment, Heimliche Liebe; Tarantella from Gasparone; Polka mazurka, Willst du mein Liebster sein? from Der arme Jonathan; Song from Das Sonntagsgeld; Trumpet Solo; Spatzenlied from Cousin Bobby; Overture, Der Bettelstudent; Cellar Waltz from Apajune, der Wassermann; Gavotte from The Dubarry; Schiffsjungenmarsch from Der Viceadmiral; Duet from Der arme Jonathan; Waltz from The Dubarry; Ballad from Apajune, der Wassermann; Overture, Das verwunschene Schloss; Trio, O du himmelblauer See from Das verwunschene Schloss; Students' Polka from Jung Heideberg; Quodlibet, Was die Menschen Liebe heissen, from Nordlicht; Gallop, Rasch wie der Blitz, from Der arme Jonathan. In an interval at 7.40, Time, Weather and Programme Announcements. 8.45, Topical Talk. 9.0, An Interview with Auguste Wilbrandt-Bandits, on his Ninetieth Birthday. 9.15, Readings from Bruder Wanderer (Wolfram Brauckmeyer). 10.0, News, Weather and Announcements. 10.15, Dance Music by the David Mathé Band, relayed from Hubner's Kursalon.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Records. 1.20, Weather. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.30, Boys Scouts' Report. 3.35, Programme for Children. 4.40, Gramophone Records. 4.50, Talk: How to train Dogs. 5.0, Gramophone Records. 5.40, Social Report. 5.55, Programme Announcements. 6.0, Light Music. In the Interval, News. 7.0, Miscellaneous Items. 7.20, Answers to Agricultural Correspondence. 7.30, Talk: Slovak Literature. 7.45, Radio Journal. 8.0, Talk on Brahms. 8.15, Concert of Brahms' Chamber Music by the Polish Quartet; Soloists: Lipowska (Songs) and Dubiska (Violin); Movement in C Minor for Strings, Op. 51. 9.15, Sports Notes. 9.20, Radio Journal. 9.25, Choral Concert. 10.10, Topical Talk. 10.25, Gramophone Records. 10.35, Talk in Esperanto, relayed from Cracow, 959 kc/s (312.8 metres). 10.55, Aviation Weather Report and Police News. 11.0, Dance Music. ZURICH.—See Schweizerischer Landessender.

PORSGRUND.—See Oslo.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.6 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Gramophone Music. 6.0, Programme for Children. 6.40, News and Dublin Cattle Market Report. 7.0, French Lesson. 7.15, Recitations by Cathleen Murphy. 7.30, Time Signal. 7.31, Filleann Pipe Solos by Lex Rowsome. 7.45, Mezzo-Soprano Solos by Elizabeth Downey. 8.0, Pianoforte Recital by Dina Copeman. 8.20, Concert by the Station Orchestra. 8.40, Tenor Solos by Lionel Boardman. 8.55, The Station Orchestra. 9.15, Variety Programme. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 12 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations and Talk on Hygiene. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral. Weather Forecast, Exchange Quotations, and Market Prices. 10.5, Concert by the Station Orchestra. 10.30, Flamenco Songs, with Guitar accompaniment. 11.0, La Chica del Gato—Play in Three Acts (Amielles). In the interval at 12 Midnight, News. 1.0 a.m. (Friday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopelavoro Announcements. 8.20, Giornale Radio and Press Review. 8.30, Time Signal and Announcements. 8.35 (approx.), Military Band Concert: March (De Nardis); Overture, Norma (Bellini); Selection from Norma (Bellini); Symphonie Intermezzo (Coccherini); Selection from Marcella (Giordano); Andante and Minuet from the Quartet in D for Strings (Mozart); Suite from Sigurd Jorsalfar (Grieg). In the interval, Art Notes. 10.30, Gramophone Music. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

BEograd, 697 kc/s, 430.4 metres; 2.8 kW.—6.25 p.m., Time and Programme Announcements. 6.30, Dialogue in French. 7.0, Recital of Folk Songs. 7.30, Talk. 8.0, See Schweizerischer Landessender. 10.0, News, followed by Gypsy Music from the Petrosacka Zadruga Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Czar and Carpenter—Opera-Comique (Lortzing), in an abridged form on Gramophone Records. 2.45, Programme for Children. 3.10, Talk for Girls. 3.30, Exchange and Weather. 3.45, Reading (Amil Strauss). 4.0, See Heilsberg. 5.0, Talks for Women. 5.25, Topical Talk. 5.35, Contemporary Music—Suite, Aus Litauen (Max Laurischkus) for Flute, Oboe, Clarinet, Bassoon and Horn; Von Land und Leuten; Abendstimmung; Litauisches Volkslied; Dorfserenade; Kirnes. 6.5, A Poem. 6.5, Waltzes sung by Isa Berger: Frühlingsstimmen (Joh. Strauss); Tales from the Vienna Woods (Joh. Strauss); Dorfschwalben aus Oesterreich (Joh. Strauss). 6.30, Agricultural Talk. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations relayed from Leipzig. 8.0, An Epigram, followed by Programme in Commemoration of Paul Ernst. 9.10 (approx.). See Stuttgart. 10.0, News. 10.45, Weather Report for Shipping. 11.0, Serenade from Langenberg. 12 Midnight (approx.), Close Down.

BERLIN

WITZleben, 715 kc/s, 419.5 metres; 1.5 kW.—4.30 p.m., Concert by Alois Pachernegg and his Orchestra: Overture, Edelweiss (Kozak); Waltz, Rudolfs-Klänge (Joh. Strauss); Old Styrian Suite (Pachernegg); (a) Peasant March, (b) Aria, (c) Waltz. (d) Ländler, (e) G-trampfer; Scandinavian Caprice (Dörmich); Russian Dance No. 4 (Bullerian); Habanera (Chabrier); Overture, Mamsell Umütz (Leuschner). 5.25, People one meets on a Journey—The Porter, the Hotel Proprietor, the Hotel Porter, the Chamber Maid, the Waiter, and the Pension Landlady. 5.55, Waltzes, Op. 39, for Piano-forte (Brahms); by Prudentia Olbrich and Heinrich Steiner. 6.15, Reading. 6.30, Talk on Pomerania. 6.40, The Witzleben Station informs its Listeners. . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.5, The Watchword. 8.10, Orchestral Concert: Aquarellen-Walzer (Joh. Strauss); Im wogenden Aehrenfelde (Dransmann); Potpourri, Wien bei Nacht (Kozak); Hungarian Music (Pataky); Overture, Prince Methusalem (Joh. Strauss). 8.45, Drei Kaiserjäger—Folk Play (Angermayer). 10.0, Weather, News, and Sports Notes. 10.30, The Scandal Monger—a Wireless Cabaret. 11.0, Dance Music, relayed from the Café Moka Eftl. 12. Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

THURSDAY

JUNE THE FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON The White Coons' Concert Party, Act III of "Don Carlos," from the Royal Opera House, Covent Garden.
REGIONAL MIDLAND Concert by Winning Choirs, from Corporation Street Schools, Stafford.
REGIONAL NORTH Relay from the Argyle Theatre, Birkenhead.
REGIONAL BELFAST The Music of Edward German, orchestral concert.

ABROAD

BERO-MUNSTER 8.0 p.m. Beethoven Concert, from the Musiksaal, Basle (relayed also by Radio Paris).
COPENHAGEN 8.10 p.m. Danish Music from the State Broadcasting Building.
HILVERSUM 8.40 p.m. Beethoven's Ninth Symphony, from Amsterdam.
LEIPZIG 7.0 p.m. Concert of Romantic Music, by the Symphony Orchestra (relayed by other German stations).
MUNICH 9.0 p.m. Opera: "I Pagliacci" (Leoncavallo), from the National Theatre.
PRAGUE 8.35 p.m. Orchestral Concert, conducted by Nikolaj Malko.
STRASBOURG 8.45 p.m. The Municipal Orchestra, conducted by M. E. G. Munch.
TOULOUSE 8.45 p.m. Extracts from Opera: "The Valkyries" (Wagner).
TURIN 8.30 p.m. Opera: "Othello," by Verdi.
WARSAW 8.0 p.m. Light Music by the Station Orchestra, conducted by Nawrot.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.30 p.m., Radio Journal. 7.40, Bull-Fighting Notes. 7.55, Lottery and Charade Results. 8.0, Talk on Wines. 8.15, News. 8.30, Madame Belliard—Play in Three Acts (Vildrac).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—7.0 p.m., See Prague. 7.10, A One-Act Comedy (Svoboda). 7.55, Choral Concert, conducted by B. Jelinek. 8.35, See Prague. 11.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—12 Noon, Concert by the Small Silesian Philharmonic Orchestra, conducted by Hermann Behr. In the interval at 1.0 p.m., Time and News. 2.15, Programme arranged by the Post Office with Gramophone Records. 3.10, Agricultural Prices. 3.40, Talk on Spas Göbersdorf. 3.50, Book Review. 4.10, Recital by Alfred Stöckel (Tenor) and Franz Boffon (Pianoforte). 5.0, Programme for Children. 5.30, Agricultural Prices. 5.32, Concert by the Station Orchestra, conducted by Bruno Janz: March, Zur Frühjahrsparade (Schlick); Ständchen (Schlick); Suite Goliardica (Amadei); Waltz, Am schönen Rhein gedenk' ich dein (Keler-Bela); Potpourri, Aus der Wanderschaft (Maufréd). 6.15, A Discussion on Hand-Weaving in Silesia. 6.35, Programme to be announced. 6.50, Weather for Farmers, and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, A Radio Play about Ulrich von Hutten (Otto Bräuer). 9.0, Announcements. 9.10, Organ Recital by Johannes Bierig, relayed from St. Catherine's Church. The Chamber Orchestra, conducted by Franz Marszalek. Concerto in D Minor (Handel); Concerto in A Minor (Bach); Concerto in A (Handel). 10.0, Time and News. 10.25, Talk: From the Diary of an Announcer. 10.45, Wireless Notes. 10.55, Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.10 p.m., Orchestral Concert, conducted by Bakala. 5.10, Talk for Young People. 5.20, See Prague. 5.50, Talk on Agricultural Reform. 6.0, Literary Talk. 6.15, See Prague. 6.25, German Transmission, News, followed by Programme for Young People. 7.0, See Prague. 7.40, A Comedy in Two Acts (Petrka). 8.20, Recital of Folk Songs. 8.35, See Prague. 11.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert of Light Music by the Small

Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert: Overture, The Crown Diamonds (Auber); Selection from Evergreen (Hart and Rodgers); Organ Solo: Rhapsody in Blue (Gershwin-Maclean); Chanson triste (Tchaikovsky-Stewart); Dance of the Merry-makers (German); Two Items from Le chapeau Billoquet (Boutemps); In a Chinese Temple Garden (Kotzebey); With a Song in my Heart (Rodgers-Coates). 5.0, Concert by the Station Orchestra, conducted by Charles Walpot. Overture, Les Hirondelles (Hirschmann); Waltz from Die geschiedene Frau (Fall); La chère maison (Dalerose); Le coeur de ma mie (Dalerose); Caucasian Suite (Ippolitov-Ivanov). 5.30, Programme for Children. 6.0, Talk: Art in the Home. 6.15, Gramophone Concert: Overture, Abu Hassan (Weber); Der Wanderer (Schubert); Finale of The Clock Symphony (Haydn); La nuit ensorcelée (Chopin-Albert); Canzonetta (Mendelssohn); Overture, Flotte Fische (Suppe); Allegretto from the Quartet in E Flat, Op. 29 (Tchaikovsky); Ballad, Op. 19 (Faure). 7.15, Talk for Workers. 7.30, Sports Talk. 8.0, Concert by the Station Symphony Orchestra, conducted by Jean Kump. Soloist: M. Wallstein (Violin); Overture, Mignon (Thomas); Two Pieces (De Greef); (a) Menuet et mon coeur, (b) Le due d'Albe; Violin Solos: (a) Il trillo del diavolo (Tartini), (b) Reverie (Vieuxtemps); (c) First Part from the Concerto in G (Mozart); Dances from Prince Igor (Borodin). 8.45, Talk. 9.0, Concert by a Workers' Orchestra, relayed from Molenbeek. Bayon de soleil (Gomoul); Five Variations on a Theme from The Song of Songs (Moya-Alexis); Last Serenade (van de Walla); Selection from La Traviata (Verdi); Luna Walzer (Lincke). 10.0, Le Journal Parlé. 10.10, Gramophone Concert: Part I: Old and New Dance Music. Part II: Modern French Symphony Music.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert, with Songs by Mlle. Vera Morgan. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Paul Leemans; Soloists: Mlle. Vera Morgan (Soprano) and M. Wigy (Violin); Strauss Potpourri (Weber); Serenade from Milenka (Jan Blockx); Songs: (a) Mainacht (Brahms); (b) Aria from Der Freischütz (Weber); Scene and Waltz from Gretina Green (Giraud); Violin Solo: Minuet (Mozart); Ballet Music from Hérodiade (Massenet). 5.0, Mozart Concert by the Station Symphony Orchestra, conducted by Jean Kump; Overture, Figaro; Eine kleine Nachtmusik; Air from Il Re Pastore; German Dances. 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by Paul Leemans; Overture, Les Saltimbanques (Ganne); Rhapsody in Blue (Gershwin); Gramophone Records; Potpourri of Songs by Emilie Bullebroeck; Roses from the

South (Strauss). 7.10, News. 7.15, Book and Film Review. 7.30, Talk for Housewives. 8.0, Concert by the Station Symphony Orchestra, conducted by Charles Walpot, and a Choir, conducted by M. Persoons; Overture, Le Roi d'Ys (Lalo); Five O'clock Tea with Stolz (Dostal); Songs by the Choir; Selection from The Gipsy Princess (Kálmán); Flower Waltz from The Nutcracker Suite (Tchaikovsky). 8.45, Religious Address. 9.0, Concert (contd.): 18.2 Overture (Tchaikovsky); Norwegian Rhapsody (Svendsen); Songs by the Choir: Scènes populaires (Massenet); K.R.V.C. Song (Mentleman). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Operetta Music and Sound Film Music on Gramophone Records.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Dimiro Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Song Recital by G. Stefanovici. 8.20, Symphony Concert by the Station Orchestra, conducted by G. C. Nottara. Soloist: G. Draghici (Cello). The Hebrides Overture (Mendelssohn); Symphony No. 1 in E flat (Haydn); Cello Sonata No. 4 in B flat (Vivaldi-Indy); Poem for Cello (Nottara); Lyric Suite (Dvorak). In an interval at 9.0, Talk. 9.45, Radio Journal. 10.0, Talk in German on Romania.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.25 p.m. to 12 Midnight.—6.30 p.m., Pianoforte, Violin, and Cello Recital. 6.20, Song Recital. 7.15, Market Prices. 7.30, Music Academy Examination relayed from the Opera House. 10.30, News Bulletin. 10.40 (approx.), Dance Music from the Hotel Bellevue. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Malundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12.5 p.m., String Ensemble Concert, relayed from the Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Dance Music by the Sabbar Band. In the interval at 3.45 (approx.), Reading. 5.0, Programme for Boys. 5.35, Exchange and Fish Market Prices. 5.50, Reading. 6.20, English Lesson. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk. 8.0, Chimes from the Town Hall. 8.5, Reading. 8.10, Concert of Danish Music relayed from the State Broadcasting Building. The Radio Symphony Orchestra, conducted by Lanny Gründahl and Emil Resen; Soloists, Tenna Frederiksen Kraft, Sylvia Schierbeck, and Holger Byrding (Song); Overture, Little Christie (G. P. E. Hartmann); Duet from King and Marshal (Heise); Selection from Artemis (Mass); First Movement from the Symphony, Espanya (Nielsen); Overture, Faselavn (Riisager); Ten Minutes Interval; Overture, Aladdin (Hornemann); Symphonie Poem, Op. 16, for Soprano and Orchestra, Avalon (Gram); Two Dances from The Emperor's New Clothes (Hoffding); Prelude to Act II of Saul and David (Nielsen); Dance from Maskarade (Nielsen); Song from Maskarade (Nielsen); Negro's Dance from Aladdin (Hornemann). 10.0, News. 10.15, Copenhagen in Poetry and Song—Literary and Musical Programme. 11.0, Dance Music relayed from the Apollo Establishment. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., The Letter Box. 7.15, Miscellaneous Items and News. 7.30, See Warsaw. 11.0, Concert of Light Music from the Pavilion Restaurant. 12 Midnight, Fantasia from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. Announcers: T. St. A. Ronald and B. McNabb. 5.30, Concert for Worthing and Littlehampton Listeners! Under Heaven's Blue (Bayan); Minstrel Memories; Trio: (a) Dreaming (Fiamagan), (b) Tonight (Komm-dy); By the sleepy Lagoon (Coates); Christy Minstrel Days; Song: Hello Sunshine (Murray); Trio: (a) So ashamed (Davies), (b) Me minus you (Webster); Serenade (Pierne); The Mill in the Forest (Eilenberg). 6.15, Song Recital for Brighton and Hove Listeners: Orchestra: Vienna, Vienna (Foss); Serenade (Toselli); Nocturne d'amour (Drigo); Pianoforte Selection from The Desert Song (Humbert); Lady Divine (Kountz); The Song of Songs (Moya-Lucas); You were meant for me (Brown); Pianoforte Selection from The Cat and the Fiddle (Kern); Kashmiri Love Song (Woodforde-Finden); Temple Bells (Woodforde-Finden); Orchestra: Stephanie Gavotte (Czibulka). 7.0, Programme in French. 10.0, Dance Music by the Ibcolians; Just another Dream of you (Burke); All of

JUNE 1st

THURSDAY

continued

me (Simons); Steamboat Bill (Leighton); Just Friends (Lewis); In my Bell Bottom Trousers (Hullbert); Smile, darn ya, Smile (O'Flynn); The O' Song (Carlton); Sing a little Jingle (Warren); The Sun has got his Hat on (Butler); There I go dreaming again (Henderson); Wherever you are (Kalm-Noble); You can make my Life a Bed of Roses (Henderson); Where are you? (Crosby); Happy-go-lucky you (Murray); Masquerade (Webster). 11.0, Organ and Song Recital; A Palace of Dreams (Waller); Songs: (a) Poor Man's Garden (Russell), (b) Tired Hands (Sanderson); Indian Love Lyrics (Woodforde-Flinden); Songs: (a) Love's Old Sweet Song (Molloy), (b) The Hills of Home (Fox); Bird Songs at Eventide (Coates). 11.30, Gramophone Records of Sir Harry Lauder's Songs: I'd love to be a Sailor; Bella, the Belle of Dimoon; She's the Lass for me; Saturday Night; Back to the Shore where the Heather grows; Tobermory; I think I'll get wed in the Summer; Bonnie Mary of Argyll. 12 Midnight, Club Concert for Hord and Ronford Listeners: Selection from Love me to-night; Beware of the Maidens (Craske); Good Old-Fashioned Chorus (Amos); Selection of Maurice Chevalier's Songs; I've finished with Lily for ever; First you say Yes; Selection from the Crooner; 'E dunno where 'e are; Mrs. Carter; Waltz from Der Rosenkavalier (R. Strauss); Goodbye (Tosti); O dry those Tears (del Riego); La Grive (Cole). 1.0 a.m. (Friday), Xylophone Solos; Orchestra: Sobre las Olas (Rosas); Light Cavalry Overture (Suppé); The Dripping Well; Orchestra: Memories of 1930 (Beckert); Danse d'Hesous; Acroplane Polka; Orchestra: Waltz, Gold and Silver (Lehar). 1.30, Songs: Camille (Carlton); They cut down the old Pine Tree (Baskin); There's Something about you that's different (May); Orchestra: The Ragpickers' Party; Just plain Folk (Gilbert); Wrapped in a Red, Red Rose (Dowling); The Heart of the Sunset (Nicholls). 2.0 a.m., Dance Music by the Deodians; Me minus you; Brother, can you spare a Dime?; Same old Moon; I'll never have to dream again; Can't we meet again; So ashamed; Here's hoping; Southern Serenade; The Wise old Owl said I do; What more can I ask?; Love Tales; It's no use, I'm in Love; Brighter than the Sun; The Village Band. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,167 kc/s, 259.3 metres.—4.30 p.m., See Munich. 5.45, Economic Notes. 6.0, Topical Talk. 6.25, Talk: Georg Sebastian Faber's New Book: Der Erzkönig. 6.45, Notes of the Day. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Variety Programme. 8.15, Light Music on Gramophone Records. 8.35, Talk: The Magna Charta of Labour. 9.10, See Stuttgart. 10.15, Time and News.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.25 p.m., Talk: How a Film Scenario is Written. 6.45, Frankfurt Exchange. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0 (from Bremen), Concert by a Nazi Orchestra, conducted by D. Entelmann: March, Königgrätzer (Piefke); Jubel-Ouverture (E. Bach); Waltz from The Gipsy Baron (Strauss); March, Der alte Fritz (v. Blon); Glow-worm Idyll (Lincke); Potpourri, Alte deutsche Treue (Frankzen); Two Alsatian Peasant Dances (Merkling); March, Wir präsentieren (Alibout). 9.0 (from Bremen), When the Cock crows—North German Peasant Comedy (August Hinrichs). 10.15, News. 10.35, Topical Talk. 10.45, Concert of Dance Music by the Station Orchestra. Soloists: Gerhard Gregor and Gerhard Maasz (Two Pianofortes).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Marsch der schönen Frauen (Clemus); Overture, Lestocq (Auber); Suite, In the Sunny South (Sommer); Waltz, Madelaine (Waldteufel); Dance of the Merry Mascots (Ketelbey); Ballet

