

The WIRELESS RETAILER and Broadcaster

**A WEEKLY REVIEW
OF THE RADIO,
TELEVISION AND
ELECTRICAL TRADES**

No. 519 Vol. 34

OCTOBER 1, 1938



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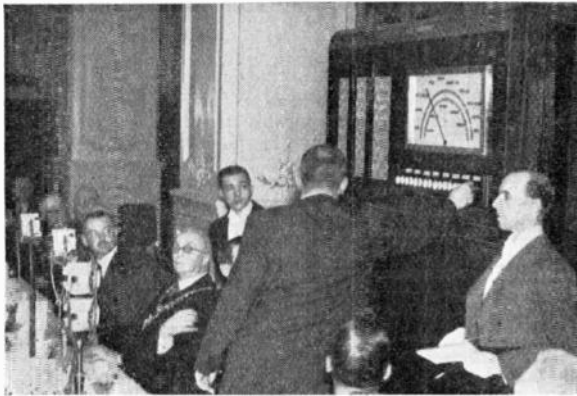
The WIRELESS RETAILER and Broadcaster

No. 519

Vol. 34

OCTOBER 1, 1938

Odhams Press, Ltd., 29, Bedford Street, Strand, London, W.C.2. Temple Bar 2468.
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With apt gesture, Mr. John Coatman, North Regional Director of the B.B.C., opened the Manchester Show. He pushed a button on this giant "receiver," lights flashed and the dial pointer swung to North Regional. The Show is open all next week.

Opened by Push Button!

A variety theatre giving three performances a day and competitions at the Exhibition itself are proving a big draw.

A receiver is presented every day to the person who passes through the turnstiles at a given time.

The *Manchester Evening Chronicle* and Marconiphone are running a spotting contest. Prizes of receivers, listening licences, cuff-links, brooches and cash, numbering 200 in all, are being awarded to persons "spotted" by watchers in the Bolton district on Tuesday.

As usual, the annual ballot for the best-value receiver at the Exhibition is being held. At present, Marconiphone hold the cup which is presented annually to the firm making the best-value set.

The theatre show has a strong radio flavour and features the broadcasting star Nosmo King, with his friend Hubert, and Judy Shirley, the singing announcer of "Monday Night at Seven."

Other acts are Forsythe, Seamon and Farrell, Eve Becke, Jack Watson and Geoffrey Warner. "The Bouquets," from the Spa Theatre, Scarborough, are presenting a programme of songs, dances, sketches and ballets.

The theatre has a seating capacity of 1,500, and prices of admission are definitely "popular"—6d. to 1s. 6d.

Television receivers are not on show, and announcements to the effect that television will not be available in the area for a long time yet have been included in retailers' publicity.

The Exhibition is open daily from 11 a.m. to 10 p.m.

Forty-six Stands

Colourful and well dressed, the stands, 46 of them, feature electrical goods and musical instruments as well as radio.

Ferranti installed the P.A. equipment. An interesting historical unit is the Marconi 2LO transmitter.

Of the dealers' group stands, the two most outstanding are those of the Marconimen (9) and the Murphy dealers (25).

Firms who took space at the last minute are W. E. Beardsall and Co., Ltd., Thorn Electrical Industries, and Smith, Sons and Co., Ltd.

The complete list of exhibitors is as follows:—

Allied Newspapers, Ltd.; W. E. Beardsall and Co., Ltd.; Belling and Lee, Ltd.; B.B.C.; British Pix Co., Ltd.; E. K. Cole, Ltd.; C.W.S., Ltd.; A. C. Cossor, Ltd.; Fred Dawes; Econasign Co., Ltd.; Electric House (Denton), Ltd.; Ferguson Radio Corp., Ltd.; Ferranti, Ltd.; H. Foster; General Electric Co., Ltd.; Hardman and Co., Ltd.; Holiday and Hemmerdinger, Ltd.; Institute of Radio Engineers; Kolster Brandes, Ltd.

(Continued on page 2.)

'Visit to Manchester Show Essential'

says R.M.A. Chairman

MANCHESTER Radio Exhibition, being held in the City Hall until October 8, was launched on Tuesday with a "push-button opening."

Mr. John Coatman, North Regional Director of the B.B.C., performed the opening ceremony at a trade luncheon given at the Midland Hotel by the *Manchester Evening Chronicle*, who, with Provincial Exhibitions, Ltd., sponsor the exhibition.

Turning to a huge model of a radio receiver, erected behind the main table, Mr. Coatman seized one of the knobs and pushed it home. Immediately the dial of the set illuminated, the pointer rested on North Regional, and a tri-coloured neon sign flashed into prominence.

Listeners' Utopia

The Hon. Lionel Berry, who presided at the Midland Hotel luncheon, said the Manchester Radio Exhibition had its periods of ups and downs, but he was confident that, all circumstances considered, this year's show was one of the most comprehensive and attractive of the series that started in 1924.

"Year after year the brains of the Radio Trade are revealing more and more marvels to ensure trouble-free listening, to take us nearer the Utopia of perfect listening."

Before declaring the Exhibition open, Mr. John Coatman, C.I.E., recalled not long ago describing the R.M.A. and the B.B.C. as the heavenly twins of broadcasting. He was wrong. There was a third member of the fraternity—the Press. Actually they were triplets.

In the Northern Region they were probably more radio-minded than any other part of the country. Two and a half million licences, about 65 per cent. of the estimated households, had been taken out, so that saturation point was by no means reached.

Concerning television, Mr. Coatman said: "There are certain obstacles in the way of television coming north. At present the Post Office is examining these problems."

Major L. H. Peter (chairman of the R.M.A.) said this year there were so many improvements in radio receivers and in the method of operating them that a visit to the Exhibition should be an essential appointment of every listener in the Manchester area.

Other speeches were made by Mr. V. de Ferranti and the Lord Mayor of Manchester (Sir William Kay).

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Where to Join London Signals

COLONEL G. D. OZANNE, M.C., Deputy Chief Signals Officer, London and District, is receiving requests for information from various people in the Radio Industry, and informs us that the following are the Territorial Signal Units in the London Area:—

City of London Signals, 20, Atkins Road, S.W.12.

London Corps Signals, Fulham House, S.W.6.

Cavalry Divisional Signals, Duke of York's Headquarters, S.W.3.

44th Divisional Signals, Stamford Brook Lodge, W.6.

54th Divisional Signals, Bay Lodge, Lee Green, Stratford, E.15.

Applications for joining these units should be made in writing to the Adjutant, giving full particulars of technical qualifications.

W.R.A. Offers Services for Defence

ON Monday, W.R.A. National Council offered the services of its organisation and its members, particularly in a P.A. capacity, to the Minister for the Co-ordination of Defence.

The letter pointed out the Association had members in all important towns in the country, at least 90 per cent. of which were fully equipped with P.A. equipment.

R.G.T.G.A. to Change Name?

A SPECIAL meeting of the Radio and Gramophone Trades Guardian Association, Ltd., is to be held on Tuesday, October 18, to consider changing the name of the organisation to the Radio and Electrical Trades Guardian Association, Ltd.

Sun Electrical Co., Ltd.—The net profit to April 30 this year amounts to £19,445, against £19,219, and the dividend is maintained at 5 per cent. A sum of £2,000 has been transferred to reserve and £5,196 carried forward. The total turnover, says the report, is slightly increased despite a falling off in the radio section of the business.

Joseph Lucas, Ltd.—The net profit for the year to August 7, after providing for income tax and other charges, amounts to £319,626, as compared with £348,798. The dividend is maintained at 15 per cent.

Electric and Musical Industries profit for the year to September 30 is £146,000 (subject to audit), compared with £313,964 for 1936-37. The ordinary dividend is 5 per cent., as against 10 per cent. last year.

A. C. Cossor, Ltd.—It is understood negotiations are taking place regarding the shares in A. C. Cossor, Ltd., held by Ismay Industries, Ltd., presumably with a view to their sale. The present Ismay holding gives them a controlling interest in Cossor.

National Organisation for Electrical Dealers

Backed by E.C.A. and N.E.C.T.A.

NATIONAL organisation for retailers of domestic electrical equipment who are not electrical contractors is being arranged by the National Electrical Contractors' Trading Association, which is allied to the Electrical Contractors' Association.

The new body which has been formed is known as the National Association of Electrical Retailers, and its director and secretary is Mr. L. C. Penwill. Headquarters are at the N.E.C.T.A. offices, Africa House, Kingsway, London, W.C.2. The annual subscription to the new organisation, N.A.E.R., is a guinea a year.

Membership is open to all bona-fide electrical retailers no matter what other branches of retailing they may carry on.

Objects and benefits of membership have been grouped into seven points. They are:—

To promote the status of electrical retailers—to set up a register—and to secure within the inner councils of the electrical industry due recognition of their services and needs;

To promote the education and electrical appreciation of electrical salesmen to the end that the public may be well served in a technical branch of retail distribution;

To put quality before price and to cut out the sale of unsafe appliances;

To secure standardised terms and con-

ditions in keeping with the difficulties and costs of electrical retail distribution.

To cut out all price-cutting and discount snatching;

To give individual advice and assistance to members and to take collective action on their behalf; and

To watch all electrical retail trading developments and to negotiate financial benefits for members.

In introducing this new organisation it is pointed out that in addition to contractors, sales of domestic electrical appliances are handled by departmental stores, furnishing houses, builders, plumbers, ironmongers and music dealers. The N.A.E.R. has been formed to provide a central electrical retailers' organisation to represent all such forms of electrical retailing.

N.E.C.T.A., it is added, was formed some 22 years ago to safeguard the business interests of contractors and retailers and this body always paid the closest attention to retail trading problems.

Electrical retailers had felt, however, that N.E.C.T.A. was essentially a contractor organisation under contractor control. To meet this objection N.A.E.R. had been formed as a purely retailer organisation under appropriate retailer control.

The new body will have the full weight of the E.C.A. and N.E.C.T.A. organisations behind it.

Manchester Show Golf Prize List

SIX major prizes and a number of mystery awards are to be competed for at the Manchester Exhibition golf meeting, to be held at Davyhulme Park, Manchester, to-morrow, Sunday.

The meeting has been organised jointly by Allied Newspapers, Ltd., and the Lancashire and Cheshire R.I.G.S. committee.

The competition will take the form of an 18-hole medal round, the first prize for the best card returned being the *Evening Chronicle* Exhibition Challenge Cup and replica, presented by Allied Newspapers, Ltd. Second prize for the runner-up has been presented by the *Wireless Trader*.

For the best gross score, Provincial Exhibitions, Ltd., have presented a third prize; while the Hon. Lionel Berry has presented two prizes for the best nett scores, one for handicaps of 1 to 14, and one for handicaps of 15 to 24.

Sixth prize, presented by Lancashire and Cheshire R.I.G.S., is for the best nett score over six hidden holes.

The mystery prizes have been presented by Messrs. Eric W. Cheadle and L. Dean, of the *Evening Chronicle*, and the nature of the contests for these is not to be divulged until the prize-giving.

After the competition proper there is to

be a putting contest for a prize given by Mr. J. H. Farthing, President of Lancashire and Cheshire R.I.G.S.

Davyhulme Golf Club is some eight miles from Manchester, and coach transport has been arranged, leaving the Manchester Town Hall at 10.30 a.m.

Lunch Club Fixture

IN sending notices for the next meeting of the Manchester Radio Trades Luncheon Club, to be held on Monday, when Mr. G. J. Freshwater, sales promotion manager of the Marconiphone Co., will give an address on "If I were a dealer." Mr. R. H. Ellis (secretary of the Club) intimates that all the standholders have been invited.

MANCHESTER EXHIBITORS

(Continued from page 1.)

Mercantile Credit Co., Ltd.; *Manchester Evening Chronicle*; Marconiphone retailers; J. D. Morrison and Co.; Murphy retailers; Northern Radio Rentals Corp., Ltd.; Northern Steel and Hardware Co., Ltd.; Philco Distributors (Lancashire), Ltd.; Price and Co., Ltd.; Philips retailers; Priestly and Ford, Ltd.; Radio Rentals, Ltd.; Ridings Stores, Ltd.; Rezentone Products, Ltd.; G. Robinson and Sons, Ltd.; Royal Air Force; Smith, Sons and Co., Ltd.; Will Stewart; Thorn Electrical Industries; Trader Publishing Co.; Whiteley Electrical Radio Co., Ltd.; and Wireless Retailers' Association.

PUSH-BUTTON LUNCH AT OPENING OF NORTHERN RADIOLYMPIA



All sections of the Trade, the B.B.C. and the Press gave the Manchester Show a hearty send-off at the "Manchester Evening Chronicle" lunch on Tuesday. Mr. John Coatman, B.B.C. North Regional Director, and Major L. H. Peter, R.M.A. Chairman, were among the speakers.

NAMES in the NEWS

MR. H. C. RAWSON announces that he resigned from John Ismay and Sons, Ltd., in mid-August and from other subsidiary companies of the Ismay group in mid-July. He severed his connections entirely at the end of September. Trade friends may communicate with him at South Lodge, Second Avenue, Westcliff-on-Sea, Essex. (Southend 2125.)

Mr. C. Gilbert Hibbard has decided to retire from business. (Gilberts (Hull), Ltd., is buying the goodwill of C. Gilbert and Co., Ltd., and will be taking over 81, Arundel Street, Sheffield.)

Mr. Bert Bryan (of hotel fame), who is brother of **Mr. Harry Bryan**, of Selecta Gramophones, Ltd., has disposed of Jervis Court, Bournemouth, and purchased the old-established business of H. Austin Storry, Ltd., 14-16, Palmerston Road, Southsea. The business is personal to Mr. Bert Bryan.

Mr. Patrick B. Belfield has now resigned his position as manager of the Birmingham Branch of Bankers' Commercial Security, Limited, and Equipment Trust Company, Limited, and has accepted an appointment as manager of Forward Discount Company, Limited, 84, Colmore Row, Birmingham (Central 6112). Mr. Belfield is hon. secretary of the Midlands Luncheon Club.

Burglar Marconifan

A DISCRIMINATING burglar broke into the premises of Logan's Radio Services, Rutherglen, last week.

He took a Marconiphone 853 (17½ guineas when you pay for it) motor-tuned set from the centre of the window

But he did not seriously disarrange the display. He took another receiver from stock and placed it in the window's centre!

Lord Marks

LORD MARKS, C.B.E., J.P., M.I.M.E., A.M.I.C.E., chairman of the Columbia Graphophone Co., Ltd., and a director of Electric and Musical Industries, Ltd., died on Saturday, September 24, at the age of 80.

He joined the Columbia organisation in 1917, becoming chairman in 1921, and has been a director of E.M.I. since its formation in 1931.

Lord Marks has had a very distinguished career and was a noted civil engineer and patent expert. Educated at the Royal Arsenal School, Woolwich, and at King's College, London, he founded the firm of Marks and Clerk, patent agents and consulting engineers, in 1887.

He was knighted in 1911 for distinguished services and created a peer in 1929. During the Great War he held several important Government positions.

His connections were far reaching both at home and abroad, and he was a recognised authority on questions relating to world commerce.

Burndept Dealer Show

THERE is now being held in the Grosvenor Hotel, Manchester, an exhibition of the full range of Burndept all-wave radio receivers. It opened on Wednesday, September 28, and will be continued until October 5.

One thousand retailers in South Lancashire, including Manchester and district, Cheshire and North Wales, have been invited to see this particularly bright show, which is dominated by a display piece 6 ft. high and 7 ft. wide.

Some 30 or 40 instruments are on view. Mr. J. S. O'Brien, who is in charge of Burndept in Manchester, is in attendance.

SOUTH, SONS AND CO., LTD., of Manchester and Macclesfield, held an exhibition of radio and musical instruments in the Stanley Hall, Macclesfield, last week. Settings, display showcards, etc., were devised and created entirely by the staff. Mr. A. J. Howarth is manager of this branch.

Frank Heaver Forms Agency for Overseas Lines

FORMED to represent in this country the radio products of a number of overseas manufacturers, Frank Heaver, Ltd., was registered as a private company on September 23, with a capital of £1,000 and registered offices at Bush House, Aldwych, London, W.C.2.

Mr. E. Frank Heaver is permanent governing director and chairman. He was, until recently, sales manager of R. A. Rothemel, Ltd., and British Centralab.

The products of the firms represented by Frank Heaver, Ltd., cover a wide range of components and mouldings, and radio marine compasses. These will all be available for set manufacturers.

Firms at present being represented are Ad Auriema, Inc., New York; General Instruments Co., New York; F. W. Sickles Co., Springfield, U.S.A.; Yaxley Mallory Co., Indianapolis; Kurz Kaseh Co., Dayton, Ohio; General Communications Co., Boston, U.S.A.; Raytheon Production Co., Boston, U.S.A.; Crowe Name Plate and Manufacturing Co., Chicago; Astatic Microphone Laboratories, Youngstown, Ohio; Stevens Paper Mills, Windsor, U.S.A., and Alfa Radio, Brussels.

McMichael Annual Dance

MCMICHAEL RADIO held their 12th annual dinner and dance at the Castle Hotel, Windsor, on September 23.

Mr. Leslie McMichael welcomed the guests and read messages from some of those who were unfortunately absent, including Sir Glynn West.

He congratulated the sports club on organising the dinner and dance. And he said that thanks were due to the staff that again this year McMichael had sets that looked well, worked well, and would sell well.

Mr. H. F. Buckmaster spoke of the directors' thoughtfulness for the staff, and presentations were made to both Mr. McMichael and Mr. Klein.

Cups for the best "sports" of the year were then presented.

OUR OPINION — AND YOURS

Wireless Retailer & BROADCASTER

Odhams Press, Ltd., 29, Bedford Street, Strand, London, W.C.2. Temple Bar 2468.
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Clocks and Batteries

SIX and a quarter million homes have controlled-frequency electricity supply suitable for any of the synchronous clocks we describe in pages 19-24.

This is a huge market, for every home needs a *minimum* of two clocks, and many use three times this number.

Again this is an extra and trouble-free product which, as a radio dealer, you are fully qualified to handle. In your list of satisfied set customers you have an excellent opportunity for clock sales. Go to it!

NEXT week we will tell you exactly how many homes in your area can use synchronous clocks. You can plan a campaign.

Our "Survey of Wired Homes"—the only service of its kind provided by any radio trade paper—gives unique district-by-district data of homes on the mains in nearly 500 supply areas in Great Britain.

The total on D.C. now shows a decline from a million to 800,000, which total is less than the *increase* in A.C. homes for the year.

There are seven million homes on A.C., and two-thirds of the homes in the country are on the electric mains.

WHAT will happen to the battery market if the country continues to electrify half-a-million more homes every year?

This past week has supplied one answer. Crisis news precipitated a rush for portable sets.

Electric torches and battery hand-lamps are in demand, too.

Whether they are needed for emergencies or not, these sets and lighting accessories prove themselves useful when you once have bought them.

An extra set for the car, the garden, for rooms where there is no power point is a boon in most households. A torch can be used in the car, in the cellar, and in a dozen other places.

There is plenty of future for batteries, especially in the shop that sells them *actively*.

Are To-day's Sets Better than "Old Faithfuls"?

WHAT is the reaction of the ordinary listener to the modern trend in design? Do the public want gadgets, such as push-buttons, motor tuning and "magi-eye" indicators?

I have been in the business as dealer and service agent for something like 16 years. The greater part of this time has been spent in servicing receivers. This brings one into very close touch with customers, and one gets to know their likes and dislikes concerning their own instruments and also their feelings regarding the selling points stressed in advertisements.

It seems to me, thinking over many conversations I have had, that for the most part the present-day refinements are regarded with some suspicion. There is a tendency to consider them as merely selling stunts, unnecessary complications and possible sources of trouble and breakdown in a machine already sufficiently loaded up

YOU have views on how the Industry should be run, you wonder if other dealers are having the same business experiences—perhaps you have a good trade story to tell. . . . Then why not write a letter for this page?

with weak spots. I am by no means sure that this view is not at least partly correct.

Having had considerable experience of service troubles with receivers of all makes and ages, it is my view that the instruments of seasons 1936/7/8 do not compare at all favourably from the standpoint of reliability with sets of 1933/4/5.

Looking over records of service work during this period, it appears that 1934 instruments were the best for average performance and reliability. It is rather striking that most manufacturers have what appears to be a star line, in which trouble is almost non-existent, and it frequently happens that this model is one that is low down on the price-list.

One particular model which was introduced at the 1934 Exhibition has always stood out as being the most reliable job in the trade.

This particular instrument had one weak spot, the wavechange switch. Apart from this one comparatively trivial fault (a fault which, I would add, I have found to be by far the most prevalent in all makes and types), the reliability is of an unusually high order.

Curiously enough, after only one season, the makers dropped the model, and at Olympia, 1935, they introduced one to take its place, very closely following the same circuit design, but in a new overcoat, an "improvement" on the 1934 model, but certainly its inferior in reliability.

Another manufacturer whose name is a household word introduced in 1934 a design that was really revolutionary. This proved

to be, in the main, above the average for dependability, though curiously enough I encountered one or two individual instruments that were definitely dud.

Since 1934 I have not come across any particular model that is really outstanding for reliability. In my daily routine it is the exception to find serious trouble with instruments of 1934-35 vintage, whereas, sets of 1936-37 and 1938, though not so old are certainly bigger offenders, both as regards the frequency of breakdowns and the seriousness of the trouble.

Customers' Views

This view is often held by customers, as one is told by the owner of a modern receiver that "the old set never gave half the trouble that we have had with this one." Making all allowance for the fact that the owner of an up-to-date instrument is apt to be a bit peeved when trouble occurs and inclined to exaggerate the charms of the "old love," still I think there is a good deal of truth in his lament.

Apart from reliability, can one honestly say that the performance of receivers this year is any better than four years ago?

I would place the desirable points of a receiver in this order of merit:—

- (1) Reliability—and this I would place so far first as to leave other points almost non-starters.
- (2) Quality of reproduction, and with this point I would couple absence of back-ground noise.
- (3) Range, coupled with selectivity.
- (4) Appearance.

As a service engineer I would place accessibility before appearance, but this point would not appeal to the ordinary user.

Taking these four points individually, I say that as regards the first the present-day instrument is definitely behind those of four or five years ago.

On the second point, while it may be that by laboratory instruments the receiver of to-day gives reproduction that is more nearly theoretically perfect, still to the ordinary listener it is what his ear can appreciate that matters. I think most people who pay their ten bob will agree that they hear the items broadcast as nearly perfectly as makes no difference on their old friend of 1934-35.

On the third point, with the exception that for the years 1937-38 an all-wave range has become the general rule, I don't think it can be claimed that the receiver of 1934-35 is at all inferior. After all, for entertainment such as the average Bill Smith and John Brown requires, what is the real value of the ultra-short and short wave bands?

I will express no opinion as to whether this year's models are better or worse in appearance than their forerunners, but I would end with the question, "Have we progressed?"—DIEN, Sheffield.

THE LATE CUCKOO

by SIGGS



E. London on Interference

AN informative meeting at which Mr. J. Walters, of Belling and Lee, Ltd., spoke on the suppression of interference, was held by the Essex and East London W.R.A. branch at Mr. P. C. Harrop's premises, Brentwood, on Monday.

Mr. Walters said there were two forms of suppression. One at the source, the other at the receiver. They would be most interested in the latter, but he would first deal with the former and describe how interference arose, as this would help to clarify the subject.

These oscillations were conducted along or radiated by the mains. There were two interference components, symmetrical and asymmetrical. The symmetrical is that component flowing round the circuit. The asymmetrical exists between conductors and earth.

Very little interference was mains conducted. It was mostly radiated.

Chokes, he pointed out, would never cure interference on their own. An oscillating current could not be "resisted," only by-passed.

