April 1954
40 Cents
45c in Canada

QST

devoted entirely to

amateur radio

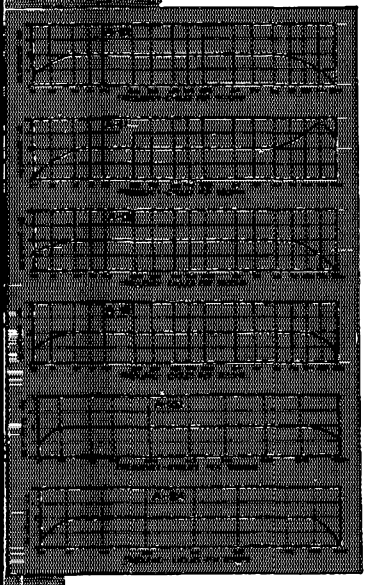
PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

ULTRA COMPACT UNITS...OUNCER UNITS

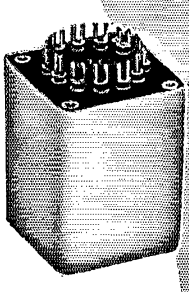
HIGH FIDELITY . . . . SMALL SIZE . . . . FROM STOCK

UTC Ultra compact audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. High fidelity is obtainable in all individual units, the frequency response being ± 2 DB from 30 to 20,000 cycles.

True hum balancing coil structure combined with a high conductivity die cast outer case, effects good inductive shielding.



Type No.	Application	Primary Impedance	Secondary Impedance	List Price
A-10	Low impedance mike, pickup, or multiple line to grid	50, 125/150, 200/250, 333, 500/600 ohms	50,000 ohms	$16.00
A-11	Low impedance mike, pickup, or line to 1 or 2 grids (multiple alloy shields for low hum pickup)	50, 200, 500	50,000 ohms	18.00
A-12	Low impedance mike, pickup, or multiple line to grids	50, 125/150, 200/250, 333, 500/600 ohms	80,000 ohms overall, in two sections	16.00
A-14	Dynamic microphone to one or two grids	30 ohms	50,000 ohms overall, in two sections	17.00
A-20	Mixing, mike, pickup, or multiple line to line	50, 125/150, 200/250, 333, 500/600 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-21	mixing, low impedance mike, pickup, or line to line (multiple alloy shields for low hum pickup)	50, 200/250, 500/600	50, 200/250, 500/600	18.00
A-16	Single plate to single grid	15,000 ohms	60,000 ohms, 2:1 ratio	15.00
A-17	Single plate to single grid 8 MA unbalanced D.C.	As above	As above	17.00
A-18	Single plate to two grids. Split primary	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio	16.00
A-19	Single plate to two grids 8 MA unbalanced D.C.	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio	19.00
A-24	Single plate to multiple line	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-25	Single plate to multiple line 8 MA unbalanced D.C.	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	17.00
A-26	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-27	Crystal microphone to multiple line	100,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-30	Audio choke, 250 henrys @ 5 MA 6000 ohms D.C..65 henrys @ 10 MA 1500 ohms D.C.			12.00
A-32	Filter choke 60 henrys @ 15 MA 2000 ohms D.C., 15 henrys @ 30 MA 500 ohms D.C.			10.00



TYPE A CASE
1½" x 1½" x 2" high

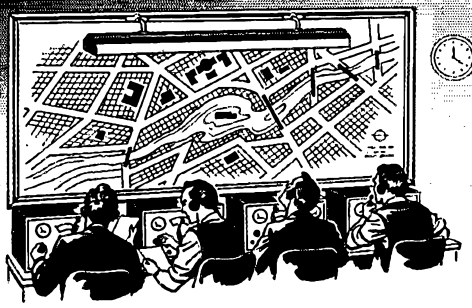
UTC OUNCER components represent the acme in compact quality transformers. These units, which weigh one ounce, are fully impregnated and sealed in a drawn aluminum housing ⅞" diameter...mounting opposite terminal board. High fidelity characteristics are provided, uniform from 40 to 15,000 cycles, except for 0-14, 0-15, and units carrying DC which are intended for voice frequencies from 150 to 4,000 cycles. Maximum level 0 DB.

OUNCER CASE
⅞" Dia. x 1⅛" high

Type No.	Application	Pri. Imp.	Sec. Imp.	List Price
0-1	Mike, pickup or line to 1 grid	50, 200/250 500/600	50,000	$14.00
0-2	Mike, pickup or line to 2 grids	50, 200/250 500/600	50,000	14.00
0-3	Dynamic mike to 1 grid	7.5/30	50,000	13.00
0-4	Single plate to 1 grid	15,000	60,000	11.00
0-5	Plate to grid, D.C. in Pri.	15,000	60,000	11.00
0-6	Single plate to 2 grids	15,000	95,000	13.00
0-7	Plate to 2 grids, D.C. in Pri.	15,000	95,000	13.00
0-8	Single plate to line	15,000	50, 200/250, 500/600	14.00
0-9	Plate to line, D.C. in Pri.	15,000	50, 200/250, 500/600	14.00
0-10	Push pull plates to line	30,000 ohms plate to plate	50, 200/250, 500/600	14.00
0-11	Crystal mike to line	50,000	50, 200/250, 500/600	14.00
0-12	Mixing and matching	50, 200/250	50, 200/250, 500/600	13.00
0-13	Reactor, 300 Hys.—no D.C.; 50 Hys.—3 MA. D.C.,		6000 ohms	10.00
0-14	50:1 mike or line to grid	200	½ megohm	14.00
0-15	10:1 single plate to grid	15,000	1 megohm	14.00

Varick Transformer Co.
150 VARICK STREET • NEW YORK 13, N. Y.
EXPORT DIVISION: 13 EAST 40th STREET, NEW YORK 16, N. Y., CABLES: "ARLAB"

For dependable CD work ....G-E 5-STAR TUBES!



AT NEW LOW PRICES!

They're down as much as 50% and more from the original figures! Large-scale output has brought about substantial production savings . . . which G.E. is passing on to you in the form of plus-value prices. See your nearby G-E tube distributor!

You can't afford failures when handling civil defense. Help avoid them with 5-Star Tubes!

DESIGNED FOR RELIABILITY! Double mica spacers, doubled-staked getters, welded tab stops . . . these are three of the many special features *designed into* G-E 5-Star Tubes, so they will resist shocks and vibration.

BUILT FOR RELIABILITY! 5-Star Tube parts are individually inspected and micro-measured. Among many advanced steps in manufacture, is a special coating process on heater bends that virtually eliminates heater failures.

TESTED FOR RELIABILITY! Every G-E 5-Star Tube gets a 46-hour "burn-in" under Class A conditions. When you install a 5-Star Tube, you know it will do its job, and keep doing it!

Twelve popular types are given at right. The complete 5-Star Tube list, including subminiatures, is available at your G-E tube distributor's. Visit him today! *Tube Dept., General Electric Co., Schenectady 5, N. Y.*

Here are 12 types you will find directly useful!

STANDARD TUBES	REPLACE WITH THESE 5-STAR HIGH-RELIABILITY TUBES
5Y3-GT	*GL-6087—full-wave rectifier.
6AK5	GL-5654—sharp-cutoff r-f pentode.
6AL5	GL-5726—twin diode.
6AQ5	GL-6005—beam power amplifier.
6AU6	GL-6136—sharp-cutoff r-f pentode.
6BA6	GL-5749—remote-cutoff r-f pentode.
6BE6	GL-5750—pentagrid converter.
6C4	*GL-6135—medium-mu triode.
6SK7	GL-6137—remote-cutoff r-f pentode.
6X4	*GL-6202—full-wave rectifier.
12AT7	GL-6201—h-f high-mu twin triode.
12AY7	*GL-6072—low-noise high-mu twin triode.