Scene (Armandola); Selection from Die Fledermaus (Joh. Strauss). In the interval at 1.20, News. 2.30, Programme arranged by the Post Office, with Gramophone Music. 3.0, Market Prices. 3.30 (from Danzig), Programme for Young People. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Alceste (Gluck); Invitation to the Dance (Weber); Overture, Il Seraglio (Mozart); Largo (Handel); Minuet (Haydn); Ballet Music from Prometheus (Beethoven); Overture, Alphonse and Estrella (Schubert). In the interval at 5.0, Recitation in East Prussian Dialect. 5.45, Radio Report from the Rossitten Bird Sanctuary. 6.15, Market Prices. 6.25, Agricultural Talk. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, News. 8.10, Orchestral Concert from Berlin (Witzleben). 8.45, A Play, relayed from Berlin (Witzleben). 10.15, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40 a.m., Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, La Princesse jaune (Saint-Saëns); Chinese Rhapsody (Gabriel-Marie); My Old Kentucky Home (arr. Busch); Selection from The Merry Wives of Windsor (Nicolaï); Clair de lune (Ketelbey); Tango (Albeniz); Gramophone Music: Waltz from Faust (Gounod); Selection from Countess Maritza (Kálmán); In the Shadows (Finck); Poppies (Moret); Gramophone Music: Waltz, Gold and Silver (Lehar); In the Streets of Hong-Kong (Humphries); Rhapsody-Rag (Lenzberg); Two Songs (Tosti): (a) Good-bye, (b) Serenade; March, Heil Europa (Blon). 1.55 to 2.10, Interval. 2.10, Gramophone Music. 2.40, Talk on Fashions. 3.25, Gramophone Music. 3.40, Talk. 4.10, Song Recital by M. Bracony (Tenor). 4.40, Programme for Children. 5.10, Popular Music by Kovacs Lajos and his Dance Orchestra. 6.10, Sports Talk. 6.40, Kovacs Lajos and his Orchestra (contd.). 7.10, Talk on Holidays; Central Switzerland. 7.40, Time and News. 7.45, Gramophone Music. 8.40, The Ninth Symphony (Beethoven), relayed from the Concertgebouw, Amsterdam. The Concertgebouw Orchestra conducted by Dr. Willem Mengelberg. 9.55, Gramophone Music. 10.10, Concert by the Wireless Orchestra, conducted by Nico Treep: Melody (Kálmán); Valse des blondes (Ganne); Overture, Poet and Peasant (Suppé); Nachtigall im Floderbusch (Krone); Paso doble, Madrid (Speyer). 10.40, General News. 10.50, Concert (contd.): Selection from White Horse Inn (Stolz-Benatzky); March, Wien bleibt Wien (Schrammel). 11.10, Gramophone Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. Programme of the Christian Radio Society (N.C.R.V.). 1.40 p.m., Handicrafts Lesson. 2.40, Talk for Women. 3.10, Programme to be announced. 3.40, Religious Programme: Songs and Addresses. 4.40, Song Recital by Helene Ludolph (Soprano). In the interval, Organ Solo The Little Shepherd (Debussy) on Gramophone Records. 5.25, Handwork Lesson for Young People. 5.55, Talk: Dutch Monuments. 6.25, Dress-making Lesson. 6.40, Police Notes. 6.55, News. 7.10, Topical Talk. 7.40 Programme arranged by the Temperance Movement. 8.40, Concert by the Arnhem Orchestra, conducted by H. J. Manks. Soloists: Miss Vroomen (Soprano), Norwegian Artists' Carnival (Svendsen); Overture, Ruy Blas (Mendelssohn); Aria for Soprano with Trumpet accompaniment, from Samson and Delilah; Selection from Samson and Delilah (Saint-Saëns). 10.40, Gramophone Concert of Variety Music. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Report and Racing Results. 8.15, Fashion Review. 8.30, Radio Concert. 9.0, News. 9.15, Radio Concert. 12 Midnight till Close Down. Programme in English by the I.B.C. H. K. Hitecheek announcing. 12 Midnight, Organ Recital, Popmar Scottish Medley; La Serenata (Braga); As your Hair grows whiter (Daviro); In a Chinese Temple Garden (Ketelbey); Pianoforte and Organ Duet, Clockwork (Mayer); A Perfect Day (Jacobs-Bond); Mother Machree (Olcott); Love's Old Sweet Song (Molloy). 12.30 a.m. (Friday), Vocal and Orchestral Concert. A New Love is Old (Harbach and Kern); Like a Breath of Springtime (Burke); Try and forget (Kern); Just you, Just me (Greer); Stardust (Carmichael); My Song (Henderson); They didn't believe me (Kern); The Thrill is gone (Brown and Henderson). 12.57 I.B.C. Good-night Melody. 1.0, Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—7.15 p.m., Announcements and Gramophone Music. 7.25, Boy Scouts' Report. 7.30 till Close Down, See Warsaw.

KAUNAS

155 kc/s, 1,935 metres; 7 kW. 8.0 p.m., Time and News Bulletin. 8.40, Variety Programme. 9.0, Hygiene Report. 9.20, Concert. 9.50, Sports Notes. 10.0, Talk in Esperanto. 10.20, Concert. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres, 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra, conducted by Erkki Linko: Overture, Maritana (Wallace); Waltz, The Wedding of the Winds (Hall); Norwegian Rhapsody (Svendsen); Serenade (May); Florentine March (Fucik). 7.0, Talk. 7.25, Humorous Talk. 7.50, Song Recital by R. Ryyänen. 8.15, Concert by the Station Orchestra: Air from The Bayadere (Kálmán); Dreams of Yesterday (Humphries); Pomona Waltz (Waldteufel). 8.45, News in Finnish and Swedish. 9.15, Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Eysoldt: Overture, Die Operprobe (Lortzing); Suite, Auf der Wanderschaft (Klingard); Spielzeug und Waldnixe (Ertl); Selection from Die Königskinder (Humperdinck); Berceuse (Järnefeldt); Elegie (Massenet); Polka, Künstlergruss (Joh. Strauss); Polka, 1-Tipferl (Jos. Strauss); Potpourri of Viennese Operetta Music, Songs and Dances, Viribus unitis (Richter). In the interval at 2.0, News. 2.30, Sponsored Programme with Gramophone Records. 3.0, Programme for Children. 3.30, Economic Notes and Time. 4.0, Talk on the Teaching of Geography. 4.30, Mozart Concert: Dorothee Corraun (Violin), Gerda van Essen (Viola), Erika Schütze (Pianoforte), Amy Czwojdzinski-Otten (Soprano) and Dr. Willi Czwojdzinski (Accompaniment); Rondo in A Minor for Pianoforte; Sonata in G for Violin and Pianoforte, Soprano Solos: (a) Der Sylphe des Friedens, (b) Das Veilchen, (c) An Choe; Duet in B Flat for Violin and Viola; Soprano Solos: (a) Sei du mein Trost, (b) Wohl tauschst ihr Vöglein, (c) Sehnsucht nach dem Frühling; Trio in E Flat, Op. 14, No. 2, for Violin, Viola, and Pianoforte. 5.50, Talk on Animals: Dangerous immigrants in Germany. 6.40, Programme for Young People. 6.20, French Conversation. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, News. 8.10, Political Talk. 8.30 to 10.0, Variety Programme. 8.30, Humorous Scenes and Tales about Ne'er-do-wells. 9.35, Max and Moritz — Symphonic Burlesque (Mraeck). 10.0, News and Sports Report. 10.25, Political Talk. 10.40, Serenade, conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—1.15 p.m., Instrumental Concert on Gramophone Records. 2.0, News. 2.10, Film Review. 3.0, Puzzles for the Ear. 3.35, Economic Notes. 4.0, Concert by the Station Orchestra, conducted by Hilmar Weber. Part I: Old Dances: Gavotte in D (Bach); Gratulations-Menuett (Beethoven); Polonaise in D (Wagner); Waltz, Wo die Zitronen blühen (Joh. Strauss); Quadrille from Das Soumtagskind (Müllacker); Frauentanz-Mazurka (Jos. Strauss); Ist das nicht ebie? (Heuberger); Polka, München-Wine, ein Sinn! (Konczak); Waltz (Waldteufel); Galop, Rutschepeter (Ziehrer). Part II: Short Stories from Vogtland. Part III: Operetta Music: Selection from Paganini (Lehar); Waltz from Die Tanzgrüfin (Stolz); Batavia Fox-trot, from The Cousin from Nowhere. 5.50, Economic Notes, Weather, and Time. 6.0, Talk on Musical Policy. 6.30, Report on the Meeting of the German Bunsen Society. 7.0, Transmission for all German Stations; Concert of Romantic Music by the Leipzig Symphony Orchestra. Conductor: Theodor Blumer. Soloists: Antoinette Rauch (Soprano) and Franz Hammerla (Clarinet). Overture, Fierrabras (Schubert); Concertino Op. 26 for Clarinet and Orchestra (Weber); Songs (Brahms): (a) An eine Arolsharfe, (b) An die Nachtigall, (c) In Waldeseinsamkeit, (d) An den Mond; Three Fantasiestücke for Pianoforte. Op. 25 (Schumann); Overture, Jessonda (Spohr). 8.0, Schill—Radio Play (Jochen Günther). 9.0, Concert by the Chartoflax-Estudiantina Mandoline Orchestra and the Striesen Glee Society. 10.5, News. 10.10 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Quintet Concert. 7.0, Programme for Women. 7.30, Answers to Correspondents. 8.0, Song Recital by Mme. Thierry-Kavenik. 8.45, Vocal Quintet Concert. 9.30, Guitar Concert. 10.0, News. 10.15, Quintet Concert.

LWOW

788 kc/s, 381 metres; 16 kW.—7.0 p.m., History Talk. 7.15, Miscellaneous Items. 7.30, See Warsaw. 10.15, Gramophone Music with Commentary. 10.55, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Instrumental and Vocal Concert. After the Concert, News.

MADRID

ARANJUEZ (EAQ), 9,660 kc/s, 30.43 metres; 20 kW.—11.30 p.m., Programme relayed from Madrid, EAJ7. 1.0 a.m. (Friday), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, and Programme for Children. 9.15, News and Political Review. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes, Time Signal and Political Review. 10.45 (approx.), Song Recital by Marius Gonzalez and Augusto Gronez (Baritone). 12.45 a.m. (Friday), News. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.30 p.m., German Transmission: Two Talks: (a) Through Italy, (b) Walter von der Vogelweide. 7.0, See Prague. 7.40, Concert by the Station Orchestra, conducted by V. Musil. 8.20, See Prague. 11.0, Close Down.

MOTALA.—See Stockholm.

MÜHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.30 p.m., Concert conducted by Erich Kloss: Overture, The Merry Wives of Windsor (Nicolaï); Scene from Das Nachtlager in Granada (Kreutzer); Suite, Brahmsiana (Fritz); Norwegian Bridal Procession (Grieg); Air from The Queen of Spades (Tchaikovsky); Suite, Pictures from an Exhibition (Mussorgsky); Dance Melody (Meyer-Helmund); Gallop (Langey). 5.45, Agricultural Talk. 6.5, Chamber Music Concert by a Fiddle Trio. Soloists: Ernst Konrad Haase (Baritone). Introductory Talk by Dr. Ludwig Gerhäuser. 6.45, Time, Weather and Agricultural Notes. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Bunte Stunde by the Reithemer Orchestra and Soloists. Conductor: Heinrich Cassinir. 8.50, Introductory Talk to the following Transmission. 9.0, I Pagliacci—Opera in Two Acts (Leoncavallo), relayed from the National Theatre. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

777 kc/s, 1,083 metres; 60 kW. Relayd by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—5.0 p.m., Song Recital by Einar Elien (Baritone). 5.30, Discussion between a Policeman and a Chanfleur on Traffic Regulations. 6.0, German Lesson. 6.30, Divine Service. 7.0, Announcements, Weather and News. 7.30, Talk: Traffic Control on the Roads around Oslo. 8.0, Time Signal. 8.1, Agricultural Talk. 8.30, Pianoforte Recital by Waldemar Alme. 9.0, Recitations by Lars Tvinde. 9.30, Sponsored Programme. 9.30, Agricultural Notes. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by the Toneveld Choir, relayed from Aalsund, 671 kc/s, 447.1 metres.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Popolavoro Announcements, Agricultural Talk and Giornale Radio. 8.20, Gramophone Music. In the interval at 8.50, Time Signal and Announcements. 8.45, Concert of Popular Music. 9.30, La Compagnia di Scogliè—Comedy in Two Acts (Armo). 10.0 (approx.), Concert (contd.). 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Gramophone Concert: Part I, Thomas and Herold Music; Part II, Popular Melodies. 10.0 (approx.), Close Down.

JUNE 1st

THURSDAY

continued

PARIS

POSTE PARISIEN, 914 kc s, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Programme for Children. 7.30, Gramophone Music. 8.0, Agricultural Talk. 8.5, Talk on the Artisan. 8.15, Interval. 8.30, Orchestral Concert; Soloists: M. Passani (Pianoforte) and Raoul Vidas (Violin).

PARIS

RADIO PARIS, call CFR, 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Protestant Address. 12.30 p.m., Orchestral Concert. Part I.—In Italy: Three Pieces (Gabriel Marie); (a) Le départ, (b) Naples un matin, (c) Naples au soir; 1 trois oeufs (Bonincontro); Good-bye (Costi). Part II.—In Spain: Two Melodies (Laparra); España (Albeniz). Part III.—In Russia: Dumka (Weckesser); Melody (Weckesser); Elegy (Rachmaninov); Melody (Akinenko). Part IV.—In the East: El Nomaad (Bigot); Egyptian Piece (Naggar); Libyan March (Naggar). Programme of Operetta and Sound Film Music: Selection from The Geisha (Jones); Two Sound Film Melodies (Heymann); March, The Three Musketeers (Jean Lenoir). In the interval at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.30, Gramophone Music. 6.45, Legal Talk. 7.0, Talk: French Poetry Since 1870. 7.29, Orchestral Music: Raverie (Luigini); Suite funambulesque (Messager); Second Suite from La Nursery (Inghelbrecht). 7.45, Press Review. 8.0, Beethoven Festival Concert, relayed from the Casino, Basle. In the interval at 8.30, News and Weather; and at 9.15, Press Review. 10.30, Gramophone Music: Ballet Music from Marouf (Rabaud); La Valse (Ravel).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 950 kc s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 7.55, Care of the Garden, by Alfred C. Hottes. 8.0, Betty and Bob, from New York. 8.15, Radio Troubadours, from New York. 8.45, State Federation of Pennsylvania Women. 8.58, Baseball Scores. 9.0, Thursday Special, from New York. 9.30, Market Reports. 9.45, Programme to be announced. 10.0, Baseball Scores. 10.5, Programme to be announced. 10.15, Dick Darling, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Hotel Park Central Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Sport Review. 11.22, Press News-Reeler. 11.29, Temperature Report. 11.30, Rigs and Moke. 11.45 to 1.45 a.m. (Friday), New York Relay. 11.45, Today's News, by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., Variety Programme. 12.30, Concert Footlights. 12.45, Merle Thorpe Talks. 1.0, Captain Diamond's Adventures. 1.30, Thrillers. 1.45, Programme to be announced. 2.0 to 3.30, New York Relay. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Time Signal and Musical Varieties.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.55 p.m., Theatre Notes and Programme Announcements. 6.0, Gramophone Music. 6.15, Talk. 6.30, Agricultural Talk. 6.45, News. 7.10, Agricultural Letter Box. 7.28, Time Signal. 7.30, See Warsaw. 8.0, Soloist Concert, relayed from Poznan University Hall. In the interval, Sports News and News from Warsaw. 9.30, See Warsaw. 10.15, Talk. 10.30, Time Signal, Sports and Police Notes. 10.45 (approx.). Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Brno. 5.10, Talk on Economics. 5.20, Talk on Social Questions. 5.30, Gramophone Music. 5.40, Literary Talk: Books for Children. 5.50, Gramophone Music. 6.5, Talk for Gardeners. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Book Review, Agricultural Report and Talk on Fire Insurance. 7.0, Chimes. 7.1, News Bulletin. 7.10, English Lesson. 7.25, Wireless Talk. 7.40, See Brno. 8.20, Talk: America as seen by a Czech. 8.35, Concert by the Station Orchestra, conducted by Nikolaj Malko. Soloist: Gabriela Christmannova-Eshova (Songs). In the interval at 9.0, Time Signal. 10.0, Time Signal. 10.1, News Bulletin. 10.15, Gramophone Music. 11.0, (approx.). Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.30 to 3.0 p.m., Concert of Popular Music. 4.30, Talk for Children. 5.0 to 6.0, Gramophone Music. 8.0, Arab Programme: News and Gramophone Music. 8.45, News. 9.0, Concert. Overture, Gerald (Adam); Selection from La Belle Helene (Offenbach); Song, Melancholy (Luchesi); Violin Solo: Raverie (Guitarré); Song (Richard and Meskid); Guitarré (Bizet-Mouton). 9.45, Talk. 10.0, Concert of Classical Music, conducted by M. Giardino. Overture, Benvenuto Cellini (Berlioz); Song from The Damnation of Faust (Berlioz); The Surprise Symphony (Haydn); Forest Murmurs, from Siegfried

(Wagner) 11.0, Gramophone Music or Relay.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Geneva), Mountaineering Programme—Stories and Suggestions for Climbing. 7.30 (from Geneva), Weather and News. 8.0, Concert by a Children's Choir, for the Anniversary of the Entry of Geneva into the Swiss Confederation. In an interval at 8.15, Address. 8.45 (from Geneva), Talk: The Creation of the Post Office and the First Geneva Stamps. 9.5, Selection from La Fête de Juin (Jacques-Baleroze), by the Sta ion Orchestra. 9.50, News and Weather. 10.0 (from Lausanne), Songs on Gramophone Records. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.). Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—9.5 p.m., Musical Programme. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.30, Talk. 11.0, Concert by the Station Trio, followed by Songs and Popular Music on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—6.30 p.m., English Lesson. 7.0, Weather. 7.5, Concert of Operetta Music. Soloist: Irma Kalnins (Soprano). Overture, Im Reiche des Indra (Lincke); Selection from First Love (Gilbert); Songs and Airs from Operetta; Waltz from The Merry Peasant (Fall); Potpourri (LeBar). 8.0, News. 8.15, Pianoforte Recital: Etude (Stravinsky); Airs: Prokofiev; (a) Prelude, (b) Two Pieces from Contes de la vieille grand-mère, Op. 31, (c) Gavotte from the Symphonie classique, (d) March from The Loves of the Three Oranges; Airs (Bartok); (a) Three Miniatures, Op. 10, (b) Allegro barbaro, (c) Air; Capriccio in F Minor (Debussis). 8.45, Concert of Light Music. In an interval at 9.0, Weather and News. 9.20, Relay of Foreign Stations. 10.30 (approx.). Close Down.

RJUKAN.—See Oslo.