Having dealt with conducted interference, Mr. Walters went on to speak about radiated interference. Unfortunately, he said, it is impossible to prevent radiation, except by apparatus at the source of interference. The only way open to the listener is to reject it by using a special form of aerial.

The dipole aerial with a twisted lead down was not an anti-interference aerial, he stated. It was definitely very efficient on the short waves, because it was resonant on that wave-band.

Concentric Cable

The Post Office made the most definite step towards producing an anti-interference aerial by using a screened down lead. That was a 100 per cent. anti-interference with a metal earthed sheath. It worked well, but had one big disadvantage.

If more than 15 ft. of down lead was used it caused signal attenuation owing to its distributed capacity. As a result of this people evolved the type of aerial known as the transmission line type.

The capacity, inductance, and impedance were so worked out that no matter what the length, the whole lot balanced out. That was the theory. It did not quite work out like that in practice, but it was near enough.

He had, in the laboratory, even wrapped it round an electrical motor without getting interference. Another advantage of this type of aerial, not possessed by the dipole, is that it is non-directional.

He was in favour of the vertical aerial. It was better to have a short vertical aerial than a long horizontal one.

Using a 12 ft. vertical aerial against a 60 ft. horizontal type, one-fifth the signal strength might be expected, but actually the same strength was obtained with the two aerials at the same level. The vertical aerial used with a screened down lead had a greater efficiency because its signal strength to noise ratio was increased.

The average building, he said, had 90 per cent. of its metal, not including girders, set

ASSOCIATION

Future Events

- Brighton W.R.A.,** Tuesday, October 4, 8 p.m., Howard's Pavilion Restaurant, Brighton.
- Bury W.R.A.,** Monday, October 24, 10.30 a.m., British Legion Club, The Rock.
- Essex and E. London W.R.A.,** Monday, October 24, 8.30 p.m., Shaw Bros., Beehive Lane, Ilford.
- Gt. Yarmouth W.R.A.,** Wednesday, October 12, 8 p.m., Market Square.
- Liverpool W.R.A.,** Tuesday, October 18, 7.30 p.m., Cross Keys Hotel, St. Pauls Square.
- Lowestoft W.R.A.,** Tuesday, October 11, The Clarendon Stores.
- Manchester W.R.A.,** Monday, October 10, 2.30 p.m., Office of N. N. Lucas, Albert Square.
- N.W. Area Council W.R.A.,** Tuesday, October 4, 10.30 a.m., Office of N. N. Lucas, Albert Square, Manchester.
- Roehdale W.R.A.,** Monday, October 3, 10.30 a.m., Burneys Café, Drake Street, Roehdale.
- Scottish R.R.A., A.G.M.,** Monday, October 10, Glasgow.
- W. Herts Dealers** (inaugural N.A.R.R. branch meeting), Tuesday, October 11, 8.30 p.m., Carlton Tea Rooms, Queen's Road, Watford.
- W.R.A. National Council,** Thursday, October 27, 2 p.m., 10, Ashley Place, London, S.W.1.

MEETINGS

in the horizontal plane. Gutters, pipes and wiring were mainly horizontal. He had found that it was often possible to erect a vertical aerial lower than a horizontal one and still get a clear pick-up.

The difficulty of selling aerials to-day was introduced by Mr. Wilde.

Mr. Walters admitted this, but pointed out that it was the fault of the retailers. They had told the public sets would pick up any station "on a piece of wire over the picture rail." They very much regretted those statements now, especially with more sensitive receivers that picked up interference.

To-day receivers demanded better aerials and it was for the radio dealer to re-educate the customer. It might not be easy, because the customer would remind them that not so long ago they did not bother about aerials.

Mr. Sacker said he had not found it so difficult, and had sold 17 in six weeks following a special display.

At the conclusion of this talk, for which Mr. Walters was thanked, the meeting went on to discuss the television situation. It was proposed that a meeting of all dealers in the television area should be called to discuss policies,

but it was agreed to defer this owing to the supplies difficulty and the present situation.

It was also agreed to hold annual dinner and dance, the date to be fixed later. The resignation of Mr. B. A. Singer was accepted with regret, and it was agreed to hold an election for the office of chairman and treasurer at the next meeting on October 24.

Glasgow Conference

ARRANGEMENTS for the annual general meeting and open conference of the S.R.R.A., at the Empire Exhibition, Glasgow, on October 10, are now practically completed.

Mr. James Cameron, president of the Association, will preside, and the principal speaker at the conference following is to be Major L. H. Peter, chairman of the R.M.A.

Other manufacturers, it is hoped, will also come to Scotland for the occasion. At the luncheon, ex-Bailie William Thomson is to preside.

On Tuesday, October 11, the Scottish Radio Golf Society have fixed up an "international" match at Hilton Park course.

These arrangements were outlined by Mr. J. R. Paterson, of the Glasgow Branch, at a meeting held in the Central Hotel on September 22.

Mr. James Turner said he hoped there would be a large attendance of dealers from all parts of Scotland, and it promised to be a very successful event.

Nominations for vacancies on the Council were taken, and these will be voted on at the next meeting.

Mr. Turner proposed a series of lectures or talks at monthly meetings in order to create more interest among the members, and it was agreed to approach several well-known experts in the Trade.

A proposal to hold a social function was continued to see if the wholesalers in Glasgow would co-operate in a joint dance.

N.A.R.R. Maintenance Plan

THE National Association of Radio Retailers is to proceed with its set-maintenance scheme, it was announced at the Council meeting held on Wednesday.

It was stated members' reception of the scheme justified it being proceeded with. Agreement forms and leaflets would be available shortly.

A sub-committee, comprising the President, Vice-President and Mr. Gilbert, was appointed to handle the proposed P.A. section.

Very successful results from the stand taken at Radiolympia was reported. Many new members had been enrolled, while a large number of contacts had been made. The N.A.R.R. list of used set allowances had proved very useful in contacting dealers.

It was also gratifying to note the interest displayed in the Association by the public, it was added. The leaflets "Notice to Wireless Licence Holders" had been widely distributed,

(Continued on page 8.)

*What is
real*

REMOTE

Philco Remote Control controls **every** operation in tuning a radio from **any** part of the room in which the fixed speaker-chassis unit is installed.

In this respect, Philco Remote Control Radio is unique and the complete answer to the demand for mobile tuning of a fixed unit.

The Remote Control Unit, which can be moved at will to any part of the room, incorporates controls for on-off, ordinary manual tuning on three wavebands, mechanical Automatic Tuning of eight stations (changeable at will) operated by six illuminated amber keys, volume control, tone control and wave-change.



SEVEN-VALVE ALL-WAVE SUPERHET

The fixed speaker-chassis unit consists of a 7-valve all-wave superhet chassis with full Automatic Volume Control and a special auditorium speaker giving excellent tone. This unit is available as either a table or floor model, both cabinets being finished in highly figured walnut: the floor model has a well at the top for housing the Remote Control Unit, enclosed by a piano lid.

● DELIVERIES OCTOBER 15th ●

*Pioneered
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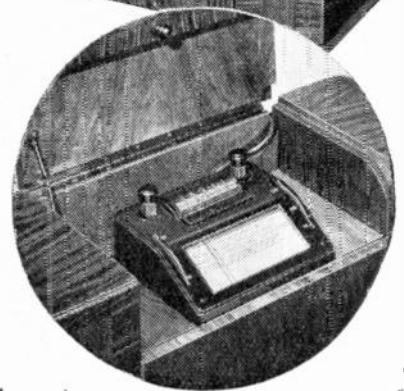
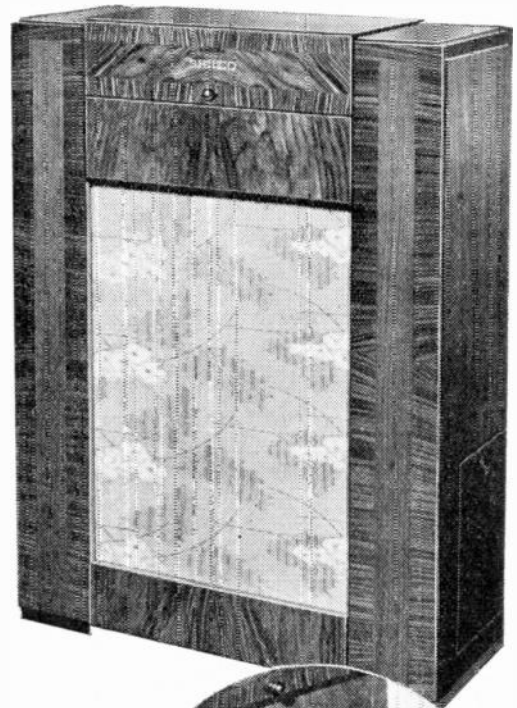
PHILCO RADIO & TELEVISION CORPORATION OF

WHEN REPLYING TO ADVERTISEMENTS PLEASE MENTION "THE BROADCASTER."

CONTROL ?

PHILCO REMOTE CONTROL RADIO

The First Popular-priced Radio to
be Completely Controlled from a
Distance



Inset shows Concert
Grand with piano lid
open, showing Remote
Control Unit.

MODEL D732

Baby Grand, complete . . . **16** Gns.

Concert Grand, complete **19** Gns.

PHILCO WORLD'S LARGEST MAKERS OF RADIO SETS

GREAT BRITAIN, LTD., PERIVALE, GREENFORD, MIDDLESEX
WHEN REPLYING TO ADVERTISEMENTS PLEASE MENTION "THE BROADCASTER."

NEW PRODUCTS

Crypton Chargers

AN improved series of valve and metal rectifier charging equipment has been produced by Crypton Equipment, Ltd., North Acton Road, London, N.W.10. These will be on view at the Motor Show.

There are three types of double-capacity valve rectifiers, the CV66, 6 amps. 30 volts, at £17, the CV88, 6 amps. 85 volts, at £25, and the CV99, 10 amps. 85 volts, at £36. Exclusive features include three independent charging circuits, transformer tapping control, double normal charging rates.

New metal rectifiers total 16, of which single-circuit types range in price from £9 10s. to £30; two-circuit types from £17 10s. to £47 10s., and three-circuit types from £14 10s. to £30. Separate rectifying units are provided for each circuit, while no series resistances are used, all regulation is carried out by transformer coupling.

Car Radio Equipment at Motor Show

A NUMBER of new car radio receivers and equipment will be introduced at the Motor Show at Earl's Court, London, opening on Thursday, October 13.

Advance details of the car radio exhibits were published in the September 24 issue of BROADCASTER, and the following are new introductions:—

Arvin.—Six-valve superhet with full A.V.C., remote control and self-contained moving-coil speaker to sell at approximately 9½ gns. for 6- or 12-volt models. It is a very compact unit having about 4 watts output. European-wide range, single bolt mounting and grey crackle finish, while it is stated no suppressors are required.

A similar model will also be available having a larger output and separate speaker at a cost of 30s. to £2 extra. This equipment is made by Arvin Electric, Ltd., 14, Warren Court, London, W.1, and will be shown by Stedall and Co., Ltd., 164, High Holborn, London, W.C.1.

Ferranti.—Aerial suitable for mounting underneath the running board or chassis of a car and priced at 10s. 6d. It consists of a steel tube 48 in. overall length and ½ in. in diameter heavily tinned to prevent corrosion. It is made and shown by Ferranti, Ltd., Moston, Manchester, 10.

"Roadio."—Four new car radios are being released.

First is the model 297 "Roadio Seven," incorporating a seven-valve superhet circuit with A.V.C. and inter-station noise suppression, continuously variable tone control, provision for medium and long waves, remote control for dashboard or steering column fixing, station-named dial, self-contained M.C. speaker, output 5 watts, steel case housing in black copper oxide finish with chromed speaker grille, consumption 2.4 amps. on 12 volts, 4.6 amps. on 6 volts, 16½ gns., including aerial. A companion model, 297S, is

Products for retailer and set maker are described in this feature. Manufacturers are invited to send details of new lines.

supplied with the speaker separate and costs 18 gns.

Next is the model 399 "Roadio Nine," utilising a nine-valve de luxe superhet. Main features are similar to the "Roadio Seven," but output 5½ watts and price 22½ gns., including aerial. A companion model, 399S, with speaker separate, is 24 gns.

All models are supplied complete with accessories, and for an extra 6 gns. will be provided with automatic motor-driven remote control tuning.

They are supplied and shown by Masteradio, Ltd., 1, Newton Street, London, E.C.

Skyrod Aerials Delivery

BELLING AND LEE, LTD., Cambridge Arterial Road, Enfield, Middlesex, announce that owing to their having to give priority to Air Raids Precaution orders for Skyrod aerials, even written promises of delivery are apt to be broken.

Trade orders are being dealt with in strict rotation, and revised delivery dates are being given to all customers.

Dynatron Receivers

IN a letter sent to certain London dealers by Dynatron Radio, Ltd., Perfecta Works, Ray Lea Road, Maidenhead, Bucks, it is pointed out that it has been announced that in the event of war, news and announcements and possibly air raid warnings will be broadcast in addition on the ultra-short wavebands now used for television.

This is the only waveband that cannot be jammed, reception being confined entirely to the London area.

Dynatron state that all their receivers and radiograms, as well as those of the associate company, Keates, Hacker Co., 91-93, Bishopsgate, London, E.C.2. offer excellent reception on this waveband.

Defiant Receivers

THE new range of Defiant receivers, supplied by the Co-operative Wholesale Society, Ltd., comprises instruments ranging in price from £7 10s. to 35 gns.

New season's battery models comprise three-valve, two-waveband, £7 10s., complete with batteries; five-valve, two-waveband superhet, £8 15s.; four-valve, three-waveband superhet, £11 11s.; four-valve, three-waveband superhet, £12 12s.; and four-valve, three-waveband superhet transportable, 11½ gns.

New mains sets are: four-valve, including rectifier two-waveband A.C. superhet, with press-button tuning, 9½ gns., without press-button tuning, £8 8s.; four-valve (including rectifier), three-waveband A.C. superhet, £8 12s. 6d.; four-valve (including rectifier), three-waveband A.C. superhet, with cathode-ray tuning indicator, 200/250 volts, 40/100 cycles, 10½ gns.

Eight valves (including rectifier), five-waveband A.C. superhet, with cathode-ray tuning indicator and motor-driven press-button tuning, 18 guineas; six-valve (including rectifier), three-waveband A.C. superhet transportable, with cathode-ray tuning indicator, 13½ gns.; five-valve (including rectifier), three-waveband A.C. superhet, with cathode-ray tuning indicator, 13½ gns.

Five-valve (including rectifier), three-waveband A.C. superhet console, with cathode-ray tuning indicator, 15½ gns.; six-valve (including rectifier), four-waveband A.C. superhet, with cathode-ray tuning indicator, 16 gns.; five-valve (including rectifier), three-waveband A.C. superhet radio-gramophone, with cathode-ray tuning indicator, 20 gns.; and six-valve (including rectifier), four-waveband A.C. superhet automatic radio-gramophone, with cathode-ray tuning indicator, 35 gns.

Pix Replacement Lines

THREE new lines in replacement components for the service-man have been introduced at the Manchester Exhibition by the British Pix Co., Ltd., Pix Works, Lillieshall Road, London, S.W.4.

These are a full range of resistances, paper condensers and electrolytic condensers

ASSOCIATION MEETINGS—(Continued from page 5)

and there was evidence that this form of publicity was helping members. Welcome was expressed to the W. Herts R.R.A., which had decided to reconstitute itself as a N.A.R.R. branch.

The President and the Vice-President were nominated to serve on two committees of the British Standards Institution.

A summary of the proceedings of the R.M.A. Television Convention at Radiolympia was submitted.

A suggestion that the hire-purchase facilities of Electrical Credit Services, Ltd., should be available to N.A.R.R. members was submitted, and it was agreed that negotiations should be opened.

Following the authority given at the annual general meeting, it was decided to approach a number of members to serve on the Council.

W. Herts Joins N.A.R.R.

AFTER working for several years as a separate association, the West Herts R.R.A. has decided to become a branch of the N.A.R.R.

Although the Association has been doing

valuable local work as an independent body, it has been felt for some time by the Committee that co-operation with some national body was essential if work of wider scope and real value was to be done.

During the past few weeks informal discussions have taken place.

Subsequently the Committee recommended the members to wind up the Association and join the N.A.R.R.

At a meeting held at Watford last week the following resolution was carried:—

West Herts R.R.A. feels that, in view of the unsatisfactory position of the retail trade, unity of trade organisation on a national basis is essential if any improvement is to be made. Therefore, to further such combined action and to have the support of a parent Association, West Herts decides to dissolve as a local Association to enable steps to be immediately taken for it to be re-formed as a branch of N.A.R.R.

This step has since been sanctioned by the N.A.R.R. National Council.

A meeting of West Herts dealers will be held at the Carlton Tea Rooms, Queen's Road, Watford, on Tuesday, October 11, at 8.30 p.m., with the object of forming a local N.A.R.R. branch.

NEW PRODUCTS

Products for retailer and set maker are described in this feature. Manufacturers are invited to send details of new lines.

Frank Heaver Lines

FRANK HEAVER, LTD., Bush House, Aldwych, London, W.C.2, agents for a number of overseas manufacturers has available for setmakers in this country various new types of push-button tuning units and electrolytic condensers.

Made by the General Instruments Co., of New York, is a mechanical push-button unit available in 6 and 8 button types. It is claimed to have the distinct advantage of overcoming all past difficulties in that the pressure needed to operate is less than that for the average push-button switch. The 6-button type has a side adjustment for altering stations, and the 8-button type front of panel adjustment. The normal control operates by an independent clutch.

From F. W. Sickles Co., of Springfield, Mass, U.S.A., there is an iron-cored permeability tuned press-button unit available in any size up to 12 buttons.

Produced by the Alpha Radio of Brussels is a motor-controlled automatic tuning unit. This employs keys instead of buttons, which can be operated by a fingertip. Adjustment can be made from the front of the panel, vernier tuning of 1 to 50 is combined in the condenser knob, while the motor is protected by a safety switch and has self-lubricated bearings.

Stations other than those controlled by the keys can be automatically tuned in by motor through a touch of the condenser knob to the right or left.

The new electrolytic condensers are a product of the Yaxley-Mallory Co., of Indianapolis, and are available in any capacity. An entirely new method of manufacture called the fabricated plate system is employed, while another feature is their very small size.

Each has coded connecting tags, the code being described on the barrel of the condenser.

Triotron Valves

THORN Electrical Industries, Ltd., 105-109, Judd Street, London, W.C.1, announce that they now have a range of competitive Triotron valves suitable for all replacement purposes.

Two new additions are double diode output pentodes for A.C. and universal receivers respectively, both listing at 12s. 6d.

The A.C. valve is the DP495, which can be used as a replacement for the Mullard Pen 4DD and Tungram DDPP4M, while the A.C.-D.C. version is the DP4480, a replacement for the Mullard Pen 40DD and Tungram DDPP39M.

Dallas Catalogue

THE 1938-39 edition of the Dallas radio and electrical catalogue is now available from John E. Dallas and Sons, Ltd., Dallas Building, Ridgmount St., London, W.C.1.

Its 64 pages covers on the radio side

the receivers and radiograms of Alba, Beethoven, Ever-Ready, Ferguson, G.E.C., Halcyon, Invicta, K.B., Pilot, Regentone, Sparton, and Vidor, together with B.V.A. valves, accumulators, batteries and speakers, PA equipment, and a range of domestic electrical appliances, including clocks, cookers, vacuum cleaners, toasters, fans, fires and refrigerators. The catalogue is fully illustrated.

Truvoice P.A. List

A STRIKING and well-displayed catalogue of Truvoice P.A. equipment has been issued by the Truvoice Dept. of Henri Selmer and Co., Ltd., of 114-116, Charing Cross Road, London, W.C.2.

The front cover carries a fine portrait of Al Bowley at the microphone, while the 18 pages of the catalogue are packed with illustrations and descriptions of the wide range of Truvoice equipment.

Marconi Valve Catalogue

A NEW catalogue of Marconi valves, publication No. 1589/938 has just been issued by the Marconiphone Co., Ltd., Radio House, 210-212, Tottenham Court Road, London, W.1.

This booklet shows many improvements, including a greatly extended list of comparative tables, details of inter-electrode capacities and more comprehensive data on all the newer types of valves. The size has been increased from 48 to 64 pages, and several of the new pages are devoted to Emission cathode-ray tubes.

"Own Name" Catalogue

A CATALOGUE of receivers and radiograms to which dealers can put their own names has just been issued by Radio and Electrical Productions, of 117, Queensway, Bayswater, London, W.2.

'Copies of the "Own Name" catalogue have been despatched to a large number of dealers, and further supplies over-printed with the dealers name and address can be provided at a nominal cost.

The catalogue is very well produced on art paper and consists of 12 pages and covers. No mention is made of the manufacturer's name and address, but a separate price list and order form are included.

One alteration has been made to a radiogram in the firm's range. The model 8PP/HGD now employs push-pull output, making eight valves in the circuit arrangement in place of seven when the model was first produced. The universal version 8PP/UCM also employs eight valves.

Ediswan Minor Pick-up

THE Edison Swan Electric Co., Ltd., of 155, Charing Cross Road, London, W.C.2, point out that their B.T.-H. Minor pick-up has been erroneously advertised at 15s. The price of the pick-up remains unchanged at 17s. 6d.

IT COSTS NO MORE TO SELL THE BEST!

Order



★ INTERMEDIATE FREQUENCY LINERS

CONNECTED to any source of 200-250 Volts D.C., and drawing only 0.2 mA., these Liners generate exact frequencies (modulated at audio frequency) for lining up Intermediate Frequency Transformers, and for ganging the R.F. stages. Consumption is so insignificant even H.T. Batteries may be economically used. When used with A.C. receivers, the necessary d.c. supply may be drawn from the receivers' own anode supply circuits, by connecting one input terminal of the Liner to chassis and the other to any convenient H.T. point. Signal may be reduced simply by reversing H.T. input leads of the Liner.

465 KC/S LINER

Accurately tuned to 465 kc/s. at the factory. In use, one output terminal is taken to chassis and the other to the grid of the F.C. valve, and the I.F. Trimmers of the set are then adjusted for loudest volume. List No. V.T. 17

10/6

NETT TRADE PRICE

110 KC/S LINER

Generates an exact 110 kc/s. signal and will be found invaluable for re-aligning of earlier types of superhet receiver employing this Intermediate Frequency. List No. V.T. 20

10/6

NETT TRADE PRICE

★ Write for descriptive instruction leaflets NOW!

Send for 120 page catalogue

A.F. BULGIN & CO. LTD.

ABBAY ROAD · BARKING · ESSEX

G.E.C.

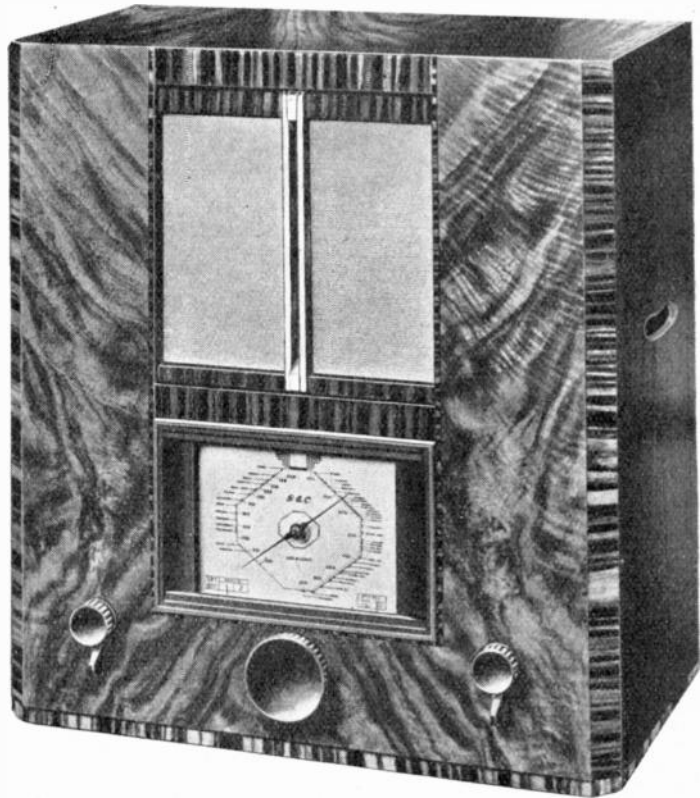
A.C. Transportable 5

HIGHLY EFFICIENT FRAME-AERIAL
SUPERHET WITH REMARKABLE RANGE

These times call for the closest contact with broadcasting. Here is the ideal set for immediate use in home or office. Can be taken instantly to any room or floor. Guaranteed to give excellent results under the most adverse conditions.