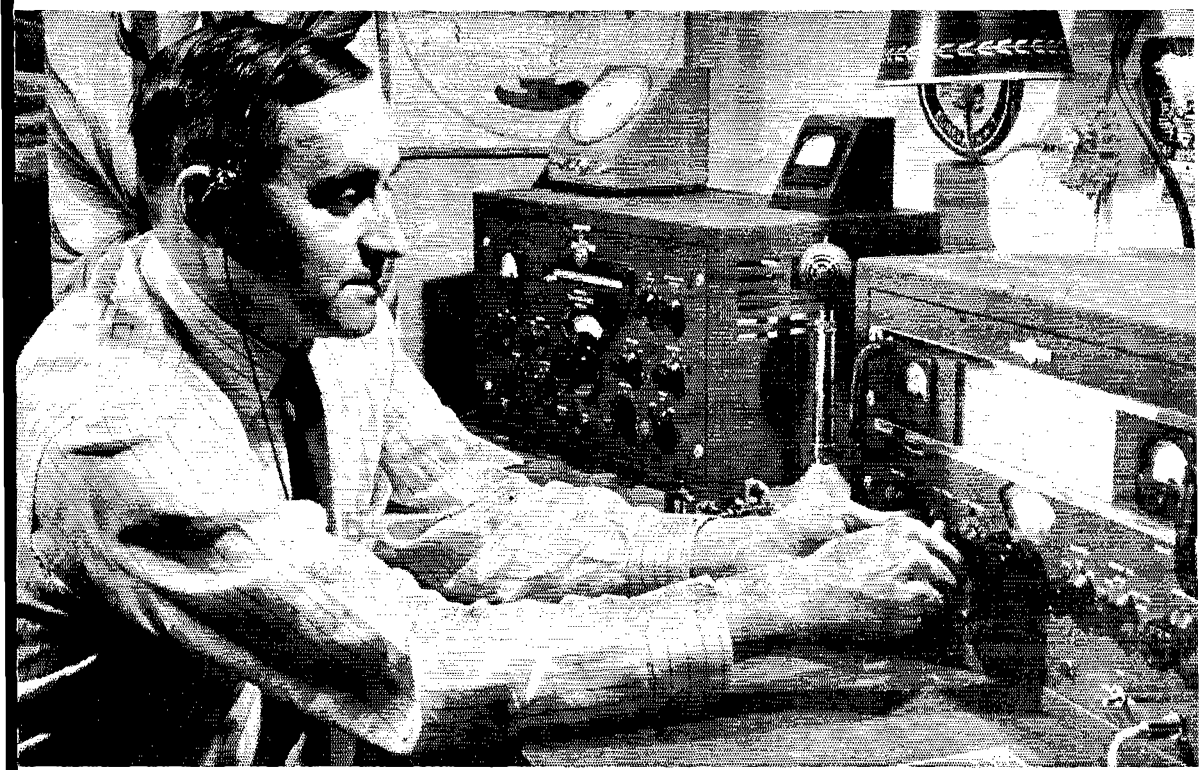
**Slight electrical difference.*

● General Electric wishes to congratulate the winner of the 1953 Edison Award, J. S. Surber, W9NZZ, Peru, Indiana. For sacrificing hours of his time day-in and day-out to keep remote arctic weather station men in touch with their families, Mr. Surber was adjudged the amateur whose public service was the most noteworthy. Radio amateurs everywhere can feel honored by this tribute to a member of their group.

GENERAL ELECTRIC

166-182

W9NZZ DESERVES CONGRATULATIONS



Mr. J. Stan Surber, Peru, Indiana, 46 year old short-wave radio "mailman." Winner of General Electric's 1953 Edison Radio Amateur Award for the outstanding "ham" public service of the year. W9NZZ is the only regular communications link with home for hundreds of servicemen at Arctic weather stations. Last year he transmitted and received over a million and a half words in Morse code to and from such points as T-3, an ice island near the North Pole. His equipment: Collins 75A-3 receiver, 32V-3 transmitter.

Mr. Surber's own account of how he kept on the air 8 hours a day for 353 days *without a miss due to equipment failure*

"During the year 1953, W9NZZ 'worked' the World's most northern stations (Alert and Eureka on Ellesmere Island; Mould Bay on Prince Patrick Island; Isachsen on Ellef Ringnes Island; and, Fletcher's Ice Island floating near the North Pole) in keeping traffic schedules, for a total of 353 days of 365. Of the 12 days missed, 4 of them were due to the necessity of my being out of town. The remaining 8 days missed were due to 'black-out' 20 meter conditions — not one day did equipment failure cause a 'miss.' Practically every day of the year the equipment is turned on at 7:30 a.m. and not turned off until just before I leave for work as a train dispatcher for the Chesapeake and Ohio Railway, or approximately 3:30 p.m. Surely that is dependability!

"The fact that Collins transmitters and/or receivers are used in five of the six most regularly scheduled stations, adds much to this record of consistent communications via 20 meters. It is easy to understand how, with such equipment at both ends, schedules are kept, on frequency and on time.

"To me, the Collins 75A-3 with the 800 cycle mechanical filter, is the last word in CW reception — surely it is the answer to the CW man's prayer."

Naturally we take pride in the fact that Mr. Surber's equipment is *COLLINS.*

COLLINS RADIO COMPANY **Cedar Rapids, Iowa**

11 W. 42nd St. **New York 36**

1930 Hi-Line Drive **Dallas 2**

2700 W. Olive Ave. **Burbank**

COLLINS

QST

APRIL 1954

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OFFICES

38 La Salle Road
West Hartford 7, Connecticut

TEL.: AD 3-6268 TWX: HF 88

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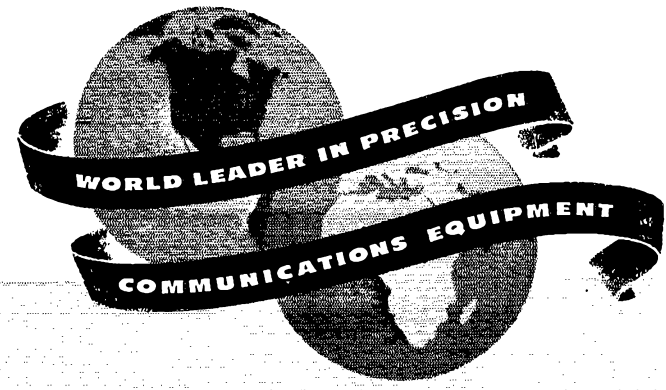
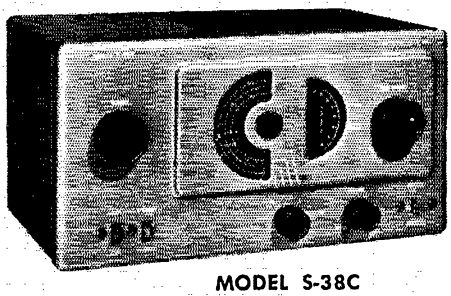
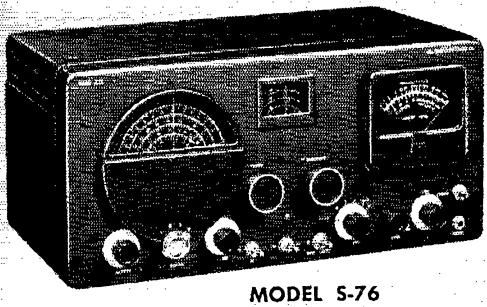
hallicrafters



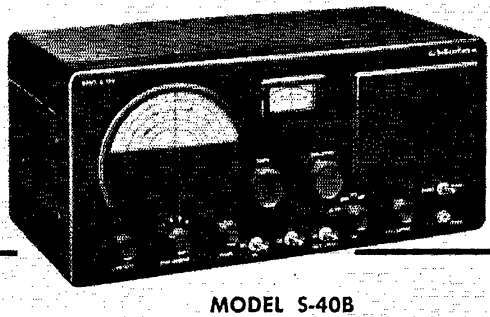
MODEL S-53A



MODEL S-38C



MODEL S-76



MODEL S-40B

Here are the high performance—high value instruments that have made the hallicrafters name best known among amateurs around the world!