ROME

CALL 190, 680 kc s, 441 metres; 50 kW. Relayed by Naples, 941 kc s, 319 metres; and 290, 11,910 kc s, 25.4 metres.—1.10 to 2.15 p.m., Concert from Turin. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.45, Programme for Children. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30 to 6.30, Song and Violin Recital. 6.40 (Naples), Shipping and Sports Notes. 6.50, Agricultural and Popolavoro Notes. 7.10, Tourist Report. 7.20, Announcements in various languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Song Recital by Gisella de Bonifantibus (Soprano); La rondinella (Lattuada); Liu's Aria from Turandot (Puccini); Grandina (Barrera and Calleja); Seguidilla murciana (Falla). 8.30, Giornale Radio and Sports Notes. 8.35 (approx.). Opera from Turin. Giornale Radio after the Opera.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.52 metres.—11.45 p.m., Stock Reports. 12 Midnight to 2.0 a.m. (Friday), New York Relay. 12 Midnight, Sponsored Programme. 1.0, Capt. Henry's Show Boat. 2.0, Variety Programme, from New York, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,220 kc s, 244.1 metres; and Bern, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Xenchâtel Observatory and Weather Report. 12 Noon (from Basle), Extracts from A Midsummer Night's Dream (Mendelssohn). 12.30 p.m., News. 12.40 (from Basle), Scandinavian Music on Gramophone Records. 1.25 (from Zurich), Exchange, Time and Weather. 1.30 (approx.) to 5.0, Interval. 5.0 (from Zurich), Concert by the Small Station Orchestra. 6.0 (from Zurich), Gramophone Music. 6.30 (from Basle), Talk on Birds Nests. 7.0 (from Basle), Time, Weather and Programme for Workers. 7.10 (from Basle), Light Music on Gramophone Records. 7.45 (from Basle), Introductory Talk to the following Transmission. 8.0 (from Basle), Beethoven Concert, relayed from the Musiksal. In the interval at 9.50 (approx.). Weather and News. 10.20 (approx.). Close Down.

SEVILLE

EAJ7, 815 kc s, 368.1 metres; 1.5 kW.—9.30 to 10.0 a.m., News Bulletin. 3.0 to 4.0 p.m., Concert. Part I.—The Station Orchestra; Foxtrot, Rio Rosa (Gard); Two Waltzes (Beethoven); Overture, William Tell (Rossini); selection from El salto del

Paseo (Caballero). Part II: Flamenco Songs. 10.0 to 12 Midnight, Concert. Part I.—Orchestral Music: Andalusian Airs (arr. Tressa); Habanera, La Paloma (Vradier); Ballet Music from Sylvia (Debussy); Mazurka from El ultimo romántico (Santillo—Vert); Una noche en Catalunya (Luna). Part II.—Songs and Dance Music. Part III.—Flamenco Songs. In the interval, News, Exchange and Weather. 12 Midnight (approx.). Close Down.

SOTTENS.—See Radio-Suisse Romands.

STOCKHOLM

680 kc/s, 436 metres; 50 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Religious Address. 5.30, Programme for Children. 5.45, Concert of Gramophone Music. 6.45, English Lesson, relayed from Jonköping, 1,490 kc/s, 201.3 metres. 7.15, Weather and News. 7.30, Trifles—a Play (Susan Glaspell). 8.15 (from Göteborg), Choral Concert. 8.45, Talk, relayed from Malmö, 1,301 kc/s, 231 metres. 9.15, Musical Programme. 9.45, Weather and News. 10.0 Concert of Light Music. 11.0 (approx.). Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.1, Exchange Quotations. 1.5, Orchestral Concert, conducted by M. de Villers; Overture, Mozart (Hahn); Suite, Bal à la cour (Chomé); Selection from Hansel and Gretel (Humperdinck); Violin Solo: M. Grégoire, Tambourin chinois (Kreutzer); Symphonie Fragments from Apollonide (Février). 2.0, Children's Programme. 3.0 to 4.15, Interval. 4.15, Elocution Lesson. 4.30, Programme for Children, relayed from Bordeaux Lafayette. 6.0, Talk in German: French Civilisation. 6.15, Programme for Women. 6.30, Orchestral Concert, conducted by M. Boskam. 7.30, Time Signal and News. 7.45, Sound Film Successes, on Gramophone Records. 8.15, Press Review in German, Lottery Results, and News. 8.30, Gramophone Music. 8.45, Concert by the Municipal Orchestra, conducted by M. E. G. Munch, relayed from the Orange; Overture, Martha (Platow); Le Pas de fleurs, from Nala (Debussy); Waltz from Le Pas des Fleurs (Debussy); Scènes pittoresques (Massenet); Orchestral Suite, Scènes pittoresques (Massenet); Overture, Mignon (Thomas); Violin Solos: M. Drillon; (a) Serenade, Op. 14, No. 1 (Moszkowsky), (b) Meditation from Thais (Massenet); Ballet Music from Lindine (Loetzing); Marche Militaire, Op. 51, No. 1 (Schubert-Günand). In the interval, Press Review in French.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—1.30 p.m., Songs by Franz Volker, on Gramophone Records. 2.0, Concert, arranged by the Post Office. 2.30, Spanish Lesson. 3.0, Elementary English Lesson. 3.30, Programme for Young People. 4.30 See Munich. 5.45, Time and News. 6.0, Talk: What is happening in China? 6.25, Talk: The Family Its Evolution, Composition and Purpose. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Leipzig. 8.0, Das Rosenband—Verse and Music of the Roscoe Period, with Commentary. 9.0, A Ball in 1800—Old Dance Music by the Württemberg Symphony Orchestra, conducted by Gustav Görlich. 10.10, Time and News. 10.30, Contemporary German Song-Writers Recital by Margarete Welter (Soprano). Four Songs (Richard Frank); (a) Frühlingssonne, (b) Stilles Lied 1 and 2, (c) Ein, (d) Das Heim; Two Songs (Jos. Haas); (a) Stilles kleines Kämmerlein, (b) Warte, wenn wieder das Weihen blüht; Three Songs (Hans Pfitzner); (a) Liebeslied, (b) Die Einsame, (c) Gretel; Three Songs (R. Strauss); (a) Schlechtes Wetter, (b) Blauer Sommer, (c) Herr Luz. 11.0 (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire. 6.30 p.m., Programme for Children. 7.0, Programme by an Argentine Orchestra. 7.15, Horse Racing Results, Market Prices and News. 7.25, Local News. 7.30, Opera Music. Selection from (a) L'Africain (Meyerbeer), (b) Boris Godunov (Mussorgsky), and (c) The Damnation of Faust (Berlioz). 7.45, Music by a Viennese Orchestra. 8.15, Light Music. 8.45, Extracts from Die Walküre (Wagner). 9.30, Military Music. 9.45, Operetta Airs. 10.0, Opera Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Dance Music. 11.15, Chansonnettes. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown Constable announcing. 11.30, Military Band Concert. March, Blaze Away; Selection from Son Toy; Fantasia—The Battle of Waterloo; Descriptive Piece: A Voyage in a Troopship; Serevade; Marche

Iorraine. 11.57, I.B.C. Good-night Melody. 12 Midnight, News, Weather and Announcements. 12.5 a.m. (Friday), Popula Choruses. 12.15, Accordion Music. 12.30 (approx.). Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 590 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Variety Concert. 6.35, Giornale Radio, Agricultural Report, Popolavoro Announcements. 7.0, Time, Tourist Talk and Gramophone Records. 7.20, Giornale Radio. 7.45, Gramophone Records. 8.0, Announcements, Giornale Radio and Weather. 8.10, Gramophone Records: Florentine March (Fueck); Mona Lisa (Sullivan); In Santa Lucia (Stranisky); Donde estas corazon? (Serrano); Rosate (Cherubini-Bixio). 8.20, Talk on the following Transmission. 8.30, Othello—Opera in Four Acts (Verdi). In the intervals, Music Review and Literary Talk. After the Opera, Giornale Radio.

VATICAN CITY

15,120 kc s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW. 11.0 to 11.45 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.0 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.55 p.m., Concert by the Vienna Women's Symphony Orchestra, conducted by Julius Lehner. Soloist: Maria Radosi (Viola). Symphony in D (Wagnersoll); Prelude to Le Déluge (Saint-Saëns); Violin Solo: Jola (Falla); Variations on a Theme of Tchaikovsky (Aronsky); Molly on the Shore (Grainger); Mock Morris (Grainger). 5.45, Talk: The Exhibition of Austrian Photography in the Austrian Museum. 6.0, Talk by the President of the International Board of Trade. 6.25, Theatre Review. 6.35, Talk: Christianity in the Portuguese East Indies. 7.0, Talk: Experiences of an Architect in the Tyrol, Bohm, the Rhineland, Anatolia and Bagdad. 7.30, Time, Weather and Programme Announcements. 7.40, Recital on Two Pianos by Maryan Ruzic and Walter Landauer. Wiener Meisterpotpourri I (Rawicz-Landauer); Menu to be (Turk-Fred Albert); Waltz Fantasia from Dio Eledemans (Joh. Strauss); Wiener Meisterpotpourri II (Rawicz-Landauer); Lichesleid and Liebesfrucht (Kreutzer); Jazz Potpourri (Rawicz-Landauer). 8.30, See Turin. In an interval, News, Weather and announcements.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—1.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 2.5 p.m., Programme Announcements. 12.14, Gramophone Records. 1.20, Weather Forecast. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Gramophone Concert. In the interval at 3.35, Talk. 4.2, French Lesson. 4.40, Talk: Jean Ladislas David, Scholar and Teacher. 5.0, Gramophone Records. 5.40, Topical Talk. 5.55, Programme Announcements. 6.0, Light Music and Dance Music. In the interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural News. 7.30, Literary Talk. 7.45, Radio Journal. 8.0, Concert by the Station Orchestra, conducted by Nawrot; Soloist: S. Miller (Soprano); Mazurka (Wieniawsky); Ukrainian Dance (Noskowski); Valse-Berence (de Licheli); Parana Dogale (Mariotti); Songs: (a) Love Song (Tinelli), (b) Baccio vero (Ghigi), (c) La hibara (Lacome); Waltz from Der liebe Augustin (Fall); Melody (Rubinstein); Ce n'est qu'un bon fois (Kowalska); Spanish Waltz (Rosen); Intermezzo (Popold); Romance (Rena); Songs: (a) My Song (Gall), (b) Waltz Song (Gall), (c) Do you remember? (Berlin); A Comedy Overture (Kocher-Ebner); Boston Waltz (Maklakowicz); Carnival Polka (Buenos); Mazurka (Namaslowski). In the interval, Sports Notes and Radio Journal. 9.30, Dramatic Programme. 10.15, Dance Music. 10.55, Aviation Weather Report and Police Notes. 11.0, Dance Music.

WILNO

533 kc/s, 563 metres; 16 kW.—5.55 p.m., Programme Announcements. 6.0, Dance Music on Gramophone Records. 6.40, Lithuanian News. 6.45, Miscellaneous Items. 7.0, Topical Talk. 7.10, Answers to Correspondents. 7.30, See Warsaw. 12 Midnight (approx.). Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.0 p.m., Announcements. 8.0, See Ljubljana. 10.0, News and Weather. 10.10, Dance Music by the Bingo Boys Orchestra, relayed from the Esplanade Hotel. 11.0 (approx.). Close Down.

ZURICH.—See Schweizerischer Landeseender.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Gramophone Music. 6.0, Programme for Children. 6.45, News Bulletin. 7.0, Talk on Gardening. 7.15, Literary Talk. 7.30, Time Signal. 7.31, Concert by the Station Orchestra. 8.0, Tenor Solos by R. McCullagh. 8.15, The Station Orchestra. 8.30, Soprano Solos by M. French. 8.40, The Station Orchestra. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report, and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW.—7.0 p.m., Trio Concert. 8.0, Request Gramophone Records. 8.30, Exchange Quotations. 9.0, Gramophone Music and News. 10.0, Chimes from the Cathedral and Weather Forecast. 10.5, Sponsored Programme. Exchange Quotations, and Market Prices. 10.10, Gramophone Music. 11.0, Concert of Music by Joaquin Zamacois by the Station Orchestra and Mercedes Plantada (Songs). In the interval at 12 Midnight, News Bulletin. 1.0 a.m. (Saturday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Notes, Tourist Talk and Dopolavora Announcements. 8.20, Giornale Radio and Press Review. 8.30, Time Signal and Announcements. 8.35 (approx.), Concert of Opera Music. Soloists: M. de Santis Bruno (Soprano) and Franco Signorile (Tenor). Overture, Luisa Miller (Verdi). Soprano Solo from Le Rondine (Puccini). Tenor Aria from Mignon (Thomas). Selection from L'Amico Fritz (Mascagni). Soprano Aria from Rigoletto (Verdi). Tenor Aria from Manon Lescaut (Puccini). Selection from L'Amore dei tre re (Montemuzzi). Overture, Le Preziose ridicole (Lattuada). Soprano Solo from Louise (Chaprentier). Tenor Solo: Siellienne from Cavalleria rusticana (Mascagni). Intermezzo from Manuel Mendez (Filiasi). Duet from Act II of Rigoletto (Verdi). Selection from The Wily Widow (Wolf-Ferrari). In the interval: Theatre Notes. 10.30, Gramophone Music. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Gramophone Records. 7.20, Talk. 8.0, Gramophone Records. 8.30, Concert by the Station String Quartet. 9.0, Variety Programme. 10.30, News, followed by Cigány Music from the Rudnicki Restaurant.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW.—2.0 p.m., Gramophone Records of the Squire String Octet. 3.0, Talk for Girls. 3.30, Weather and Exchange. 3.45, Reading (Wilhelm Schmidtbou). 4.0, See Leipzig. 5.0, Talk: The Vocational Training Movement under the National Socialist administration. 5.25, Dialogue on the Whitsun Demonstrations of Young Hitlerites. 5.35, Richard Wetz Song Recital by Fred Brissen: An die Nacht; Koptisches Lied; Menschenbeifall; Habe nichts; Sprich; Volkslied; Hyuli; Herbst; Herbstabend; Liebesnot; Der Beichtiger. 6.0, A Poem. 6.5 (approx.), String Quartet in A Minor (Richard Wetz), by the Hennig Quartet. 6.30, Talk: The Newspaper Campaign against the New German Administration. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, An Epigram. 8.2 (approx.), Concert from Leipzig. 9.30, Dance Music. 10.15, News. 10.45, Weather Report for Shipping. 11.0, Programme from Frankfurt. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.40 p.m., The Witzleben Station informs its Listeners . . . 6.45, Topical Talk. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.5, Announcements. 8.10, Der Freikorpsoper (Volterlum) Concert Version, with the Composer conducting. 9.10, The Country beyond the Frontier: A Journey through Lost German Territory. 10.0, Weather, News, and Sports Notes. 10.15, Orchestral Concert, conducted by Albrecht Neuring, relayed from Stettin: March, Zum Städtel hinaus (Meissner); Trauwalzer from Der Feldprediger (Abelöcker); Overture, William Tell (Rossini); Spanish Fantasia. A Festival in Aranjuez (Demessman); Puppenwalzer from Die Puppentheater (Bayer); Selection from The Maid of the Black Forest (Jessel). 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

986 kc/s, 304 metres; 13 kW.—6.15 p.m., Radio Journal. 7.30, News. 7.40, Talk for Schools. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News. 8.30, Concert by the A.R.C.A. Symphony Orchestra and Soloists.

FRIDAY

JUNE THE SECOND

PRINCIPAL EVENTS OF THE DAY:

	AT HOME
NATIONAL	Act I of "Othello," from the Royal Opera House, Covent Garden. Light symphony concert.
LONDON	"The Wild Duck," a play by Ibsen.
REGIONAL	
MIDLAND	Band programme.
REGIONAL	
NORTH	Orchestral concert.
REGIONAL	
SCOTTISH	"Scotland Calling," an all-Scottish entertainment of music, song and humour.
REGIONAL	
BELFAST	Military Band Concert.
	ABROAD
BARI	8.35 p.m. Concert of Opera Music.
BERO-	8.0 p.m. Beethoven Concert from the Musiksaal, Basle.
MUNSTER	
BRESLAU	8.0 p.m. The Silesian Philharmonic Orchestra.
BRUSSELS	9.30 p.m. Concert, conducted by K. Candael, from Antwerp.
(No. 2)	
EIFFEL	8.30 p.m. Comedy: "Le Malade Imaginaire," by Molière; 9.15 p.m., Symphony Concert.
TOWER	
HEILSBURG	6.25 p.m. Pianoforte Quartet, No. 13, in C Minor, by R. Strauss.
STOCKHOLM	10.0 p.m. Recital of German Music of the Romantic Period.
STUTTGART	9.35 p.m. Schumann Pianoforte Recital.
VIENNA	8.45 p.m. Wagner's Early Opera Music, by the Vienna Symphony Orchestra and the State Opera Choir.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW. 7.0 p.m., See Prague. 7.25, Concert by the Station Orchestra, conducted by L. Raifer: Overture, Egmont (Beethoven); The London Symphony (Haydn); Suite from A Midsummer Night's Dream (Mendelssohn). 8.15, See Prague. 10.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 253 metres.—12 Noon, Concert, relayed from the Old Town Hall, Bremen. 1.0 p.m., Time, Weather and News. 1.15, Gramophone Concert: Selection from The Mastersingers (Wagner); Air from Der Pfeifertag (Schillings); Cradle Song, Schlaf Herzenssöhnchen, Op. 13, No. 2 (Weber-Heimann); Bavarian Folk Song, Op. 326, No. 37, 's Zerselam (Böhme); Rendezvous der Puppen (Gehhardt); Kleiner Narr (Fisher); Tarantella from Venezia e Napoli (Liszt); Waltz, Frühlingstimmen (Joh. Strauss); Military March, Op. 37, No. 1 (R. Strauss); War March, Op. 37, No. 2 (R. Strauss). 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.30, Programme for Children. 4.0, See Leipzig. 5.0, Talk: The Secret Rulers of France. 5.20, Agricultural Prices. 5.25 (approx.), Talk: The Meaning of Rhythm, with Musical Illustrations. 5.40, Programme to be announced. 6.0, Mandoline and Zither Concert of Folk Music. 6.30, Talk: Napoleon overruns Europe. 6.50, Weather for Farmers and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Concert by the Silesian Philharmonic Orchestra, conducted by Franz von Hoesslin: Symphony in D without the Minnet (Mozart); Fugue for String Orchestra (Kaminski); Symphony No. 6—the Pastoral (Beethoven). In an interval at 8.45, Florian Seidl reads his story, Heilige Heimat. 10.0, Time, Weather and News. 10.30, Talk: Springtime in the 18er Gebirge. 10.50, Concert from Stettin (See Berlin, Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW. 4.10 p.m., Concert of Offenbach Music by the Station Orchestra, conducted by Janota: Overture, Orpheus in the Underworld; Selection from The Tales of Hoffmann; Selection from La Vie Parisienne; Melodies from The Goldsmith of Toledo. 4.55, Theatre Review. 5.5, See Prague. 6.5, Talk on Creative Art. 6.15, Talk for Workers. 6.25, German Transmission: News, Sports Notes, and Talk on Oxford, England's Oldest Centre of Culture. 7.0, See Prague. 7.10, Talk: The Construction of Matter. 7.25, See Moravská-Ostrava. 8.15, See Prague. 10.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert of Opera Music. 2.0, Broadcast for Schools. 5.0, Concert by the Small Station Orchestra, conducted by P. Leemans. Overture, Der Schauspielerdirektor (Mozart); L'aven dans le soir (Paray); Fantasia on Limousin Airs (Roucard); Pianoforte Solo: Spanish Caprice (Moszkovsky); Selection from Thaïs (Massenet); Cello Solo: Neapolitan Serenade (Szabadi); Gipsy Dance from The Fair Maid of Perth (Bizet); Ballet de cour (Pierné). 6.0, Talk. 6.15, Gramophone Concert: Symphony No. 31 (Mozart); Three Songs from Die schöne Müllerin (Schubert). 6.45, Beethoven Pianoforte Recital by Osear Delvigne: Andante in F, Sonata appassionata, Op. 57. 7.15, Talk on Modern Youth. 7.30, Legal Talk and Literary Review. 8.0, Concert by the Station Symphony Orchestra, conducted by Meulemans. Soloists: Mme. Van Dromme (Songs) and M. Chabeck (Trumpet). Overture, Gwendoline (Chabrier); Symphonic Piece for Trumpet (Barbier); Song (Mussorgsky); (a) Trepák, (b) The Field Marshal; Chasse fantastique (Guirand). 8.45, Talk. 9.0, Concert (contd.): Selection from Le Baruffe Chiozzottoe (Sinigaglia); Orchestral Suite (Kalkman); Three Songs; Invitation to the Waltz (Weber); Conte d'avril (Widor); Military March from the Algerian Suite (Saint-Saëns). 10.0, Le Journal Parlé. 10.10, The Listeners' Quarter-of-an-Hour. 10.25, Gramophone Concert.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Gramophone Concert of Light Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. 2.0, Broadcast for Schools. 5.0, Concert by the Station Symphony Orchestra, conducted by Arthur Meulemans; Symphony No. 7 in C (Haydn); Ballad, Soir d'été sur la bryère (Benoit); Waltz suite (Gilsou); Adoration (la Gye); Petite Suite de Concert (Coleridge Taylor). 6.0, Gramophone Music. 6.15, Talk on Automobile Engineering. 6.30, Concert by the Station Orchestra, conducted by P. Leemans. 7.15, Reading from Wireless Notes. 8.0, Gramophone Records: Overture, Bronwen (Holbøkke); Variations on a Theme of Corelli (Carrini-Kreiser); Fire Dance (Fallas); Badinerie (Gounod); Overture, Semiramis (Rossini). 8.30, Radio Play. 9.25, Entree No. 27, arranged for a Quartet (Chopin), on Gramophone Records. 9.30, Concert conducted by Karel Candael, relayed from Antwerp: Humoresque (Grieg); Petit triptyque (Maes); Stenka Rasin (Jarovi); Signal (Candael). 10.0, Le Journal Parlé.