B.C. 3754

12 GNS.



● The set for **EVERY** occasion
and situation

Propaganda In and Out the Vision Area

AN excellent example of how retailers can educate the public about the true television position was given recently by Mr. G. W. Cowling, of Cowling Bros., the Murphy dealers, of Belvoir and Nicholas Streets, Leicester.

Mr. Cowling, it seems, gave the *Leicester Mercury* a special interview about the Radiolympia Television Convention. The result was a two-column story headed "No Television in Provinces for Long Time Yet."

Points from the interview are:—

Sir Frank E. Smith, Sir Noel Ashbridge, and Sir Stephen Tallents "all stated emphatically that the spread of the television service, even to such important areas as Birmingham and Manchester, was unlikely to take place for a considerable time."

"When expansion is started it will almost certainly go to one or two of the big cities first, but even that development will be a long time coming."

"For practical purposes the range of a television station does not extend to more than 40-50 miles, so that before the whole country can be served with television a chain of perhaps 100 stations will be required—and the present one in London costs £300,000 a year to operate with only three hours' programmes a day."

"Leading engineers in London say that even when the transmission service is extended, it will be a long time before the buyers of £10 or £15 radio sets can be served."

Provincial dealers should devise all the publicity they can for these points.

Now, of course, the Television Conference is old history, and not likely to appeal very greatly to local newspaper men. It should not be difficult, however, for the keen retailer to discover something newsworthy on which he can hang an interview putting over the facts in something after Mr. Cowling's style.

Television itself often makes news, but there is no need to wait for some event before tackling your local editor. A retailer can make news himself by some



At the R.C.A. television exhibition, Radio City, New York, visitors are shown the works of a receiver by this glass-fronted model and the mirror behind it.

special show, display or offer, and his television message can be worked in as an explanation of his confidence in the success of his scheme.

Relations Officer

WHAT regular readers of this page want to know is how to publicise the television facts in the reception area—the facts being that television is an established service providing good entertainment for all who can raise £20 or so.

The B.B.C. has just appointed a Television Public Relations Officer whose job will be the spreading of the facts in the reception area.

His name is D. K. Wolfe Murray, and he takes up his duties on October 17. After a week or so to gather inside knowledge about Alexandra Palace, he will start giving lectures to the public.

It is too early yet to say how these talks will be organised, but it is believed that retailers in each area visited will have every opportunity to co-operate.

Mr. Wolfe Murray has been deputation secretary to the Royal National Mission to Deep Sea Fishermen since 1923. He has already some acquaintance with television, as he broadcast a talk on bird studies some time ago.

Critical Comments

THE Television Ball from Pinewood showed that even an actuality broadcast should be carefully prepared—even rehearsed if possible. At the Ball, bad microphone positioning and the fact that celebrities had nothing to say made the event a disappointment.

Trick work with the Emitrons as seen in "St. Simeon Stylites" and "The Man Who Sold His Shadow" is commendable. The possibilities of television technique should be explored in this way.

Fading from Emitron to Emitron is an

TELEVISION PAGE

art some people at A.P. have yet to master. Black-out between shots should be avoided.

There is too much changing from Emitron to Emitron merely for the sake of change. And some producers select the moment when action is most interesting—and viewing continuity essential—for the change-over.

Feature programmes of the "Lambeth Walks Out" kind should be developed. In this, film was well used.

Whirling and other stunt titles that add to eye-strain should be avoided.

Close-ups of cabaret artistes before their acts would satisfy viewers' natural curiosity and probably make lack of detail in long shots less noticeable. The mind would see more than the eye.

When will the O.B. vans really get busy?

Outside Broadcasts

INFORMATION is available concerning only three outside broadcasts during October.

On Monday next, October 3, three Emitrons will be at the Earls Court for boxing. It is hoped viewers will see Benny Lynch, Harry Mizler, Arthur Danahar and several other boxers in action.

On Saturday next motor racing from Alexandra Palace will be televised. Arthur Dobson and "B. Bira," both of whom hold the lap record at 58.63, will be seen in a two-car duel and in a race with 25 other entrants.

Television's first visit to a public dance hall will take place on October 22, when the Emitrons will be at the Hammersmith Palais de Danse.

Revolutionary System?

THE technically minded can speculate—if so inclined—over the following news item.

Contained in a recent issue of the *Liverpool Daily Post*, it was to the effect that an anonymous inventor at Pilling, near Fleetwood, has succeeded in transmitting picture signals working with vision rays instead of radio waves.

The curiosity of the local people, it seems, had been roused by strange towers erected at Pilling and at Overton nine miles away across Morecambe Bay.

The reporter discovered the inventor, a Manchester man, who is said to have been working on his idea for twenty years. The inventor said: "We are not yet in a position to give a detailed account of what is happening within the tower, but I can tell you we are developing a new kind of television, based on vision rays. We are not working with anything that has to do with electrical waves. We are meeting with the success I anticipated, and we have already got picture signals from Overton."

Works at Weston

PLANS have been prepared for the erection of a factory for the manufacture of television equipment at Hutton Moor, Weston-super-Mare. The promoter of the enterprise is Mr. G. E. Francis, of Weston.—R. C. N.

Demonstration Time Table

THE time-table of next week's main programme events is as follows:—

Sunday, October 2.—"Laugh With Me," a comedy by Adelaide Philpotts.

Monday.—"Fruits of Remembrance," a Pirandello comedy; Cabaret.

Tuesday.—"Parnell," a play by Elsie T. Schauffler.

Wednesday.—"I Pagliacci," opera.

Thursday.—Picture Page.

Friday.—"La Kermesse Héroïque," a film; Cabaret.

Saturday.—"London Wall," a play by John van Druten; motor racing from Crystal Palace.

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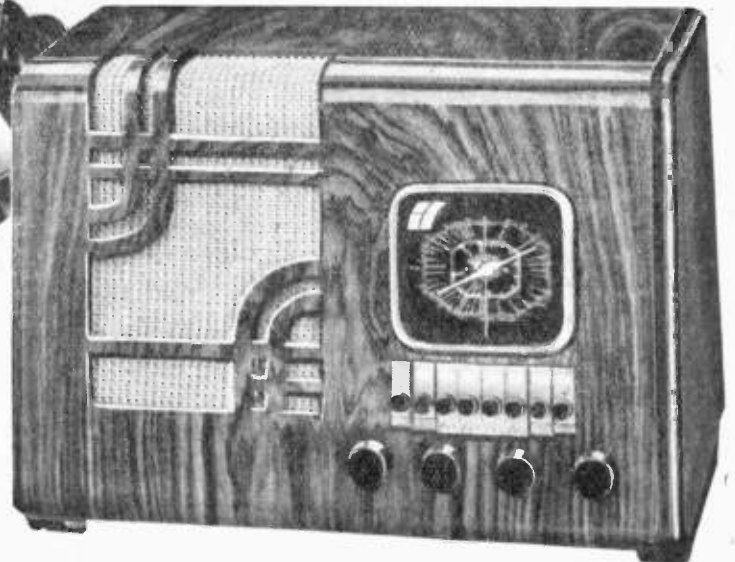
ONLY REGENTONE



NATIONAL NEWSPAPERS with combined circulations of 9,000,000 carry the Regentone message to the Public—creating sales for you. Be prepared!



19 GNS. COMPLETE



Cash in on this great Radio development to-day. Your customers will be thrilled to know that, with a Regentone Remote Control, they can now sit in an armchair or wander from room to room and tune in any or all of 7 stations at will without going near their set! Phone, wire or post your order NOW.

WHEN REPLYING TO ADVERTISEMENTS PLEASE MENTION "THE BROADCASTER."

UNANIMOUS

GIVES REALLY AUTOMATIC TUNING

● "Show us something NEW"—the yearly cry of Trade, Public and Press has been answered at Radiolympia and Manchester in a more emphatic manner than for many years. By Regentone. Regentone—the only firm to give automatic tuning in the real sense of the word. Regentone, whose "Synchronised Impulse" Remote Control tunes the set from any part of the house...without touching the receiver...without extra wires. Regentone—the only firm to give radio "on tap"...the Radio of the future...heard but not seen! With this amazing invention Regentone provides you with a unique opportunity of new sales at a time when you need it most. Tell your customers about it—demonstrate this marvellous Regentone unit to them—show them how it changes stations...starts and stops the set...from afar. They will find it irresistible. They will buy!

REGENTONE

AUTOMATIC Motor Tuned RECEIVER
Complete with
Synchronised Impulse REMOTE CONTROL

You sell the complete installation—Receiver and Remote Control—for only 19 Guineas. The Receiver—A.C.; 3 Waveband Superhet; 8 buttons; 7 stations; motor and manual control; 5 valves (6 functions)—sells alone for only 14 Guineas. There are two models of the Regentone Remote Control...No. 1, which starts and stops any Mains Set from any part of the house, where there is an electric point, sells at £4.10.0. No. 2, for use only with automatic, motor tuned receivers, also changes stations at the touch of ONE button, and sells at £5.10.0.

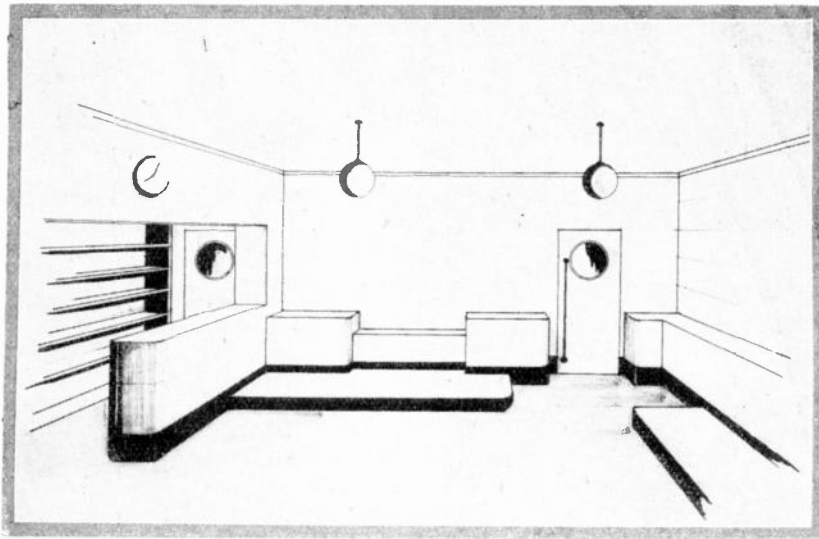


REGENTONE PRODUCTS Ltd., Worton Road, Isleworth, Middx.
 Telephone: Hounslow 2212.

Curew Wilson

WHEN REPLYING TO ADVERTISEMENTS PLEASE MENTION "THE BROADCASTER."

LET US PLAN YOUR SHOP FOR YOU



£3,500 Annually from Weekly Payments Club

BARRATT AND CO., of 16, Wilmslow Road, and 21, Palatine Road, Manchester, are quietly cashing in to the tune of £70 per week on a weekly payment club. It is called Barratt's Bob Club, or, in short, B.B.C.

It is easy to join and is intended for those whose purchasing power is limited. Mr. Barratt, after making a careful analysis of the trading conditions in his area, came to the conclusion there was a big trade to be done in small radio and electrical goods, priced at below the £2 mark.

Initial Purchase Restricted

No inquiries are made as to the standing of the prospective B.B.C. member, but his initial purchase is restricted to an article not exceeding 10s. in value and the account must be liquidated in weekly sums of 1s. Five per cent. is added to the retail price, but is returned as a bonus on the settlement of the account, if the customer has abided by the conditions.

Having established his *bona-fides*, the customer may then purchase an article costing £1, and if his record continues satisfactory may buy more expensive products, providing he keeps within his ability to pay. Barratt's decide that.

What was intended to be a rigidly operated hob-a-week club has become something far bigger and more important.

Six months after he launched the B.B.C. Mr. Barratt had a membership of about 400, and bad debts represented .025 per cent.; to-day he has 1,420 club customers, a "black list" of 400, and a debit represented by bad debts of 1 per cent., so that, on the whole, his scheme has amply justified itself.

If a person wants to buy a high-tension battery, a low-priced iron, lamps, or anything else coming within the 10s. price limit, on club terms, and asks to be

enrolled in the B.B.C., the shop manager asks for his name and address, occupation, how long resident at the present address, name of employer and how long in present employment. These particulars are entered on a printed form, which is afterwards filed.

The shop manager relies on his knowledge of the district, consults the local directory, and if there is some verification of the verbal particulars given, the goods are supplied and a blank instalment receipt book issued. The initial weekly payment must be made on the spot.

"At one time the goods were handed over immediately we were satisfied of the truthfulness of the applicant's replies," explained Mr. Barratt; "but it soon became obvious that people got the idea they had only to ask and they would receive."

"The essence of the contract is good faith. It seemed to me that by making use of a small printed form, and allowing a time lag of a few hours, the customer was likely to be impressed with the nature of the commitment he had entered into. Now a new club member, after having registered, is asked to return later on the same day, or perhaps the following day, to accept delivery of the goods."

Rapid Development

"The scheme has developed astonishingly. Customers who were originally good for 10s. have proved themselves creditworthy for amounts much greater, but have had to graduate through different stages before being allowed to purchase really costly articles. The result is to-day we are allowing some people up to six months' credit, but insist on the regular weekly payments agreed upon at the outset of the contract.

"Customers who are known to us and

An artist's impression of shop layout prepared by "Broadcaster" Service Bureau to a dealer's own suggestions and requirements. Advice and assistance of this kind is available to all subscribers without charge. If you have some rough ideas that you have not had time to work out, why not send them along?

who are in regular employment may purchase within their ability to pay anything which can be settled within the six months' period.

"Once we have discovered a good customer we endeavour to hold him. When the last payment of the initial purchase has been made we try to interest him to purchase something else, and so the scheme goes on in snowball fashion. No documents are signed by the customer, the whole transaction being based on good will.

"The payment book is the passport to further purchasing privileges.

Keeping Accounts Open

"It is our aim to keep open as many B.B.C. accounts as possible. When the last payment has been made on an article we suggest to the customer that he should leave a small sum, perhaps 1s., or maybe the final discount, as a deposit on the next article he may want to purchase, if not immediately, then some time in the near future.

"What happens if a customer misses his weekly payment?

"We immediately send a printed slip in a 1d. envelope, calling attention to the omission, and asking for a remittance or a personal explanation. If this is not productive of result, then the return of the goods is sought. When that happens the customer is classed as undesirable.

Dealing with Distress Cases

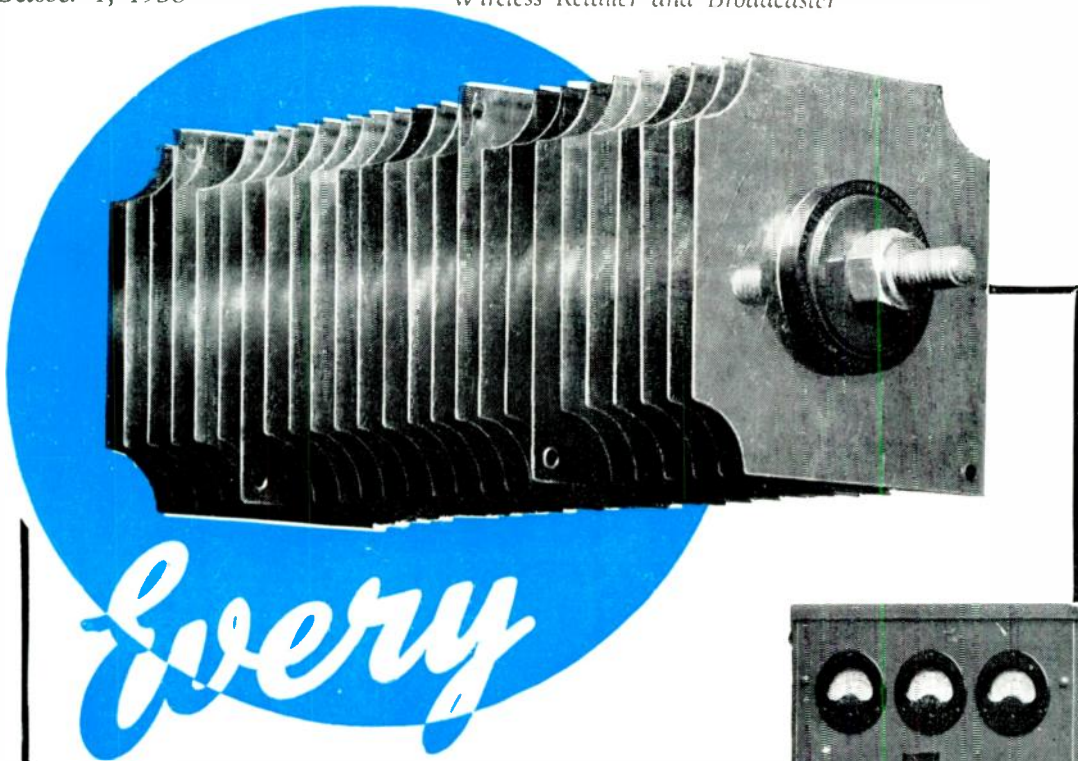
"There are, of course, genuine cases of temporary distress, and these are treated with due sympathy. It is insisted upon, however, that the client calls at the shop once a week to report his circumstances and the reason for his inability to resume payments."

Of defaulters a fairly high percentage is represented by people who owe small amounts of, say, 3s. or 4s. A representative of Barratt's tries to recover the goods, but if he does not succeed immediately, the amount outstanding is written off, because to pursue the matter would result in still further loss.

Mr. Barratt said that since football pools have become popular there has been a tendency for bad debts which never had been heavy to increase. He has been making inquiries, and finds that in some districts people have been spending as much as 10s. or 12s. a week on pools; 50 per cent. of people who contributed to pools, he added, were spending more than they could afford.

This constituted a serious menace to shopkeepers and manufacturers, who even yet had not realised how serious was the withdrawal from normal trade channels of a sum of £40,000.000 per annum.

Ninety per cent. of the members of Barratt's Bob Club give repeat orders.



Every

**WESTINGHOUSE
BATTERY CHARGER**

incorporates the British-made Westinghouse Copper-oxide Metal Rectifier. This has been tested throughout the world for a period of over ten years and its reliability and efficiency proved by continued repeat orders from satisfied users.

Only a genuine Westinghouse Metal Rectifier Battery Charger can give you years of reliable service. There is a model to suit every charging station, whether dealing with radio or car batteries, or both. Write to Dept. B. for a copy of "At The Correct Rate" which gives full details of the current range.



Westinghouse

BRITISH-MADE METAL RECTIFIER
BATTERY CHARGERS

WESTINGHOUSE BRAKE & SIGNAL CO. LTD., 82 YORK WAY, KING'S CROSS, LONDON, N.1

WHEN REPLYING TO ADVERTISEMENTS PLEASE MENTION "THE BROADCASTER."

£200,000

HAS ALREADY BEEN SPENT ON MARKETING SMITH "SECTRIC" CLOCKS

"and the advertising is again being DOUBLED"

announces Mr. Setric

Seven years' steadily growing sales and advertising have established Smith "Setric" Clocks on the market and made them the first choice of the public . . . the easiest and most profitable to stock, display and sell in the 1938-9 shopping season. Are you "all set" for your share in the new campaign?



SMITH SECTRIC CLOCKS



Retail Trade Enquiries: ALL LEADING WHOLESALERS. Wholesale and Export Enquiries: SMITH'S ENGLISH CLOCKS LIMITED, Cricklewood Works, London, N.W.2

PLUG IN TO GREENWICH TIME

Scientific

Popular "Sectric" Selling Lines for Season 1938-9 . . .



**TO BE
FEATURED
in
NATIONAL
ADVERTISING**

THESE big sellers in the Smith "Sectric" range are already proved successes, popular with the buying public, and giving their owners that real satisfaction which means recommendations and repeat orders. Stock up with these models which you can recommend with confidence to all who are buying clocks as gifts or for permanent use in their own household.

And don't forget Smith "Sectric" Clock Connectors

These neat, handy and easily fixed connectors make it a simple matter to wire up a Smith "Sectric" Clock without interfering with the normal use of an electric plug point. Flush-fitting and semi-flush models cost only 2/6 and 2/3 respectively.

SMITH SECTRIC CLOCKS

MODELS ILLUSTRATED:

LARK - - - -	36/-	CAVIL	49/6
LONDON from	109/6	DELHI	71/6

Retail Trade Enquiries: ALL LEADING WHOLESALERS.

Wholesale and Export Enquiries: SMITH'S ENGLISH CLOCKS LIMITED,
Cricklewood Works, London, N.W.2.



ALARMS

CALLBOY — in walnut and mahogany finishes and attractive pastel shades of blue, green and Primrose. Price 27/6.
LARK — walnut and black finishes. Price 36/-.
SWALLOW (Nitelite) — Oak 52/6. Walnut 58/-.

STYLE CLOCKS

CLARE	32/6
BRAMBER	37/6
CAMBRIA	37/6
CAVIL	49/6
ST. KILDA	59/6
STEYNING	47/6

MANTEL CLOCKS

HESTON	from 29/6
PERTH—offered in attractive pastel shades.	Price 26/-
TILBURY	from 47/6
TWEED	from 58/6
MYSTIC	from 75/-
CHALFONT	from 77/6
LONDON—Strike or Chime	
Oak	109/6
Walnut	126/6

WALL CLOCKS

DURBAN—in white for kitchen—in walnut for commercial use. Also offered in pastel shades	27/6
DULWICH	37/6
DELTA	39/6
DELHI	71/6

PLUG IN TO GREENWICH TIME

Scientific

lots of Hampstead! We are attractive and good company." So now it's up to the boys of Culbuoy.

FERRANTI

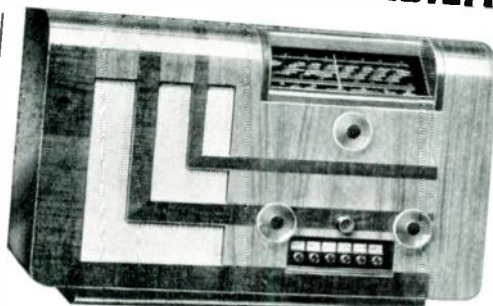
OFFER YOU PRESTUNING WITH NEARLY PERFECT QUALITY AND CONSISTENT RELIABILITY

Maintained Prices

SOUND TRADING POLICY

Only FERRANTI "Prestune" Radio, with its exclusive system of automatic tuning, can give you tone quality at its best. "Prestuning", apart from its simplicity, accuracy and dependability, incorporates a unique circuit specially broad-tuned to obtain reproduction as near to perfection as is practicable.