As an amateur operator, you know there is no substitute for performance in a receiver. Either a rig pulls in the signals or it doesn't. That's why we urge you to compare Hallicrafters receivers—model for model and dollar for dollar—with *any* others on the market. We know that when you do you'll choose Hallicrafters—because comparisons like that are what have built our business and reputation. A reputation backed by expert operators all over the world.

MODEL S-38C. The radio that amazes even the experts! Offers world-wide reception for the short-wave listener and the new radio amateur even in weak signal areas where ordinary sets fail. Covers Broadcast Band 540-1650 kc *plus three short-wave bands* covering 1650 kc-32 Mc.

Electrical band spread plus high gain circuitry makes tuning even on crowded bands a snap. Really pulls in distant, weak signals. Headfone tip jacks on rear and built-in PM speaker. Oscillator for reception of code signals.

Gray steel cabinet 12⅞" x 7" x 7¾" deep. Shipping weight 13 lbs. Four tubes plus rectifier. **$49.95**

MODEL S-53A. The finest small communications receiver built and ideal where maximum performance is required in small space. Several steps better than the S-38C, but not quite up to larger S-40B. Covers Broadcast Band 540-1630 kc *plus four short-wave bands* covering 2.5-31 and 48-54.5 Mc.

Electrical bandspread tuning control to separate stations on crowded bands, with calibration for 48-54.5 Mc. Two i-f stages. Panel switches control automatic noise limiter, code reception and high-low control. Phono jack for records. Headfone tip jacks on rear and built-in PM speaker. Temp. compensated to reduce fading due to frequency shift.

Satin black steel cabinet with brushed chrome trim. 12⅞" x 7" x 7¾" deep. Shipping weight 19 lbs. Piano hinge top. Seven tubes plus rectifier. **$99.95**

MODEL S-40B. Long a favorite with amateurs. A big set with big set performance at a modest price. The largest set in the Hallicrafters line, with its own built-in speaker. Covers Broadcast Band 540-1680 kc *plus three short-wave bands* covering 1680 kc-44 Mc.

Electrical bandspread tuning control to separate stations on crowded bands. One r-f, two i-f stages to draw in stations. Switches for automatic noise limiter, code reception and three position tone control. Code pitch control and built-in speaker.

Satin black steel cabinet. 18½" x 8⅞" x 9½" deep. Shipping weight 36 lbs. Piano hinge top. Seven tubes plus rectifier. **$119.95**

MODEL S-76. Value packed, double conversion communications receiver with Broadcast Band 538-1580 kc *plus three short-wave bands* covering 1720 kc-34 Mc.

Electrical bandspread tuning control with calibrated dial to separate stations on crowded bands. Double superhet with 50 kc second i-f and giant 4-inch "S" meter. Five position selectivity, one r-f, two conversion, two i-f stages, temperature compensated. Phono input jack. 3.2 or 500 ohm outputs. Socket for external power or remote control.

Satin black steel cabinet with chrome plastic trim rings. 18½" x 8⅞" x 9½" deep. Shipping weight 41 lbs. Piano hinge top. Nine tubes plus voltage regulator and rectifier. **$199.95**

hallicrafters

THE NAME IS FAMOUS — RADIO • TELEVISION • HIGH FIDELITY

4401 West Fifth Avenue, Chicago 24, Illinois • Hallicrafters Ltd., 51 Camden Street, Toronto, Canada

Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. **All ARRL Field Organization appointments** are now available to qualified League members. These include ORS, OES, OPS, OO and OBS. Also, where vacancies exist SCMs desire applications for SEC, EC, RM and PAM. In addition to station and leadership appointments for Members, *all amateurs* in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).

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Maryland-Delaware-D. C.	W3EQK	Arthur W. Plummer	3804 Rexmere Road	Baltimore 18, Md.
Southern New Jersey	K2BG	Herbert C. Brooks	800 Lincoln Ave.	Palmyra
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Western Pennsylvania	W3NCD	R. M. Heck	RFD 1	Sharpsville
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Nebraska	WØCBH	Floyd B. Campbell	203 W. 8th St.	North Platte
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New Hampshire	W1GMH	Carroll A. Currier	1426 Belmont St.	Manchester
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West Virginia	W8PQQ	Albert H. Hix	1013 Belmont St.	Forest Hills, Charleston 4
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West Indies (Cuba-P.R.-V.I.)	KP4DJ	William Werner	563 Ramon Llovet	Urb. Truman, Rio Piedras, P. R.
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Ontario	VE3IA	G. Eric Farquhar	16 Emerald Crescent	Burlington, Ont.
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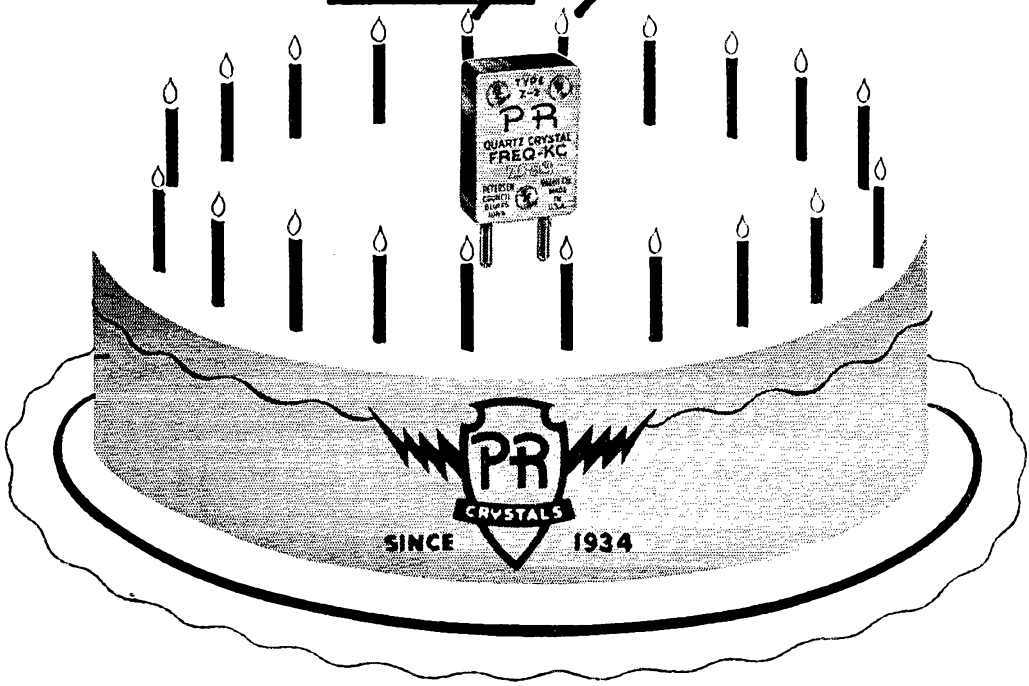
Alberta	VE6MJ	Sydney T. Jones	10706–57th Ave.	Edmonton, Alta.
British Columbia	VE7JT	Peter McIntyre	981 West 26th Ave.	Vancouver, B. C.
Yukon				
Manitoba	VE4LC	Leonard E. Cuff	286 Rutland St.	St. James
Saskatchewan	VE5HR	Harold R. Horn	1044 King St.	Saskatoon

* Official appointed to act temporarily in the absence of a regular official.

20 YEARS

is a long grind!