10.10, Concert by the Minstrel Club Orchestra, conducted by M. De Vandel.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Concert by the Station Orchestra. Soloist: D. Teodorescu (Violin). Overture, The Merry Wives of Windsor (Nicola); Divertissement from Les Erinnyes (Massenet); Selection from La Belle Helène (Offenbach); Grieg Potpourri (Urbach); Waltz, The Blue Danube (Joh. Strauss); Spanish Rhapsody (Chabrier); Symphonic Poem, Les Préludes (Liszt); Canzonetta from the Concerto for Violin (Tchaikovsky); Turkish March (Mozart). In an interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Opera Music on Gramophone Records. In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Also relayed on 840 metres from 7.10 p.m. to 12 Midnight.—4.0 p.m., Concert by the Nandor Medgyessy Cigány Band. 5.0, Talk. 5.30, Concert by the Budapest Concert Orchestra. 6.30, Shorthand Lesson. 7.0, Market Prices. 7.10, Gramophone Music. 8.10, Political Review. 10.30, News Bulletin. 10.40 (approx.), Concert by the Bela Bodrics Cigány Band from the Café Patria. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—12.5 p.m., Concert relayed from the Bellevue Strandhotel. 2.0 to 3.30, No Transmission. 3.30, Concert by Carl Rydahl's Instrumental Ensemble; Soloist, Ellen Polack (Songs). 5.35, Exchange and Fish Market Prices. 5.50, Talk on the Motor-Car Industry. 6.20, German Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Talk on Social Reform. 8.0, Chimes from the Town Hall. 8.5, Programme by Per Knutzon. 8.10, Concert of French Music by the Radio Orchestra, conducted by Emil Reesen: Overture, La Princesse jaune (Saint-Saëns); Bacchanale from Samson and Delilah (Saint-Saëns); Suite, Jeux d'enfants (Bizet); Pavane pour une Infante défunte (Ravel); Rhapsody on Popular Themes (Gaubert). 9.0, H. C. Andersen sits as a Model—Radio Play (Carl Arctander). 9.15, Dance Music for Pianoforte and Saxophone. 9.45, A Radio Sketch (Evald Longfors). 10.0, News. 10.15, Viggo Brodersen Song Recital by Herta Bjarvig. 10.30, String Quartet in A Flat, Op. 105, for Two Violins, Viola, and Cello (Dvorak). 11.5 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Talk on the Modern Theatre. 7.15, Miscellaneous Items and News. 7.30, See Warsaw. 12 Midnight (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C., T. St. A. Ronald and B. McNabb announcing. 5.30, Military Band Concert for Southampton and Winchester Listeners: On the Quarter Deck (Alford); Stein Song (Colcord-Enstead); Old Comrades' March (Teike); The Battle of Waterloo (Eekersberg); Xylophone Solo, National Emblem (Bagley); Jungle Drums (Kotbeby); Serenade (Heykens); Cornet Solo, The Lost Chord (Sullivan); Carry on (Dundas); Selection from Floradora (Leslie Stuart); Marche Jauraine (Ganne). 6.15, Concert for Bournemouth and Weymouth Listeners: Vienna, City of my Dreams; Three Songs: (a) Boots (McCall), (b) The Gay Highway (Drummond), (c) The Smugglers' Song (Mortimer); Spanish Serenade (Herbert); Chinese Serenade (Herbert); Two Songs: (a) To Mary, (b) Down Vauxhall Way (Oliver); By the Swanee River (Myddleton); Three Songs: (a) A Border Ballad (Cowan), (b) The Mighty Deep (Aude), (c) March of the Cameron Man (Campbell); Waltz, Wiener Blue (Joh. Strauss). 7.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Beolians: Underneath the Arches (Flanagan); Ah! misbehavin' (Brooks); The Flies crawled up the Window (Ellis); Kansas City Kitty (Leslie); One more Kiss (Tobias); I gaw' down and go Boom (Stevens); Mona Lisa (Sullivan); The Bogie Wail (Myers); Sheltered by the Stars; Just a Little Home for the Old Folks; You've got me in the Palm of your Hand; Fit as a Fiddle; My Romance; I can't believe it's true. 11.0, A Half-Hour with Mendelssohn; Overture, Ruy Blas; Pianoforte Solo, The Bees' Wedding; Selection from A Midsummer Night's Dream; Pianoforte Solo, Rondo Capriccio; Spring Song; War March of the Priests, from Athalia. 11.30, Vocal and Orchestral Concert: Overture, Masucello (Auber); Aria from Martha (Flotow); Quæsta o Quælla, from Rigoletto (Verdi); Barcarolle from The Tales of Hoffmann (Offenbach); Tarantella, La Danza (Rossini); Santa Lucia (Traditional); La

JUNE 2nd

FRIDAY

continued

Donna e Mobile, from Rigoletto (Verdi); Reconciliation from Les millions d'Arlequin (Drigo). 12 **Midnight**, Club Concert for Colchester Listeners: The Changing of the Guard (Flotsam and Jetsam); Two Songs: (a) Exactly like you (Fields), (b) More than you know (Yonmans); Carry one (Dumbos); Two Songs: (a) The Crocodile (Traditional), (b) Pretty Polly Perkins (Traditional); **Organ Solo**, There's something about a Soldier (Gay); Two Songs: (a) Archie of the R.A.F. (Longstaffe), (b) The Driver of the 8.15 (Longstaffe); The Voice of the Guns (Alford); Song, Silver Threads among the Gold (Danks); **Organ Solo**, Butterflies in the Rain (Sherman Myers); Song, Love's Old Sweet Song (Malloy); Colonel Boney March (Alford). 1.0 **a.m. (Saturday)**, Hawaiian Duets; Sing Something Simple (Huppfeld); Bone Festa (Traditional); Three Little Words (Chick); O Sole Mio (di Capua); Alma Mia (Whidden); Kamschamohi (Traditional); Goodnight, Sweetheart (Noble); Hawaiian Twilight (Traditional). 1.30, Vocal Duets; Dancing with Tears in my Eyes; Songs I heard at Mother's Knee; Sweeping the clouds away; Song of the West; Sleepy Time down South; The same as we used to do; Kiss me Goodnight. 2.0, Dance Music by the Deodians; I'll follow you; Isn't it Romantic? A Million Dreams; Mimi; Here's hoping; Somebody stole my Gal; Always in my heart; What would happen to me? Dreaming; Wheezy Ann; Wanderer; Night after Night; Just an Echo in the Valley; A little Street where Old Friends meet. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—7.0 p.m., Transmission for all German Stations; Echoes from the Rhine-Main District—a Radio Sequence. 8.0, See Munich. 9.0, The Flags of Germany a Radio Sequence (Heinz Nieth). 9.30, Symphony in D, Op. 73 (Brahms), by the Station Orchestra, conducted by Hans Rosbaud. 10.15, Time and News. 10.45, Concert; Part I: Music by Hans Pleischer; Part II: Old Dance Music. 12 **Midnight**, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 263.3 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres. 5.0 p.m. (from Bremen), Humorous Dialect Programme. 5.30, Hamburg, Bremen and Lübeck—Report on Events in the Senate and House of Burgesses of the Hanseatic Free Cities. 6.0, Puppen Papen Basterdahn a Comedy in North German Dialect (C. F. Mass). 6.40, Frankfurt Exchange and Hamburg Market Prices. 6.50, Weather Report. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, See Munich. 9.0, (from Kiel), From the Archives of the Schleswig-Holstein Musical Collection Concert by Käthe Trass (Soprano), August Schreibege (Violin), Karl Zaubitzer (Viola), Hans Hillebrand (Cello) and Hans Döring (Piano). Serenade Op. 126 No. 2 for Violin, Cello and Piano (Reinecke); Des Kineds Gebet (Rhode); Mutterfreude (Rhode); Adagio from the Sonata Op. 70 for Violin and Piano (Niemann); Die schlanke Wasserlinie (Woyrsch); Weil auf mir du dunkles Auge (Woyrsch); Quartet Op. 272 for Violin, Viola, Cello and Piano (Reinecke). 10.0, Time and News. 10.20, Topical Talk. 10.30 (from Kiel), Orchestral Concert, conducted by Hans Döring, Overture, The Crown Diamonds (Anber); Minnet, Belvedere (Brose); Selection from Der Waldschmied (Lortzing); Mazurka, Herzblatt (Blond); Selection from Der Tenor der Herzogin (Künnecke); Friedenmann Bach Suite (Lenschner); Waltz from Ball bei Hof (Zielner); Intermezzo, Puppel (Sisler); March Um den Lorbeer (Christ).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—12.30 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilken; Hungarian Comedy Overture (Keller-Beda); Waltz, Wiener Bouillons (Joh. Strauss); Selection from The Hermit's Bell (Mallart); Suite, Ein Fest im Gnomereich (Wittelhorn); Overture, The Merry Wives of Windsor (Nicola); Two Melodies from the Sound Film, Grün-ist die Heide (Blüme); Selection from The Bartered Bride (Smetana); Slav Rhapsody (Volpatti); March Potpourri (Schmidt-Hagen). In the intervals, Weather and News. 2.30, Programme arranged by

the Post Office, with Gramophone Records. 3.0, Exchange and Market Prices. 3.30, Programme for Children. 4.0, Programme for Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken; Overture, Le Cheval de bronze (Anber); Suite mignonne (Sibelius); Waltz, Plattreister (Jos. Strauss); Selection from Der Rosenkavalier (Richard Strauss); Rhapsody No. 1 (Liszt); Overture, Turandot (Luchner). In an interval at 5.0, Dialogue on Gambling. 5.45, Review of Periodicals. 6.15, Market Prices. 6.25, Pianoforte Quartet No. 13 in C Minor (R. Strauss) by the Königsberg Chamber Music Association. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, News. 8.10, The Zoological Gardens—a Song sequence (Erwin Zillinger) for Four-part Mixed Choir and Orchestra. The Wireless Chorus and the Königsberg Opera House Orchestra, conducted by Ludwig Leschetzky. 9.30, News. 9.40, Reading from Michael Kohlhaas (Heinrich von Kleist). 10.10, News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep. 11.40, Time and Gramophone Records. 12.10 p.m., Dance Music by Kovacs Lajos and his Orchestra. 1.40, Talk. 2.10, Gramophone Records. 2.40, Talk. 3.10, Gramophone Records. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Organ Recital by J. Jong. Selection from Chu Chin Chow (Norton); Waltz, Gold and Silver (Lehar); Selection from I Pagliacci (Leoncavallo); High Society Blues (Hanley); Het lied van de vlag (van Zetten). 4.25, Programme for Children. 4.55, Gramophone Records. 5.55, Concert by the V.A.R.A. Orchestra, conducted by de Groot; Overture, Die Felsenmühle (Reisiger); Suite from Czar Saltan (Rimsky-Korsakov); Die Schwärmer (Lammer); Die Waldvögel (Mayer); Schritte im Zweiertakt (Kockert); Invitation to the Dance (Weber-Berlioz); Three Noctettes from Op. 15 (Glazunov); Melody (Mascagni); Aquarelle-Walzer (Strauss); Jubel Overture (Weber). In the interval at 6.40, Talk. 7.40 to 10.25, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Medical Talk. 8.10, Gramophone Records. 8.40, Talk. 9.10, Gramophone Records. 9.40, Religious Notes. 9.45, Press Review. 9.55, Religious Address. 10.25 till Close Down, V.A.R.A. Programme. 10.25, Gramophone Records. 10.40, Dance Music by the Piotrogilas Quartet. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. 11.55 a.m. till Close Down, Programme by the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet. 1.25, Interval. 1.40, Organ Recital by W. van Bruggen; Organ Concerto No. 2 (Handel); O Sanctus, Inna (Chipp); Elevation (Bossi); Kyrie Eleison (Rieger); Gramophone Music; Two Variations on Puer nobis nascitur (Gülmann); Interlude (Wagenaar); Choral Fantasia (Smetets); Pastorella (v. Bruggen); Religious March (Peraldi). 2.55, Gramophone Music. 4.10, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. 4.40, Gardening Talk. 5.10, Concert (cont'd). 5.40, Talk on Germany. 5.55, Concert (cont'd). 6.40, Police Notes. 6.55, Talk on Petrol. 7.15, Gramophone Music. 7.25, International Variety Programme by Willy Derby, Eay Armond, Edwin Gibbens, and the Vladimir Pique Trio. De Vier Gousseus, and the K.R.O. Boys, conducted by P. Linstenhouwer. 10.20, Programme Notes. 10.25, Variety Programme (cont'd).

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 240 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News, Financial Report, and Racing Results. 8.15, Esperanto Lesson. 8.30, Radio Concert. 9.0, News. 12 **Midnight** till Close Down, Programme in English by the I.B.C., H. K. Hitchcock announcing. 12 **Midnight**, The Studio Chorus; Carry me back to Old Virginia; Way down yonder in the Cornfield; Selection from Cavalcade (Coward); Ould John Braddlem (Traditional); On Ika Moor baht (Traditional); Music Hall Favourites. 12.30 a.m. (Saturday), Rhythm Band; Stevedore Stomp, Misty Mornin'; The Dicky Glide; Saratoga Swing; I'm so in love with you; The Minor Drag; Shout 'em Aunt Tillie; Barlem Fuss. 12.57, I.B.C. Good-night Melody. 1.0, Close Down.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 10 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.15 p.m., Programme for Children. 6.40 (from Helsinki), Aerodion Recital of Marches and Dances.

7.5, Talk. 7.30, Talk: A Visit to the Police Station. 7.55 (from Helsinki), Concert by the Station Orchestra, conducted by Erkki Linko; Persian March (Strauss); Overture, Orpheus in the Underworld (Offenbach); Pesther-Walzer (Lammer); Selection from Poldubal (Nedbal); Villanera and Rondalla Aragonesa (Granados); Hungarian Dance No. 6 (Brahms). 8.45, News in Finnish and Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—1.0 p.m., Concert, conducted by Wolf; Soloist, Ferdinand Pankok (Zither); Overture, The Water Carrier (Cherubini); Musikanten—Suite (Geisler); Waltz, Am Wörther See (Kochal); Zither Solos: (a) Suite, Waldeinsamkeit (Reigerberg), (b) Mit Lust und Liebe (Huber); Selection from Der Tenor der Herzogen (Künnecke); Quadrille from Die Fledermas (Joh. Strauss). In the interval at 2.0 (approx.), News. 2.30, Sponsored Programme with Gramophone Records. 3.30, Economic Notes and Time. 3.50, Programme for Children. 4.30, Orchestral Concert, conducted by Kühn; Soloist, Lotte Hellwy-Joster (Violin). Divertimento No. 1 in E flat (Mozart); Violin Concerto in A minor, No. 22 (Viotti); Valse chivaleresque (Sibelius); Variations on a Theme by Haydn (Brahms). 5.30, Review of German Novels. 6.10, German Poems. 6.20, English Conversation. 6.45, Weather, Time, Economic Notes and Sports Report. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, News. 8.5, Political Talk. 8.15, Concert of German Folk Dances by the Concert Choir, the Children's Choir, and Station Orchestra, conducted by Knip. 8.45, Jampitter Moosbach Radio Play (Johann Gottlieb Peiseler). 10.5, News and Sports Report. 10.20, Serenade conducted by Wolf. 11.30 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 **Noon**, Weather and Time. 12.5 p.m., Orchestral Concert, conducted by Bruno Sehestak. In the interval at 1.0, News. 2.0, Second News. 2.10 to 2.30, Notes on Art. 2.55, Music for Flute and Piano. 3.15, Programme for Community Women Music in the Village. 3.35, Market Prices. 4.0, Concert by the Station Orchestra, conducted by Willy Steffen; Overture, The Siege of Corinth (Rossini); Andante from the Surprise Symphony (Haydn); Cradle Song in F (Georg Pittrich); Suite for Orchestra, Op. 3 (Hans Wellig); Scandinavian Caprice in A Minor (Max Deminich); Overture, Karnevalsstreichle (Martin Richter); Pieces from the Serenade in G Minor, No. 4 (Robert Fuchs); Seliges Waldesheimnis, Op. 15 (Wilhelm Kienzl); Bohemian Pictures from the South (Carl Reinecke). In an interval at 5.0, Review of Books. 5.50, Economic Notes, Weather and Time. 6.0, Talk: Art in the Village church. 6.20, Evening in a Youth Hostel—A Sequence in Song and Verse by the Leipzig Branch of Young Hitlerites. 6.45, Talk: A Thousand Years of Barchfeld. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Italian Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Soloists, Kurt Hermann (Pianoforte) and Alois Heydrich (Oboe); Artistic Dance and Aria for Lute and Orchestra (Respighi); Idillio-Concertino for Oboe, String Orchestra, and two Horns (Wolf-Ferrari); Chamber Symphony in B flat for Piano, two Violins, Viola, Cello, Double Bass, Flute, Oboe, Clarinet, Bassoon and Horn (Wolf-Ferrari); First Suite from La Donna Serpente (Casella). 9.30, The Malice of Objects—a Radio Sequence (Gustav Hermann). 10.10, News. 10.20 (approx.), Concert of Light Music by the Emde Orchestra. 12 **Midnight** (approx.), Close Down.

LINZ.—See Vienna.

I. JUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 p.m., Quintet Concert. 7.0, French Lesson. 7.30, Talk on Geology. 8.0, Programme relayed from Belgrade. 10.0, News and Gramophone Music.

LOWO

788 kc/s, 381 metres; 16 kW.—7.0 p.m., Reading. 7.15, Miscellaneous Items. 7.30, See Warsaw. 12 **Midnight** (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Concert of Popular Music. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 9,850 kc/s, 30.43 metres; 20 kW. 11.30 p.m. Concert of Popular Music. In the interval at 11.45, Radio Chronicle. 12.35 a.m. (Saturday), Answers to Correspondence. 12.40, Spanish South-American Talk. 12.45, Light Music. 1.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes Exchange, Radio Journal, Talk by Joaquin Gomez de Laraña, Programme of Musical Novelties and Variety Items by Ramon Gomez de la Serna. 9.15, News and Political Review. 9.30 to 10.30, Interval. 10.30, Chimes, Time Signal, and Political Review. 10.45 (approx.), Symphony Concert on Gramophone Records; Overture, Don Giovanni (Mozart); Entr'acte from Khorvanchina (Mussorgsky); Three Dances (Granados); Pianoforte Concerto in A Minor (Schumann); Symphonic Poem, Till Eulenspiegel's Merry Pranks (Oscar Strauss); Spanish Caprice (Rimsky-Korsakov). 12.45 a.m. (Saturday), News and Programme Announcements for Listeners Abroad. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.15 p.m., See Prague. 7.25, Concert by the Radvanice Village Band. 8.15, See Prague. 10.30 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserlautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—5.45 p.m., Talk on Moritz Rugendas. 6.5, Talk on Protection from Aerial Attack. 6.25, Time, Weather, and Agricultural Notes. 6.35, Concert by the Tegezenen Trio. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, Trees and Flowers Concert by the Small Station Orchestra, conducted by Erich Kloss; Soloists: Maria Sunko-Saller (Soprano) and Walter Holden (Recitations). 9.0, Topical Talk. 9.20, Symphony Concert by the Station Orchestra, conducted by Hans A. Winter; Soloist: Edith von Voigtländer (Violin); Symphonic Prologue to King Oedipus (Schillings); Concerto in E for Violin and Orchestra (Bach); Sinfonietta for Full Orchestra (Jung). 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 44.1 metres.—5.0 p.m., Gramophone Concert. 6.0, French Lesson. 6.30, Agricultural Talk. 7.0, Announcements, Weather, and News. 7.30, English Lesson. 8.0, Time Signal. 8.1, Heng man lever en Sketch (Rodo Moberg). 9.29, Agricultural Notes, Weather, and News. 10.15, Light Music and Dance Music by the Walter Schibert Ensemble. 11.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

FALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Populair Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Geografisk Radio. 8.30, Gramophone Music. 8.45, Falstaff—Opera in Two Acts (Verdi) on Gramophone Records. In the intervals: Talk and Announcements; After the Opera, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,435.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and test signals). 6.45 p.m., Theatre Talk. 7.0, Le Journal Parlé. 8.30, Literary and Musical Programme for Young People. 9.15, Symphony Concert, conducted by M. Flamant; Soloists, M. Vanouvier (Flute) and M. René Bas (Violin); A Bâtons rompus (Gillet); Estase (Ganne); Selection from Madame Favart (Offenbach); Flute Solo, Chanson de l'Épousée (Honegger); Violin Solo, Entr'acte from La Colombe (Goumard); Cello Solo, Waltz, Hofballtänze (Joh. Strauss). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.7 metres; 60 kW.—6.45 p.m., Le Journal Parlé. 7.0, Sponsored Talk. 7.10, Gramophone Music. 7.55, Press Review. 8.0, Talk on Music. 8.15 to 8.30, Interval. 8.30, Concert by the Station Symphony Orchestra; Prelude and Dance from Daria (Marty); Kludes latines (Xerub); Song with Orchestral Accompaniment, Musique sur Jean (Villermaz); Piece for Piano and Orchestra, Rhapsody in Blue (Gershwin); Songs, Chansons à la bien-aimée (Bertrand); Suite mignonne (Copland); Traversée heureuse (F. Schmitt); Paysage polaire (Silver); French March (Filippucci). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,715 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd).