No other system of automatic tuning gives you quite the same high fidelity of tone as Ferranti Prestuning. With Ferranti Prestuning an entirely separate circuit is utilized which incorporates I.F. and oscillator coils which are temperature and humidity compensated. These operate in conjunction with pre-set condensers having silvered ceramic bases, with the result that once a station has been tuned — this is done simply by pressing the appropriate button — it will stay in tune all the time. In other words "drift", which is a common source of trouble in less well-made sets, is eliminated. Ferranti "Prestune" reception is simple, accurate and instantaneous. The simplicity of the design and the absence of complicated and costly devices ensures consistent reliability. Ferranti "Prestune"



MODEL 515PB

Radio is supplied to the trade with the "Prestune" Stations set ready for immediate use. No adjustments prior to installation in the customer's home are, therefore, necessary and the dealer is saved a great deal of trouble and time. Ferranti are specialists in controlled production. There will be no large stocks to flog-off at the end of the season. Prices will, therefore, be strictly maintained, and lastly the Ferranti restricted dealership scheme ensures that each dealer participating in the sound Ferranti Trading Policy receives a substantial quota of business at profitable prices.

MODEL 515PB (illustrated above) 15½ GUINEAS
"Prestune" High Fidelity A.C. All-Wave Superhet. with 8-stage multi valve circuit. Prestuning on 6 powerful stations. Four watt pentode output. French Walnut cabinet.

MODEL 617PB 17 GUINEAS
Exclusive "Prestune" A.C. 6-valve High Fidelity, All-Wave Superhet. circuit; Push-Pull output 6-watts undistorted; large 10" Moving Coil Speaker providing outstanding quality of reproduction. "Prestune" with 6 push buttons. Massive French Walnut cabinet.

FERRANTI LIMITED, RADIO WORKS, MOSTON, MANCHESTER, 10

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NEWS

The WIRELESS RETAILER and Broadcaster

Electrical Section:
To provide a weekly news service for radio dealers who also have an electrical department.

No. 519

Vol. 34

OCTOBER 1, 1938

The major portion of "Broadcaster's" Electrical Section this week is devoted to synchronous clocks. Below is an article telling how they work, and on following pages there are a review of clocks, a directory of clock manufacturers, and various sketches which can be used in dealers' advertising

THE successful functioning of synchronous clocks is entirely dependent on the frequency control of the mains supply, so that it is necessary to discover how this is attained in the generating station before describing the workings of the clocks themselves.

The idea of driving synchronous clocks by electricity was first suggested as long ago as 1895, but it was of little practical use from a nation-wide sales point of view until quite recently, firstly, because most mains supplies were D.C., and secondly, because those that did happen to be A.C. differed in frequency from district to district. Very few were time-controlled.

With the inauguration of the National Grid Scheme a satisfactory measure of standardisation and reliability had to be attained because, in this system, the generators work in parallel, and the frequency of all generators in the group must be identical.

Variation in frequency between one machine and another would lead to "load snatching." A slow-running generator is relieved of a portion of its load by the faster running machines, and is thus enabled to gather speed; conversely, a fast machine tends to shoulder more than its fair load and slow up. Oscillation between stations follows.

How Synchronous Clocks Work

In practice, the frequency of the supply is entirely dependent on generator speed, which, again, is dependent on the steam admitted to the turbines and on other generators which may be running in parallel.

The steam supply is controlled partly by a governor and partly by hand. Before generating stations were linked up with the grid scheme a frequency variation of plus or minus 2½ per cent. was allowed. This would permit a clock to vary as much as 35 minutes in 24 hours, though it would not affect other apparatus connected to the mains.

This comparatively wide limit being useless under modern conditions, stations are now fitted with a master frequency meter on which very slight deviations from the standard frequency are easily apparent.

This takes the form of two clocks, one (which can be either mechanically or electrically driven) indicating Greenwich time, the other a synchronous clock driven from the mains. Between them is a third dial with two hands, one driven by each clock. These hands make one complete revolution of the dial in three minutes, and while the exact frequency of 50 cycles is maintained they rotate together.

Any discrepancy between the two pointers is immediately apparent to the engineer, who then makes the adjustments necessary to bring the frequency back to standard. All the clocks connected to the mains will reflect the slight inaccuracies of the

master clock, but this adjustment brings them all back to the correct time.

It will thus be seen that synchronous clocks may vary slightly from Greenwich time, but the variation is never likely to be more than a few seconds, and the average time will always be correct, for the master clock is synchronised frequently with Greenwich time signals.

An elaboration of this plan is used for controlling the frequency of a group of generating stations.

Synchronous clocks are entirely different from all other types of electrically driven clocks, in that they will work only from A.C. mains, and then only satisfactorily on a time-controlled supply. These two points must be constantly kept in mind when making sales and installing synchronous clocks.

Their main advantages are simplicity of construction, cheapness, reliability, accuracy and low running costs, with negligible maintenance costs. Tests over a period of six months reveal a variation never exceeding 10 seconds from one day to the next, usually much less.

Another advantage is the small power consumption required, which varies from 0.65 watts to 4 watts. Taking 1 watt as an average, running costs will be approximately 8½d. a year if current costs 1d. per unit; a clock with this consumption will run 1,000 hours on one unit.

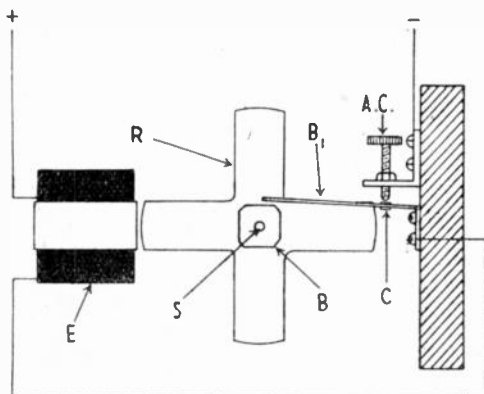
Self-Starters and Not

Synchronous clocks can be divided roughly into two types, self-starting and non-self-starting. One disadvantage of the self-starting type is that, if there is a slight interruption in the supply, the clock may be slow without anyone knowing it. Most clocks of this type, however, are fitted with a device to indicate that the supply has failed. The non-self-starting type, of course, stop if the supply fails, and have to be restarted by hand.

The driving mechanism of a synchronous clock is very simple and compact, consisting of a small motor and a train of gear wheels. Similar motors have been used for many years for scientific time-marking and for regulating the speed of automatic telegraphs. They are usually known as phonic wheels in this connection.

To understand how synchronous motors work, first consider a simple D.C. motor as in the diagram on this page. R is an iron rotor with a spindle S, and a brass plate B, which has as many sides as there are poles to the rotor. A brass spring contact strip B1, with contact C, passes close to the adjustable contact AC, while E is an

(Continued on page 20.)



A simple D.C. motor (as represented in this sketch) is useful as a means of understanding how a synchronous motor works. This diagram is fully explained in column three.

Directory of Clock Manufacturers

Autway Co., 13, Wellington Street, Glasgow.

A. J. Balcombe, Ltd., 52-58, Tabernacle Street, London, E.C.2.

Batwin Electrical Appliances, Ltd., 138, Southwark Street, London, S.E.

British Vacuum Cleaner and Engineering Co., Ltd., Parsons Green Lane, Fulham, London, S.W.6.

Bulle Products, Ltd., 187a, Tottenham Court Road, London, W. 1.

A. C. Cossor, Ltd., Cossor House, Highbury Grove, London, N.5.

Electrical Commodities, Ltd., Sparton Works, Beresford Avenue, Wembley, Middlesex.

Euston Manufacturing Co., 56-60, Grove Road, Walthamstow, London, E.17.

Everett Edgcombe and Co., Ltd., Colindale Works, The Hyde, Hendon, London, N.W.9.

Ferranti, Ltd., Moston, Manchester, 10, Garrard Clocks, Ltd., 117, Golden Lane, London, E.C.1.

General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

Gent and Co., Ltd., Faraday Works, Leicester.

Ingersoll, Ltd., 223-227, St. John Street, Clerkenwell, London, E.C.1.

Ismay Distributors, Ltd., Sterling Works, Dagenham, Essex.

Londex, Ltd., Brettenham House, Lancaster Place, Strand, London, W.C.2.

London Electric Clock Co., 15, Park Street, Islington, London, N.1.

Lowne Electric Clock and Appliances Co., Ltd., Boones Street, Lee, London, S.E.13.

Markt and Co. (London), Ltd., 23, Portpool Place, London, E.C.1.

Mauthe Clocks, Ltd., 2-3, Charterhouse Square, London, E.C.1.

National Clock Manufacturing Co., Ltd., 19, St. Bride Street, London, E.C.4.

Orel-Micro Electric, Ltd., 39-41, Berners Street, London, W.1.

Pahl Bros., Ltd., 84, Chiswell Street, London, E.C.1.

Singer Thermoplastic Products, Ltd., 71, Tranquil Vale, Blackheath, London, S.E.3.

Smith's English Clocks, Ltd., Cricklewood Works, London, N.W.2.

Stockall, Marples and Co., Ltd., 6-10, Clerkenwell Road, London, E.C.1.

Strong and Co., 12-13, Hamsell Street, London, E.C.1.

Sunshine Devices, Ltd., 57, Moorfields, Liverpool 2.

Synchromatic Time Recording Co., Ltd., 65, Erskine Street, Liverpool, 6.

Synchrone Co., Ltd., 117, Victoria Street, London, S.W.1.

T.M.C.—Harwell (Sales), Ltd., 223, Shaftesbury Avenue, London, W.C.2.

Time Recorder and Equipment Co., West Bank Works, Barking, Essex.

Nobody can poke such delicious yet harmless fun as does Heath Robinson. He has here exercised his ingenuity in devising an elaborately inefficient way of testing the accuracy of Smith's synchronous clocks, by checking against noon as indicated by the sun and as recorded by a piece of apparatus which must have considerable time-lag!

How Synchronous Clocks Work

(Continued from page 19.)

electric magnet placed near the rotor poles. The brass plate B will make contact with B1 when the rotor is turned 45 degrees from its present position, whereupon E will become magnetised and draw down the next pole of the rotor. Contact will then be broken again, but the rotor will continue on its own momentum until the next contact is made, and the whole cycle of operation recommences. It will be seen that if the rotor is once started in either direction it will continue to rotate at a steady but uncontrolled speed.

If the contacts B and B1 are attached to one arm of an electrically maintained tuning fork the speed of the rotor will be controlled by the frequency of the fork's vibration. As this is an accurately known constant, the motor can then be used for time measurement.

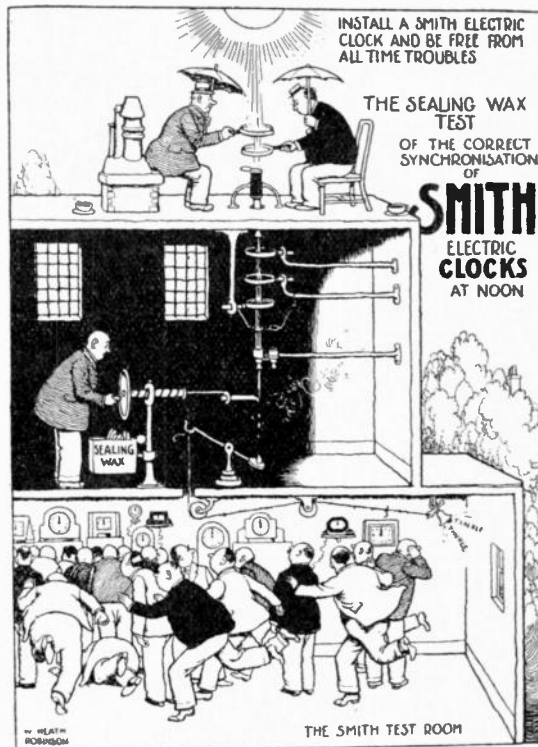
It follows that if the magnet is supplied with alternating current instead of pulsating direct current, conditions will be very similar to tuning fork control, except that the speed will now be governed by the supply frequency. The speed will thus depend on this frequency and the number of poles on the rotor.

As each cycle will consist of two pulsations, two rotor poles are attracted by the magnet in every cycle. Increasing the number of poles on the rotor will therefore lower the speed, while an increase in frequency will raise it. Speed in revolutions per minute is given by the formula—

$$\text{R.P.M.} = \frac{2 \times \text{frequency} \times 60}{\text{No. of Rotor poles.}}$$

In motors designed to run at comparatively slow speeds, the increase in the number of rotor poles (or teeth) necessitates making them very small, and the number of magnet poles is therefore increased to pull several teeth together. This has no effect on the speed.

For the self-starting type of rotor a slight modification is made in the construction of the magnets. The stator poles



are divided into two halves, and one half of each is shielded by a copper ring. The effect of this is to retard the growth of the magnetic flux on the part of the pole on which they are placed, owing to the induction of electric currents inside the rings. When the exciting current in the coil is at its maximum, the greatest strength of field will be along a given line between the poles of the stator.

Just as this maximum is dying down in the unshielded parts of the magnetic poles, the shielded poles reach full strength, and the line of maximum magnetism shifts round with sufficient strength to spin the rotor and give it the required start.

Silent Running

In clocks of the non-self-starting type various devices are employed to impart the initial spin to the rotor. Usually a knob is fitted in the back working on a slipping clutch principle. When the knob is twisted, pressed in, or pressed in and released, the mechanism is started.

Synchronous electric clocks have obvious advantages for domestic use, some of which have already been mentioned. Here are a few more useful sales points.

The light moving parts are frequently enclosed in an oil chamber, and thus run very silently and require little attention.

Another contribution to silent running is the fact that the first wheels in the gear train are often made of fibre.

Clocks can be plugged into ordinary sockets or lampholders, though it is better if they are permanently wired to the mains supply. The simplicity and consequent smallness of the motors enables them to be put into any kind of case, and the fact that there is no pendulum makes regulating and levelling unnecessary, while timekeeping is completely unaffected by temperature and climatic conditions.

J. B. J.

Synchronous CLOCK REVIEW

There is a very wide choice of electric clocks now on the market. Among the best-known lines are those which are reviewed in the following pages. A complete directory of synchronous clock manufacturers is given opposite, but for the sake of convenience addresses are also given below under the alphabetically arranged trade names.

BULLE

Bulle Products, Ltd., Bulle Clock House, 187a, Tottenham Court Road, London, W.1.

IN addition to their wide range of well-known self-contained battery operated clocks, Bulle have now developed an A.C. mains movement, so that each clock in the range is now available for either battery or A.C. mains operation.

The current catalogue illustrates more than 30 models, A.C. models being listed at 5s. less than the battery types.

Prices range from the popular Strathmore in Jacobean oak at 45s. for battery, or 40s. for A.C. operation, up to 3 guineas for the new Queen battery model, which is a new and attractive version of the famous glass Bulle clock with visible pendulum.

Other popular priced models include the Royal at 4 guineas in peach, green, blue or black, the Paris de Luxe at 5 guineas, and the Chef for modern kitchens at 49s. 6d.

A vigorous new sales and advertising campaign has just commenced, and new displays and sales literature are available. Supplies will be forwarded on application.

COSSOR

A. C. Cossor, Ltd., Cossor House, Highbury Grove, London, N.5.

A TWELVE-DAY running trial given to each clock before it is released for sale is a feature of the testing system adopted by A. C. Cossor.

First releases of Cossor clocks (this is a new departure for the firm) include Model EC250 at 25s. in walnut; Model EC426 at 42s. 6d. in walnut with a chrome base; and Model EC550, a modern design in walnut at 55s.

Features stressed are reliability and silent working, wide bearings, gear trains of generous width, and ease of service. Each clock is also subjected to a 2,000-volt breakdown test.

EUSTON

Euston Manufacturing Co., 56-60, Grove Road, London, E.17.

A NUMBER of new domestic synchronous electric clocks are being produced and details will be available in a few days.

A development particularly interesting

to retailers for their own use is a combined clock and display device. This comprises a clock with a 12-in. dial in a bakelite case and with mirrored characters. A short advertising message can also be shown.

The dial is illuminated by an ordinary 25-100-watt lamp, which also projects a flood of light downwards. The clock, therefore, can form an arresting item in a window and at the same time will flood-light any special line placed below it.

It is said to make an inexpensive and effective window attraction for the long dark evenings.

FERRANTI

Ferranti, Ltd., Hollinwood, Lancashire.

DURING the past few years the range of Ferranti clocks has increased greatly, and clocks for every room in the home, offices, halls and streets are now marketed.

Mantel clocks with square or round dials are supplied in a variety of designs of bakelite or wooden cases ranging from 26s. to 65s. Striking and chiming clocks in larger cases are available in walnut or oak.

Fancy clocks include many striking models. Tinted mirror glass clocks of neat modern design are sold in peach, green or amber shades, while there are chromium strut clocks and flush fitting types in many varied designs.

Two of the most interesting models are Nos. 9 and 7 alarm clocks. A feature is that the alarm setting dial shows the full 24 hours, so that the alarm can be set for a morning or evening time, and will only operate once in 24 hours without the necessity for resetting.

Model No. 7 has automatic floodlighting of the dial switched on at approximately midnight, and will be automatically switched off at approximately 8 a.m.

FROSTOFF

A. J. Balcombe, Ltd., 52-58, Tabernacle Street, London, E.C.2.

ATTRACTIVE kitchen clocks for wall or shelf mounting which are also defrosting attachments for refrigerators have been produced by A. J. Balcombe.

The wall type, Model 503, retails at £3 10s., and the shelf type, Model 502, at £3 7s. 6d. Casework of both models



Labour saving for housewives as well as Father Time is provided by electric clocks. Stereos of this block are available for dealer advertisements at 5s. post free.

is finished in white enamel, while the wall model features a chrome bezel.

These clocks are provided with 3-pin 5-amp. plugs, and are of the self-starting type.

GENALEX

General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

THE G.E.C. range of synchronous electric clocks is available in a wide variety of finishes suitable for use in the home, office, shops, factories, and theatres.

The movement in the smaller patterns is mounted in an all-insulated drum and is interchangeable with the 3/4-in. standard drum movement fitted in a large proportion of existing spring-driven clocks. Old movements can therefore be superseded and the original clock modernised by the substitution of the new movement.

The clock movement is geared direct to a tiny synchronous electric motor which runs at only 200 r.p.m. There is no ticking or humming and the cost of running is negligible, said to be approximately 10 units a year. The clocks are suitable for 200/250 volts 50 cycles; other voltages can be supplied if specified.

Nearly 150 types are listed, ranging in price from 23s. 6d. Mantel, wall and pedestal patterns are available with a choice of bakelite and wood cases.

Special designs can be supplied to order. Also Master Controlled Systems for use in public buildings and works.

GENTS

Gent and Co., Ltd., Parady Works, Leicester.

LATEST additions to the range of Gents' domestic A.C. clocks are three models of modern horizontal design all priced at £2 14s. each.

These are the C369 in oak and the C370 and C371 in walnut. The trio have 4-in. cream dials.

Mantel clocks range from the C212 walnut-case type with 5-in. square dial at £2 5s. to the C319, also with square dial but with a choice of hardwood cases at £5.

There are also a wide selection of modern designs from £3 18s. to £5 19s. 6d.; while the company markets a number of special models of unusual

(Continued on page 22.)

pattern, the prices of these being on application only.

Strong feature of the clock selection is the very long range of wall clocks for both domestic and commercial uses. These range upwards in price from £3 for a 9-in. wood-cased model.

The movement employed in the domestic models is of the 300-r.p.m. slow-speed type with a starter knob on the back for starting. Movements in barrel housings for fitting in existing cases are also available.

GOBLIN

British Vacuum Cleaner and Engineering Co., Ltd., Goblin Works, Ermyn Way, Leatherhead, Surrey.

SOME 50 models available in a variety of finishes to harmonise with every home setting now comprise the range.

Every clock is sold with the undertaking that should the movement fail within two years of purchase, it will be replaced free of charge.

The range includes a variety of wall and mantel types for kitchen, living room or bedroom use. Interesting models out of the usual run are 238 "Capricorn," embodying barometer, thermometer and clock at 70s. in oak, 85s. in walnut and other finishes, and the 241 "Electra," an effective bedside clock with an independently controlled lamp and shade. This is available in a variety of finishes from 45s.

Another attractive model recently introduced is the "Foyle" bracket, mantel or wall clock on a walnut or mahogany stand. It has a glass mirror dial with chromium hands and fittings and sells at 5 guineas.

The lowest-priced model in the range is 27s. 6d.

HAMMOND

Electrical Commodities, Ltd., Spartan Works, Beresford Avenue, Wembley, Middlesex.

A FEATURE of the Hammond clock range is a series of models incorporating automatic calendar changed by the clock movement. There are nine models in this series in modern design mantel and desk cases. Prices range from 63s. to 147s.

Leading the standard range is the Paris alarm at 21s., followed by a wide selection of mantel and modern design types.

Specimen prices include the Mayfair in moulded walnut at 26s.; the Grenadier and Gloria desk and boudoir types at 42s.; several wooden-cased types from 29s. 6d.

Modern design types are priced at from 63s. for the Empress to 126s. for the Majestic; while to match period furniture there is the Sovereign at 94s. 6d.

Wall clocks include the Parkway and Picardy at 27s. 6d., and the Hampton at 49s. 6d., these being of round pattern. A rectangular wall type is the Stewardess, 42s.

Features of the movement include 2 watts consumption, Nitralloy main shaft to slow-speed motor, no need for oiling, and centre seconds hand.

KIENZLE

Pahl Bros., Ltd., 34, Chiswell Street, London, E.C.2.

THE Kienzle synchronous clock has been on the world market since 1927, and is the product of a factory which has

been manufacturing clocks for more than 50 years. The unit, it is stated, complies with all the test clauses of the B.S. specification for such clocks.

The coil winding employed is said to be one of the largest fitted to A.C. clocks, while the rotor, of the slow-speed type, revolves at 200 r.p.m. Consumption is 1.8 watt, and the unit is designed to give correct time even if the mains voltage falls by 10 per cent.

Insulation resistance between the electrical circuit and the case is given as being 100 megohms at 500 volts D.C. The unit has withstood 2,000 volts r.m.s. 50 cycles between winding and case for one minute.

A wide range of models is available, prices ranging from 25s. for a chrome and aluminium type to 77s. for a 12-in. hinged door walnut wall clock.

The range includes mantel types in wooden and metal cases as well as kitchen and office wall clocks.

LONDEX

Londex, Ltd., Brettenham House, Lancaster Place, Strand, London, W.C.2.

NOVEL design features the Londex synchronous electric clock movement marketed by this firm. It is designed for 200-250-volt mains and is suitable as a drive unit for clocks up to 14 in. in diameter.

The unit is listed as the P1 and retails at 12s. 6d. Dust covers list at 1s. each extra, while hands can be supplied at from 1s. to 2s. per set of three according to size.

NEATLITE

National Clock Manufacturing Co., Ltd., 19, St. Bride Street, London, E.C.4.

MOTOR design, which has considerably reduced the number of gears in the train, is claimed as being a leading feature of Neatlite clocks.

The motor is of the slow-speed type, which is started by a special control.

Leading the range are two moulded walnut mantel types at 22s. 6d. each, and a range of wooden designs in oak and walnut at prices ranging from 28s. 6d. to 69s. There is also a grandmother type in oak at 105s. It is 53 in. high.

HOW TO CATCH TRAINS



The obvious answer to the dashing gentleman on the left is that an electric clock will tell him the accurate time, so that he can catch his train calmly. The sketch on the right needs no explanation. Everybody ought to have electric clocks if they want the right time. Stereos or either block for dealer advertising, 5s., post free.

Continuing the

Synchronous Clock

There is also a series of chrome and silver models from 17s. 6d. to 22s. 6d. Two of these are also available combined with table lamps, and retail at 54s.