Long before World War II, PR Crystals were established world leaders . . . because it was back in April, 1934, that Bill Petersen, WØJRY, ground the first crystals that were destined to set frequency control standards during the years ahead.

Now . . . with 20 years of experience, research and development behind them . . . PR Crystals continue this leadership in all services where dependable, exacting frequency control is essential. From coast to coast . . . from continent to continent . . . PRs are on the job 24 hours a day.

Throughout all of these years, in war and peace, PR has never made a compromise with QUALITY. In broadcast, amateur, aircraft, marine, point-to-point, police, civil defense, military — and scores of other services — PRs are proving what they claim to be . . . the best!

So, 1954 means more than baking a cake . . . it means you get 20 years of uninterrupted experience, "know-how" and research when you buy a PR!

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2800 W. BROADWAY • COUNCIL BLUFFS, IOWA

EXPORT SALES: Royal National Company, Inc., 75 West Street, New York 6, N. Y., U. S. A.

THE AMERICAN RADIO RELAY LEAGUE, *INC.,*

is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

All general correspondence should be addressed to the administrative headquarters at West Hartford, Connecticut.

Past Presidents

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GEORGE W. BAILEY, W2KH, 1940–1952

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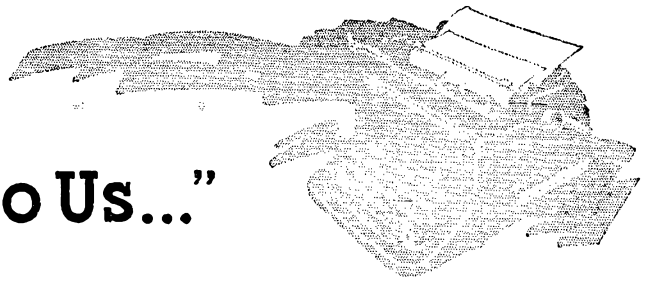

"It Seems to Us..."

MEMBERSHIP GROWTH

Full Membership in the League has reached a new all-time high. As of December 31, 1953, there were 41,949 licensed-amateur members in the U. S. and possessions, plus an additional 1665 Full Members in Canada for a total voting membership of 43,614. During the year Associate Membership also showed an increase, except in foreign countries where currency restrictions continued to cause difficulty. The total number on ARRL records, worldwide, is now 60,000.

Early indications are that League membership is continuing its climb in 1954. Aside from the fact that this trend is a sign of a healthy amateur radio, it would be fitting if our League's growth could set a new high again this year — the fortieth anniversary of the national amateur association. Let's aim to make it a banner year!

AMATEUR GROWTH

If you were to inspect figures released by FCC on the total number of amateur licenses outstanding at the end of 1953 compared with the total a year earlier, you might become alarmed at an indicated decrease of several thousand amateurs. Don't be misled. Despite the figures, there was no drop in the number of licensees during 1953 any more than there was a fantastic growth in our ranks, a couple of years ago, indicated by inflated license figures at that time. The erroneous figures (double-counting, and failure to delete expirations) of previous years are now being cut down to size by new tabulating procedures adopted by the Commission's staff about a year ago.

We mention this only to prevent from gaining headway any rumors that amateur radio has ceased to grow. During 1953 some 8000 newcomers obtained five-year (Technician or higher) licenses, in addition to about 10,000 Novices who, we expect, will contribute to our future permanent growth.

TVI CHECKING

We commend to your reading the article beginning on page 34 of this issue, describing the work of our Technical Staff in recent years on some of the problems of television interference. We would like to make it plain that the project treated in the present article is separate from the ARRL TVI Demonstration, which we reported in the October issue, and the color TV field tests work, which we reported in the November issue — all being individual projects, with some running simultaneously.

What strikes us particularly in reading the article ourselves is how things have changed in the ARRL lab in recent years. It doesn't seem so long ago that a couple of us over a sandwich at lunchtime could cook up an idea for a new transmitter layout, or tube line-up, or tuning system, and come back to the lab and turn out the whole darned thing in an afternoon — ready for an article to be written next day for *QST*. Things just aren't that simple nowadays (we're telling you?). Now the conception of an idea is only the beginning of perhaps a several weeks' project of discussions on design and layout, more careful construction with particular attention to shielding and by-passing, and then the task of debugging the whole affair. It used to be that we would simply tune up a new *QST* rig and if it delivered suitable power to a dummy load, and had decent keying or modulation characteristics, it had passed its test. While reasonable attention was given to harmonic reduction, it wasn't a major problem because most harmonics of any consequence fell right in our own ham bands — there wasn't any broadcast service on our second or fourth or umpteenth harmonic which with only a small chunk of a microvolt could raise hob with the neighbor's reception. And so it is that today even the simplest beginner's transmitter gets a thorough working over in our lab before a description of it ever reaches print. If the gang in our lab are wearing their fingernails shorter these days, you now know why.

ARE YOU LICENSED ?

• When joining the League or renewing your membership, it is important that you show whether you have an amateur license, either station or operator. Please *state your call and/or the class of operator license held,* that we may verify your classification.

Strays

Bewildering 1000-to-1 sequence involving W4-UMF: 1) He was signing his call as W4-Uncle-Mike-Fox on 50 Mc. 2) A TVId lady neighbor looked in the 'phone book and found a Mike Fox listed, called the gentleman and asked, "Is this Uncle Mike Fox?" 3) It turned out that the fellow *was* an uncle, so he naturally replied in the affirmative. 4) She queried him about the TVI and he, of course, denied all. 5) "Uncle Mike's" sister's father-in-law, W6JCQ, happened to be visiting him and suggested that the lady call FCC. 6) This was done and W4UMF's 'phone number ascertained. 7) The lady got in touch with W4UMF and the TVI matter was settled most amiably.

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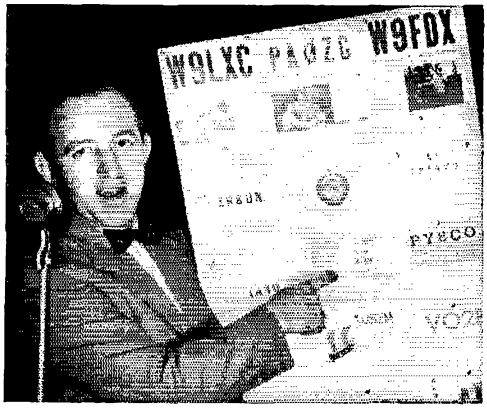


W9LXC (in action, above) effectively "sold" amateur radio to hundreds of Wisconsin Kiwanis and Rotary Club members through a recent series of talks and on-the-air demonstrations in the Sheboygan area. W9NVJ assisted in handling a 400-watt 20-meter 'phone set-up, arranged for rapid assembly and disassembly, with which widespread QSOs were made during the programs. So impressive was W9LXC's presentation that for some time he was kept busy turning away subsequent invitations from other community organizations. More power to such diligent emissaries of ham good will!

FEED-BACK

In the circuit of the Transistor Self-Powered C.W. Monitor (*QST*, January 1954, page 29) the take-off lead to C_2 and C_3 should be shown running to the base of the 2N32 transistor, not to the emitter.

COMING A.R.R.L. CONVENTIONS

June 6th — Southeastern Division, Atlanta
June 12th–13th — Rocky Mountain Division, Denver
June 26th–27th — Oregon State, Klamath Falls
Oct. 2nd–3rd — West Gulf Division, Kerrville, Texas

25 Years Ago this month

April 1929

. . . This issue's editorial deals with two subjects: the upcoming meeting of ARRL's Board of Directors in May and recent doings of the Federal Radio Commission.

. . . An expansive article by Ross Hull, "Modern Practice in High-Frequency Radiotelephony," discusses improved methods for higher efficiency and stability.

. . . "Calibrating the Heterodyne Frequency Meter or Monitor," by George Grammer, W3AIH, puts broadcast-band signals to work to obtain 3.5-, 7- and 14-Mc. precision.