7.45, Gramophone Music. 8.0, Press Review and Weather. 12.0 Noon Jewish Talk. 12.30, Gramophone Concert: Overture, Le Roi d'Ys (Lalo); Polonaise from Eugene Onegin (Tchaikovsky); La Capriciosa (Ries); Air from Figaro (Mozart); Air from Messiah (Buneman); Danse sacrée (Debussy); Danse profane (Debussy); Prelude in C (Prokofiev); Le bonheur est chose légère (Saint-Saëns); Le Chasseur maudit (César Franck); La Chanson du pêcheur (Fauré); Pastorale d'été (Honegger); Symphony No. 5, the Pathetic (Tchaikovsky). In the intervals at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange and News. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk, Weather and Market Prices. 6.30, Gramophone Music: Impressions of Damascus (Konguelli); Serenade (Saint-Saëns); Valse triste (Sibelius); Hungarian Rhapsody (Liszt). 6.50, Insurance Societies' Report. 7.0, Radio Dialogue. 7.20, Gramophone Concert: Lensia (Loyraux); Donauwellen (Ivanovici); Coq et Poules (Paradis); Divine Lady (Shilkret); Saxophone Marmalade (Rosenthal); C'est peu de chose (Verdun); A la Godilie (van Hoorebeke). 7.45, Commercial Prices and News. 8.0, Reading. 8.30, News, Weather. 8.40, Gastronomic Review. 8.45, La danseuse rouge—Play (Charles Henri Hirsch). In the interval at 9.15, Press Review and News.

PITTSBURGH

(KDKA), 980 kc/s, 306 metres; 50 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., KDKA Home Forum. 7.45, Variety Programme. 8.0, Betty and Bob, from New York. 8.15, International Sunday School Lesson by Rev. S. S. Lappin. 8.30, Tenor Solos by John Dmulp. 8.45, Marian Sisters, from New York. 8.55, Baseball Scores. 9.0, Hotel Cosmopolitan Orchestra, from New York. 9.30, Market Reports. 9.45, Programme to be announced. 10.0, Baseball Scores. 10.5, Programme to be announced. 10.15, Dick Daring, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Hotel Roosevelt Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, Riggs and Moke. 11.45, Today's News, by Lowell Thomas, from New York. 12 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Saturday), Variety Programme. 12.30 to 3.15, New York Relay. 12.30, Five Star Theatre—Charlie Chan. 1.0, Variety Programme. 1.30, Adventures in Health. 1.45, Phil Cook and his Ingram Shavers. 2.0, Echoes of the Palisades. 2.30, Variety Programme. 3.0, Time Signal and Music is my Hobby.

PORSGRUND.—See Oslo.

POZNAN

896 kc/s, 335 metres; 1.9 kW.—5.55 p.m., Theatre Notes and Programme Announcements. 6.0, Educational Report. 6.15, Missionary Talk. 6.30, Talk: The Foundations of Modern Poland. 6.45, Talk on Polish Topography. 7.0, News, 7.28, Time Signal. 7.30, See Warsaw. 10.15, Time Signal. Sports and Police Notes. 10.30, Dance Music, relayed from the Café Esplanade. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Brno. 4.55, Talk. 5.5, Concert by the Ondricek Quartet: String Quartet in D, Op. 10 (Krieka); String Quartet in A Minor, Op. 41, No. 1 (Schumann). 6.5, Market Prices. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk: German Schools in Czechoslovakia. 7.0, Chimes. 7.1, News Bulletin. 7.10, Russian News. 7.25, See Moravská-Ostrava. 8.15, Hermelin the Acrobat—Comedy in Three Acts (Werner). In the intervals at 9.0 and 10.0, Time Signal. 10.15, News Bulletin. 10.30 (approx.), Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—1.30 to 3.0 p.m., Concert of Popular Music. 5.0 to 6.0, Gramophone Concert. 8.30, Gramophone Music. 8.45, News. 9.0, Concert. Waltz, The Blue Danube (Joh. Strauss); Song, La coquette de Mimi Pinson (Goublier); Overture, The Secret Marriage (Chiarosa); Song: Signorina; Hungarian March from The Damnation of Faust (Berlioz); Tango (Canaro); In a Persian Market (Ketchey); Recitation; Waltz, The Skaters (Waldteufel); Song Valse des cols bleus; Selection from The Barber of Seville (Rossini); Song: Petit à petit; Cello Solo; Berceuse (Fauré); Song: Ta Voix; Selection from The Love Parade (Scherzinger-Salabert). In the interval, Adventure Talk. 11.0, Gramophone Music or Relay.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Lausanne), Religious Address. 7.25 (from Lausanne), Weather and News. 7.30 (from Lausanne), Political Review of the Week. 8.0 (from Lausanne), Flute and Piano/forte Recital by E. DeFrancesco and Maggy Gay-

lus-DeFrancesco. 8.25 (from Lausanne), Song Recital of Operetta Airs by Gilda Prince-French. 8.50, Military Music, relayed from Fribourg. 9.25 (from Lausanne), Radio Sketch. 9.50, News and Weather. 10.0 (from Lausanne), Old Dance Music by the Ed. Moser Orchestra. 10.30 (from Geneva), Talk: The Work of the League of Nations. 10.50 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.0 p.m., Talks 6.30, Latvian Lesson. 7.0, Weather. 7.5, Puccini Concert. Selection from Ma non Lascia. The Girl of the Golden West, Madame Butterfly and La Bohème. 8.0, News. 8.20, Recital of Songs. 8.40, Concert of Popular Music by the Radio Orchestra, conducted by Prof. Medins. 9.30, Dance Music. 10.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—1.0 to 2.15 p.m., Orchestral Concert of Light Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 5.10, Announcements. 5.15, Exchange and Giornale Radio. 5.30, Vocal and Instrumental Concert. 6.40 (Naples), Shipping and Sports Notes. 6.50, Announcements. 6.57, Report of the International Institute of Agriculture (in Spanish, German, and French). 7.10, Tourist Report. 7.20, News in Various Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.15, Gramophone Records. 8.30, Talk by Gigi Michelotti. 8.45, Variety Concert. Soloists: Rodolfo Caporali (Piano/forte) and Emilio Livi (Tenor). Italian Capriccio (Tchaikovsky); Piano/forte Solos: (a) Tempo di ballo (Scazzati), (b) Three Es-saisés (Chopin), (c) Tarantella (Chopin); Tenor Solos: (a) Aria from Mephistopheles (Boito), (b) Notte veneziana (Carlucci), (c) Aria from The Pearl Fishers (Bizet), (d) Aria from Rigoletto (Verdi); Piano/forte Solos: (a) Spanish Dance (Granados), (b) Ritual Fire Dance from Amor brujo (Falbo), (c) Polichinelle (Rachmaninov); Talk (in an interval): Music in Ethiopia. 10.0, Gramophone Concert. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

(WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—8.0 p.m., Biblical Drama. 8.15, Moore Paint Programme from New York. 8.30, Echoes of Erin, from New York. 8.45, Stock Report and Police Notices. 11.45, Stock Reports. 12 Midnight, Cities Service Concert, from New York. 12.30 a.m. (Saturday), WGY Farm Forum. 1.0 to 2.30, New York Relay. 1.0, Musical Programme. 1.30, Variety Programme. 2.0, Sponsored Programme. 2.30, Richfield Country Club, from New York, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres, 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather Report. 12 Noon (from Zurich), Concert of Operetta Music by the Station Orchestra. 12.30 p.m., News. 12.40 (from Zurich), Concert (contd.). 1.25 (from Zurich), Exchange, Time, and Weather. 1.30 (approx.) to 5.0, Interval. 5.0 (from Basle), Programme for Children. 5.30 (from Basle), Light Music on Gramophone Records. 6.0 (from Zurich), Concert by the Small Station Orchestra. 6.30 (from Basle), Talk on Beethoven. 7.0 (from Basle), Time, Weather, Market Prices, Tourist Report, and Sports Notes. 7.15 (from Basle), Gramophone Music. 7.45 (from Basle), Introductory Talk to the following Transmission. 8.0 (from Basle), Beethoven Concert, relayed from the Musiksaal. 10.0, Weather, News, and Close Down.

SEVILLE

EAJ 7, 815 kc/s, 368.1 metres; 1.5 kW. 9.30 to 10.0 a.m., News Bulletin. 3.0 to 4.0 p.m., Concert by the Station Orchestra, followed by Dance Music. 10.0 to 12 Midnight, Concert. Part I: Guitar Recital: Contrate (Bach); Allegretto from the Sonata in A (Moreno Torroba); Evocacion (Tárrega); Gavotte (Bach); Theme with Variations (Sors); Fandanguillo (Turina); Reverie (Tárrega); Etude (Tárrega); Part II: Song Recital: Berceuse (Gretchaninov); Granada (Nin); Nebbie (Respighi); Wiegenlied; (Brahms); China (Mauray); Song (Pedrell); Ojos Tapatiós (Menendez); Serenata (Lambert). Part III: Dance Music. 12 Midnight (approx.) Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—5.5 p.m., Programme for Children. 5.25, Accordion Music. 5.45, Concert of Gramophone Music. 6.45, Microphone Report. 7.15, Weather and News. 7.30, Talk relayed from Malmö, 1,301 kc/s, 231 metres. 8.0, Orchestral Concert, with Songs by Karin Rydqvist: Selection from Tannhäuser (Wagner); Selection from The Bartered Bride (Smetana); Aria from Die tote Stadt (Korngold); Aria from Tosca (Puccini); Intermezzo from The Jewels of the Madonna (Wolf-Ferrari); Legend (Dvorak); Dance (Mascagni); Aria from The Force of Destiny (Verdi); Aria from Aida (Verdi); Overture, William Tell (Rossini). 9.15, Talk. 10.0, German Music of the Romantic Period—Recital by Olof Wiberg (Piano/forte), John Järnberg (Violin), and Carin de FrimERIC (Cello); Symphonic Studies, Op. 13, for Piano/forte (Schumann); Trio No. 2 in C Minor, Op. 66, for Piano/forte, Violin, and Cello (Mendelssohn). 11.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.1, Exchange Quotations. 1.5, Light Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Literary Talk in French. 5.0, Dance Music by the Orchestra, conducted by M. Roskam. 6.0, Chamber Music by the Station Trio, relayed from Lille, 1,130 kc/s, 265.4 metres. 7.0, Talk in German. 7.15, Discussion in French on Vocations. 7.30, Time and News. 7.45, Newly released Gramophone Records. 8.15, Press Review in German, Lottery Prices and News. 8.30, Protestant Service for Whit-Sun, relayed from St. Thomas's Church, Eschallet, für Lieder Cantata (Bach), by the Choirs of St. Thomas and St. Peter, conducted by M. Jung. Soloists: Mlle Forster (Soprano) and M. Nussbicker (Baritone). After the Transmission, Press Review in

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12 Noon, Orchestral Concert, conducted by Gustav Górlisch; Soloists, Lore Fischer (Contralto), Otto Seyfert (Piano/forte), Georg Beerwald (Violin), and Curt Schneider (Cello). 1.15 p.m., Time and News. 1.30, Symphony in G Minor (Mozart) by the Berlin Opera House Orchestra, conducted by R. Strauss on Gramophone Records. 2.0, Concert arranged by the Post Office. 2.30, Advanced English Lesson. 3.0, Interval. 3.15 (from Mannheim), Talk: Hints for Sunday Excursions. 3.30, Concert by Students of the Academy of Music: Baritone Solos: (a) Als ich dich kaum gesehn, (b) Einen Brief soll ich schreiben (Ruck), (c) Jägers Abendlied (Ruck); Cello and Piano/forte (Martini-Kreisler); German Dance (Dittersdorf); Minuet in G for Violin and Piano/forte (Beethoven); Piano/forte Trio: (a) Das ist der erste Frühlingstag; Baritone Solos: (a) Der Kuckuck (Ruck), (b) Ach wie's ist's möglich dann, (c) Wo a kleins lüttle steht. 4.0, Recital of Favourite Arias by Hermann Lingor (Tenor): Aria from Turandot (Puccini); Aria from Cavalleria rusticana (Mascagni); Non Pagliaccio non son I from I Pagliacci (Leoncavallo); Aria from Carmen (Bizet). 4.30, See Langenberg. 5.45, Time, Weather, and Market Prices. 6.0, Talk: The Swabian-Alemannic Civilization in South-West Germany. 6.25 (from Mannheim), Talk: The Future of German Aviation with Special reference to its Present Development. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Frankfurt. 8.0, See Munich. 9.0, Songs of the German Troubadours, arranged by Prof. Moser and sung to the Lute by Oskar Besenfelder (Baritone). 9.35, Robert Schumann Piano/forte Recital: Nocturne in F, Op. 21; Nocturne in D, Op. 21; Sonata in G Minor, Op. 22. 10.10, Time and News, followed by Gramophone Music. 11.0, St. Francis Five Episodes from his Life after the Poem by Felix Timmermans (Wilhelm Locks), relayed from the Ufa Palast. 11.30 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW. Transmissions irregular owing to fire.—7.0 p.m., Talk: The Causes and the Treatment of Diabetes. 7.15, Horse Racing Results, Market Prices, and News. 7.25, Local News. 7.30, Operetta Airs. 7.45, Military Music. 8.0, Programme by a Viennese Orchestra. 8.30, Accordion Solos. 8.45, Sound Film Music. 9.0, Concerto in A for Violin (Mozart). 9.30, Operetta Airs. 9.45, Military Music. 10.0, Orchestral Music. 10.15, North African News.

10.30, Concert for Listeners in Morocco. 11.0, Orchestral Music. 11.15, Opera Music. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Light Music: Hungarian Dances; Wishes fond and Fair; Venice, Waltz, Tales from the Vienna Woods; Russian Potpourri; I know of Two Bright Eyes; Where my Caravan has rested; Wine, Women, and Song. 11.57, I.B.C. Good-night Melody. 12 Midnight, News, Weather, and Announcements. 12.5 a.m. (Saturday), Opera Music. 12.15, Chansonnettes. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.0 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35, till Close Down See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—5.0 to 6.0 p.m., Chamber Music Concert. 6.35, Giornale Radio, Agricultural Report and Dopolavoro Announcements. 7.0, Time and Report of the Royal Geographical Society. 7.10, Gramophone Records. Nitouche (Nervitti); L'ultima catena (Ferruzzi); Cinguetto (Gentili); Piccola vagabonda (Raimondo); Villanella (Fancini). 7.20, Giornale Radio. 7.45, Gramophone Music. 8.0, Announcements, Giornale Radio and Weather. 8.10, Gramophone Records. Ah! forse è lui, from La Traviata (Verdi); Ritorna vincitore from Aida (Verdi); Prelude to Act III of Tosca (Puccini); Nostalgie del Danubio (Chiappone-Frondel-Marins); Goodbye (Costi); Aria from L'Africaine (Meyerbeer). 8.45, Talk: The Centenary of Ariosto. 9.0, Symphony Concert. Talk in the interval. 11.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW. 11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.20 p.m., Ballad Recital by Amy Wimbinger (Contralto) and Elmer von John (Bass). 5.55, Tourist and Traffic Report. 6.10, Talk: Swimming as a Sport in Austria. 6.25, Sports Talk. 6.35, Talk: The Protection of Monuments in Austria. 7.0, Old Dance Music by the Louis Seidl Band. In an interval at 7.30, Time, Weather, and Programme Announcements. 8.15, Talk: The Austrian Countryside. 8.45, Concert of Wagner's Early Opera Music by the Vienna Symphony Orchestra and the State Opera Choir; Soloists, Luise Helletsgruber (Soprano), Karl Fischer-Niemann (Tenor), and Karl Hammes (Baritone); Unpublished Extracts from Lenzbach; Introduction, Choral and Septet from Die Hochzeit; Two Arias from Die Feen; Selection from Liebes-Verbet; Overture, Rienzi. 10.30, News, Weather and Announcements. 10.45, Dance Music on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Records. 1.20, Weather Forecast. 1.25 to 3.10, Interval. 3.10, Announcements. 3.15, Economic Notes. 3.25, Aviation Report and Anti-Gas Drill. 3.30, Naval and Colonial Report. 3.35, Gramophone Records. 4.25, Review of Periodicals. 4.40, Talk: Protection of Animals in Poland. 5.0, Soprano and Baritone Recital. 5.55, Programme Announcements. 6.0, Dance Music. In the interval, News. 7.0, Miscellaneous Items. 7.20, Agricultural Press Review, relayed from Wilno, 533 kc/s, 563 metres. 7.30, Talk. 7.45, Radio Journal. 8.0, Talk on Music. 8.15, Symphony Concert. In the interval, Sports Notes and Radio Journal. 10.0, Reading. 10.15, Dance Music. In the interval at 10.55, Aviation Weather Forecast and Police Notes.

WILNO

533 kc/s, 563 metres; 16 kW. 5.55 p.m., Programme Announcements. 6.0, Dance Music on Gramophone Records. 6.40, Talk for Poles in Lithuania. 6.55, Miscellaneous Items. 7.0, Reading. 7.10, Programme to be announced. 7.20, Agricultural Press Review. 7.30, See Warsaw. 12 Midnight (approx.), Close Down.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—7.25 p.m., Talk on the History of Croatian Music. 7.40, Announcements. 8.30, See Belgrade. 10.0, News and Weather. 10.10, Dance Music. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

725 kc/s, 413 metres; 60 kW., and Cork, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.45, News Bulletin. 7.0, Talk: Rome, and how to get there. 7.15, Gaelic Talk. 7.30, Time Signal. 7.31, Concert of Irish Music by the Station Orchestra. 7.40, Irish Song Recital by Betty Byrne (Contralto). 8.0, Traditional Fiddle Music by Tadig Small. 8.15, Illustrated Talk. 8.45, The Station Orchestra. 9.0, A Play by the Leven Players. 9.30, The Station Orchestra. 9.45, Sponsored Programme. 10.45, Time Signal, News, Weather Report and Close Down.

BARCELONA

EAJ1, 860 kc/s, 348.8 metres; 8 kW. 6.30 p.m., Programme for Children. 8.0, Request Gramophone Records. 8.30, Exchange Quotations and Catalan Grammar Lesson. 9.0, Gramophone Music and News. 10.0, Chimes, Weather Forecast, Exchange Quotations and Market Prices. 10.5, Concert by the Station Orchestra. 11.0, Talk in Catalan. 11.15, Concert by the Violeta de Clavé Choir, conducted by Pedro Jorda. In the interval, News. After the concert, Gramophone Music. 1.0 a.m. (Sunday), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—8.0 p.m., Agricultural Report, Tourist Talk, Sport's Notes, and Popolavoro Announcements. 8.20, Giornale Radio and Press Review. 8.30, Time Signal and Announcements. 8.35, Concert of Popular Music. In the interval, Book Review. 10.30, Gramophone Music. 10.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.55 p.m., Time and Programme Announcements. 7.0, Yugoslav Song Recital by Bozidar Mitrovic. 7.30, A Radio Play. 8.15, Concert by a Wind Instrument Orchestra. 9.0, Concert of Yugoslav Music by the Belgrade Choral Society. 10.10, News, followed by Relay of Foreign Stations.