The Neatlite series incorporates a number of coloured mirror clocks of particularly modern design. Prices range from 60s. to 105s.

There are also two wall models in oak cases at 60s. They are without glasses, one being square and the other octagonal. Both these are available for flush wall mounting at 57s.

All clocks in these series carry a two years' guarantee.

OREL-MICRO

Orel Micro Electric, Ltd., 39-41, Burners Street, London, W.1.

OREL clocks are battery driven types, power supply being provided by a standard 4½-volt torch battery, which it is claimed will run the clock for over 10 months.

The clock unit is rectangular in shape and weighs 2 oz. Features include micro-meter time-keeping adjustment; transparent dust-proof case; and precision standard balance wheel and hair-spring.

Leading the range are the Betty wall type and the Given mantel type, both at 25s. Both have moulded cases in mahogany, oak, walnut, and black, with additional coloured finishes for the Betty. White and ivory versions of the Betty list at 27s. 6d.

Other models in the range include a mantel type ranging in price from the New Terrace in moulded walnut at £2 to the Dorchester in figured walnut at 3 guineas. There are also modern design mantel types and a series of wall and inset types from 2 to 4 guineas.

Sales-aids available from the company stress the slogan, "Worked by a pocket battery—no wires—no plugs."

SECTRIC

Smith's English Clocks, Ltd., Cricklewood Works, London, N.W.2.

SMITH'S autumn clock campaign does not include the introduction of a large number of new models, the range introduced earlier this year having met with such a favourable reception.

Among leading selling lines are the

You ought to have Electric clocks



Review

alarm series, including the Callboy at 25s. in walnut and mahogany, or blue, green and primrose pastel shades; the Lark at 36s. in walnut and black; and the Swallow Nitelite at 52s. 6d. in oak and 58s. in walnut.

Style clocks include such popular models as the Clare at 32s. 6d.; Bramber and Cambria at 37s. 6d. each; the Heston series from 29s. 6d.; the Perth in pastel shades at 26s.; the Tilbury from 47s. 6d.; Tweed from 58s. 6d.; Mystic, 75s.; Chalfont from 77s. 6d.; Cavil, 49s. 6d.; St. Kilda, 59s. 6d.; and Steyning, 47s. 6d.

Chiming clocks include the London in oak at 109s. 6d. and in walnut at 126s. 6d. Domestic wall dials include the Durban in white or pastel shades at 27s. 6d.; and the Dulwich at 37s. 6d. Among commercial dials are the Delta at the new price of 39s. 6d., and the Delhi and Durban.

Smith's have doubled their advertising allocation this autumn in order to help the dealer to sell his stock of Sectric clocks faster than ever.

A wide range of sales-aids are offered to enable the dealer to link up with the advertising campaign.

These sales-aids are detailed in a separate folder available to the Trade on application. They include display stands given free of charge with an order for a reasonable quantity of goods. Displays already in circulation will be continued.

Sales-aids also include lantern slides for use in local cinemas, advertisements for local advertising, neon and revolving signs to advertise clocks and other goods as well, letters for mailing to potential, private and commercial customers, blotters and stickers.

Prominent advertising space has been taken in leading national newspapers, building trade periodicals, magazines and journals, while bills have been posted on buses and trams where space could be obtained.

STERLING

Ismay Distributors, Ltd., Sterling Works, Dagenham, Essex.

THE early introduction of synchronous alarm clocks is promised by the Sterling Clock Co., Ltd., the manufacturers of the Sterling models.

Throughout a very wide and varied

range of standard models a slow-speed motor with centre seconds hand is employed.

Lowest priced model in the range is the 506 in oak at 23s. 6d. Other mantel clocks in wooden and a combination of wooden and metal cases retail at 25s., 28s. 6d., 30s., 32s. 6d., 35s., 36s., 36s. 6d., 42s., 45s., 55s., 60s., 95s. and 105s. Prices vary according to designs and finishes, while in most cases there are several alternative designs at each price.

Modern designs in mantel and table clocks are also produced, prices for these ranging upwards from 39s. 6d.

An attractive series of wall clocks is also available, there being some 10 basic models, several in various alternative finishes, the price range being from 30s. to 65s.

The company also publishes a special list of types particularly suitable for builders when constructing new houses.

SYNCHRONOMAINS

Synchrone Co., Ltd., 117, Victoria Street, Westminster, London, S.W.1.

SLOW-SPEED synchronous motors running at 200 r.p.m. are fitted to A.C. clocks marketed by this firm. Consumption is given as being $\frac{1}{2}$ watt, while the units are designed to operate the hands of dials up to 2 ft. 6 in. in diameter.

The whole mechanism is contained in a neat bakelite housing.

Synchrone mains clocks are available in a large variety of designs, including alarms, timepiece and striking models for mantelshelf use, timepiece models for wall hanging, grandfather and grandmother clocks in both silent and striking versions, and outdoor and turret clocks of all descriptions.

Prices range upwards from 27s. 6d. for the alarm model, which is available in mahogany or walnut bakelite finishes. Luminous hands and figures can be provided for a small extra charge.

Prices for mantel clocks range from 33s. for a bakelite model in mahogany, walnut or oak to 121s. for a handsome model in walnut. Several of the models are available with striking mechanism at extra charges.

Synchrone also market complete clock installations, including master clock driving trains of slave dials.

SYNCKLOCKS

Everett Edgcumbe and Co., Ltd., Colindale Works, Hendon, London, N.W.9.

OIL-BATH lubrication of the motor is one of the leading features of the movement incorporated in Syncklocks models. The motor is of the self-starting type and is contained in a sealed housing. Models are provided in the current range to suit all demands, while in many cases both ordinary and striking versions are available. The standard dial is $3\frac{1}{2}$ in. in diameter.

Wooden-cased models include the Sidley and Verney, both in oak, at 32s. 6d. and 35s. respectively; the Wilton, in oak, 43s.; the Marlow, in walnut, 69s.; and the Ostend, 35s. in oak and 40s. in walnut.

Wooden mantel models with 6 in. dials include the Hensall, oak, 37s. 6d.; Denton, walnut, 40s.; Clutton, oak, 47s. 6d. (striker, 71s. 6d.); Swanbourne, oak, 50s.

SURVEY OF WIRED HOMES

NEXT week BROADCASTER publishes a complete statistical district-by-district and county-by-county survey of the wired and unwired homes of Great Britain, showing the progress of electrification. Districts with time-controlled mains will be specially indicated.

(striker, 71s. 6d.); Finmere, oak, 47s. 6d. (striker, 71s. 6d.); or walnut, 52s. 6d. (striker, 76s. 6d.); and the Welford, oak, 47s. 6d. (striker, 71s. 6d.). There is also the Dorchester in walnut with square dial at 75s. 6d. (striker, 90s. 6d.); and the Woodford in oak and with semi-circular dial at 105s. (striker, 126s., or chimer, 189s.).

There is also a wide range of modern designs and strut types, respective prices being 54s. for the Tisbury strut clock and 89s. for the modernistic 'live.

The range also includes the Haddon grandmother at £13 17s. (striker, £15, or chimer, £18 10s.); and the Kirkstall grand-daughter at £6 18s. 6d. (striker, £8 1s. 6d., or chimer, 11 guineas).

There is also a series of wall and flush mounting types ranging from 55s. for wall mounting types, and 44s. for flush mounting types.

TEMCO

T.M.C.-Harwell (Sales), Ltd., Britannia House, 235, Shaftesbury Avenue, London, W.C.2.

THE range of Temco clocks now contains some 148 models in designs and prices to suit all pockets.

This includes 39 new models, from 25s. to 140s. in price. The models are divided into 20 wood mantel types, eight metal and glass, two coloured Catalin and two wood wall types, one being the 775, at 39s. 6d.

Among the new models is the 4002 metal strut type in pastel colours at 25s.; the 4003, 4004 and 4005 in chrome and coloured Briolite at 35s. 6d., 37s. 6d. and 39s. 6d. respectively; and seven Jacobean oak mantel types, from 29s. 6d. to 45s.

Model 774 at 45s., one of the Catalin models, is available in a variety of colours, while in several other new models the bezel has been dispensed with, the convex-face glass being secured by four chromium screws.

A strong advertising campaign has been started by the company, and advertisements are appearing every few days in leading National and Provincial newspapers.

Several display units are offered to stockists, as well as showcards, an art showroom catalogue, and literature including an 18-page throwaway showing all models and designed for overprinting.

TIM

London Electric Clock Co., 15, Park Street, Islington, London, N.1.

MOVEMENTS fitted to Tim clocks are of the slow-speed type, the rotors turning at 120 r.p.m. They are designed to (Continued on page 24.)

BUILDING EXHIBITION

Automatic Salesman Helps To Sell Fires

"THE Automatic Salesman," consisting of a loud speaker and a series of sales records concealed on the stand, has been used at the Building Exhibition, Olympia, London, which closes to-night, by Berry's Electric, Ltd., to interest visitors in their range of "Chameleon" fires.

When a salesman is unable to give immediate attention to a visitor, he switches on a sales record to maintain the prospect's attention. This idea, it is stated, will probably be used by various Supply Companies, who are featuring Chameleon fires in their showrooms.

A brand new model in the "Chameleon" colour changing fire range is the Winsomeberry at £7 15s. for A.C. only, with automatic control, or £6 15s. with hand control, A.C. or D.C. It has two 1-kw. heating units so designed that they may swivel back to form an alcove in which there is a special receptacle for flowers.

The flowers and alcove are bathed in light, the colour of which changes almost imperceptibly through the whole range of the solar spectrum or may remain set to suit individual requirements. The Winsomeberry is supplied in a combination of satin and polished silver finish.

Berry's Electric, Ltd., are now in a position to supply the colour changing unit separately for £4 10s., for the convenience of those people who would like to incorporate it in their general home decorative scheme, such as the lighting of alcoves.

Various new types of lighting fittings have been exhibited. They are modernistic design pendant fittings, of the bowl and two and three light types. Prices range from 39s. 6d.

Washer Range

Other firms who have been displaying new lines for the first time include Beatty Bros., Belling and Co., E. K. Cole, Ltd., Hotpoint Electric Appliance Co., Ltd., and Smith's English Clocks, Ltd.

Beatty Bros.—Latest introduction in a range of washers is the model S.B., which heats or boils the water and will wash, rinse, wring, blue and then deposit the clothes in a basket. It has a capacity of approximately 7 lb. of dry clothes and incorporates a patent agitator with a beaded edge, giving a double flow of water against a single flow. Current consumption is approximately 1/5th of a unit, A.C. or D.C. supplies, and the cost complete is 33 gns. in a stainless steel finish.

Belling and Co.—Showing 1938-39 range of fires described in August 20 issue of BROADCASTER, together with streamline cookers and convector heaters.

E. K. Cole, Ltd.—The cabinet model Ekco-Coffield washer shown is one of a range described in BROADCASTER, September 17 issue. The latest types of Thermo-vent convector heater, described in the September 24 issue, are also shown.

Hotpoint Electric Appliance Co., Ltd.—Featuring three new fires, a streamline cooker and a constant hot water unit, together with an improved model 400 vacuum cleaner.

The fires are the Advance 2-kw. model at 65s., embodying a hyperbolic reflector and available in a choice of enamelled finishes; the Tewin 1,250 watts pedestal model, which, if accidentally knocked over, is automatically switched off, costing 47s. 6d., in chrome finish with choice of base and top finishes, and the Reliance 2-kw. panel model at £5 10s., having a reflector of trapezoidal section finished in chromium plate with choice of finish for panels.

Full details have not yet been released concerning the new streamline cooker, which is expected to retail at £25 10s. Price and release date of the constant hot water unit are also pending. The model at present shown will deliver three pints of water per minute at 130 degrees, and has a loading of 4 kilowatts.

The improved model 400 cleaner has a more robust switch housing, four separate adjustments for fitting the soft bristled brush, which is now claimed to be non-clogging and a heavier front cap where extension hose is fixed. Price remains the same, £10 17s. 6d., including dusting tools.

Three-pint Jug

The new electric jug is not shown at the Exhibition. It has a loading of 1,800 watts and provides three pints of boiling water in five minutes. This jug is of porcelain construction, employs a "Tonibar" type element and costs 30s. Any part can be replaced and a feature is that the jug cannot be filled or emptied when in circuit.

Hotpoint can now supply for 5s. a stand which hooks on the side of an electric cooker to accommodate a kettle.

Smith's English Clocks, Ltd.—Showing alarm clocks among other types, which are now available in black, walnut or mahogany finishes and pastel shades. The pastel shades are primrose, blue and grey.

All the above firms, with the exception of Smith's Clocks, have stands in a special electrical section, headed by the British Electrical Development Association. Other firms in the section are Aidas Electric (water heating equipment), Geo. Bray (heating elements), Jackson Electric Stove Co., Ltd. (cookers and fires), Premier Electric Heaters (fires, kettles, percolators), Pressed Steel Co. (Prestcold refrigerators) and Simplex Electric Co. (fires, cookers and inspection lamps).

Other firms showing electrical appliances elsewhere in the exhibition are Interwoven Stove Co., Ltd. (connector heater and lamps), Kelvinator, Ltd. (refrigerators), Smith's English Clocks, Ltd., Tellus Super Vacuum Cleaner, Ltd., Ventaria, Ltd. (ventilating fans), and Zaros (Sales), Ltd. (refrigerators).



A double-purpose window display piece issued by the G.E.C. for fires or domestic appliances or combination of both. It was described last week.

Synchronous Clock Review

(Continued from page 23.)

operate clocks with dials up to 2 ft. if the hands of the larger sizes are balanced. Consumption is approximately 1½ watts.

In addition to a wide range of clocks fitted with this movement, the company market at 19s. 6d. a home constructor's kit of parts attractively boxed.

Standard Tim clocks range in price from 26s. 3d. upwards. There is a wide selection of wooden and metal mantel types, wooden models being from 50s. to 80s., the metal models listing from 42s. 6d. to 45s.

There is also a big selection of ornamental and modern design types, square-dial mantel types in wood, and two grand-daughter clocks at 100s. and 173s. 6d.

Hanging and wall models are also available, prices ranging from 47s. 6d. for an 8-in. oxy-copper metal-cased circular model to £17 for an 18-in. double-sided clock in walnut.

VIKING

Sunshine Devices, Ltd., 94, Steel Street, Liverpool, 1.

PARTICULARLY novel designs feature this series of clocks. They have edge-lit glass dials, the lighting being controlled by a switch. Waltham self-starting movements are incorporated.

Leading the range is the Silver Moon-Glo Model MTI at 4 guineas in chrome and silver. Next are the two Owl-Glow models at 5 guineas each. These employ circular glass dials and chrome-finished plinth bases. Model OSD-7 has luminous dots for the chapters, while Model OSN-8 has Arabic numerals.

Finally there is the Collonade, Model CS10, at 6 guineas. This has a square dial mounted between two brass-finished columns on a chrome base.

BROADCASTER SERVICE ENGINEER SUPPLEMENT

HUNTS SERVICE THE SERVICE ENGINEERS
IF IT'S A CONDENSER — YOU GET IT FROM HUNTS
QUICKER — BETTER — CHEAPER — STOCK



PRECISION CAPACITOR ANALYSER & RESISTANCE BRIDGE.
A better, more accurate and more dependable capacity and resistance analyser, designed to meet the needs of engineers and service men alike.

This instrument virtually represents the Wien Bridge Laboratory method of capacity measurement, in a form simple to use, embodying a high degree of accuracy entirely independent of line voltage variations.

All readings are direct from a colour-coded panel, eliminating the necessity for cross reference to complicated charts or graphs. A scientific instrument and a real time, trouble- and money-saver.

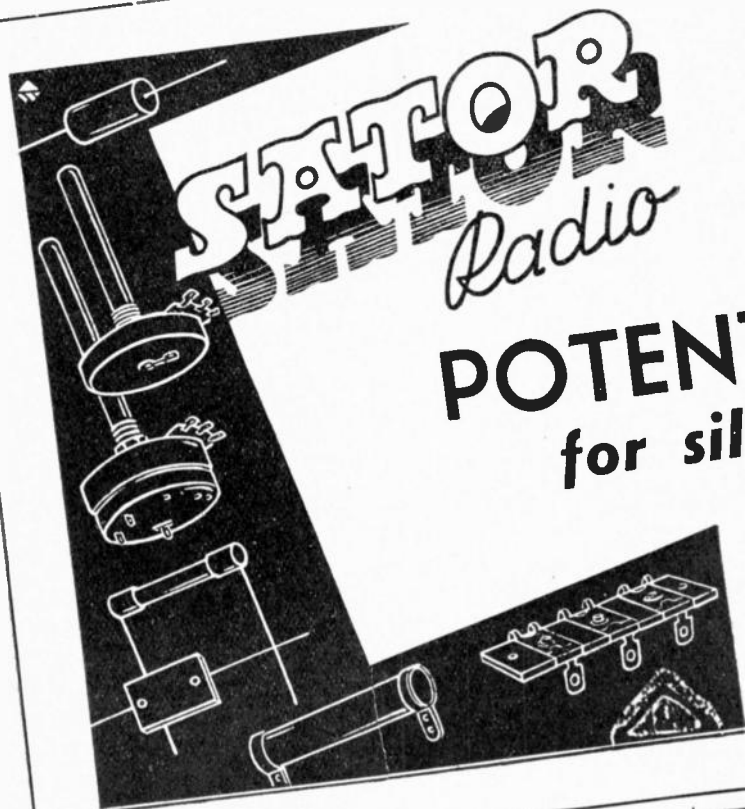
EIGHT OUTSTANDING FEATURES.

- 1. MEASURES CAPACITY.**
Accurately measures the capacity of all types of electrolytic, paper, mica, and air condensers by means of a built-in Wien Bridge. Also measures capacity between circuit wiring. Capacity range .00001 to 70.0 mfd.
- 2. MEASURES POWER FACTOR.**
The power factor of all types of electrolytic condensers can be read direct from a scale which is calibrated zero to 50 power factor. Thus, the filtering efficient of condensers can easily be determined.
- 3. MEASURES RESISTANCES** from 50 to 2,000,000 ohms.
- 4. MEASURES INSULATION RESISTANCE.**
- 5. DETECTS DEFECTIVE CONDENSERS.**
- 6. IS A CONTINUITY METER** for all circuits.
The capacity analyser may also be used as a continuity meter for testing all types of circuits.
- 7. IS A VISUAL BRIDGE BALANCE** using a cathode ray tube.



NEW BRITISH-MADE MODEL incorporates

Type C.L.R. 3221.
List price £11-11-0 each.

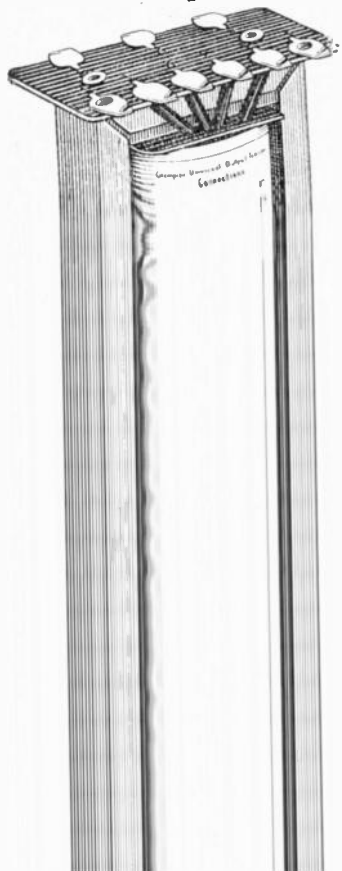


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STOCK IN ALL STANDARD TYPES • HEAD FACTORIES IN AUSTRALIA

GRANDPION UNIVERSAL REPLACEMENT OUTPUT TRANSFORMER for Radio Receivers

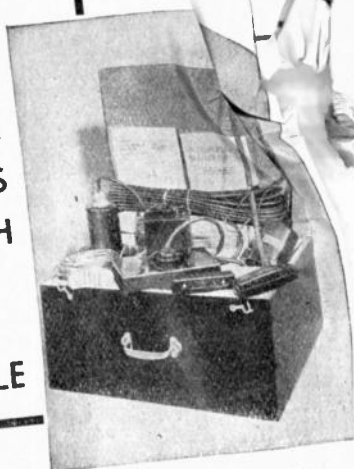


Quicker, Cheaper,
Better
than re-winds.

PRIMARY tapped for
Triode, Battery Pentode,
Mains Pentode, and
Push-Pull outputs.

SECONDARY tapped

**TWO
SUPPRESSION
INSTALLATIONS
ARE WORTH
ONE
RECEIVER SALE**



at your door, but you must go
them

PYE 806 PUSH-BUTTON FIVE

(Continued from page iii.)

Repeat both operations until no further improvement results.

Long Waves.—Tune set and oscillator to 1,800 metres (166 kc.) and adjust P1 for maximum, simultaneously rocking the gang, and then line up T5 for maximum on a 1,000-metres (300 kc.) signal.

I.F. Wavetrap.—With gang at maximum and receiver switched to M.W. band, inject a strong 465-kc. signal and adjust the core of L1 (the brass stem underneath chassis) for maximum response.

Push-button Realignment

TO realign the push-buttons all that is necessary is to connect an aerial and earth system to the receiver and press each button in turn and adjust first the lower (oscillator) trimmer to bring in the station spot on, and then the upper (aerial) trimmer to bring in the station at full strength.

The visual tuning indicator will show the correct tuning position and the maximum response. The coils corresponding to the various press-buttons are linked to the buttons by black lines on the button plate and are inscribed A (aerial) and O (oscillator).

Before realigning the buttons, it is necessary to allow the valves to heat up thoroughly to obviate drift on heating.

The appended tables indicate the correct combination of aerial and oscillator coils.

If the station on the push-button is not required then the new station may be tuned in as in push-button realignment and the new station name fitted.

If it is desired to retain the station, then a push-button belonging to a station that is not particularly required must be brought into service, the coils corresponding to the button being removed and a new coil combination fitted.

A Pye calibrated coil adjuster, obtainable from the makers price 1s., is required for the subsequent operation.

After the set has warmed up, press the button in question and remove the pushbutton escutcheon plate. Insert the stem of the adjuster into the calibrated sleeve and push the latter on to the brass collar of the aerial coil concerned. Adjust the aerial coil to approximately the correct setting for the required station (see table). The position on the line engraved on the adjuster is read from the calibration on the sleeve.

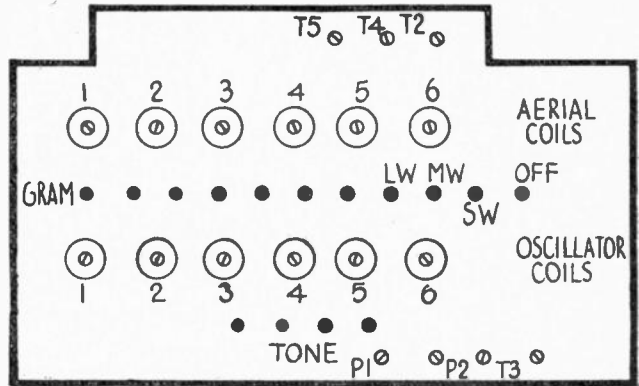
Then adjust the corresponding oscillator coil to approximate setting (see table) and then finally tune to actual resonance by reference to the tuning indicator.

Repeat the aerial coil adjustment, this time obtaining resonance by reference to the tuning indicator, change the name-plate behind the escutcheon window, and finally replace the escutcheon.

Replacement Condensers.

EXACT replacement condensers are available from A. H. Hunt, Ltd. These are: For C51, Type 2915, 1s. 9d.; for C41, Type 4015, 1s. 6d.; for C40, Type 2964, 1s. 10d.; and for C48, C49 and C50, Type 4200, 9s. 3d.