. . . "A General Purpose Audio-Frequency Power Amplifier," by James J. Lamb, W1CEI, uses UY-227s and UX-250s to produce 10 watts of high-quality output.

. . . "Alternating Current Rectification as Applied to Radio," by R. J. Kryter, appears in the first of two parts that deal with several types of rectifying equipment.

. . . J. E. Smith clarifies the meaning of overtones, harmonics and heterodynes at audio and radio frequencies in an interesting article titled "Beats."

. . . "Notes on Distortion in Audio-Frequency Amplifiers," by J. R. Nelson, gives mathematical and graphical analysis of driver-stage distortion.

. . . C. J. Paddon contributes "Dress," an article on construction practices specifically suggesting methods for neater wiring and cabling.

. . . "The Disk Condenser," by Milton A. Ausman, and "A Simple Homemade Meter," by Stanton Chapman, 4LD, are worthy of any experimenter's attention.

. . . O. W. Pike and E. E. Spitzer write of the new UX-865, a low-power screen-grid transmitting tube that should find wide amateur application.

. . . The Experimenters' Section contains reports on crystal-self-excited oscillator switching, inductance coil design, sign-flasher interference and click filters.

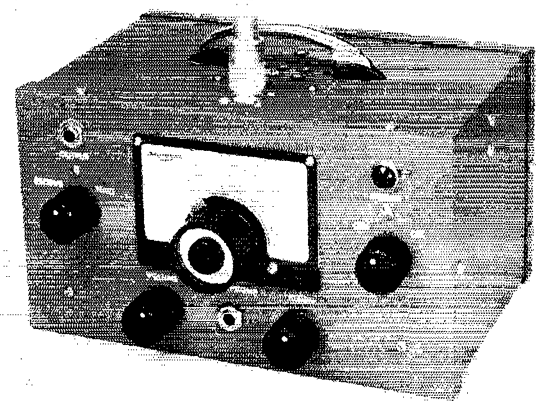
HAMFEST CALENDAR

CALIFORNIA — The week end of May 1st–2nd, 12th Annual hamfest of the Fresno Amateur Radio Club. Registration and daytime activities begin at 9 A.M. at the Fresno Motel, Highway 99 North; banquet at 7:30 P.M. at the Memorial Auditorium, followed by entertainment. Fee $4.50; preregistration closes April 26th. Write Grant Storey, W6NTK, 908 W. Pico, Fresno, Calif.

PENNSYLVANIA — Saturday, April 24th, at the Arcadia Cafe, 27 West Orange Street, Lancaster, the 9th annual banquet of the Lancaster Radio Transmitting Society. Festivities will begin at 6:30 P.M. Entertainment has been planned for the OMs, YLs and XYLs. Registrations are in advance and may be obtained through Arthur C. Jacoby, W3OY, 589 North Plum Street, Lancaster.

SOUTH CAROLINA — Sunday, April 4th, the Palmetto Amateur Radio Club hamfest at Heise's Pond, 10 miles north of Columbia on Highway 1. Registration, including meal, $2. Write Hans Kaufmann, W4WSA, Box 5103, Columbia.

TEXAS — The week end of April 24th–25th, combination hamfest and swapfest of the South Plains Radio Club at the Old North Lubbock Air Base. Preregistration $1.50; at door, $2. Coffee free; cafeteria service available. Dates coincide with the Technical Engineering Show. Load up all your swap gear and head for Lubbock. Register with John Estes, 1502 28th St., Lubbock.



A complete station for 144-Mc. portable or home-station operation — built in a 5 × 6 × 9-inch package.

A One-Package Station for Two Meters

A Complete Transmitter-Receiver for Home or Portable Use

BY MASON P. SOUTHWORTH,* W1VLH

OUR COVER

Spring — and the young ham's fancy turns to thoughts of 2-meter DX from the high spots. W1VLH samples the fun from the top of West Peak, Meriden, Connecticut, one of Southern New England's most popular v.h.f. locations. His rig, described herewith, is a compact plug-in-and-play job that runs on a.c. at home, or plugs into an economical vibrator supply in the car. Build it now and be ready for the summer portable season.

In most sections of the country, the past year has seen a lively increase in 144-Mc. activity. Here is a piece of gear for the fellow who wants a handy, compact rig for this band and prefers to build his own equipment. Small size is nearly always a desirable feature in portable gear and this item, complete with transmitter, modulator, receiver and a.c. power supply, is built in a 5 × 9 × 6-inch cabinet. A 100-ma. vibrator supply may be easily connected externally when battery operation is desired. You can operate this "plug in and play" station almost anywhere and have fun doing it, and it should tie in well with local c.d. set-ups.

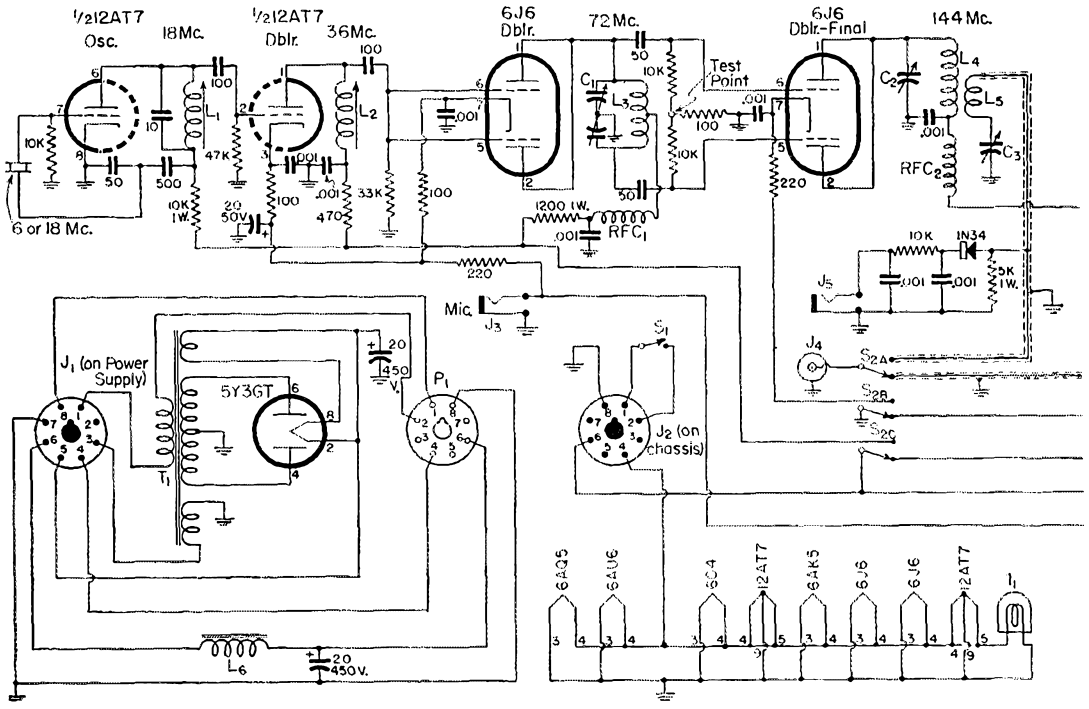
As might be expected, there isn't quite enough room in the box for a kilowatt transmitter and triple-conversion receiver. However, the 5-watt rig and superregenerative superhet described will give a good account of themselves. The power level was decided for us easily enough by the limitations of an economical 300-volt 100-ma. supply. The idea of running only 5 watts shouldn't worry anyone because it doesn't take high power to work out on 144 Mc. Nor should anyone be dismayed at the thought of a simple receiver with a superregenerative second detector.