BERLIN

DEUTSCHLANDSENDER, 183.5 kc/s, 1,635 metres; 60 kW. 2.0 p.m., Gramophone Concert of Light Music. 2.0, Programme for Children. 3.30, Weather and Exchange. 3.45, Gerhard Eschenhagen reads from his own works. 4.0, See Hamburg. 5.0, Weekly Review. 5.30, Pianoforte Duets: Sonata in C (E. Bach); Variations on a Theme of Schumann Op. 23 (Brahms); Polonaise in D (Max Dettmann). 6.0, A Poem. 6.5, Recital of Humorous Songs: Schlusslied des Narren (Carl Gallus); Fastnachtsskram (Hartmut Wegener); Der Büchlerwurm (Hartmut Wegener); Soldatenlied (Waldemar Wendland); Locklied (Waldemar Wendland); Alles Reiterlied (Waldemar Wendland); Lumpenlied (Conradin Kreutzer); Der Sperrling und das Känguru (Hans Brehme); Die Schildkröte (Hans Brehme); Tertius gaudens (Hans Brehme). 6.30, Talk: The Importance of the Young Hitlerite Movement for the New State. 6.50, Weather and Announcements. 7.0, Transmission for all German Stations; A German Whitsuntide Message—Radio Sequence (Ernst Keienburg). 8.0, Variety Programme. 10.0, News. 10.45, Weather Report for Shipping. 11.0, Programme from Munich. 12 Midnight, Dance Music from Berlin (Witzleben). 12.20 a.m. (Sunday), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—4.0 p.m., Concert of Music by Berlin Composers. The German Symphony Orchestra, conducted by Manfred Gurlitt; Military Music from Wallensteins Lager Op. 51 (Wuensch); Three Dance Impressions (Boriz); Minuet (Riege); Two Aquatellas for Small Orchestra (Fischer); Deutsche Städtebilder (Schmidtsch); 5.0, Sports Notes. 5.10, Concert by the German Symphony Orchestra, conducted by Manfred Gurlitt; Ballet Music from Céphale et Procris (Grétry-Mottl); Flemish Dances (Blocks); Overture, Russian and Ludmilla (Glinka); Norwegian Artists' Carnival (Svendsen); A Viennese Waltz (German). 6.0, Address by Rudolf Presber. 6.20, Soprano Song Recital by Jennie von Thibaut. 6.40, The Witzleben Station informs its listeners. 6.45, Topical Talk. 7.0, Transmission for all German Stations relayed from Berlin (Deutschlandsender). 8.5, The Watchword. 8.10, Humorous Tales. 8.20, A Journey into the Blue—Variety Programme. 10.0, Weather, News and Sports Notes. 10.15 (approx.), Dance Music. 1.0 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.10 p.m., Concert by the Station Orchestra. 5.0, See

SATURDAY

JUNE THE THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Orchestral concert, British Composers.
LONDON The White Coons' Concert Party.
REGIONAL
MIDLAND "A Day in the Country," choral programme.
REGIONAL
NORTH "Fire," with the Rochdale Fire Brigade, feature programme.
REGIONAL
WEST Orchestral programme of Eric Coates' Music.
REGIONAL
SCOTTISH Orchestral Concert.
REGIONAL
BELFAST "The Ballad Singer," An Ulster comedy by Dr. E. H. M. Milligan.

ABROAD

BORDEAUX 8.30 p.m. Operetta: "The Rose of Stamboul," by Fall (relayed from Paris).
LAFAYETTE
COPENHAGEN 8.5 p.m. J. S. Bach Concert.
LEIPZIG 8.15 p.m. Oratorio: "Der Morgen," by Hans Sachsse.
PALERMO 8.45 p.m. Operetta: "Katja, the Dancer," by Gilbert.
ROME 9.0 p.m. Gala Concert in Honour of the Pioneers of Italian Broadcasting.
STRASBOURG 9.0 p.m. The Colmar Symphony Orchestra, conducted by M. Lochbrunner.
TOULOUSE 9.0 p.m. Extracts from "Le petit duc," by Lecoq.
VIENNA 8.0 p.m. Drinking Songs and Dance Scenes from Opera.

Prague. 6.5, Gramophone Music. 6.15, Schrammel Quartet Concert. 6.55, Talk for Housewives. 7.0, See Prague. 7.25, See Brno. 8.0, Talk. 8.15, Concert by the Station Orchestra, conducted by E. Dyk, a Choir and Soloists; Scene from Dorfmusikanten (Mozart); Slovak Folk Songs (Suchon); Waltz, Frühlingstimmen (Joh. Strauss); Melody (Friml); Song from The Land of Smiles (Lehar); Song from Paganini (Lehar); Rhapsody in Blue (Gershwin); Mazurka and Galop (Topinka); Tattoo (Fahrbach). In the interval: A One Act Comedy (Anerbinner). 10.0, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and Gleiwitz, 1,184 kc/s, 263 metres.—12.15 p.m., See Heilsberg. 1.0, Time, Weather and News. 1.15, Gramophone Concert. 2.15, Programme arranged by the Post Office, with Gramophone Records. 3.10, Agricultural Prices. 3.30, Talk on the Press. 3.50, Programme Announcements. 4.0 (from Gleiwitz), Concert by the Gleiwitz Orchestra, conducted by Richard Pöschke. March, Frisch voran! (Blankenburg); Waltz, Im Reiche der Venus (Gröschel); L'Arlesienne, Suite No. 2 (Bizet); Overture, Auvergne (Cherubini); Second Rhapsody in F (Liszt); Réverie (Vieuxtemps); Beim Tanz der Nationen (Manfred); Selection from Der Obersteiger (Zeller); March, Jung Deutschland (Manfred). In an interval at 4.50, Film Review. 5.45, Book Review. 6.5, Extracts from Hansel and Gretel Opera (Humperdinck), on Gramophone Records. 6.30, Pianoforte Recital by Kurt Hattwig, Rhapsody in B Minor, Op. 79, No. 1 (Brahms); Polonaise-Fantasia, Op. 61 (Chopin). 6.50, Weather and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Programme (to be announced). 8.30, Variety Programme. 10.0, Time, Weather and News. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW. 6.25 p.m., German Transmission: News, followed by Violin, Guitar and Song Recital: Sonata No. 1 for Violin and Guitar (Paganini); Sonata No. 3 (Paganini); Sonata No. 4 for Violin and Guitar (Paganini); Romance (Kreutzer); Schuschi (Schubert); Song (Kreutzer); Love Song, Op. 37, No. 2 (Spohr); Love Song (Weber). 7.0, See Prague. 7.25, A Slovak Wedding in Song—Programme by J. Lunga (Elcentonist) and M. Langova and J. Svirga (Songs). 8.5, Reading. 8.15, See Bratislava. 10.0, See Prague. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—12 Noon, Extracts from Aida—Opera (Verdi), on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Lecmans; One-step (Caludi); Waltz, Roses from the South (Joh. Strauss); Selection from L'heure Time (Schubert-Berthe); Violin Solo: Zephyr (Hubay); Arabesque (Montagne-Phillips); Ballet Music from Coppelia (Delibes). 4.45, Programme to be announced. 5.0, Concert by the Station Symphony Orchestra, conducted by J. Kumps; Rapsodie dahoméenne (de Boeck); Quinette (Soudant); Fantasia (Soudant); Divertissement on Brabant Themes (Deleroix); Two Basque Airs (Kumps); Humoresque (De Greef); Sérénade de Torello (Gilson); Walloon Fantasia (Jongen). 6.0, Agricultural Talk. 6.15, Violin Recital by Mme. Buysse-Rolin; Concerto in E (Bach); Sicilienne (Paradis); Waltz (Brahms). 6.45, Gramophone Concert for Children. 7.15, Talk: The Organisation of Big Shops. 7.30, Le Journal Parlé. 8.0, Choral Concert, relayed from the Jardin d'Acclimatation, Liège. Soloist: M. Hector Cloekers (Violin). Le Rossignol (Grétry); Sérénade d'hiver (Saint-Saëns); Two Violin Solos; La chanson des vagues (Riga). 8.45, Mari express—Comedy in One Act (Thubant). 9.5, Bonsoir Voisin—Opera-Comique (Poise), by the Station Symphony Orchestra, conducted by J. Kumps and Soloists. 10.0, Le Journal Parlé. 10.10, Dance Music, relayed from the St. Sauveur Palais de Danse. 11.30, Dance Music on Gramophone Records.

BRUSSELS (No. 2)

N.I.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Lecmans; Overture (Casadesu); Petite Suite No. 2 (de Micheli); Asturias (Albeniz); Ballet Music from Hérodote (Massenet); Cello Solo: Hungarian Rhapsody (Popper); Czardas No. 1 (Michiels); Selection from Ronny (Kálmán). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert. 4.45, Talk: The League of Nations. 5.0, Variety Concert by the Radio Orchestra, conducted by Franz André. 6.0, Hungarian Fantasia (Liszt). 6.15, Talk on History: Joseph II. 6.30, Concert by the Small Station Orchestra, conducted by P. Lecmans; Overture, Der Bittelstudent (Müllöcker); Spanish Dances (Laparra); Selection from Rienzi (Wagner); Fantastic Rhapsody for Pianoforte (Dutilleul), played by the Composer; Chant sans paroles (Tchaikovsky); Two-step (Bill-Fray). 7.15, Talk: Belgium and the Economic Crisis. 7.30, Agricultural and Horticultural Notes. 8.0, Concert by the Radio Orchestra, conducted by Franz André. Soloists: Mme. Lambert and Chao Mei Pa (Songs). Overture, Orpheus in the Underworld (Offenbach); Selection from New Moon (Rouberg); Chinese Folk Songs; Jazz Fantasia for Vocal Quartet

(Candris); Popular Spanish Songs; Slav Dances (Dvorak). 8.45, Recitations. 9.0, Concert (contd.): Three Mask Dances (Wood); Norwegian Dances (Grieg); Hebridean Folk Songs; Scenes napolitaines (Massenet); Four Lyric Songs; Ballet Music from William Tell (Rossini); Dances from The Rebel Maid (Montagne-Phillips). 10.0, Le Journal Parlé. 10.10, Dance Music by Robert de Kers and his Cabaret Kings, relayed from the Century Hotel, Antwerp.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—5.0 p.m., Light Music and Romanian Music by the Sibiceanu Orchestra. In the interval at 6.0, Radio Journal. 7.0, Educational Talks. In an interval at 7.20, Gramophone Music. 8.0, Talk on Georges Koukou. 8.15, Choral Concert. 8.45, Talk. 9.0, Concert, relayed from a Restaurant. 9.45, Radio Journal.

BUDAPEST

545 kc/s, 550.5 metres; 18.5 kW. Programme also relayed on 840 metres.—5.20 p.m., Concert by the Janosi Toll Chany Band. 5.50, Answers to Correspondence. 7.0, Market Prices. 7.10, Lindvig Bardos Concert by the Palestrina Choir, conducted by the Composer. 7.55, Talk. 8.20, Concert of Operetta Music. 10.20, News Bulletin. 10.30 (approx.), Dance Music from the Rajnapark; Soloist: Paul Fekete (Popular Songs). 11.0, Lecture: Recital—Popular Hymns and Marches.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 1.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Wives Restaurant. 2.0 to 2.30, Interval. 2.30, Gramophone Music. 3.0, Programme for Children. 3.30, Concert by the Radio Orchestra, conducted by Launy Grøndahl. Soloist: Helge Rungwold (Songs). Characteristic March (Schubert); Suite from Laekshmi (Nielsen); Waltz from Der Mann mit den drei Frauen (Lehar); Sérénade (Zibulka); March, Dunkirk (Lottor); Songs, Overture, Il reggente (Mercadante); Selection from the Suite Nordische Volkstänze, (E. Hartmann); Mazurka, L'auvergnate (Ganne); Dance from Sommerfugle (Andersen); Ave Maria stella (Grieg); Hungarian Rhapsody No. 2 (Liszt). 5.35, Exchange and Fish Market Prices. 6.0, Time and Chimes from the Town Hall. 6.5, Talk. 6.50, French Lesson. 6.50, Weather Forecast. 7.0, News. 7.15, Time Signal. 7.30, Talk of Bach. 8.0, Chimes from the Town Hall. 8.5, Bach Concert. The Radio Orchestra, conducted by Launy Grøndahl. Soloists: Johannes Karstens (Songs), Henry Munck (Oboe), and Folmer Jensen (Pianoforte). Suite in D for Orchestra; Two Songs with Oboe obbligato: (a) Hört ihr Augen auf zu weinen from the Cantata Was Gott tut, das ist wohlgetan, (b) Senzer, Tränen, Kummer, Not from the Cantata Ich hatte viel Bekümmernis; Prelude and Fugue from Das wohltemperierte Klavier; Overture, Die Erde lacht, die Himmel jubelt. 8.40 to 12.30 a.m. (Sunday), Variety Programme. 8.40, Readings. 9.0, Modern Music by Louis Prell's Instrumental Ensemble. 9.25, Recital of Viennese Songs by Hlona Wiesmann. 9.40, Modern Music (contd.). 10.0, Violin Recital by Mogens Hansen; Canonetta from the Violin Concerto in D (Tchaikovsky); Zigeunerweisen (de Sarasate). 10.15, News. 10.30, Dance Music by Louis Prell's Dance Band. 10.50 (in the interval), Humorous Items. 11.35, Song Recital. 11.55, Dance Music (contd.). 12.30 a.m., Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—7.0 p.m., Miscellaneous Items, News and Gramophone Music. 7.30, See Warsaw. 11.0, Light Music and Dance Music from the Pavillon Restaurant. In the interval at 11.30, News for Members of the Polish Polar Expedition. 12 Midnight, Fanfare from the Tower of St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—5.30 to 7.0 p.m., Programme in English by the I.B.C. 5.30 p.m., Detet Concert for Tunbridge Wells and Isle of Thanet Listeners; Spring Song (Mendelssohn); Hungarian Dances in D, and A Minor (Brahms); Songs: (a) Because (d'Hardelo), (b) The Second Minuet (Brsly); Torador of Andalous (Rubinoff); Ave Maria (Schubert); Romance (Rubinoff); Song: The Sweetest Flower that Blows (Hawley); Valse Bluette (Drigo); The Butterfly (Bendis); Mock Morris (Grainger). 6.15, Vocal Concert for Dover and Folkstone Listeners; Orchestra: Musical Comedy Switch (arr. Hall); Quartet: (a) Come to the Fair (Faustberg Maertin), (b) The Clock is playing (Hewitt); Orchestra: The Cock-croaker's Tea Party (Noack); A-rowing (Terry); Rio Grande (Harris); Orchestra: Wee Macgregor Patrol (Amers); Song of the Vagabonds (Friml); Old Man River (Kern); Orchestra: Colonel Bogey (Alford); Love and War (Cook); Song of the Drum (Ellis). 7.0, Programme in French. 11.0 till Close Down,

JUNE 3rd

SATURDAY

continued

Programme in English by the I.B.C. 11.0, Club Concert for Canvey Island Listeners; Hyde Park Corner; Twenty Million People; Talk by Mr. Leslie Knight; What have I got to lose; Moon Song; The Village Band; If I ever get a job again; My Heart's to let; The Girl in the Little Green Hat; Mad Moments; Sweetheart; Farewell to Arms; Let me give my happiness to you; Her Name is Mary; When you've fallen in Love. 12 Midnight, Variety Programme. Orchestra: Sons les Toits de Paris; Hope Brothers; Handbell Solo; Happy Days; Songs made famous by Vesta Victoria; I'm fading away; Handsaw Solo; Someone like you; You can't see the Sea to-day, Sir; Laughing Sam, the Railwayman; Orchestra: My Sunshine is you. 12.30 a.m. (Sunday), American Songs; I don't work for a living, Dinah; Hallelujah, I'm a Bum; Orchestra: By the Swanee River; Fortunes galore; Can't we talk it over; The Railroad Boomer; Orchestra: Lazy Pete (Kersten); Banjo Solos: The Buffoon (Carzon); The Wedding of the Painted Doll; Fashionette (Glogaw); Quartet: (a) Darktown Dandies (Morley), (b) Snatches of Song (arr. Grimshaw); Cracker Jack (Roser); Medley of Popular Airs; Flapperette (Greer). 1.30, Vocal Trios; Without a Song; Time on my Hands; You'll never realise; Orchestra: The Gold Diggers of Broadway; When it's Springtime in the Rockies; A Pair of Blue Eyes; Crying for the Carolines. 2.0, Dance Music by the Ibcolians: The World is so small; Little Nell; Mediterranean Madness; Bananas; Round the Bend of the Road; Balloons; I don't want to go to bed; Have you ever been Lonely; Standing on the Corner; Sitting in the Dark; Leave the pretty Girls alone; Put a little Springtime in the Winter of their Lives; Thompson's old grey mul; A Boy and Girl were dancing. 2.57, I.B.C. Good-night Melody. 3.0 (approx.). Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres, and Trier, 1,157 kc/s, 259.3 metres.—4.30 p.m., Orchestral Concert. 5.45, Economic Notes. 6.0, Book Review. 6.30, Weekly Review. 6.45, Topical Talk. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Viola Recital by J. F. Hoff. Hans Rosbaud at the Piano. 8.20, Ballet Music from Opera by the Station Orchestra. 9.0, A Wireless Cabaret. 10.10, Time and News. 10.45, See Munich. 12 Midnight, (Close Down).

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—4.0 p.m., Military Band Concert: Reichsritter-Fanfare (Prager); Selection from Lohengrin (Wagner); Suite from Sigurd Jorsalfar (Grieg); Blue Danube Waltz (Joh. Strauss); March (Rührig); Potpourri, O Deutschland hoch in Ehren (Lindemann); Hanseatic Hymn, Die Hamburger Flagge (Beyer); March, Schleswig-Holstein meermarschlucken (Funk). 5.30, Dialogue: The World War Collection in the Hamburg State Library. 6.0 (from Hanover), Marschner Concert, conducted by Otto Ebel von Sosn, with Introductory Talk. Soloist, Josef Correck. Overture, The Vampire; Aria and Wedding March from Hans Heiling; Selection from Austin. 6.50, Weather Forecast. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Flute Recital. 8.20, See Berlin (Witzleben). 10.15, Time, Weather, and News. 10.35, Topical Talk. 10.45, Late Concert, relayed from Lake Schwerin.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—12.30 p.m., Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky; Overture, Rühzahl (Weber); Introduction to the Third Act and Bridal Chorus from Lohengrin (Wagner); Selection from Tosca (Puccini); Spanish Caprice (Rimsky-Korsakov); March from Le Cid (Cornelius); Overture, Zampa (Herold); Waltz (Waldeufel); Overture, Gipsy Love (Lehar); Intermezzo from The Arabian Nights (Joh. Strauss). In the intervals, Time, Weather and News. 2.30, Programme arranged by the Post Office, with Gramophone Records. 3.0, Agricultural Prices and Exchange. 3.30 (from Danzig), Programme for Children. 4.0, Concert by the Small Station Orchestra,