Right is the arrangement of push-buttons and trimmers in the Pye 806 automatic tuning receiver. Below are the diagrams showing the chassis layout.

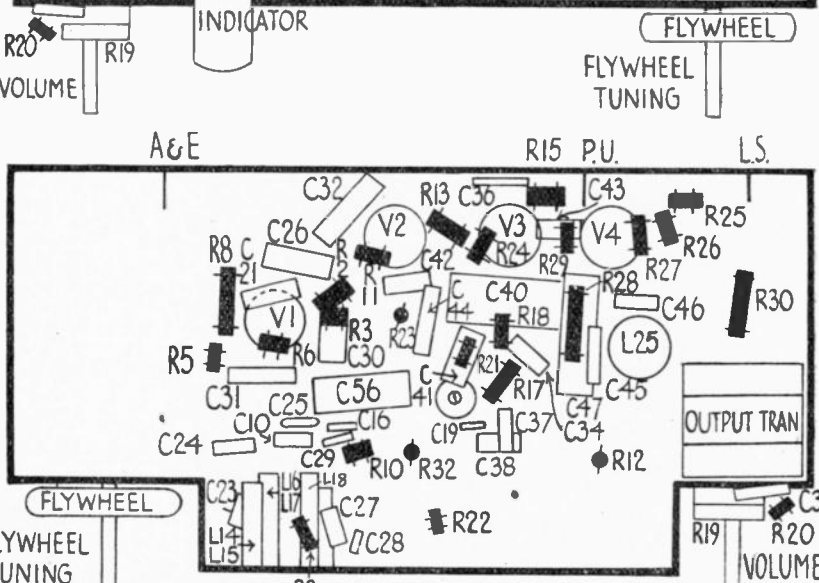
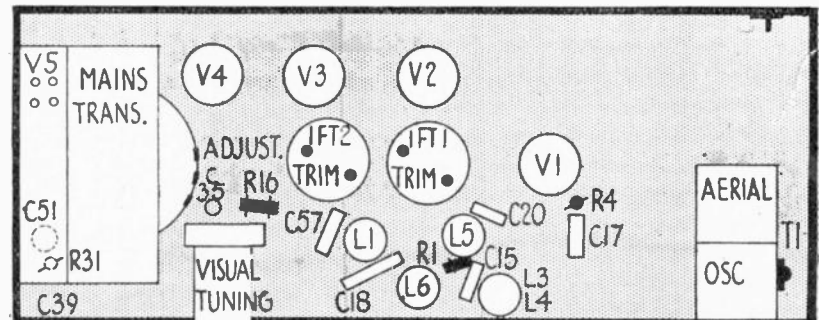


WAVELENGTHS & COILS

Button.	Aerial coil.	Oscillator coil.	Wavelengths covered.
1	G	F	1420—1935
2	F	E	1245—1680
3	E	M	400—555
4	D	K	334—464
5	C	J	253—352
6	B	H	195—275

COIL ADJUSTER SETTINGS

Station.	Wave-length.	Com-bina-tion num-ber.	Reading.	
			Aerial coil.	Oscil-lator coil.
Hilversum 1	1,875	1	7½	5
Radio Paris	1,648	(1)	4½	4½
Droitwich	1,500	(1)	2½	4
Luxembourg	1,293	2	5½	4½
Radio Eireann	531	3	7½	6
Stuttgart	522.6	3	6½	5½
Brussels 1.	483.9	(3)	5½	5
North Regional	449.1	4	4	4½
Paris (P.T.T.)	431.7	(4)	3½	4
Rome 1	429.8	(4)	6½	4
Scottish Regional	391.1	4	5	5½
Welsh Regional	373.1	4	4½	4½
London Regional	342.1	(4)	2½	4
Hamburg	331.9	(4)	7½	7
Poste Parisien	312.8	5	1	3½
N.Ireland Regional	307.1	5	7	6
Midland Regional	296.2	5	5½	5½
Konigsberg	291	5	4½	5
West Regional	285.7	5	4½	5
Stagshaw	267.4	(5)	3	4½
Nationals	261.1	6	7½	0½
Cork	242.9	6	7	0½
Aberdeen	233.5	6	5	5
Dublin	222.6	6	4½	4½
Radio Lyons	215.4	6	3½	3½
Radio Normandy	212.6	6	3½	3½
Bournemouth	203.5	6	2½	3
Plymouth	203.5	6	2½	3



and decoupling condenser C35 are mounted across the valveholder.

Sockets at the rear of the chassis deck are for connecting a dipole aerial for short-wave work.

The electrolytic condenser pack containing C48, C49 and C50 is mounted on the speaker baffle board. R14 and C33 are inside IFT2, and C22 in IFT1. The fixed trimming condensers are inside the respective transformers.

The trimming condenser T3 has a further trimming condenser in parallel, as indicated on the push-button panel drawing.

In some models the valves may be Ever Ready make with similar characteristics.

L29, the first smoothing choke, is mounted on the speaker baffle board.

Another pair of sockets at the rear of the chassis enable a high output pick-up to be connected.

The pilot lights illuminating the push-button panel and the wavelength scale are rated at 6 volts .5 amp., and have M.E.S. bases.

The expander indicator light is fitted inside a rubber mounting that is removed by unscrewing a knurled nut. The bulb has an M.E.S. base and is rated at 4 volts .06 amp.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Press the fidelity tone button. Prevent operation of the oscillator section of V1 by shorting the oscillator section of the gang. Set volume control to maximum.

Connect a service oscillator between the top grid cap of V1 (via a .002-mfd. condenser) and chassis. Remove the normal grid connection and connect a 500,000-ohms resistance between the grid of the valve and chassis.

Tune the service oscillator to 465 kc. (645 metres) and adjust the trimmers of IFT2 and then IFT1 for maximum response, reducing the input from the service oscillator as the circuits come into line, so as to keep the A.V.C. inoperative.

Remove short from osc. section of gang. **Signal Circuits.**—Connect the service oscillator to the A. and E. sockets via a dummy aerial, replace normal grid connection to V1 and remove the 500,000-ohms resistance.

Only feed sufficient input from the service oscillator to obtain reliable peaks in the output meter, and reduce the input as the circuits come into line, so as to keep below the A.V.C. point.

Short Waves.—Tune set and oscillator to 15 metres (20 mc.) and adjust T1 and then T2 for maximum.

The short-wave padding is fixed, but check at 50 metres (6 mc.).

Medium Waves.—Tune set and oscillator to 210 metres (1,425 kc.) and adjust T3 and then T4 for maximum.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

(Continued on page iv.)

Pye 806 on Test

MODEL 806.—A.C. mains operation, 200-250 volts, 40-100 cycles. Price 16½ gns.

DESCRIPTION.—Four-valve, plus rectifier, three-band receiver with permeability push-button tuning.

FEATURES.—Three full-vision scales traversed by three vertical pointers. Each scale calibrated in metres and station names. Visual tuning indicator and expander indicator. Press-button panel with buttons for six stations, four tone positions, gramophone, wave selection and master switch. Other controls for flywheel manual tuning and volume. Sockets for dipole short-wave aerial, pick-up and extension speaker.

LOADING.—96 watts.

Sensitivity and Selectivity

SHORT WAVES (13.5-51.3 metres).—Excellent gain and selectivity well maintained over the whole band with clean background and easy handling.

MEDIUM WAVES (196-565 metres).—Very good gain and selectivity with local stations spreading on adjacent channels only. Well-maintained sensitivity.

LONG WAVES (900-1,985 metres).—Similar performance to medium waves with very slight interference on Deutschlandsender.

Push-button Operation

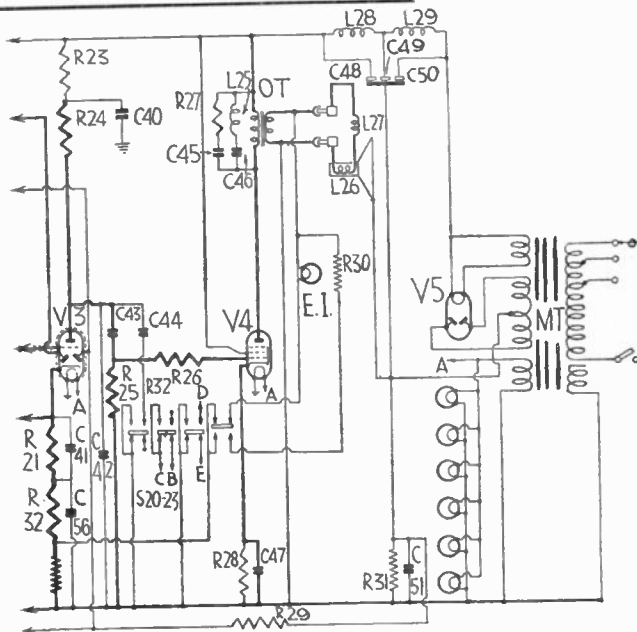
The push-button settings were accurate and did not change during our entire test of the receiver.

Acoustic Output

Very well-balanced tone with well-designed control positions for frequency modifications. Speech is clean and general reproduction crisp with good low-note radiation. The expansion control works satisfactorily and its action is definitely noticeable. The volume is ample for a large room.

RESISTANCES

R.	Purpose.	Ohms.
1	Aerial shunt	10,000
2	V1 screen pot. (part)	30,000
3	V1 screen pot. (part)	80,000
4	V1 A.V.C. feed	1.1 meg.
5	Regeneration modifier	100
6	Osc. grid leak	50,000
7	Regeneration modifier	10,000
8	Osc. anode feed	10,000
9	Regeneration modifier	25
10	Regeneration modifier	100
11	V1 anodes decoupling	1,000
12	Osc. pre-set coils shunt	40,000
13	V2 screen decoupling	10,000
14	H.F. stopper	110,000
15	A.V.C. decoupling	1.1 meg.
16	T.1. anode feed	2.1 meg.
17	T.1. anode feed	2.1 meg.
18	Demodulating diode load	510,000
19	Volume control	1 meg.
20	Tone modifier	80,000
21	V3 cathode bias	1,500
22	Feed back pot. (part)	5
23	V3 anode decoupling	30,000
24	V3 anode load	110,000
25	V4 grid leak	510,000
26	V4 grid stopper	25,000
27	Tone modifier	5,000
28	V4 cathode bias	150
29	A.V.C. diode load	1.1 meg.
30	Feed back	20
31	A.V.C. delay volts	15
32	Feed back pot. (part)	150



Details of the automatic tuning feature of this receiver are given on the next page, together with diagrams of the push-button and trimmer arrangement and the chassis layouts.

VALVE READINGS

No signal. Volume maximum. M.W. minimum capacity.

V.	Type.	Electrode.	Volts.	Ma.
1	(All Mullard) TH4A ..	Anode ..	240	.9
		Screen ..	50	2.9
		Osc. anode ..	155	7.5
2	VP4B ..	Anode ..	253	6.4
		Screen ..	165	3.4
3	TDD4 ..	Anode ..	70	1.2
4	PenB4 ..	Anode ..	230	69
		Screen ..	253	10
5	DW4/350 ..	Heater	370	—

WINDINGS (D.C. Resistances)

L.	Ohms.	L.	Ohms.
2	1.35	18	4.5
5	2.1	K	1.5
6	12	E	3
B	1.15	Field	800
C	1.4	Choke	270
D	1.9	I.F.T.s.	5
E	3	O.T. prim.	290
F	23.5	M.T. prim.	15
G	28	M.T. sec.	330
14	9		
17	2.25		

PYE 806 PUSH-BUTTON THREE-BAND FIVE

CIRCUIT.—Aerial input to the signal grid of V1, a triode hexode frequency changer, is by single tuned circuits on the medium and long bands. A 465-kc. I.F. filter, L1 and C57, and a second channel filter coil, L8, are included.

On the short waves an additional input circuit for a dipole feeder is included. In the oscillator section single coils are used on medium and long bands.

A variable selectivity I.F. transformer couples V1 to the I.F. amplifying valve V2, an H.F. pentode operating on a frequency of 465 kc.

An iron-cored I.F. transformer effects the coupling between the I.F. amplifier and the demodulating diode of V3, a double diode triode, and to the demodulating diode load *via* an H.F. filter. It will be seen that the manual volume control R19 operates by varying the input to the triode grid, and is tone compensated by C39 and R20.

The coupling arrangements to the volume control include an optional bass limiting tone condenser C38. The demodulated potentials also feed the Mullard TV4A visual tuning indicator.

The other diode of V3 provides a D.C. potential utilised to energise the A.V.C. network controlling V1 and V2.

V3 is resistance-capacity coupled to V4, an output pentode, and an optional treble limiting condenser C44 is included. Negative feed-back potentials are fed to the cathode of V3, giving different tone modifications. A tone circuit, R27 and C45, and a 9-kc. filter, L25 and C46, are connected across the primary of the speaker transformer.

Mains equipment consists of a mains transformer, a full-wave rectifying valve V5, electrolytic smoothing condensers and two smoothing chokes (one of which is the speaker field coil).

Chassis Removal.—The cabinet has a



Permeability automatic tuning is a feature of the Pye 806 A.C. three-band receiver, which retails at 16½ gns.

false bottom secured by wood screws. Removal of this gives access to the underside of the chassis and enables components to be replaced.

Detach the back of cabinet (secured by screws) and two spring-fixed control knobs. Remove the four chassis securing bolts from the base, and the two wood screws securing the wavelength dial assembly and the two screws securing the bracket (fixed to the front of the chassis) to the wood block on the front of the cabinet.

Uncleat the leads from the speaker baffle board, remove the rectifying valve from its socket and the four wood screws securing the two lower metal brackets that are threaded to receive two of the screws securing the back of the cabinet.

The chassis may then be removed from the cabinet to the extent of sundry leads, and is fully accessible for service.

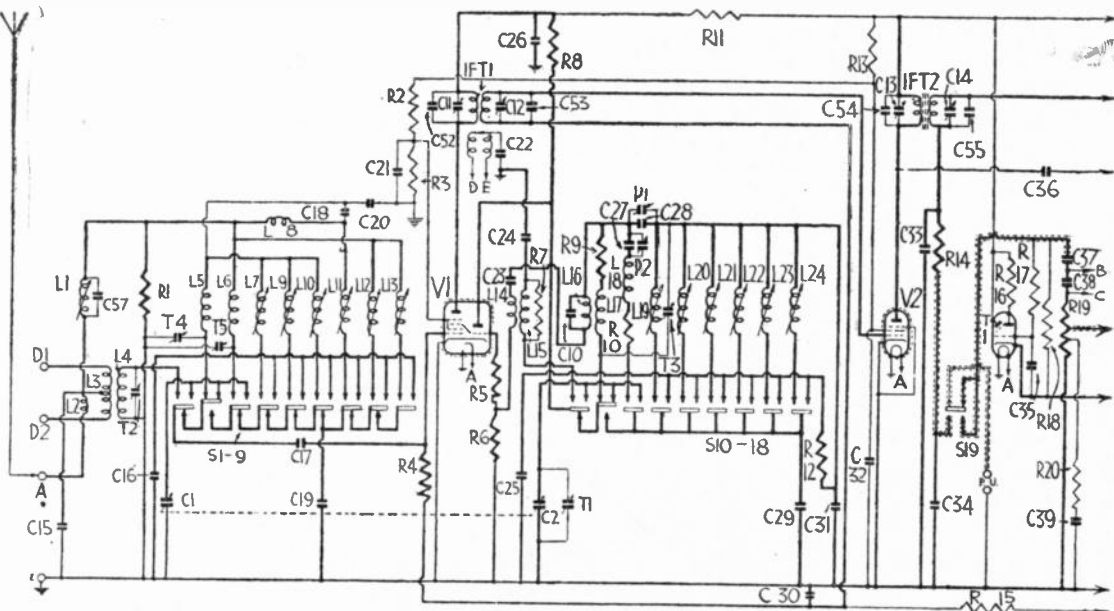
Special Notes.—Socketed plugs at the rear of the chassis enable an extension speaker of some 2 to 4 ohms impedance to be used in conjunction with or separately from the internal speaker.

The visual tuning indicator is a Mullard TV4A, and the anode feed resistance R16

CONDENSERS

C.	Purpose.	Mfds.	C.	Purpose.	Mfds.
10	M.W. osc. fixed trimmer	.0005	36	A.V.C. diode coupling	.00002
15	Dipole centre-point earth	.0002	37	L.F. coupling	.01
16	Aerial tune	.00044	38	Tone modifier	.001
17	V1 grid isolating	.0001	39	Tone modifier	.01
18	Shunt with coils	.005	40	V3 anode decoupling	2
19	Additional pre-set capacity	.00003	41	V3 cathode bias shunt	.20
20	Shunt with coils	.005	42	V3 anode shunt	.003
21	V1 screen decoupling	.1	43	L.F. coupling	.01
22	Variable selectivity	.0005	44	Feed back condenser	.01
23	Osc. grid.	.0001	45	Tone modifier	.01
24	S.W. osc. fixed padder	.005	46	Tone modifier	.005
25	Osc. fixed padder	.00041	47	V4 cathode bias shunt	.50
26	V1 anode decoupling	.1	48	H.T. smoothing	8
27	L.W. osc. fixed padder	.00022	49	H.T. smoothing	8
28	M.W. osc. fixed padder	.00055	50	H.T. smoothing	8
29	Osc. L.W. fixed trimmer	.00009	51	A.V.C. delay resistance shunt	.50
30	A.V.C. decoupling	.05	52	I.F.T.1 prim. fixed trimmer	.00009
31	Osc. coupling	.002	53	I.F.T.1 sec. fixed trimmer	.00009
32	V2 screen decoupling	.1	54	I.F.T.2 prim. fixed trimmer	.00009
33	H.F. by-pass	.00005	55	I.F.T.2 sec. fixed trimmer	.00009
34	H.F. by-pass	.00005	56	Feed back pot. shunt	.25
35	T.I. grid decoupling	.1	57	I.F. filter tuning	.002

Four valves, a rectifier and a cathode ray tuning indicator are incorporated in the circuit of the Pye 806. For short waves there is a special dipole feeder input.



BROADCASTER SERVICE ENGINEER SUPPLEMENT



HUNTS SERVICE THE SERVICE ENGINEERS

IF IT'S A CONDENSER — YOU GET IT FROM HUNTS
QUICKER — BETTER — CHEAPER — STOCK



PRECISION CAPACITOR ANALYSER & RESISTANCE BRIDGE.
A better, more accurate and more dependable capacity and resistance analyser, designed to meet the needs of engineers and service men alike.

This instrument virtually represents the Wien Bridge Laboratory method of capacity measurement, in a form simple to use, embodying a high degree of accuracy entirely independent of line voltage variations.

All readings are direct from a colour-coded panel, eliminating the necessity for cross reference to complicated charts or graphs. A scientific instrument and a real time, trouble- and money-saver.

EIGHT OUTSTANDING FEATURES.

1. MEASURES CAPACITY.

Accurately measures the capacity of all types of electrolytic, paper, mica, and air condensers by means of a built-in Wien Bridge. Also measures capacity between circuit wiring. Capacity range .00001 to 70.0 mfd.

2. MEASURES POWER FACTOR.

The power factor of all types of electrolytic condensers can be read direct from a scale which is calibrated zero to 50 power factor. Thus, the filtering efficient of condensers can easily be determined.

3. MEASURES RESISTANCES from 50 to 2,000,000 ohms.

4. MEASURES INSULATION RESISTANCE.

5. DETECTS DEFECTIVE CONDENSERS.

6. IS A CONTINUITY METER for all circuits.

The capacity analyser may also be used as a continuity meter for testing all types of circuits.

7. IS A VISUAL BRIDGE BALANCE using a cathode ray tube.

8. THE NEW BRITISH-MADE MODEL incorporates the following substantial improvements: Special jig for testing short-lead condensers and resistances. Special Oak case. Improved pack-away carrying handle. Improved clasp lock. Combined plug sockets.

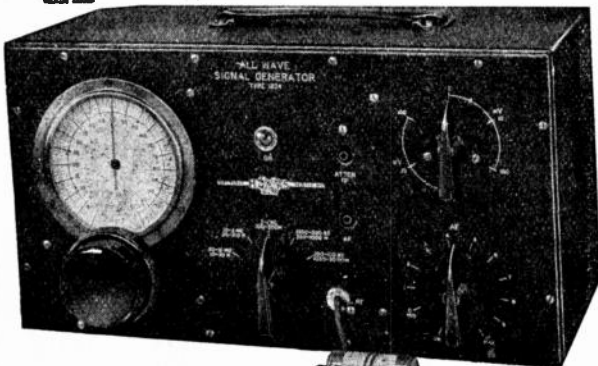
Type C.L.R. 3221.
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Complets with Valves.



ALL WAVE SIGNAL GENERATORS

6/10 METRES (Harmonic) 10/3000 METRES FUNDAMENTAL



List No. 4001a Battery Model.
List No. 4002 AC. Mains Model.

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LIST PRICE £12.12.0. TRADE NET £8.8.0.

LIST No. 4002. A.C. MAINS MODEL.
LIST PRICE £14.14.0. TRADE NET £9.16.0.
Complete with all Accessories.

Hunt's Standard Signal Generators have set a very high standard for this type of instrument and should not be confused with a simple "Oscillator" having an uncalibrated output. Extreme care has been taken with shielding, and external leakage has been reduced to a remarkably low level. The wavelength range covered is 10 metres (30 mc.) to 3,000 metres (100 kc.) without the use of harmonics. However, by using the first harmonic of range 1 (10 to 30 metres) the range of the Signal Generator can be extended down to 5 metres.

The dial of the instrument has been calibrated in metres. Much thought has been given to this particular point, as to whether the scale should have been calibrated in kilocycles. After continuous enquiry during the past year, we have come to the conclusion that the "metre" scale is definitely required. Whichever method of Calibration is employed, a conversion chart is still wanted, and one is therefore supplied with each instrument.

Each Signal Generator is within ± 3 per cent. accuracy when the dial is set to any particular wavelength. For such a low-priced instrument this represents a very high standard.

In order to achieve greater accuracy, however, each instrument is hand calibrated, and a chart supplied. With the aid of this chart errors are reduced to about ± 1 per cent., and this degree of accuracy is sufficient for any service work.

In the Hunt's Signal Generator the use of a fully shielded die cast attenuator ensures correct attenuation even on the 10-metre band. Careful design has kept frequency modulation at a very low level, and there is no attenuator reaction on frequency calibration.

By correct layout and carefully shielding the primary windings on the mains transformer, line cord leakage has been practically eliminated. A. H. Hunt, Ltd., offer these two improved Signal Generators in full confidence that the months of patient research have resulted in instruments of outstanding merit, which will be appreciated by Service Engineers.

IMMEDIATE DELIVERY

BRITISH MADE BY A. H. HUNT LTD., WANDSWORTH, LONDON, S.W.18

This commences the final article of a fortnightly series based on lectures given in a television course for retailers by Pye, Ltd., at 44, Great Marlborough Street, London, W.C.1, on Monday, Wednesday and Friday evenings. Six lessons make up the course, a new series being started each fortnight.

The course has been planned to emphasise fundamentals and to be a preliminary to fuller technical training.

Dealers' tuition each evening in the course includes practical work on Pye television receivers as well as theoretical tuition.

IN these days of highly sensitive radio receivers the truth of the saying that the set is only as good as its aerial is not always appreciated. If it were, we should not have so many interference problems. When we come to consider aerials for television we have got to remember that if the foregoing is true of radio it is equally true of television and ten times more important.

Not only does this apply where the signal strength is beginning to get on the low side. For each and every installation it is desirable to make the best possible aerial a necessity rather than a matter of expediency.