In designing this unit, an attempt was made to strike a good balance between the sending and receiving coverage. There is little point in using the world's most sensitive receiver with a low-power transmitter. At least three more tubes would be required to obtain the same gain, a.v.c. action, and noise limiting with a conventional detector, and little if any additional selectivity would be provided by the high-frequency i.f. needed in a single-conversion set-up to give adequate image rejection. After using the station on the air, we're not sorry we chose the "rush box." As for practical results, this one-box rig has proved every bit as good for all our local contacts, out to 30 miles or so, as our medium-power rig and converter-receiver set-up, and it's quite possible to work a few DX stations with it when the band opens up. We've had many interesting mobile contacts up to about 20 miles while driving around town, and if we head for the hills the prospects are even better.

Circuit Details

The r.f. section of the transmitter starts out with one half of a 12AT7 as an overtone oscillator with capacitive feed-back, using either 6- or 18-Mc. crystals. The second half of this tube is a doubler to 36 Mc. A 6J6, with its two sections connected in parallel, doubles to 72 Mc., and has a balanced plate circuit which is capacity-coupled to the grids of a second 6J6 which serves as a push-push doubler-final. This final arrangement is stable and just about foolproof in adjustment, and its efficiency approaches that of a neutralized amplifier. The cathode current of the intermediate doubler stages is used to provide excitation for a carbon microphone, so a dual triode with

* Laboratory Assistant, *QST*.



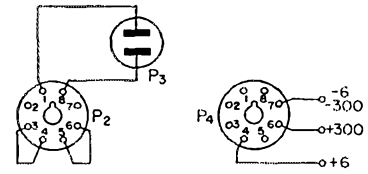


Fig. 1 — Transmitter and power supply portions of the 2-meter portable station.

C_1 — 11-$\mu\mu$f.-per-section miniature butterfly variable (Johnson 11MB11).
C_2, C_3 — 20-$\mu\mu$f. miniature variable (Johnson 20M11).
L_1 — 30 t. No. 20 enam., close-wound on ⅜-inch iron-slug form (National XR-93).
L_2 — 14 t. similar to L_1.
L_3 — 7 t. No. 20 tinned, center-tapped, ½-inch diam., ½ inch long (B & W 3003).
L_4 — 2 t. No. 16 tinned, ½-inch diam., ⅜ inch long.
L_5 — 2 t. insulated hook-up wire, ¼-inch diam., between turns of L_4.
L_6 — 10-hy. 100-ma. filter choke (Stancor C1001).
I_1 — 6.3-volt pilot light.
J_1, J_2 — 8-pin male chassis fitting (Amphenol 86-RCP-8).
J_3, J_5 — Open-circuit 'phone jack.
J_4 — Coaxial chassis fitting, female (Amphenol 83-1R).
P_1, P_2, P_4 — 8-pin female cable connector (Amphenol 86-PF-8).
P_3 — 115-volt line plug.
S_1 — Rotary power switch, s.p.s.t.
S_2 — Ceramic rotary switch, 3 p.d.t. (Centralab 2507).
RFC_1, RFC_2 — v.h.f. r.f. choke (Ohmite Z-144).
T_1 — Power transformer; 700 volts c.t. at 90 ma.; 5 volts at 2 amp.; 6.3 volts at 3 amp. (Stancor PC-8409).

separate cathodes is required for the oscillator-doubler. The use of 6-Mc. crystals requires one more multiplier stage than 8-Mc. crystals. If the latter are to be used the r.f. section may be simplified slightly by using a set-up such as that described by W2IHW.[1]

The r.f. voltmeter circuit provides a simple means of tuning up the transmitter. A 0–1 milliammeter is inserted in J_5 and all slugs and condensers tuned for maximum indication. Each stage has enough cathode bias to prevent its drawing excessive current during the tune-up procedure.

The receiver uses a 6AK5 r.f. stage. With the type of detector used, little would be gained through the use of a more complicated low-noise front end, and the pentode provides adequate gain. A 12AT7 serves as a mixer and oscillator, the latter using a Hartley circuit. Two lengths of hook-up wire, twisted together, provide injection. The 6C4 superregenerative second detector operates at a frequency of about 20 Mc. Regeneration is controlled by varying its plate voltage. An 0A2 provides a regulated plate supply for the receiver portion of the rig, and is especially desirable if mobile work is contemplated.

The audio circuit is similar to that employed in the "Twomobile."[2] The 6AU6 and 6AQ5 are used as first audio and output stages while receiving, and as speech amplifier and modulator while transmitting. Audio from the receiver is applied to the 6AU6 grid, and the microphone is in its cathode circuit. Only half of the primary of the push-pull output transformer is used during reception, the 6AQ5 driving a 2-inch p.m.

[1] Newland, "A Simple 144-Mc. Rig for C.D. Work" *QST*, February, 1954.
[2] Brown, "The Twomobile, a 144-Mc. Transceiver," *RCA Ham Tips*, Jan.-Feb., 1952.

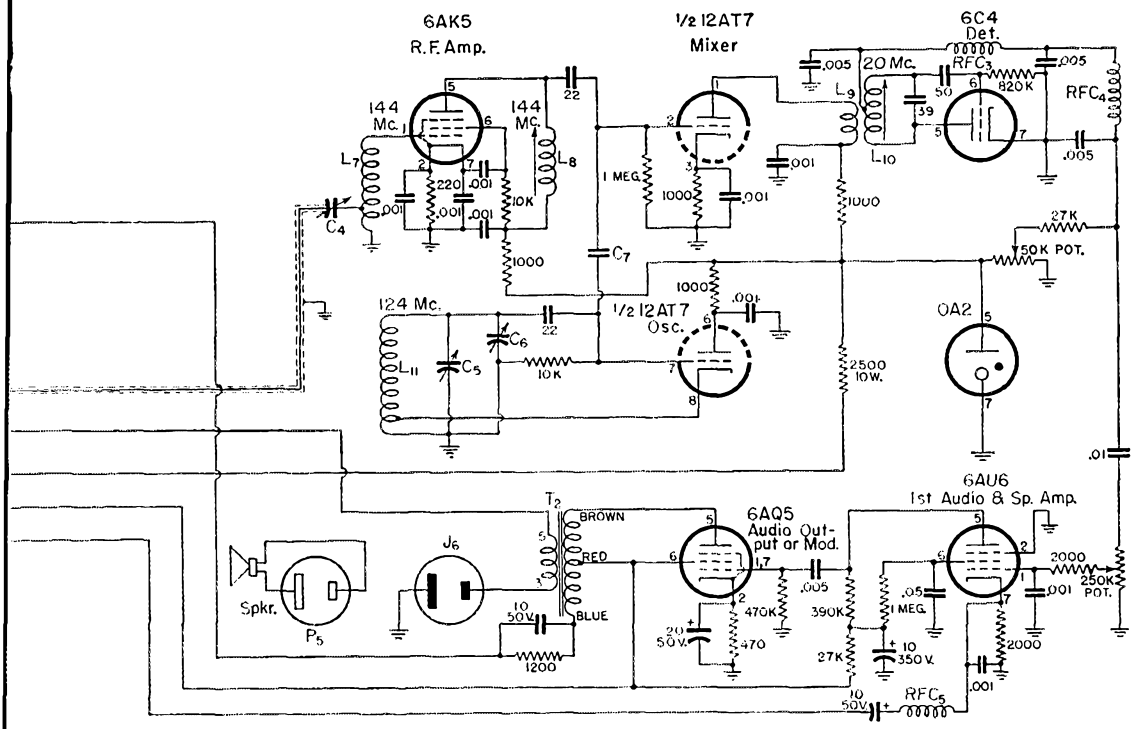


Fig. 2 — Receiver portion of the one-box station for 144 Mc.