conducted by Eugen Wilcken; Comedy Overture (Leuschner); Old Styrian Suite (Pachernegg); Selection from Madame Butterfly (Puccini); Variations on the Carnival in Venice (Strauss-Pitzau); Jubel-Walzer (Joh. Strauss); Czardas (Bohm); Selection from Der Göttergatte (Lehar); March Potpourri, Soldatenleben (Kachmann). In an interval, Report on the East Prussian ADAC Road Races. 5.40, Dialect Reading. 6.5, Programme Announcements. 6.15, Agricultural Prices. 6.25, Talk: The New Constitution. 6.50, Weather. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0 to 10.20, Programme from Stuttgart. 10.20, News, followed by Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW (7 kW up to 4.40 p.m.).—11.40 a.m. to 7.40 p.m., Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by de Notenkrakers, conducted by D. Wins. 1.40 p.m., Interval. 1.55, Gramophone Music. 2.30, Talk. 2.50, Concert by de Flierehutters, conducted by J. v. d. Horst. 3.40, Programme for Children. 4.40, Gramophone Music. 5.20, Literary Talk. 5.40, Temperance Programme by a Mixed Choir, conducted by J. F. Keja. Soloist: G. Dumont (Songs); Recitations by Mme. Straalen-Kremer. 6.40 to 7.40, Interval. 7.40 to 8.40, Programme of the Liberal Protestant Rad's Society (V.P.R.O.). 7.40, Opening of the Whitsun Conference of the V.C.J.C. 8.40 till Close Down, V.A.R.A. Programme. 8.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot; March, Per aspera ad astra (Urbach); Serenade (Toselli); Liebeswalzer (Reger); Selection from Lilie Time (Schubert-Berté). 8.10, Popular Songs. 9.25, Press Review and Announcements. 9.40, Concert (cont'd.). Overture, Phédre (Massenet); Ballet Music from Sylvia (Delibes). 10.10, Popular Songs. 10.45, Concert (cont'd.). Mit Laute und Geige (Arnoldola); The Clock is Playing (Bhanu); Sonia (Parton); Waltz, Mon Réve (Waldeufel); Sicilienne (von Bion); Serenade (Chapi); Selection from The Flower of Hawaii (Abraham). 11.10, Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Catholic Radio Society (K.R.O.).—11.55 a.m., Orchestral Concert: March, El Capitán (Sousa); Overture, Jean de Paris (Boieldien); Suite, Im Puppenhaus (Englemann); Berceuse de Jocelyn (Godard); Selection from Rigoletto (Verdi-Tavan). 12.40 p.m., Pigeon Flying Report and Gramophone Music. 12.55, Concert (cont'd.). Overture, A Life for the Czar (Glinka); Selection from Lakmé (Delibes); Idylle passionnelle (Razigade); Sang und Klang aus dem Osten (Eberle); A Day in Seville (Waldeufel); March, Farewell of the gladiators (Blankenburg). 1.25, Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Programme arranged by the H.I.R.O. 4.40, Concert by the K.R.O. Boys. Soloist, M. J. Mossel (Songs); Hungarian March (Linke); Ich habe in der Liebe ein Prinzip (Berger); A Little Street (Kahn); Brighter than the Sun (Winn). 4.55, Espana! Lesson. 5.10, Concert (cont'd.): Unsere Zeit ist endlich gekommen (Becke); Notregen (Urbach); Im Grinzing beim heurigen Wein (Sieczynsky); I'll do my best to make you happy (Noble); Potpourri, Wir kurbeln an (Dostal); Waltz Potpourri (Ciare); Melody (Lindner). 6.0, Press Review. 6.20, Concert (cont'd.): After the Night (Lütewers); Waltz, Ich hatte nie gedacht (Langsfelder); Kleine Liebe, grosse Liebe (Grothe); Drei von der Kavallerie (Erwin). 6.40, Police Announcements. 6.55, Talk on Gardening. 7.15, Gramophone Music. 7.25, Talk. 7.40, Concert for the Eighth Anniversary of the Royal Dutch Union of Singers; Three Male Voice Choirs, the Utrecht Municipal Orchestra, and Mme. Jo. Vincent (Soprano). In the interval, at 8.55 (approx.), News. 10.40, News. 10.45, Gramophone Music. 11.40, Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,205 kc/s, 249 metres; 0.8 kW.—8.0 p.m., Amusement Guide, News and Financial Report. 8.10, Review of North Africa. 8.20, Film Review. 9.0, News and Racing Results. 9.15, Radio Concert. 12 Midnight till Close Down, Programme in English by the I.B.C. H. K. Hiteheock announcing. 12 Midnight, Variety Concert: Can't we meet again? (Flanagan); If you were the only Girl in the World (Ayer); Good-night Vienna (Posford); Mona Lisa (Sullivan); Jerry becomes Corani's Patman; My Bluebird's back again (Friend); The Fairies' Gavotte (Kohn); Time alone will tell (Nicholls); I'll always be true (Benatsky); Scotch Strathpeys (Cuveller); Guilty (Kahn); Just Friends (Klenner); Whistling Waltz (Evans); Love Letters in the Sand (Coats and Kenny); Mariage

(Ahlert); Do you recall? (Flanagan). 12.67, I.B.C. Good-night Melody. 1.0, Close Down. KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,795 metres; 40 kW and Helsinki, 368.1 metres.—6.15 p.m., Talk. 6.40, Concert by the Station Orchestra, conducted by Erkki Linko. 7.20, Talk. 7.45, Song Recital. 8.10, Concert by the Station Orchestra. Selection from Samson and Delilah (Saint-Saëns); Tarantella, Naples (Mezzacapo); Grief (Mezzacapo); Waltz, Roses from the South (Strauss). 8.45, News in Finnish. 9.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf. Soloist: Lore Schröter (Soprano); March, Auf rauhen Pfaden zu den Sternen (Urbach); Hungarian Comedy Overture (Kéler-Béla); Waltz, Schwert und Leier (Strauss); Oriental Suite (Pop); Selection from The Hermit's Bell (Maillart); Song Potpourri, Jugendklänge aus Alt Heidelberg (Rhode). 12.50 p.m., Weather, Time, and News. 1.0 p.m., Concert (cont'd.). Overture, Peter Schmitt (Weber); Salut d'Amour (Elgar); Four Soprano Solos; Waltz, Freut Euch der Lebens (Strauss); German Dances (Schnherr); Overture, The Caliph of Bagdad (Boieldieu); Two Soprano Solos; Waltz Serenade (Rezareck). In the interval at 2.0, News. 2.30, Radio Report from the Exhibition People on Sunday in Düsseldorf. 3.0, Programme for Children. 3.30, Economic Notes and Time. 3.50, Talk on Westphalia. 4.10, English Reading. 4.30, Mandoline Concert. Soloist: Willy Overzier (Songs to the Lute). Six Folk Songs to the Lute: Three Pieces (Anelli); (a) Prelude, (b) Passionate Serenade, (c) Romantic Fantasia; Suite after Etudes by J. F. Burgmüller (Stoye); Concerto in G after a Sonata by Diabelli (Stoye); Six Folk Songs to the Lute. 5.50, Talk: The Lost Atlantis. 6.15, Political Talk. 6.35, Weather, Time, Economic Notes, and Sports Report. 6.50, Chimes. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, News. 8.5, A Gay Journey Variety Programme. 10.5, News and Sports Report. 10.30, Serenade relayed from Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.20 p.m., Lehár Concert on Gramophone Records; Waltz from The Merry Widow; Two Airs from The Count of Luxembourg; (a) Waltz, (b) Mädel klein; Selection from The Czarevitch; Two Airs from Schön ist die Welt; (a) Schön ist die Welt, (b) Liebste, glaub' an mich; Song, Gern hab' ich die Frau geküsst, from Paganini; Song, Maiden my Maiden, from Frederica; Selection from The Land of Smiles. In the interval, Wireless Notes. 1.0, News. 1.15, Gramophone Concert. 2.40, News. 2.45, Programme for Children. 3.45, Economic Notes. 4.0, Concert from Berlin (Witzleben). In the interval, from 5.0 to 5.15, Talk on Music. 6.0, German for Germans. 6.20, A Modern Dictionary. 6.30, Song Recital by Alfred Kase (Bartone); Kennt ihr das Land so wunderschön (Nägeli); Den Rucksack aufgeschmalt (Gretschner); Ach, wie ist's möglich dann (Kücken); Anchen von Tharau (Silcher); gold'ne Abendsonne (Nägeli); Student Songs: (a) Drei Klänge sind's, die tönen hold und rein (Seidel), (b) Die bange Nacht ist nun herun (Lyr), (c) Reich ist mir das alte Burschenband (Lachner), (d) Und hörst du das mächtige Klingen (Marschner). 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Topical Programme. 8.15, Der Morgen—Oratorio (Hans Sachs), relayed from Bautzen, The Teachers' Choral Society, the Hering Choral Society, and the Bautzen Cathedral Choir, conducted by Martin Bauer. Soloists: Lotte Schrader (Soprano), Lotte Wolf-Matthias (Contralto), Valentin Ludwig (Tenor), and Otto-Karl Zinnert (Bass). 9.45, Pfingstküsse—Radio Play (Rudolf Bartsch, arr. Martin Kunath). 10.15, News. 10.30 (approx.), Concert. 12 Midnight, Close Down. LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 547.7 metres; 7 kW.—5.0 p.m., Quintet Concert. 6.0, Talk on Ethnology. 6.30, English Lesson. 7.0, Educational Programme. 7.30, Programme for Workers. 8.0, Concert of Russian Music. 9.30, News. 9.45, Quintet Concert.

LWOW

738 kc/s, 381 metres; 16 kW.—7.0 p.m., Talk: Poland and her Marvels. 7.15, Miscellaneous Items. 7.30, See Warsaw. 11.0, Concert by the Serepada Mandoline Orchestra. In the interval, News for Members of the Polish Polar Expedition. 12 Midnight (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—7.0 to 9.0 p.m., Programme for Listeners in the Canary Islands, Guinea, and America. 7.0, Concert of Popular Music. 8.15, Talk. 8.30, Light Music. 9.0 to 11.00, Interval. 11.30, Programme relayed from Madrid (EAJ7). 1.0 a.m. (Sunday), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange, Radio Journal, Medical Talk, and Request Gramophone Records. 9.15, News. 9.30 to 10.0, Interval. 10.0, Linguaphone English Lesson. 10.30, Chimes and Time Signal. 10.35 (approx.), Opera Music on Gramophone Records: Extracts from: (a) L'Heure Espagnole (Ravel), (b) La Traviata (Donizetti). 12.45 a.m. (Sunday), News Bulletin. 1.0, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—6.25 p.m., Concert by the Ostrava Schrammel Orchestra. 7.0, See Prague. 7.25, Concert by the Station Orchestra, conducted by J. Plichta. Soloists: Nectar de Flondor (Soprano) and Richard Kubla (Tenor). Aria from Rusalka (Dvorák); Variations for Flute (Adam); Ophelia's Aria from Hamlet (Thomas); Dalibor's Aria from Dalibor (Smetana); Aria from Manon (Massenet); Aria from The Prodigal Son (Debussy); Soprano Solos: (a) Beau soir (Debussy), (b) Vocalise en forme d'Habanera (Ravel), (c) Aria from Les Filles de Cadix (Delibes); Tenor Solos: (a) The Dreary Steppe (Gretchaninow), (b), The Piper (Nedbal); Soprano Solo: Ilindri Song (Rimsky-Korsakov). 8.15, See Bratislava. 10.0, See Prague. 10.15, Concert of Light Music. 11.30 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.40 p.m., Concert by the Lorenz Jais Orchestra; Overture, Turandot (Lachner); Ballet Scene, Zigeunerfest (Lehár); Selection from Der Waffenschmied (Lortzing); Serenata Napolitana (Bauchey); Intermezzo, Chinesische Leibwache (Rehl); Necktuffelchen (Styhold); Selection from The Bird Fancier (Zeller). 5.45, Programme for Young People—Hörst Wessel—Radio Play (Ewers-Beyer). 6.25, Sonata in F Minor, Op. 120, No. 1, for Clarinet and Piano (Brahms). 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Concert by the Station Orchestra, conducted by Karl List. Soloist Lorenz Obermaier (Zither). Overture, The Caliph of Bagdad (Boieldieu); Waltz, Goldschmieds Tochterlein (Fétra); Selection from The Merry Widow (Lehár); Sturmgalopp (Komzak); Zither Solo, Waltz, Tales from the Vienna Woods (Joh. Strauss); Melody; Radetzky March (Joh. Strauss, sen.). 8.50, Wolfram and Adelgunde, or, Papa won't hear of it—A Terrible Tragedy (Grega Jareho and Heinz Stratz), with Songs. 9.15, Lucke Concert. 10.20, Time, Weather, News and Sports Notes. 10.45, Serenade. In the interval, Recital on Two Pianos by Ludwig Schmidreiter and Ludwig Kusche. 12 Midnight (approx.), (Close Down).

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Concert by the Trygve Christian-Opera Orchestra, relayed from the Logen Hall. 5.15, Programme for Children. 6.15, Hardanger Fiddle and Song Recital of Norwegian Music. 6.45, Talk on Economics. 7.0, Announcements, Weather and News. 7.30, Talk: The Germany of Goethe. 8.0, Time Signal. 8.1, Concert of Light Music and Operetta Music by the Oivind Fjeldstad Orchestra. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Cabaret Programme. 10.45, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—8.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Sports Notes and Gramophone Music. In the interval at 8.30, Time Signal and Announcements. 8.45, Katja the Dancer—Operetta in Three Acts (Gilbert). In the intervals, Book Review and Announcements. After the Operetta, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Programme of Music

JUNE 3rd

SATURDAY

continued

by Mozart, Lalo, and Fauré. 7.0, Le Journal Parlé. 8.30, Le Malade Imaginaire—Comedy in Three Acts (Molière). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 914 kc s, 323.2 metres; 60 kW.—6.45 p.m., Le Journal Parlé. 7.5, Gramophone Music. 7.30, Answers to Correspondents. 7.35, Gramophone Music (cont'd.). 8.0, Review of the Week. 8.15 to 8.30, Interval. 8.30, Quartet for Piano, Violin, Viola, and Cello (Klempner). 9.0, Interval. 9.10, Dance Music. 11.0, News. 11.5, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PARIS

RADIO PARIS; Call CFR; 174 kc s, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Gramophone Music. 8.0, Press Review and Weather. 12 Noon, Concert by the Station Orchestra: Suite, London Every Day (Eric Coates); Tzigania (Campanis-Audray); Vieille (Caunis); Scenes gitanes (Infante); Potpourri of Viennese Operetta Music (Marishka-Karczag); Vesuvian Song (Mareucci); The Londonderry Air (arr. O'Connor-Morris); Kernaria (Erlanger); In Old Thibet (Gatty-Sellars); The Nile (Leronx); Carnival Ballad (Marchetti); Le Souvenir d'Anghaz (Gabriel Marie); Morocco (Marangon-Heurtel); Tales of the Valley of the Enns (Pachernegg); Russian Song (Paladilhe-Mouton). In the intervals at 1.0, Exchange, News, and Weather; and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Market Prices. 6.10, Agricultural Talk, Weather, and Market Prices. 6.30, Concert by the Station Orchestra: Le Salut du Toréador (Berniaux); Waltz, Love (Nietini); Nuit d'Alger (Stalin); An Tourant de la route (Levis and Klenner); Valse Musette (Berniaux); March (Guejot); Waltz Intermezzo, Primrose (Gabriel); Melody (Mina). 7.0, Talk on the Discovery of America. 7.20, Concert (cont'd.); Waltz (Oscar Strauss); Tous les Trois (Warren); La plus douce (Stalin); Nostalgie d'amour (Antoli); El guason (Pascal); Comment dire non (Kalal and Burke); La Java des Bouges (Beckand). 7.45, Commercial Prices, News, and Review of the Latin Press. 8.0, Popular Concert. 8.30, News and Weather. 8.40, Review by Jean Rioux. 8.45, Gramophone Music. 9.0, Ma Seigneur de Luxe—Comedy in Three Acts (Biraubeau), relayed from the Théâtre de Paris.

PITTSBURGH

(KDKA), 980 kc s, 306 metres; 50 kW. Relay by W8XK on 48.86 metres and 25.27 metres.—7.30 p.m., Radio Départs. 8.0, Radio Troubadours, from New York. 8.30, Wealth of Harmony, from New York. 8.58, Baseball Scores. 9.0, Tangedahl Orchestra, from New York. 9.30, Concert Favorites, from New York. 9.55, Baseball Scores. 10.0, The United States Government in Pittsburgh: Postal Activities, by J. B. Hershey. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Hotel Lexington Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, A Record, by Bill and Alex of the Bowtown Y.M.C.A. 11.45, Jack Pettis and his Orchestra. 11.59, Time Signal. 12 Midnight, American Taxpayers League, from New York. 12.15 a.m. (Sunday), Al Mitchell's Orchestra, with Baritone Solos, by Everett Marshall, from New York. 12.30, Homely and Old-fashioned Quartet. 12.45 to 2.0, New York Relay. 12.45, Irene Bordoni and Emil Coleman. 1.0, John Commission on Emergency in Education. 1.15, The Leaders. 1.30, Kaltanneyer's Kindergarten. 2.0, Programme to be announced. 3.0, Programme to be announced.

PORSGRUND.—See Oslo.

POZNAN

896 kc s, 335 metres; 1.0 kW.—7.0 p.m., Theatre Notes and Programme Announcements. 7.5, News. 7.28, Time Signal. 7.30, See Warsaw. 10.0, Time Signal, Sports and Police Notes. 10.5, See Warsaw. 10.40, Announcements. 10.50, Dance Music, relayed from the Café Polonia. 11.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—4.10 p.m., See Bratislava. 5.0, Report on the Masaryk Games. 6.5, Agricultural Talk. 6.15, Talk for Workers: Social Problems in the Far East. 6.25, News in German. 6.30, German Transmission: Pianoforte Recital of Chopin's Music, with Commentary. 7.0, Chimes and News. 7.10, Music Review. 7.25, See Brno. 8.0, Gramophone Records of English Tattoos. 8.15, See Bratislava. 10.0, Time, News and Sports Notes. 10.15, See Moravská-Ostrava. 11.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; and Geneva, 395 kc/s, 760 metres.—7.0 p.m. (from Geneva), Talk: Across India. 7.30 (from Geneva), Weather and News. 8.0 (from Geneva), Hawaiian Guitar Recital. 8.30 (from Geneva), Review of the Week. 8.40, Concert by the Station Orchestra. 9.25 (from Geneva), Whistling Solos. 9.50, News and Weather. 10.0 (from Geneva), Talk: The Work of the League of Nations. 10.20 (from Geneva), Dance Music by the Broadcasting Serenaders, conducted by J. M. Pasche. 11.30 (approx.), Close Down.

REYKJAVIK

250 kc s, 1,200 metres; 21 kW.—9.5 p.m., Programme for Children. 9.30, Weather Report. 9.40, Musical Programme and Announcements. 10.0, Chimes and News Bulletin. 10.20, Talk. 11.0, Concert by the Station Trio and Choral Music on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 1RO, 680 kc s, 441 metres; 50 kW. Relay by Naples, 941 kc s, 319 metres, and 2RO, 11,810 kc s.—1.0 to 2.15 p.m., Orchestral Concert of Light Music. In the interval from 1.30 to 1.45, Giornale Radio and Exchange. 4.30, Children's Radio Review. 4.45, Announcements. 5.15, Reading. 5.30 to 6.15, Orchestral Concert: Pensiero nostalgico (Wassil); Suite campestre (Amadei); Serenata (Galli); La Filieuse (Raff); Descriptive Piece (Mendelssohn); Staccato (Albeniz); Niobe (Petralla). 6.40 (Naples), Shipping and Sports Notes. 6.50, Announcements. 7.0, Tourist Report. 7.10, Lesson in Morse. 7.20, Announcements in Various Languages. 7.40, Giornale Radio. 8.0, Time and Announcements. 8.30, Announcements. 9.0, Gala Concert in Honour of the Pioneers of Italian Broadcasting. 10.55, Giornale Radio.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 590 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—11.45 p.m., Stock Reports. 12 Midnight to 3.0 a.m. (Sunday), New York Relay. 12 Midnight, Kaltanneyer's Kindergarten. 12.30 a.m., The Economic World Today. 1.0, Band of Famous Brands. 1.15, Zora Layman and her Debonairs. 1.30, K-7, Secret Service, Spy Story. 2.0, B. A. Rolfe and his Terraplane Orchestra. 3.0, Programme Resume.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.59 a.m., Time Signal from Neuchâtel Observatory and Weather Report. 12 Noon (from Berne), Gramophone Music. 12.30 p.m., News. 12.40 (from Berne), Gramophone Music (cont'd.). 1.25 (from Berne), Exchange, Time, and Weather. 1.30 (from Zürich), The Listeners' Quarter of an Hour. 1.45 (from Zürich), Book Review. 2.15, Gramophone Records. 2.45 (from Zürich), Talk on Guatemala. 3.30 to 5.0, Interval. 5.0 (from Zürich), Accordion Band Concert. 5.30 (from Zürich), Gramophone Music. 6.0 (from Zürich), Medical Talk on Hygiene. 6.30 (from Basle), Programme in Dialect. 7.0, Chimes from Zürich Churches. 7.10 (from Basle), Time, Weather, and News. 7.15 (from Basle), Gramophone Music. 8.0 (from Basle), Talk. 8.30, Song Recital by Hermann Schey. 9.10, Weather and News. 9.20 (from Basle), Concert of Popular Music. 10.20 (from Basle), Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Technical Talk. 4.20, Concert of Light Music. 5.0, Weather Report. 5.20, Programme for Children. 6.0, Concert of Gramophone Music. 7.0, Microphone Report. 7.15, Weather and News. 7.30, Dialogue. 7.45, Talk. 8.15 (from Göteborg), Old-Time Dance Music. 9.0, Concert of Light Music. 9.45, Weather and News. 10.0 (from Göteborg), Modern Dance Music. 12 Midnight (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—11.30 a.m., Gramophone Records. 12.45 p.m., News. 1.0, Time Signal. 1.1, Exchange Quotations. 1.5, I Pagliacci—Opera (L'oncavallo), on Gramophone Records. 2.0, Legal Talk in German. 2.15, Cavalleria Rusticana—Opera (Mas-