Fortunately the use of very short wavelengths for television makes it possible for us to use what are called resonant aerial systems. By this we mean aerials which are in themselves tuned to the wavelength or an harmonic of the wavelength of the transmitter. This type of aerial is more efficient because it has the natural magnification of any resonant circuit at the frequency of resonance.

For television it is usual to employ aerials whose length approximates to half a wavelength,—that is, half of 6.67 metres or nearly 10 ft. 6 in. The figure is just a little less than the exact half, for reasons which do not concern us here.

Such aerials must normally be erected in the same plane as the aerial of the transmitter. In the case of Alexandra Palace this plane is a vertical one. Aerials for the reception of the A.P. signals are, therefore, always erected vertically.

Lead-in Systems

There is one other important difference between television and radio aerial practice to be noted. Ordinary radio aerials are usually connected directly to the set. That is, the lead-in is an integral part of the aerial. Aerials of the anti-static variety do not conform to this, of course, and television practice more closely resembles anti-static aerial erection.

The actual connection between aerial and set in both cases takes the form of a non-collecting transmission line which serves merely to connect the aerial to the set. Also, in both cases it is imperative that the transmission line should be accurately matched to both aerial and set.

With the anti-static aerial this usually means using some form of matching transformer, but in the case of the television aerial it is standard practice to connect the feeder to a low impedance point on the aerial, usually the centre, and to use a feeder which matches and then to use a suitable tapping point on the set to match the other two.

Television Principles Simply Explained—4

AERIAL DESIGN

This is done in the case of Pye television receivers, and use should always be made of a centre-tapped dipole with co-axial cable feeder for our sets.

This type of feeder is suitable for two reasons. First, its natural impedance can easily approximate to that of a centre-tapped half-wave dipole. Secondly, losses in it are low for any reasonable length. It is available in two types, both of which are suitable for our sets.

The thin variety, which is listed as K1a, is suitable for all installations where field strengths are not less than 200 microvolts and lengths do not exceed 100 yds. down to installations where field strengths do not exceed 80 microvolts and lengths do not exceed 100 ft. These conditions may normally be found in a 35/40-mile radius of A.P.

The heavier type, which is listed at AS5c, is much more costly, and should only be used for installations which do not fall within the limits specified.

A table will make when to use K1a or AS5c more easy to determine.

Cable (feet)	Distance from A.P. (miles).			
	up to 15	15-25	25-35	35-45
50	K1a	K1a	K1a	K1a
100	"	"	"	"
150	"	"	"	AS5c
200	"	"	AS5c	"
250	"	"	"	"
300	"	AS5c	"	"
over 300	AS5c	"	"	"

The feeder should always be taken at right angles from the aerial for at least one-sixteenth of a wavelength.

An ordinary dipole is non-directional, but, if erected at a sufficient height, gives satisfactory results for distances up to 20 miles from A.P.

For distances greater than this, or special circumstances at lesser ranges, it becomes necessary to take advantage of another property of ultra-short waves. In many ways the behaviour of these waves is closely akin to that of light and, in common with light, they are susceptible to the influence of reflectors.

You know that a mirror of suitable shape, behind a source of light, has the effect of increasing the light in front of the mirror and cutting it off completely behind. If we have a light source and a mirror we obtain a much brighter light as our angle of vision approaches a point where the original light and its reflection in the mirror are in a line. Obviously, the mirror has produced a directional effect.

Ultra-short waves behave in a similar way from both transmission and reception points of view. If, then, we arrange a reflector to our reception aerial we shall get an increase in received signal. Not only that, but we shall also make the aerial most effective in a line away from the reflector.

This means that we can "point" the aerial proper towards the transmitter so

that the reflector lies behind the aerial in respect of the transmitter. In point of fact, pick-up in front of the aerial is about one and a half times as great as without the reflector, and pick-up behind the reflector is negligible.

With aerials measuring 10 ft. 6 in. the reflector should be a little longer and approximate to 11 ft. 6 in. The spacing of the reflector away from the aerial is one-eighth wavelength, or 2 ft. 8 in. With Pye aerials these distances are all determined automatically in the course of assembly. The aerial now resembles a letter "H," and the feeder is taken at right angles to the aerial to a point midway between aerial and reflector.

Anti-static Screening

Some doubt may have arisen in your minds as to what happens to the sound signal, as we have only discussed the vision wavelength. Actually, television aerials are tuned to the vision signal rather than sound, the resonance being sufficiently flat to satisfactorily receive the sound.

The use of reflectors is not limited to purely long-distance reception, they can also be used to help in dealing with interference problems. In this connection the directional property is used to reduce the pick-up from sources of interference rather than to improve the signal itself.

It is possible to erect an aerial to deviate by as much as 45 degrees from true direction in an endeavour to reduce pick-up of interference if the signal strength is at all reasonable. Obviously this method cannot be applied when the source of interference lies between the transmitter and the aerial.

Given a suitable type of aerial, some consideration must be devoted to the choice of a suitable site. The important points in this connection will be dealt with in the second half of this article.

Practical Service Manual

A *Practical Wireless Service Manual*, edited by F. J. Camm, and published by Newnes, is a simple volume intended for both the public and the service-learner in the Trade.

It begins with a list of abbreviations and a diagram of circuit symbols, and throughout is written and illustrated in a popular manner. It covers the groundwork of fault-finding comprehensively, and ranges, for example, from a chapter on fault-tracing without instruments to a useful one on servicing with the cathode-ray tube.

There is a large amount of "home constructor" material on instruments such as the valve voltmeter, and no doubt practical information on these lines will appeal to many engineers.

There are nearly thirty chapters in the 285 pages of the book, and at 5s. it is certainly attractive to the less experienced service man.

PHILIPS 650A THREE-BAND FIVE

CIRCUIT.—Aerial input to the grid of the H.F. amplifier V1, an H.F. pentode, is via transformer coils. The A.V.C. potentials are applied direct to the grid instead of via the tuning coils, a grid isolating condenser being used.

H.F. transformers provide the coupling to the signal grid of the EK2 frequency changer, V2. Series grid resistances are included to the signal and oscillator grids and the reaction windings are fed direct.

An iron core I.F. transformer of the fixed condenser type, tuned to 470 kcs., effects the coupling between V2 and V3, an EF9 I.F. amplifier. V3 becomes an L.F. amplifier for gram. work, the screen of the valve being used as the anode electrode of a triode, the potentials being fed to the volume control by R18, the load, and C37, the coupling condenser.

V3 is coupled by a further I.F. transformer to the demodulating diode of V4, an ELB1 double diode output pentode. Both primary and secondary of the I.F. transformer are tapped down. The other diode provides a D.C. potential controlling V1 and V2 via the A.V.C. circuit.

The rectified impulses derived from the demodulating diode are taken via a tone compensated manual volume control to the control grid of the pentode section of V4. A pentode compensating condenser is connected across the primary of the speaker matching transformer, and also a tone control circuit, C42, R32 and R33. The demodulated impulses also feed the EM1 visual tuning indicator.

Mains equipment consists of a full-wave

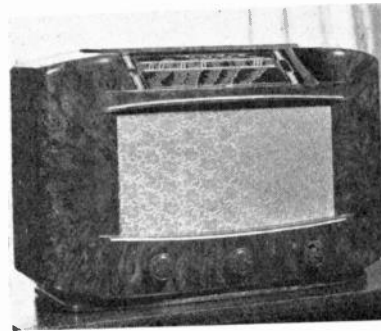
rectifying valve, a mains transformer, electrolytic smoothing condensers, and a separate smoothing choke.

Chassis Removal.—Remove back of cabinet and the three grub-screw fixed control knobs. Loosen the grub screw securing the extension shaft of the tone control at side of cabinet and unsolder the wire to the earthing tag of the metal screen on the floor of the cabinet.

Remove the eight bolts from the four metal brackets disposed two each side of the chassis on the front (inside) of the cabinet. The four bolts securing the wavelength pointer travel assembly should be removed from the roof of the cabinet, taking care not to injure the Bowden cables or to scratch the W.L. scale.

The chassis, complete with speaker assembly, can then be withdrawn from the cabinet.

Special Notes.—The mains adjustment consists of a bakelite disc, inscribed with voltage values and mounted on an insulat-



Although a "five," the 650A has a signal amplifier stage. With orthodox manual tuning it incorporates a cathode-ray indicator.

ing panel at the rear of the chassis deck. To adjust, the disc should be pulled out slightly until it is free to turn and then rotated until the desired voltage is at the top of the disc.

The mains input leads are taken via a safety device to the connecting plugs on the panel at the rear of the chassis. The safety device must be removed from the back if operation with the back removed is desired.

A lever-operated Q.M.B. gram-radio switch is near the pick-up sockets.

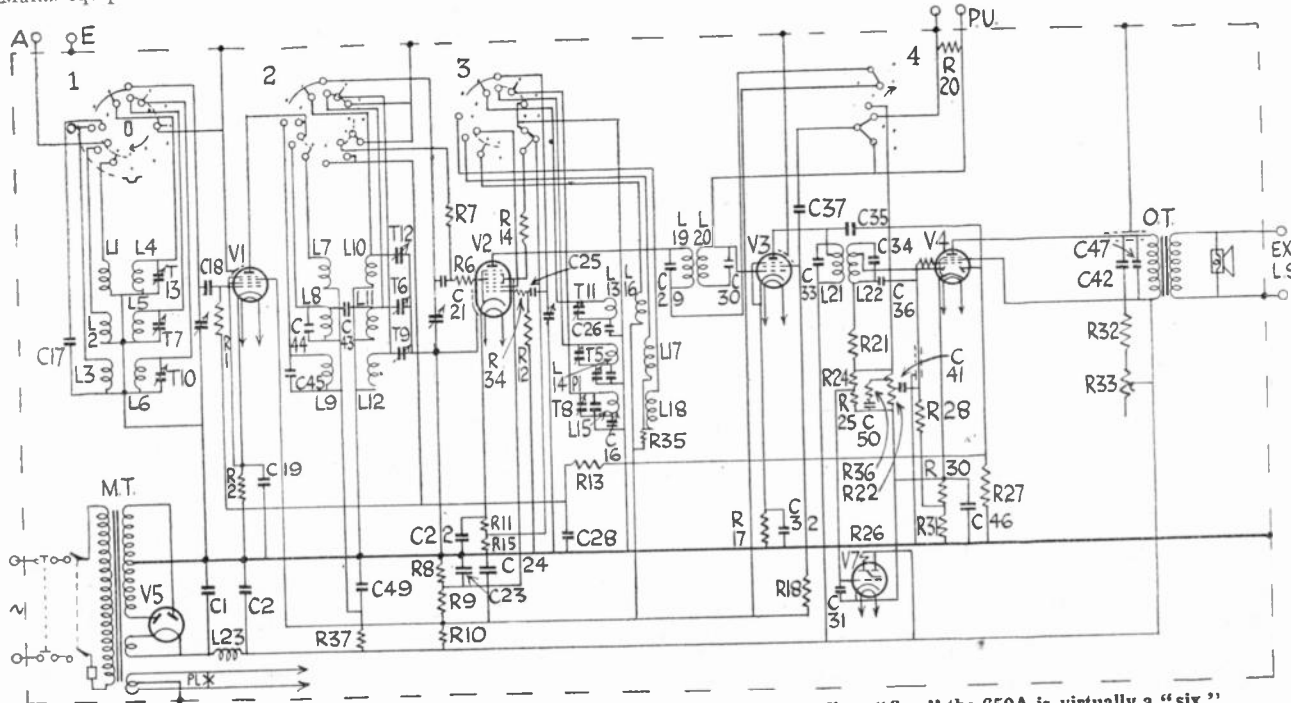
Another pair of sockets enables an extension speaker of 7 ohms impedance to be operated.

The visual tuning indicator valveholder, secured by a milled nut, must be removed before the Mullard type EM1 indicator can be removed. The anode feed resistance R26 is connected across the holder.

The single dial and pointer illuminating lamp is mounted on a bracket on the chassis deck. A reflector strip is used to evenly distribute the light over the wave-

VALVE READINGS

V.	Type.	Electrode.	Volts.	M.A.
1	All Mullard.	Anode ..	265	4.3
		Screen ..	190	1
2	EK2	Anode ..	190	2.2
		Osc. anode ..	90	1.3
		Screen ..	180	3.5
3	EF9	Anode ..	260	6.4
		Screen ..	90	2
4	ELB1	Anode ..	235	34
		Screen ..	260	5.5
5	Philips AZ1	Heater	290	—



A combined diode and output pentode saves a stage and means that while nominally a "five," the 650A is virtually a "six." The I.F. transformers are permeability trimmed.

length scale. The bulb is a Philips type 8091 D-00, and has an M.E.S. base.

R29, the grid stopper resistance of V4, is mounted on an insulating strip on the top grid connecting cap, and R6 on V2. C29, C30, C33 and C34 are inside the corresponding I.F. transformer cans. C45 is inside the anode coils can.

Alignment Notes

I.F. Circuits.—Set wavechange switch to M.W., turn volume to maximum, tune control to high position and earth the receiver. Short-circuit C28, connect a service oscillator between top grid cap of V2 (via a .32 mfd. fixed condenser) and chassis. Connect an output meter in usual manner. Turn gang to maximum.

Shunt I.F.T.2 primary with .00008 condenser, tune service oscillator to 470 kcs. and adjust T1 for maximum.

Remove .00008 condenser, connect across I.F.T.2 sec. and adjust T2 for maximum. Remove .00008 condenser, connect across I.F.T.1 prim. and adjust T3 for maximum.

Remove .00008 condenser, connect across I.F.T.1 sec. and adjust T4 for maximum. Remove shunt condenser and short circuit from C28.

Signal Circuits.—Turn quality switch to maximum (clockwise, position 2). Fit 15 degree jig (available from Philips) and set the gang to it (maximum capacity position). Connect the service oscillator to the A. and E. sockets via a dummy aerial, only feeding sufficient input to obtain definite peaks in the output meter and progressively reducing the output as the circuits come into line; P1 and P2 are of the unorthodox Philips construction.

Medium Waves.—Tune service oscillator to 1,442 kcs. and adjust T5, T6 and T7 in that order for maximum and then remove 15 degree jig.

Short-circuit C25 to chassis, tune oscillator to 346 kcs., connect a G.M.2404 or aperiodic amplifier to anode of V2 and connect output meter to the aperiodic amplifier.

Tune in the 546 kcs. signal on receiver to resonance in output meter, disconnect amplifier, reconnect output meter to receiver, remove short

WINDINGS (D.C. Resistances)

L.	Ohms.	Range	Where Measured.
1	2.4	S.W.	Aerial socket and chassis.
2	25.1	M.W.	Aerial socket and chassis.
3	105	L.W.	Aerial socket and chassis.
4	.1	S.W.	C18 and chassis.
5	4.9	M.W.	C18 and chassis.
6	45	L.W.	C18 and chassis.
7	3	S.W.	Anode V1 and C49.
8	276	M.W.	Anode V1 and C49.
9	486	L.W.	Anode V1 and C49.
10	Very low.	S.W.	H.F. gang and chassis.
11	4.9	M.W.	H.F. gang and chassis.
12	441	L.W.	H.F. gang and chassis.
13	Very low.	S.W.	Osc. gang and C26.
14	8.8	M.W.	Osc. gang and P1.
15	18	L.W.	Osc. gang and P2.
16	1.2	S.W.	Osc. anode and C24.
17	3	M.W.	Osc. anode and R35.
18	4.3	L.W.	Osc. anode and R35.
19	9	—	Anode V2 and C24.
20	8	—	Top grid V3 and tag.
21	4.5	—	Anode V3 and C2.
22	3.2	—	Diode V4 and R21.
23	380	—	C1 and C2.
OT, prim.	640	—	Tags.
M.T. prim.	52	—	Mains plug.
Total H.T. sec.	420	—	Anode pins V5.

Philips 650A on Test

MODEL 650A.—A.C. mains operation, 100-250 volts, 50-100 cycles. Price 120 gns.

DESCRIPTION.—Four-valve, plus rectifier, three-band superhet using the new E type valves.

FEATURES.—Full-vision scale, calibrated in metres and station names, traversed by an illuminated pointer. Controls for tuning, combined volume and master switch, wave selection and tone. Visual tuning indicator. Sockets for extension speaker. Gram-radio switch at rear of chassis.

LOADING.—55 watts.

Sensitivity and Selectivity

SHORT WAVES (16.7-51 metres).—Excellent gain and selectivity with very easily handling and a good background.

MEDIUM WAVES (200-585 metres).—Well maintained gain with excellent selectivity and local stations spread on adjacent channels only. Clean background.

LONG WAVES (725-2,000 metres).—Similar performance to medium waves. Slight side splash on Deutschlandsender.

Acoustic Output

Very good, well balanced tone, with excellent low-note radiation and crisp clean attack. Speech practically without colouration and generally pleasing balance on orchestral music. Ample volume for an ordinary room.

from C25 and, without altering the receiver tuning control, adjust P1 for maximum.

Realign T5, T6 and T7 on a 1,442 kcs. signal with gang condenser in jig.

Long Waves.—With gang condenser set to jig, tune oscillator to 405 kcs., and adjust T8, T9 and T10 for maximum. Remove jig. Short-circuit C25 to chassis, tune oscillator to 160 kcs., reconnect aperiodic amplifier and output meter to amplifier.

Tune in 160 kcs., signal on receiver to resonance in output meter, disconnect amplifier, reconnect output meter to receiver, remove short from C25 and, without altering the tuning control, adjust P2 for maximum.

Realign T8, T9 and T10 on a 405 kcs. signal.

Short Waves.—With gang set to jig, tune a service oscillator to 17 mcs., and, feeding through a S.W. dummy aerial, screw T11 right up and then unscrew until the first peak is heard. Then adjust T12 and then T13 for maximum. Remove jig.

Calibration.—Switch receiver to M.W. band, set oscillator to 370 metres (811 kcs.), tune in spot on receiver. Adjust the wavelength dial pointer by means of the knurled screw so that the pointer reads 370 metres.

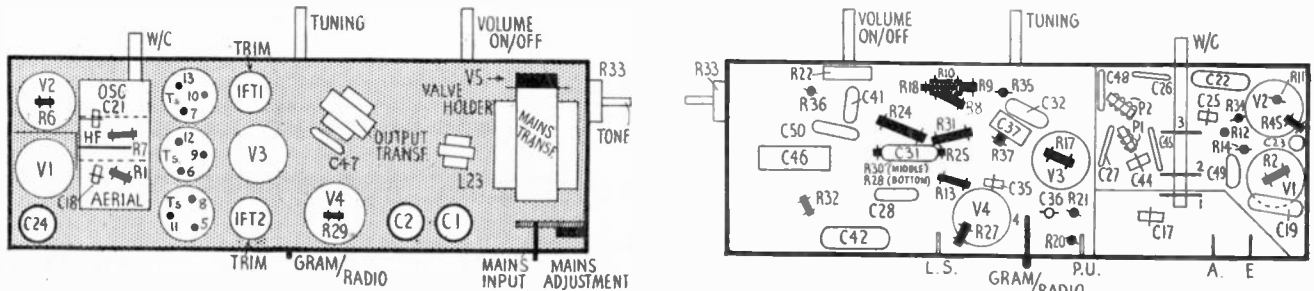
Exact replacement condensers available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18, for the 650A are: For C1, 4235, 7s.; C2, 2989, 7s. 6d.; C24, 4232, 6s. 6d.; and for C46, 2918, 1s. 9d.

RESISTANCES

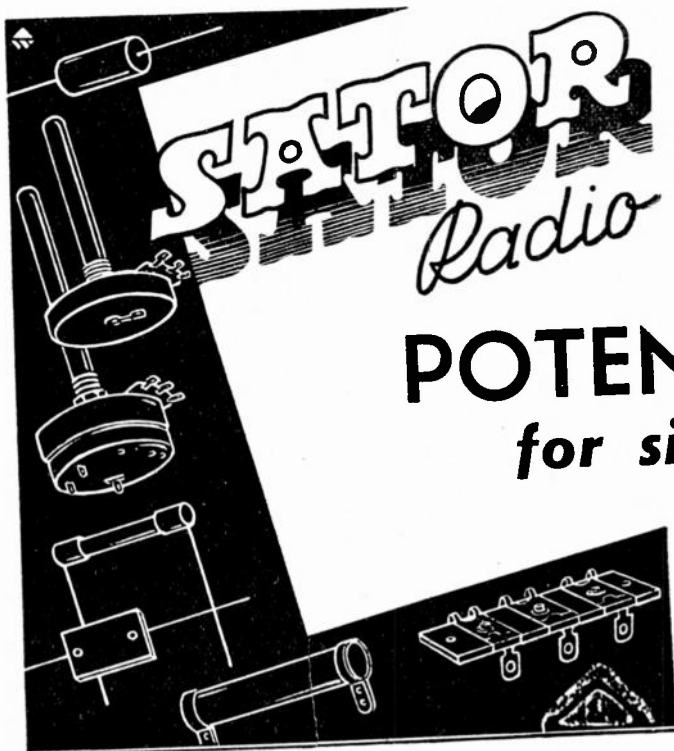
R.	Purpose.	Ohms.
1	V1 A.V.C. feed	800,000
2	V1 cathode bias	400
6	V2 series grid	32
7	V2 A.V.C. feed	800,000
8	V2 screen pot. (part)	50,000
9	V2 screen pot. (part)	32,000
10	V1 screen and V2 anode decoupling.	8,000
11	V2 cathode bias (part)	500
12	Osc. grid leak	50,000
13	A.V.C. decoupling	1.25 meg.
14	V2 cathode bias (part)	20,000
15	V2 cathode pot. (part)	160
17	V3 cathode bias	320
18	V3 screen feed and load (gram).	50,000
20	Pick-up shunt	500,000
21	H.F. stopper	50,000
22	Volume control	350,000
24	T.I. pot. (part)	5 meg.
25	T.I. pot. (part)	640,000
26	F.I. anode feed	2 meg.
27	A.V.C. diode load	640,000
28	V4 grid leak	1 meg.
29	V4 grid stopper	1,000
30	V4 cathode bias (part)	180
31	V4 cathode bias (part)	200
32	Tone modifier	100
33	Tone control	50,000
34	Osc. grid	50
35	Osc. anode feed M.W. and L.W.	2,000
36	Tone modifier	50,000
37	V1 anode decoupling	2,000

CONDENSERS

C.	Purpose.	Mfids.
1	H.T. smoothing	28
2	H.T. smoothing	32
17	L.W. aerial fixed trimmer	.00008
18	V1 grid isolating	.0001
19	V1 cathode bias shunt	.1
21	V2 grid coupling	.0001
22	V2 cathode bias shunt	.1
23	V2 screen decoupling	.1
24	V1 screen and V2 anode decoupling.	32
25	Osc. grid	.00005
26	S.W. osc. fixed padder	.0045
27	M.W. osc. fixed padder	.0004
28	A.V.C. line decoupling	.1
29	I.F.T.1 prim. fixed trimmer	.0001
30	I.F.T.1 sec. fixed trimmer	.0001
31	T.I. grid decoupling	.05
32	V3 cathode bias shunt	.05
33	I.F.T.2 prim. fixed trimmer	.000103
34	I.F.T.2 sec. fixed trimmer	.000103
35	A.V.C. diode coupling	.00008
36	H.F. bypass	.00005
37	Gram. L.F. coupling	.05
41	L.F. coupling	.02
42	Tone control	.05
43	M.W. anode extra coupling	.000002
44	M.W. anode fixed trimmer	.000064
45	L.W. anode fixed trimmer	.00025
46	V4 cathode bias shunt	25
47	Pentode compensator	.002
48	L.W. osc. fixed trimmer	.00004
49	V1 anode decoupling	.05
50	Tone compensation	.05



All components on the Philips chassis can be identified with the aid of these layout diagrams of the top (left) and underside.