C_4 — 5–30-$\mu\mu$f. ceramic trimmer (Centralab 827C)
C_5 — 2-plate miniature variable (Bud LC-1641 reduced to one stator and one rotor plate).
C_6 — 1–8-$\mu\mu$f. plastic trimmer (Erie 532–10).
C_7 — Injection coupling capacitor; two 1-inch lengths of hook-up wire, twisted together as required.
L_7 — 4 t. No. 16 tinned, $\frac{3}{8}$-inch diam., $\frac{1}{2}$ inch long, tapped 1 turn from ground end.
L_8 — 3 t. No. 28 d.c.c., $\frac{1}{2}$ inch long on $\frac{1}{4}$-inch diam. brass-slug form (National XR-80).
L_9 — 10 t. No. 28 d.c.c., close-wound over cold end of L_{10}.
L_{10} — 22 t. No. 28 d.c.c., close-wound on $\frac{1}{4}$-inch iron-slug form (National XR-81).
L_{11} — 3 t. No. 12 tinned, $\frac{5}{16}$-inch diam., $\frac{7}{8}$ inch long, tapped 1 turn from ground end.
J_6 — 2-contact male chassis fitting (Jones P-302-AB).
P_5 — 2-contact female cable connector (Jones S-203-CCT).
RFC_3 — 100-uh. r.f. choke (National R-33).
RFC_4 — 80-mh. r.f. choke (Millen 34280).
RFC_5 — V.h.f. r.f. choke (Ohmite Z-144).
T_2 — Output transformer, p.p. plates to voice coil (Stancor A-3823).

'speaker. While transmitting, the plate current of the final flows through the other half of the primary winding. Filters in the 6AU6 grid and cathode circuits and in the modulated plate lead prevent r.f. pick-up and feed-back.

All switching is handled by a three-pole double-throw ceramic rotary unit. The first section transfers the antenna from receiver to transmitter. In the receive position the second section closes the voice-coil circuit of the 'speaker and opens the cathode circuit of the final. (This is necessary to prevent the tube from drawing current when audio voltage is applied to it during receiving periods.) The third section applies plate voltage to the regulator and receiver or to the transmitter. A conventional a.c. power supply is built into the unit and connections are brought out to a plug so that heater and plate voltages from an external source may be applied for mobile operation.

Construction

The most important consideration in building this rig is to fit all the parts into the box and still obtain a natural weight balance so that the rig will carry easily. Except for these details, power and audio layout and lead lengths are not critical. The cabinet used is a 5 × 9 × 6-inch utility box having the 5 × 9-inch sides flanged and removable. It is Type MC596 made by the Middletown Manufacturing Co., Middletown, Conn. If this box is not available, it would also be possible to use one with the 6 × 9-inch sides removable if the chassis is mounted permanently in the cabinet before wiring. Everything but the power supply is mounted on the front panel or on the homemade chassis. The latter is 6 inches square and $1\frac{3}{4}$ inches high. The flanged edges shown on the chassis in the photos are not necessary for strength, and the metal work can be simplified by omitting them.

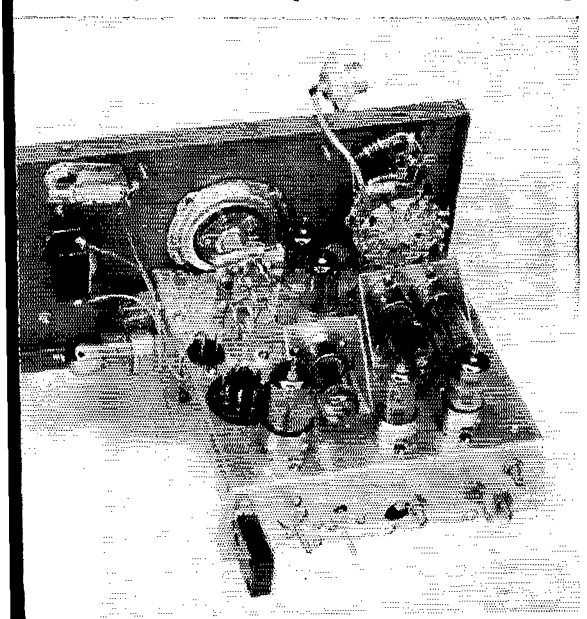
In the top rear view, the transmitter tubes are seen mounted vertically on a line near the back of the chassis with the final at the right. Along the rear of the chassis from left to right may be seen the crystal socket, the oscillator and first doubler tuning slugs, the second doubler plate condenser, a test point, the final plate condenser (top) and the loading adjustment. By connecting a mil-

liammeter between the test point (a National TPB bushing) and the chassis, final grid current may be observed. This is handy for initial adjustments but not necessary in normal tuning up. The 6C4 which is near the center, and the 6AQ5 and 0A2 which are close together near the right side, must be mounted horizontally on small right-angle brackets. The smaller one is 1½ inches long and 1¼ inches high. The larger (for the 0A2, right, and 6AQ5) should be 2 inches long and 1¼ inches high. The detector tuning slug is just behind the 6C4 mounting bracket. The other two tubes mounted on top of the chassis are the 6AK5, near the panel, and the 6AU6. The antenna trimmer may be seen on the chassis near the switch and the r.f. amplifier plate adjustment is hidden behind the 6AU6. The 12AT7 is mounted horizontally, parallel to the front panel, on a 1¾-inch-square piece of aluminum with a flange to fasten it to the chassis. The tube center should be 1⅛ inches from the panel. It is necessary to file away part of the front edge of the chassis to clear the National MCN dial assembly which drives the oscillator tuning condenser. The plugs shown near the left side serve to connect the 'speaker and power supply when the unit is installed in its cabinet. Mounted on the front panel are the pilot light assembly and power switch at the left, and the send-receive switch and output meter jack at the right. The antenna connector at the end of the shielded lead fastens to the cabinet top with four self-tapping screws. The r.f. voltmeter components are mounted on the switch and output jack.

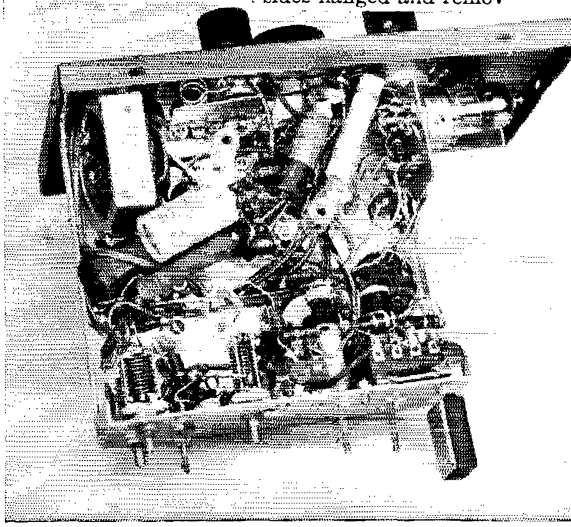
The general arrangement of the underchassis components is shown in the bottom view. Short leads are not particularly important except in the 144-Mc. circuits. The output transformer is in the left front corner. The volume control, microphone jack, and regeneration control, from left to right, are mounted on the front panel. The air-wound coil near the transformer is the self-resonant grid coil for the 6AK5. It is mounted between the grid terminal and the ground lug on the volume control. A small piece of flashing copper is soldered across the center of the r.f. amplifier socket to prevent oscillation. The slug-tuned coils for the 6AK5 plate and the detector grid circuits are visible to the left and right of center, respectively. The three large components at the left center are the 10-uf. 350-volt electrolytic, the 2500-ohm 10-watt resistor, and a two-section 10-uf. electrolytic. Other tubular condensers are grouped near the 12AT7 socket at the upper right. The smaller resistors and condensers are mounted near their associated tubes with tie points where necessary. Note that the regeneration control is mounted on the panel only and a suitable cutout must be made in the front corner of the chassis. The 72- and 144-Mc. coils are mounted on their respective condensers, and a small cone insulator serves as a tie-point for the antenna end of the link. Part of the 80-mh. choke is visible below the slug-tuned coils. Two tie-strips on the rear of the chassis provide a mounting for four resistors used for decoupling in the plate and cathode circuits of the first three stages of the transmitter.