cagni), on Gramophone Records. 3.15 to 3.45, Interval. 3.45, Music Talk in French: Richard Wagner. 4.0, Concert by the Station Orchestra, conducted by M. de Villers. Part I, Music by Wagner: Prelude and the Death of Isolde, from Tristan und Isolde; Airs from Parsifal; Overture, The Mastersingers. Part II, Music by Liszt: Les Préludes: Pannofarie Solos: (a) Waldesnacht. (b) Jeux d'eau de la Villa d'Este. (c) La Leggerozza; Hungarian Rhapsody No. 12; Extracts from The Ungarische Krönungs-Messe; Rakoczy March. 6.0, Tourist Talk in French. 6.15, French Lesson. 6.30, Orchestral Concert, conducted by M. Roskam: Marche parisienne (Ganne); Waltz, Tout Paris (Waldteufel); Selection from La Belle Hélène (Offenbach); Violin Solo, Liebesleid (Kreiser); Suite pour mes petits amis (Pétre); Marche de France (Gauthier). 7.15, Horticultural Talk in German. 7.30, Time. 7.31, News. 7.45, Gramophone Music. 8.15, Press Review in German, Lottery Results, and Announcements. 8.20, Reception of the Great Britain and France Association, relayed from the Prefecture—Programme of Speeches by M. de Wittgenitz, President, M. Roland Mareel, Prefect for the Lower Rhine, and Viscount Burdman, President of the British Delegation. 9.0, Concert in connection with the International Song Festival, relayed from Colmar: The Colmar Symphony Orchestra, conducted by M. Lochbammer, and Mixed Chorus; Overture, Les Francs-Juges (Berlioz); Chorus and Orchestra: Joshua Nayin, based on Hebrew Themes (Moussorgsky); Basle Double Quartet: (a) Meine Heimat (Ackermann), (b) Mutterliebe (Kirchhoff) (Municipal choir); (a) Les Caprices de la Mé (Gourgaud-Ducoudray), (b) Le chant du Travail (de la Tombelle); Marche Héroïque (Saint-Saëns); Barcarolle (Mendelssohn); Fugue (Bach); Ode à la jeunesse (Saudier); Choir; (a) L'Été de la Saint-Martin (Marréchal), (b) Le Gave (Kunc); Mixed Choir and Orchestra: Waltz, Wine, Women and Song (Joh. Strauss). In the interval, Press Review in French and Talk on Colmar.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relay by Freiburg, 527 kc/s, 570 metres.—12.20 p.m., Tenor Song Recital by Karl Jantz: Songs (Sehnbert): (a) Im Abendrot, (b) Wanderers Nachtlied, (c) Am Meer, (d) Du bist die Ruh; Songs (Brahms): (a) Mainacht, (b) Feldeinsamkeit, (c) Meine Liebe ist grün, (d) Ständchen. 12.50, Gramophone Concert. 1.30, Concert from Langenberg. 2.30, Time and News. 2.45, Talk on Flowers. 3.10, Humorous Anecdotes. 3.30, Programme for Children. 4.30, See Frankfurt. 5.45, Time and Sports Report. 6.0, Talk: German Art. 6.25 (from Freiburg), Talk by Heinrich Höfler. 6.50, Time and News. 7.0, Transmission for all German Stations, relayed from Berlin (Deutschlandsender). 8.0, Silecher Concert, relayed from the Liederhalle; The Stuttgart Choral Society, conducted by August Kiesz; Sanctus; Die drei Röslein; Der traurige Bua; Reiters Morgenlied; O wie herbe ist das Scheiden; Herz; Tanzlied; Wolin mit der Fremd; Liebewohl; Juchhe, dich muss ich haben; Abschied. 9.0, Swabian Variety Programme, relayed from the Stadt-Garten. 10.20, Time and News. 10.45, Dance Music relayed from Berlin (Witzleben). 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—Transmissions irregular owing to fire.—7.0 p.m., Chansonnettes. 7.15, Horse Racing Results and News. 7.25, Local News. 7.30, Opera Music. 7.45, Hawaiian Guitar Solos. 8.15, Light Music. 8.30, Military Music. 8.45, Pasodobles. 9.0, Extracts from Le Petit Duc (Lecocq). 10.0, Dance Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. W. Brown-Constable announcing. 11.30, Variety Music: You'll die if you worry; Murder in the Air; The Day I went to Wembley; Yodelling Solomon; Old Time Song Medley; Oh! how he looks at me; Laughing Chari. 11.57, I.B.C. Good-night Melody. 12 Midnight, News, Weather and Announcements. 12.5 a.m. (Sunday), Concert of Balalaika Music and Russian Songs. 12.15, Orchestral Music. 12.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—5.10 to 6.0 p.m., See Turin. 6.0 to 6.35, Interval. 6.35 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s,

500.8 metres.—5.10 to 6.0 p.m., Gramophone Records of Variety Music. 6.35, Giornale Radio, Lottery Results, Agricultural Report, and Dopplavoro Announcements. 7.0, Time and Tourist Talk. 7.10, Gramophone Records: Mamma mia che voi sapè (Nobile); Un po' d'amore (Nucci-Carabella); Corone (De Curtis); Voce lontana (Boni-Montenero); Tango del passato (De Angelis). 7.20, Giornale Radio. 7.45, Gramophone Music. 8.0, Announcements. Giornale Radio, Weather, and Gramophone Music. 8.30, Talk: Events and Problems. 8.45, Band Concert. In the interval, Review of Books and Announcements. 11.0, Giornale Radio. 11.5, (Florence only), Dance Music from the Chez moi Rajola. 11.30 (approx.), Close Down.

VATICAN CITY

15,120 kc/s, 19.81 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening). 10 kW. 11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 1.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,059 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.45 p.m., Concert by the Vienna Mercantile Song Society. 5.30, Gala Concert by the Federal Railways Orchestra, with the Results of their First Lottery, relayed from the Kurpark, Baden. Lottery Results in the interval. 6.30, Talk: Miracle Plays. 6.50, Variety Programme. 7.5, Topical Talk. 7.15, Programs. 7.20, Time, Weather and News. 7.30, A Microphone Visit to the Presses of Linz. 8.0, Concert of Drinking Songs and Dance Scenes from Operas: The Vienna Folk-song Orchestra, conducted by Theodor Christoph; Soloist, Josef Kalenberg (Tenor): Baccanale from Fandhäuser (Wagner); Drinking Song from Cavalleria Rusticana (Mascagni); Waltz and Drinking Song from Faust (Gounod); Drinking Song from Carnival in Rome (Joh. Strauss); Almie's Dance from Diamant (Bizet); Drinking Song and Waltz from Die Fledermaus (Joh. Strauss); Drinking Song from Alessandro Stradella (Plotow); Polka and Furlant from The Bartered Bride (Smetana); Drinking Song from Othello (Verdi); The Apprentices' Dance from The Mastersingers (Wagner); Orgy Scene from The Huguenots (Meyerbeer). 9.0, Radio Report from the Grimzing Wine Festival. 9.45, News, Weather, and Announcements. 10.0, Dance Music by the Charly Gaudriot Band, from Titány's Park-hotel, Schönbrunn.

WILNO

533 kc/s, 563 metres; 16 kW.—6.55 p.m., Programme Announcements. 6.0, Divine Service, relayed from the Ostra Brama Chapel. 7.0, Programme to be announced. 7.10, Miscellaneous Items. 7.15, Talk: The Miraculous Apparition of the Virgin Mary in St. Michael's Church, Wilno. 7.30, See Warsaw. 8.0, Request Gramophone Music. 9.0, Programme relayed from Warsaw. 12 Midnight (approx.), Close Down.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—11.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Gramophone Records. 1.10, Weather Report. 1.15, Educational Programme relayed from Lwów, 788 kc/s, 381 metres. 1.55 to 3.10, Interval. 3.10, Economic Notes. 3.25, Answer to Military Correspondence. 3.35, Programme for Children, relayed from Lwów. 4.0, Gramophone Records. 4.40, Talk: Queen Edwiga. 5.0, Gramophone Concert. 5.35, News. 5.40, Topical Talk. 5.55, Programme announcements. 6.0, Divine Service relayed from the Ostra Brama, Wilno. 7.0, Miscellaneous Items. 7.20, Agricultural Note. 7.30, Topical Talk. 7.45, Radio Journal. 8.0, Concert by the Station Orchestra, conducted by S. Naviot; Soloists, Ida Los (Musical Saw) and M. Reintgen (Songs): Mazurka (Narysowsky); Ballet Suite (Gyldenmark); Musical Saw Solos: (a) Chanson triste (Tchaikovsky), (b) Wiegandli (Brahms), (c) Sicilienne (Pergolesi); Asiatic Suite (Yoshimoto); Songs with Guitar Accompaniment: Waltz, Wiener Bitt (Strauss); Tarentella, Capodimanto (Solazzi); Mazurka (Cabella); Musical Saw Solos: (a) Waltz (Baur), (b) Tango (Front-Perszko), (c) Air (Gua-Arnhim); Selection from The Circus Princess (Kálmán); Songs with Guitar Accompaniment: Oherck (Sonnenfeld); Cracovienne (Rajczak); Czardas from Der Cist des Vojevodan (Grossmann). In the interval, Sports Notes and Radio Journal. 10.5, Chopin Pianoforte Recital by Z. Drewiecki; Nocturne in F. Op. 15, No. 1; Ballade in F. Op. 38; Etude in A Flat, No. 2; Three Mazurkas in A Minor—Nos. 4, 5, and 42; Boreense; Waltz in E Minor. 10.40, Talk. 10.55, Aviation Weather Report at 1 Police Notes. 11.0, Dance Music. In the interval, News for Members of the Polish Polar Expedition. See Schweizerischer Landessender.



A companion product to the reliable Westinghouse Metal Rectifier, the new WESTECTOR is likewise mechanically and electrically stable. Its characteristics are definite and lasting, and, although it does not magnify, its output is practically distortionless. It will handle large H.F. inputs, and, once installed, requires no further attention or renewal.

It's worth while knowing more about this new high-frequency metal detector. Post the coupon TODAY and get full particulars.



To Westinghouse Publicity, 82, York Rd., King's Cross, London, N.1
Please send me particulars of the Westector.

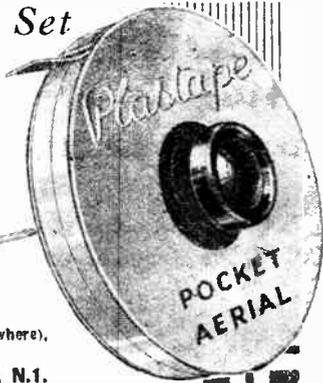
Name _____
Address _____

W.W. 275

ENJOY SUMMER RADIO WHEREVER YOU GO!
Makes any Battery Set a-TRANSPORTABLE

PATENTS PENDING

No matter whether you wish to take your radio to another room, into the garden, the car, or on your holidays, you can do so with the handy "Plastape" Pocket Aerial. Just fix to the Aerial Socket - it is instantly run out to the desired length and wound in again with the same ease as a tape measure. The ten copper conductors being spaced and insulated with three rubber-impregnated tapes ensures wonderful selectivity and no vol. amp. anywhere!



Price, complete with 30 ft. Aerial **8/6**
WHY NOT? Summer Evening Music in the Garden - "PLASTAPE" SPEAKER EXTENSION in the handy POCKET REEL.
30 ft. length, complete in winding case. **8/4.**

Obtainable from **CURRY'S** (Branches everywhere), or all good radio dealers. Particulars from **KENDEN LTD., 134, Pentonville Road, N.1.**

You'll recommend it to your friends OSBORN RADIO-GRAM CABINET FOR 70/-



Model No. 234. - Beautiful Queen Anne style Radio-Gram Cabinet 3' 3" high x 2' 6" wide x 1' 6" deep. Takes panel 19" x 12" or smaller. Ample room for any type of gramophone motor including Garrard Automatic Record Changer and largest H.T. and L.T. batteries made. Accommodation for 35 records each side of set. By omitting records storage, cabinet takes panel 27" long. Height between baseboard and motor-board 12 1/2".

PRICES. Machined Ready to Assemble Kit of Parts, Oak £3.10.0. Mahogany £3.15.0. Walnut £4.10.0. Assembled ready to polish: Oak £4.10.0. Mahogany £4.15.0. Walnut £5.10.0. Assembled and polished: Oak £5.10.0. Mahogany £6.5.0. Walnut £7.5.0. ALL MODELS CARRIAGE PAID.

CHAS. A. OSBORN. Regent Works, Arlington St., New North Road, London, N.1. Tel.: Clerkenwell 3693. Showrooms, 21, Essex St., Islington, N.1. Tel.: Clerkenwell 6634.

OSBORN SUPER ACOUSTIC Baffle Board prevents 90% speaker worry. Any size hole cut. **FREE.** Guaranteed no vibration. 18" x 18" Size: 24" x 24" £4.0. 30" x 30" £4.5. 36" x 36" £11.3. Carr. paid U.K. **SEND FOR FREE SAMPLE.**

Write for Free CATALOGUE.

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

A SOLUTION TO YOUR INTERFERENCE PROBLEM.

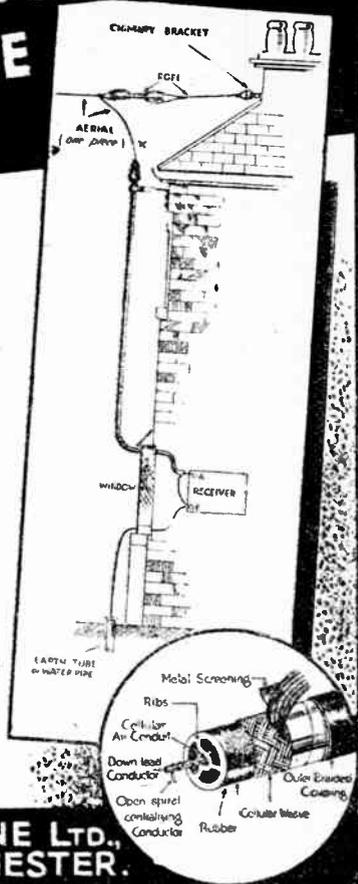
MAN MADE INTERFERENCE ELIMINATED
Baffling problems Solved by the
"GOLSTONE" Regd. AIR-SPACED METAL-SCREENED DOWN-LEAD

FREE TECHNICAL SERVICE.

Let the "Golstone" Technical Dept. solve your interference problem. Send request for Interference Elimination Form, and descriptive folders.

Extract from "Wireless World," Mar. 17th, 1933.
TEST REPORT ON "GOLSTONE" AIR-SPACED METAL-SCREENED DOWN-LEAD.

A practical Test made under conditions where interference is normally heavy, proved highly successful. Signal to noise ratio was improved to a more-than-acceptable extent; indeed, certain forms of interference disappeared entirely.



WARD & GOLDSTONE LTD., PENDLETON, MANCHESTER.



Power Amplifiers and P.A. Equipment

for Fêtes, Sports Grounds, Restaurants, Public Halls, etc. Powerful output with purity of reproduction. B.S.R. Equipment is moderate in price and gives trouble-free operation.

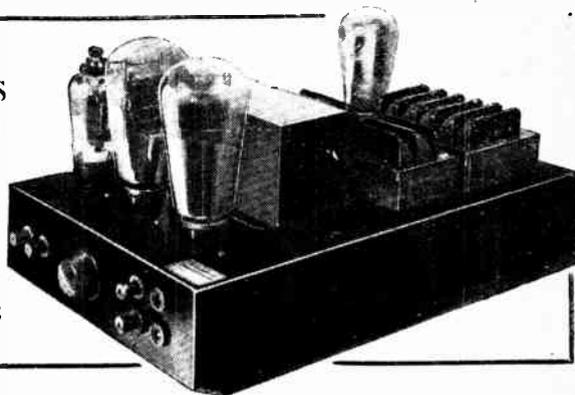
"... a very high standard in reproduction... undoubtedly in a class apart" - WIRELESS WORLD

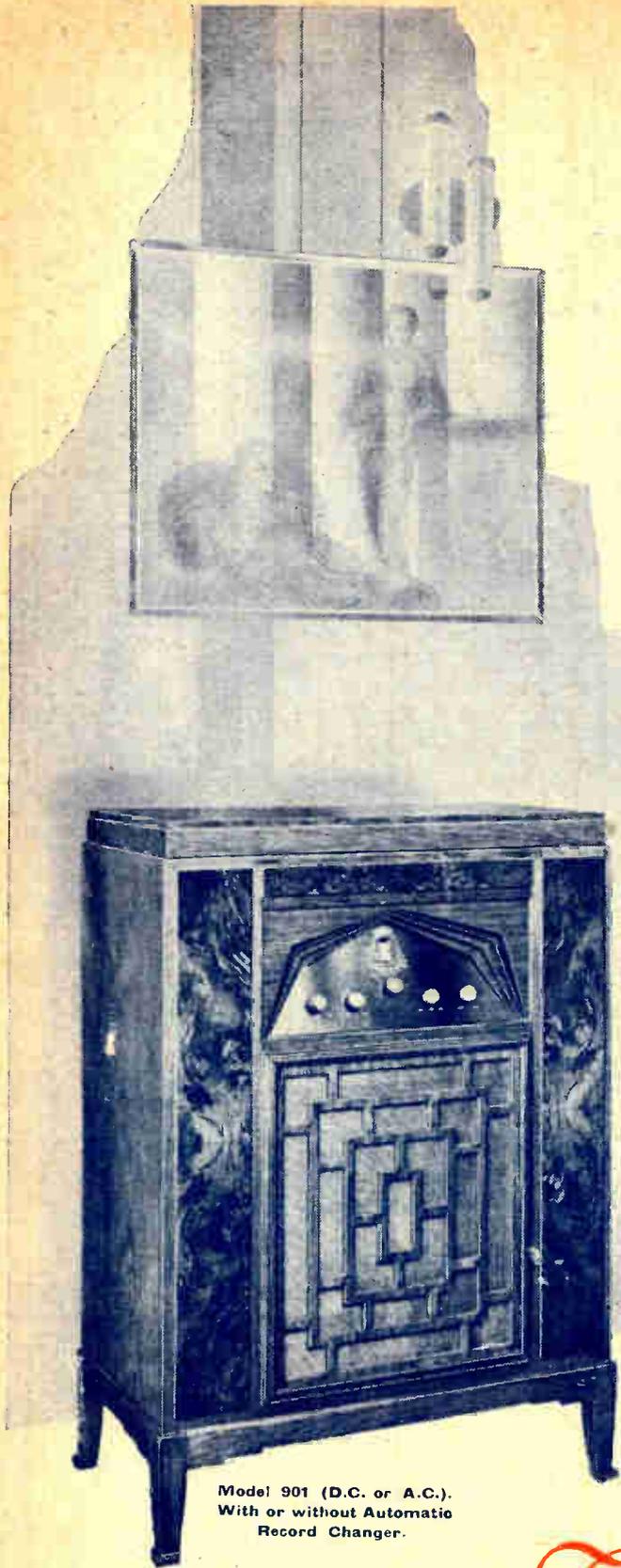
A 120 watt B.S.R. Amplifier has been installed on Blackburn Greyhound Racing Stadium. The Directors have expressed their "entire satisfaction at what they described as a perfect and unqualified success."

BIRMINGHAM SOUND REPRODUCERS, LTD., CLAREMONT WORKS, OLD HILL, STAFFS.
Phone: Cradley Heath 5370. Grams: Electronic Old Hill.

STANDARD AMPLIFIERS from 25 to 120 WATTS.

You will eventually instal B.S.R. Do so NOW.





Model 901 (D.C. or A.C.)
With or without Automatic
Record Changer.

R·G·D

MODEL 901

DELAYED A.V.C.

This well-known 9 valve Supersonic Radio Gramophone now incorporates Delayed Automatic Volume Control. Fading is overcome by this device which maintains the volume level over a widely differing range of signal strength.

A double diode valve is used for this purpose, one half rectifying the carrier frequency to produce the required bias for the variable mu valves, while the other diode functions independently as detector. Delayed automatic volume control has one great advantage over the more simple A.V.C. The control is inoperative on weak signals which are insufficient to load up the amplifier, while on powerful stations the control comes into full operation avoiding blasting and overload, without curtailing the maximum sensitivity.

Delayed A.V.C. can be incorporated in existing instruments (Models 901 D.C. & A.C.). Particulars will be sent on application.

Illustrated descriptive literature relating to Model 901 and Model 701 sent post free on request.

R·G·D

The Ultra Modern Radio Gramophone

RADIO GRAMOPHONE DEVELOPMENT CO., LTD.
17-20, FREDERICK ST., BIRMINGHAM.

Manchester: 17, Bridge Street. London: 40, Doughty Street, W.C.1

Holtens

OLYMPIA'S PRIZE-WINNER FOR TWO CONSECUTIVE YEARS