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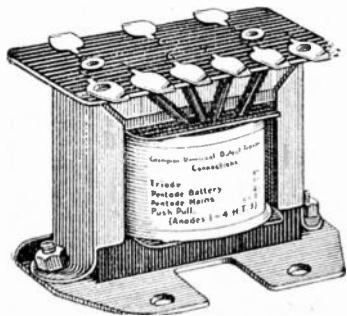
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Mains Pentode, and
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SECONDARY tapped
for 2 ohms and 7.9
ohms speech coils.

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FIXING PLATE.
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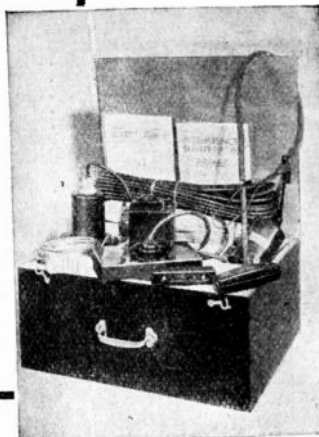
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TWO SUPPRESSION INSTALLATIONS ARE WORTH ONE RECEIVER SALE



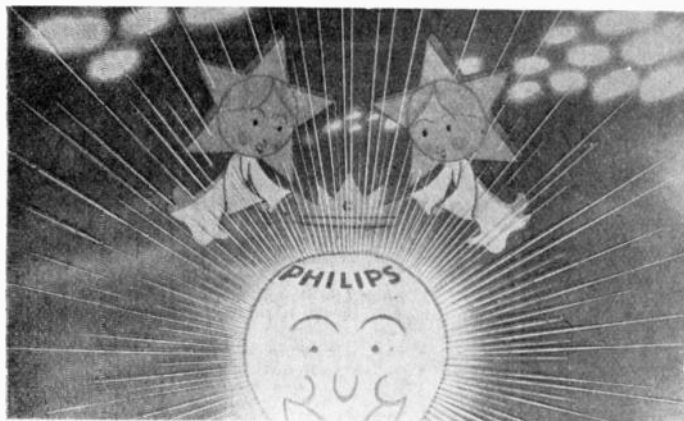
SUPPRESSION business is right at your door, but you must go
after it—think of all your receiver sales, and now re-sell them
"purer" radio. After you have sold or serviced the set, explain
that interference is not the fault of the receiver—take the complete
"Suppression Kit" illustrated above and demonstrate on the
spot. Your customer wants clear radio reception and he is
willing to pay for it. If there are technical difficulties you can
depend on the full co-operation of "Belling-Lee."

Complete Suppression Kit in wooden case containing
"Eliminoise" aerial, mains filter, flex suppressors,
etc.—full particulars on request.

BELLING-LEE
RADIO INTERFERENCE SUPPRESSION SERVICE

BELLING & LEE, LTD., CAMBRIDGE ARTERIAL RD., ENFIELD, MIDD.

5781



One day the sun oversleeps — so a Philips lamp takes over his duties. This is the story of Philips' film which begins its round of the kinemas next week.

Ten Towns will See Philips' Colour Cartoon Next Week

SIXTEEN kinemas next week launch the Philips lamp cartoon film "Worthy Representation," one of the leading sections of the autumn lamp campaign, arranged by Philips Lamps, Ltd., 145, Charing Cross-road, London, W.C.2.

The film, a George Pal colour puppet production, it will be recalled, depicts a fairy story, in which the sun oversleeping one morning had its place taken by a Philips lamp.

Picture houses showing the film next week are: The Tower and the Castle, Swansea; the Electric, Plymouth; Scala Winter Gardens, Southport; Rex, Glasgow; Sunbeam and Chantry, Sheffield; Regal, Star Lounge and Lyric, Leeds; Alexandra, Pontefract; Plaza and Princess, Huddersfield; Arcadia, Doncaster; and Plaza, Sunderland.

With the exception of the Plaza, Huddersfield, where the film is being shown from October 6 to 9, all these kinemas have booked the film for the complete week.

H.M.V. Wide Angle Fire; Hanley Dry Shaver Offer

A REFLECTOR fire giving reflection over at least 180 degrees from side to side is announced by H.M.V. Household Appliances, 104, New Bond Street, London, W.1.

Constructionally the fire, which sells at £3 17s. 6d., employs a double sheet of welded steel, first nickel and then chromium plated, while black finished, semi-adjustable feet are fitted with rubber pads to save floors.

There are two 1½ kw. elements, one switch controlled, and guarding them is a wire guard and heatproof glass rod, which serves to enhance the glow effect. A bakelite handle fitted on decorative chains drops behind the fire when released.

Deliveries are to commence about the middle of this month.

Smellie Rod Types

NEW designs in inset fires marketed by James Smellie, Ltd., of Ivanhoe, Crator and Cellini Works, Dudley, include upright rod heater types in 2 and 3 kw. loadings.

These are two basic models, one in a plain polished metal front and the other in a cut-out ornamental design and a step or trivet at the foot.

Two kw. models with two switches and plain fronts (type 4536) are 93s. in copper, 97s. in bronze, and 100s. in stainless steel. Companion models with a 3 kw. loading and three switches list at 110s., 114s. and 117s. respectively.

Prices of the 2 kw., one switch, ornamental models (type 4565), are 130s. in copper, 134s. in bronze, and 138s. in stainless steel. Similar models with 3 kw. loadings and two switches list at 147s., 150s. and 155s. respectively.

Pifco Iron

DETAILS of a new cordless electric iron called the "Chereton," are given in the new 192-page catalogue of electrical and general appliances just issued by Provincial Incandescent Fittings Co., Ltd., Pifco House, Watling Street, Manchester, 4.

The iron, which sells at 3 gns., in 4½ in. or 6 lb. models, employs a special micro heat thermostat and heat retaining pressure plate. It is fully automatic and

has a two-way handle for right or left handed users.

The loading is 1,500 watts, and the iron is suitable for A.C. only, 200-220 and 230-250 volts.

The new catalogue follows standard Pifco practice, it has stiff board covers and is profusely illustrated. Copies are available on request.

Euston Display Clock

A COMBINED synchronous clock and floodlight for window displays is announced by the Euston Manufacturing Co., Ltd., 56-60, Grove Road, London, E.17.

It consists of a clock with 12 in. dial and bakelite case. The characters are mirrored and a short message can also be shown on the dial.

The dial is illuminated by a 25 or 100 watt lamp which also throws a flood of light downwards on to any line it is decided to feature.

Initial cost and running and maintenance costs are stated to be low.

The firm is also about to introduce a range of domestic synchronous clocks.

Hanley Discounts

THE special demonstration offer of Hanley dry shavers made by Orel-Micro Electric, Ltd., 39-41, Berners Street, London, W.1, has been extended until October 22.

The offer, it will be recalled, consists of one of the new Hanley A.C. shavers and a Hanley Clipshave at the special discounts of 33½ and 20 per cent. Retailers are permitted to order one set for each of their branches.

The period of the offer has been extended to permit wholesalers representatives fully to cover their areas. A further reason is that the delivery date of the new shaver is a little later than was expected. Full supplies, however, should be ready now.

To prevent undue clerical work special offer sets of shavers are now being sent to the dealer direct and charged through his wholesalers. Previously the scheme was to send them direct c.o.d.

Application forms for these special sets can be obtained from Orel-Micro or from a dealer's usual wholesaler.

Belling-Lee Glasgow Depot

BELLING AND CO., LTD., have opened a Glasgow depot at 113, Waterloo Street, Glasgow (telephone: Central 1923), under the control of their sales engineer, Mr. W. H. Gardiner. The chief function of the depot is to give a prompter service to Scottish dealers and to deal with their orders direct. The depot will carry a considerable stock of Belling fires and cookers.

Scottish Appointments

The Curtis Lighting Co. of Great Britain, Ltd., appointed A. Oswald and Co., of 20, Blythswood Square, Glasgow, as representatives and stockists in Scotland.

Paterson and Service have moved to new premises at Waterloo Chambers, 19, Waterloo Street, Glasgow, where they have opened a fine display showroom to display the products of their principals, Mitchell Electric Co., Ltd., of Birmingham.

Mary Ann Publicity

"FOR less than 2s. weekly" is the slogan being used in national advertisements in the first period of the Mary Ann vacuum cleaner campaign launched by British Electric Domestic Appliances (1938), Ltd.

This stage of the campaign lasts until the end of October, and the announcements are appearing in the *Daily Herald*, *Daily Express* and *Daily Mail*.

THE price of the Shavemaster electric razor, which is to be marketed by S. Guiterman and Co., Ltd., of 35/36, Aldermanbury, London, E.C.2, has been fixed at £3 7s. 6d., including resistor, which makes it suitable for all voltages.

New Companies

Byron Industries, Ltd.—Priv. co. Cap. £100. Manufacturers and dealers in wireless transmitting and receiving sets, electric goods and appliances. Norbury Wilson is first director. R.O.: 29, Boole Street, Manchester.

Craven Radio and Service Co., Ltd.—Priv. co. Cap. £500. Dealers in wireless sets and apparatus. Subscribers: E. A. Morgan and G. T. Price. R.O.: Dumfries House, 25, Dumfries Place, Cardiff.

Frank Heaver, Ltd.—Priv. co. Cap. £1,000. Electrical, mechanical and radio engineers. Ernest Frank Heaver is permanent governing director and chairman. R.O.: Bush House, Aldwych, London, W.C.2.

Lees and Jackson, Ltd.—Priv. Co. Cap. £1,500. To acquire business of radio dealers carried on by H. M. Lees and J. D. Jackson at 68, Ifley Road, London, W.6, 92, Askew Road, London, W.12, and 108, Blythe Road, London, W.14. Directors: Henry M. Lees, Jack D. Jackson, Alexander S. Hastings, Edward Robin. Sol.: L. O. Glenister and Sons, 20/22, King Street, London, W.6.

Thos. Lynn, Ltd.—Priv. co. Cap. £1,000. To acquire business of a wireless dealer, carried on by T. Lynn at 141, Chester Road, Sunderland; 9, Blandford Place, Seaham Harbour; and Picture House Buildings, Horden.

Gazette News

A general meeting of **Radio Instruments, Ltd.** (in voluntary liquidation) will be held at 46, Victoria Street, London, S.W.1, on Oct. 26 at noon.

At an extraordinary meeting of **Surrey Radio Services, Ltd.**, on Sept. 19, resolution passed that the co. be wound up voluntarily with Mr. Ronald Shepherd as liquidator. Creditors meeting the same day amended resolution appointing C. Latham, 185-188, High Holborn, London, W.C.1, as liquidator.

Receiving Orders, First Meetings and Public Examinations

Arthur George Field, 27, Station Road, Chadwell Heath, Essex. Debtors' petition filed and order dated Sept. 20. First meeting Oct. 6, 11.30 a.m., 29, Russell Square, London, W.C.1. Pub. Ex. Nov. 2, 11 a.m., Shire Hall, Chelmsford.

William Albert Mather, 23, Mossgate Road, Liverpool, t/a 77, Widnes Road, Widnes, as **Mather's Stores**. Debtor's petition filed and orders dated Sept. 19. First meeting Oct. 4, 11.30 a.m., offices of Official Receiver. Pub. Ex. Oct. 25, 10.30 a.m., Court House, both Government Buildings, Victoria Street, Liverpool.

First Meetings and Public Examinations

Victor William Henry, Hill Rise, Strumpshaw, and t/a Acle, both Norfolk. First meeting called for Sept. 30. Pub. Ex. Oct. 18, 2.30 p.m., Shire Hall, Norwich.

S. Saunders (male), 111, Greenford Road, Greenford, Middlesex. First meeting Oct. 5, 11.30 a.m., 29, Russell Square, London, W.C.1. Pub. Ex. Nov. 11, 11 a.m., Court House, Half Acre, Brentford.

Mortgages and Charges

Harvey (Electrical Engineers), Ltd.—Further Land Registry charge on 22, Fitzroy Square, and 4 and 5, Fitzroy Mews, London, W., dated Sept. 6, to secure £2,000. Holders: Pearl Assurance Co., Ltd.

Bryco Manufacturing Company, Ltd., 1, Bloomsbury Street, London, W.C.1.—Debtors' petition, charged on co.'s undertaking and property, present and future, including uncalled capital, dated Aug. 31, to secure £700. Holders: B. R. Sales Company, 1, Bloomsbury Street, London, W.C.1.

Morphy-Richards, Ltd., 27-28, Finsbury Square, London, E.C.2.—Charge on freehold lands and hereditaments at St. Mary Cray,

Directors: Thomas Lynn and Mrs. Frances E. M. Lynn.

A. S. Newman (Radio), Ltd.—Priv. co. Cap. £500. Manufacturers and dealers in wireless and television apparatus. Directors: Thos. E. Fevyer, 36a, Polehill Road, Hillingdon Heath, Middlesex, and Wm. F. H. Lowen.

Walter Patterson, Ltd.—Priv. co. Cap. £2,000. To acquire the business now carried on at 59, Fleet Street, Liverpool, as "Walter Patterson." Directors: Walter Patterson (managing) and Emily Patterson. R.O.: 59, Fleet Street, Liverpool.

Sunbeam Vacuum Cleaner Co. (1938), Ltd.—Priv. co. Cap. £3,000. To acquire business previously carried on by Sunbeam Vacuum Cleaner Co., Ltd. Directors: Herbert E. Davis (chairman) and Patrick G. Stirling. R.O.: 83, Fore Street, London, E.C.2.

United Relay Exchanges, Ltd.—Priv. Co. Cap. £500. To establish and develop relay services. Directors: Leslie C. Field, Rupert R. Goding, Harry Roughton, Wm. T. C. Smeathers, Harry P. Taylor, Chas. W. S. Watson, and Sydney A. Wilshere. R.O.: St. Paul's House, 61/63, St. Paul's Churchyard, London, E.C.4.

Wembley Electrical Appliances, Ltd.—Priv. Co. Cap. £6,000. To acquire part of B.T.P. Equipment, Ltd., and to carry on business of manufacturers and dealers in wireless, television and electrical apparatus. Directors: Benjamin A. A. Thomas, Michael R. Cahill and Fredk. Lindgrewn. C.A. R.O.: 4, Clement's Inn, London, W.C.2.

Kent, and an insurance policy for £4,000, dated Sept. 6, to secure £1,000 and further advances not exceeding therewith £4,000. Holder: H. Best, Bromley Hill Court, Bromley.

Boardley and Roberts, Ltd., 5/7, St. Peter's Street, Lowestoft.—Debtors' petition filed on co.'s undertaking and property, present and future, including uncalled capital, dated Sept. 10, 1938, to secure all moneys due or to become due from co. to Barclays Bank, Ltd.

Ferguson Radio Corporation, Ltd., 25-27, Oxford Street, W.1.—Land Registry charge on land and buildings at junction of Great Cambridge Road and Lincoln Road, Enfield, dated September 8, 1938, to secure all moneys due or to become due from co. to Westminster Bank, Ltd.

G. S. N.1 (Birmingham), Ltd., 44, Holloway Head, Birmingham.—Second debenture dated September 12, 1938, to secure £630, charged on co.'s assets, present and future (subject to first debenture). Holder: W. H. D. Nightingale, 3, Beaks Hill Road, Kings Norton, Birmingham.

Bankruptcies

Joseph Albert Clements, lately 7, Plough Lane, Old Park, Oakengates, Salop.—At public exam. statement of affairs showed liabilities £275 16s. and deficiency £112 13s. 5d. Exam. was closed.

Harold Peter Burrows, 111, Beech Hill Avenue, Wigan, Lancs, and 69, High Street, Newton-le-Willows, Lancs.—At public exam. at Wigan, it was reported there were liabilities of £618 and assets of £279. Exam. was adjourned.

Jacob Fagin, 6-8, Station Road, Aldershot, Southampton.—Application for discharge herein was heard at Guildford recently. Receiving order had been made this year, and the liabilities had been estimated at £2,766 1s. 3d. There was a deficiency of £2,753 1s. 3d. The Judge refused to grant discharge, telling debtor that he could apply again when he had formulated a scheme for the payment of his trade debts.

Albert William Sadler, 115, Osmaston Road, Derby.—At pub. ex. recently at Derby, stated there was a deficiency of £625 0s. 1d. Exam. was closed.

John Tyson Townson, 97, Market Street, Dalton-in-Furness, Lancs.—At debtor's pub. ex. at Barrow-in-Furness recently, his statement of affairs showed gross liabilities of £406 6s. 6d., of which £399 4s. was expected to rank, with estimated assets of £68 2s. 2d., or a deficiency of £331 1s. 10d. Exam. was closed.

Robert Percival Andrews, 101, London Road, Headington; 95, Oxford Road, Cowley; The Market Square, Witney; and Shoe Lane, New Inn, Hall Street, Oxford, all Oxfordshire, trading as Raja Products.—At pub. ex. held on September 26 at Oxford, was reported gross liabilities were £2,656 19s. 8d. Of that amount £2,486 12s. 9d. was expected to rank. Deficiency was £1,970 14s. Exam. was adjourned.

County Court Judgments

The following list of judgments given in the County Courts of England and Wales relating to the Radio Industry has been furnished by the Registry of County Courts Judgments.

Only judgments of, or exceeding, £10 are recorded on the register, and no differentiation is made between actions for debts and disputed cases.

In certain instances the judgment is entered against a defendant acting in a representative capacity.

The appearance of a judgment in this list does not necessarily indicate that the amount still remains unpaid, and it should be understood that some of the judgments may have since been settled or paid. The name of the court is in brackets.

Baxter, P., 6, London Road, Grantham. (Edmonton.) £27 2s. 2d. Aug. 25.

Butler, F. T. (Victor Radio), High Street, Rayleigh, Essex. (Shoreditch.) £18 11s. 3d. Aug. 5.

Chestfield Radio (firm), The Broadway, Swalecliff, Whitstable, Kent. (Edmonton.) £19 14s. 10d. Aug. 5.

Cole, L., 134, Chandas Street, Netherfield, Notts. (Edmonton.) £43 8s. 9d. Aug. 18.

Coopers Electrical and Radio Supplies (firm), 2, Scotland Road, Liverpool. (Shoreditch.) £16 4s. 4d. Aug. 5.

Harris Bros. (firm), 377, Nuthall Road, Nottingham. (Shoreditch.) £31 3s. 3d. Aug. 15.

Hayhurst, W., Morland, Penrith, Cumberland. (Edmonton.) £17 5s. 10d. Aug. 18.

Humphrey, E. E., Bexley Radio and Gram. Stores, 7, High Street, Bexley, Kent. (Southend.) £15 12s. 3d. June 15.

Humphrey, L. J., t/a Bexley Radio and Gramophone Stores, 8, High Street, Old Bexley, Kent. (Brentford.) £43 2s. 5d. Aug. 26.

Jones, S. E., 15, Ashton New Road, Beswick, Manchester. (Bromley.) £20 18s. 8d. Aug. 24.

Kann, E. A., 26, Regency Square, Brighton. (Brighton and Lewes.) £18 11s. 10d. Aug. 8.

Knighton, W. O. and C. V. (firm), 41, Belvoir Street, Coalville, Leicestershire. (Nottingham.) £16 5s. 10d. Aug. 24.

Lansdowne Radio (firm), 129, Hartington Road, Stockwell, London, S.W.8. (Bow.) £15 19s. Aug. 23.

Phipps, S. R., Alcester Road, Studley, Warwick. (Birmingham.) £21 13s. 4d. Aug. 15.

Slater, J. F., t/a Slater's Radio and Cycle Stores, 37, St. John's Street, Wirksworth, Derbyshire. (Southend.) £19 12s. July 13.

Smith, Stanley C., 10, The Facade, Devonshire Road, Forest Hill, London, S.E.23. (Bloomsbury.) £10 3s. 2d. Aug. 24.

Spurr, Edward, 19, Bridge Street, Earlstown, Lancs. (Southend.) £37 19s. 11d. July 27.

Wireless Shop (Prudhoe), Ltd., Front Street, Prudhoe-on-Tyne. (Southend.) £25 18s. 11d. Aug. 3.

Woods (male), 152, High Street, Leyton, London, E.10. (Clerkenwell.) £17 12s. 10d. Aug. 18.

Business Names

The following businesses have been registered under the Business Names Act of 1916. The trading name is given first. In brackets is the name of the proprietor or proprietors. The date is that of registration.

ELECTRIC SUPPLIES, 259/261, High Street, Eltham, London, S.E.9. (William Bernard Browning.) June 2.

FORD RADIO SERVICE, Queens Place, First Avenue, Hove, 3. (Victor Stockdale Piercy.) Sept. 2.

REX RADIO, 50, West Ham Lane, London, E.15 (Sydney James Gilbert.) Sept. 5.

A SERIES ILLUSTRATING OUTSTANDING RADIO ACHIEVEMENTS OF



MELNIK

Medium-Wave 100kW. Radio Broadcast Transmitter of cubicle construction, employing High Power Class 'B' Modulation. Designed, constructed and installed to the order of the Czecho-Slovakian Administration at Prague.

TRANSMITTER SUPPLIED BY
Standard Telephones and Cables Limited
MANUFACTURERS OF



BRIMAR VALVES

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CHARGE TWICE AS MANY BATTERIES FOR LITTLE MORE OUTLAY.

Never before have any chargers offered such profit-making possibilities—Exclusive features include:— ● 3 independent charging circuits ● Balancing of circuits unnecessary ● Transformer tapping control ● Maximum efficiency at all loads ● Double normal charging rates ● No exterior paralleling of circuits ● Lowest in both first and running cost.

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Celestion Limited, Kingston-on-Thames

ALL WISE DEALERS STOCK



ALL FEATURE RADIO

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The Gambrell
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THE BEST
LOUDSPEAKING
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McKINLAY ELECTRICAL MFG. CO. LTD.
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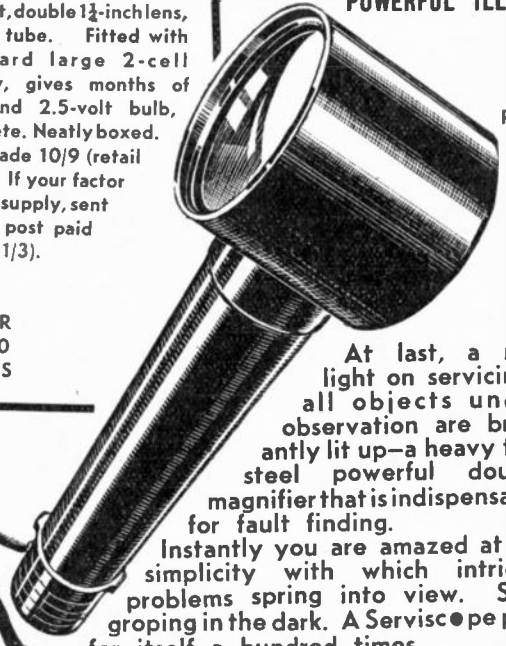
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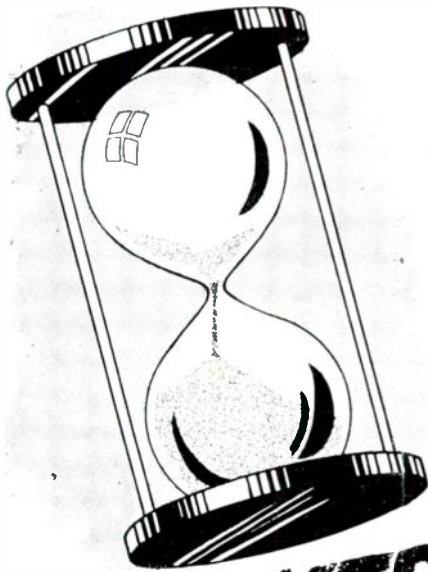
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