The arrangement of the power supply components is shown in the rear view of the cabinet. The transformer is mounted on the bottom at the left. In the lower left corner is the power input socket mounted on a 1½-inch square bracket. Above the transformer are the second filter condenser and the rectifier socket fastened to the side wall with a second bracket. The first filter condenser is hidden by the transformer. The choke is mounted on the right side of the cabinet to make the rig balance nicely when assembled. The 'speaker is mounted behind a small piece of cloth under the holes drilled in the top. A kitchen drawer pull makes a good-looking handle. The small socket is attached to the 'speaker cable. The larger one carries the supply voltages and the leads to the power switch. It is necessary to drill or punch clearance holes in the back panel to provide access to the crystal socket and the transmitter controls. A few more holes should be drilled near the top of the back to provide ventilation.

To save space in wiring up the main chassis, no shielded leads were used except the ones to and from the antenna switch. No trouble with hum or feed-back was experienced. Ordinary shielded wire proved satisfactory for the antenna



Interior view of the compact 2-meter station. Transmitter tubes are mounted vertically across the back of the chassis. The two large tubes in a horizontal position at the right are the 6AQ5 audio-modulator and 0A2 voltage regulator. The horizontal tube at the center is the 6C4 detector. The r.f. and speech amplifier tubes are toward the panel, and the mixer-oscillator is attached to the side of the chassis, at the left.



Bottom view of the 2-meter station. Parts locations are identified in the text.

leads and it is smaller and easier to handle than coax. The wiring of the 12AT7, 6AQ5, and 6C4 will be easier if as much as possible is done before their brackets are mounted on the chassis. The oscillator coil is mounted on the tuning condenser, and its leads are brought through the chassis by National TPB bushings. The push-pull output transformer used should match 5000 ohms to the 3 to 4-ohm voice coil using half the primary winding. The connections shown on the diagram are correct for the transformer specified.

Adjustment and Operation

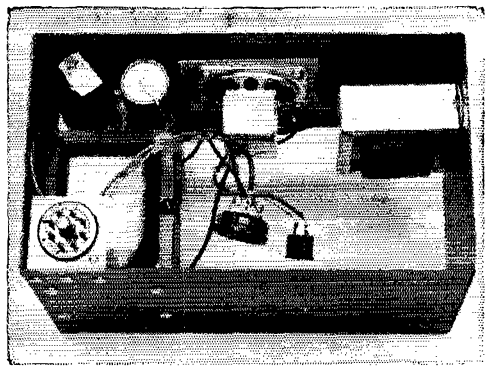
Firing up the rig will be much easier if two patch cords are made up to connect power and 'speaker leads to the main chassis. A grid-dip meter will also be helpful at this point to set the tuned circuits near their correct frequencies before plate voltage is applied. The power cord for a.c. operation should be made up as shown in the diagram with Pins 3 and 4 and Pins 5 and 6 tied together. After checking the wiring, plug in the supply and with the function switch set to receive, turn on the power. The filaments should light and a glow should be seen in the 0A2. After allowing warm-up time, advance the regeneration control with the volume about halfway on. A rushing sound should be heard with the control about ⅓ on as the detector goes into regeneration. The frequency of the detector should be about 20 Mc. This may be checked by listening for its radiation in a communications receiver or by coupling a wavemeter to L_{10}, which should pull the circuit out of regeneration when tuned to the detector frequency. Another method is to couple the output of a signal generator to L_{10} and tune the generator until the signal is heard in the 'speaker. Now the oscillator should be adjusted to cover about 124 to 128 Mc. with the plastic trimmer, C_6, set well toward maximum. Some minor adjustment of the coil may be necessary and it will be easier to find the frequency if all the plates are left on condenser C_5 temporarily. With the modification of the condenser shown in the parts list, 144–148 Mc. will take up about ¾ of the dial. The oscillator frequency may be checked with a grid-dip meter or wavemeter, and if it is not possible to hit exactly the range specified, the detector frequency may be shifted. The r.f amplifier grid and plate circuits tune very broadly and are not critical. The grid circuit is adjusted to resonance at about 146 Mc. by varying the turn spacing. L_8 should be peaked on a signal and the grid circuit may be checked by inserting brass and iron slugs and observing their effect. Either should reduce the signal strength. The antenna trimmer, C_4, should be set for maximum signal with an antenna connected to the receiver.

Adjustment of the transmitter should start with the oscillator. It is advisable to remove plate voltage from the later stages temporarily by lifting one end of their decoupling resistors or chokes. Insert a 6- or 18-Mc. crystal, turn the switch to send, and adjust the slug L_1 for oscillation as evidenced by light in a 60-ma. pilot light coupled to the coil with a one-turn link. Listen to the oscillator on 18 Mc. or a harmonic to be sure it is controlled by the crystal. In this circuit, the 50- and 500-$\mu\mu$f. capacitors determine the amount of feed-back and the values shown worked for all the crystals we had on hand. Decreasing the smaller or increasing the larger results in more feed-back. The cathodes of the following two stages are returned to ground through the microphone which must be plugged in from now on unless a closed-circuit jack is used. Plate voltage should be applied to the second half of the 12AT7 and L_2 tuned to 36 Mc. as indicated by a lamp load. Now energize the 6J6 parallel doubler stage and tune for maximum output at 72 Mc. This may be done with a bulb coupled to L_3 or by connecting a milliameter between the test point and the chassis. Final grid current should be at least 5 ma. Apply plate voltage to the doubler-final and resonate this circuit at 144 Mc. as indicated by maximum current on a 0–1 milliammeter plugged into J_5. About ⅓ scale reading should be obtained. Modulation may be checked by listening to the signal with a two-meter receiver, but since the same audio system has been checked

out with the receiver, it should operate correctly.

That's about all there is to the adjustment procedure, and the unit may now be installed in its cabinet. The transmitter tubes (vertically mounted) must be removed when this is done and inserted again after the chassis is in place. The coaxial antenna fitting will take No. 6 self-tapping screws nicely. Don't forget to insert both 'speaker and power plugs. The unit is now ready for operation. It may be used for local work with a 19-inch whip plugged in the connector as shown in the front view. The whip is made from No. 14 stiff wire soldered to the inside contact of an Amphenol 83–1SP connector, and insulated from the shell by passing it through a hole drilled down the center of a 1-inch length of ⅜-inch diameter polystyrene rod. This whip may also be used for mobile operation by mounting a second antenna fitting on the car, either directly or with a no-holes mount.[3] A coaxial transmission line to a home-station antenna may be plugged into the set directly, and balanced lines can be connected through a balun.

[3] The World Above 50 Mc., "2-Meter Mobile Enjoys a Boom," *QST*, October, 1953.



Power-supply components and 'speaker are mounted on the sides and top of the cabinet. Note the placement of the heavy parts in such position as to provide weight balance for easy carrying.

This rig is readily adaptable to portable or mobile operation. Only an external vibrator pack or dynamotor delivering 250 to 300 volts at about 100 ma. is required since the built-in filter is used. A dual-purpose supply was not

(*Continued on page 138*)

W9NZZ Wins Edison Award

For outstanding performance in the field of amateur traffic work, J. Stan Surber, W9NZZ, of Peru, Indiana, received General Electric's 1953 Edison Radio Amateur Award at ceremonies in Washington, February 10th. W9NZZ won the trophy by handling some 12,000 radiograms last year for the men of five isolated Arctic weather stations and their families at home.

Averaging seven hours of operation a day, seven days a week, W9NZZ scheduled northern outposts, including T-3 (Fletcher's Ice Island; see p. 49, Feb. *QST*), that ordinarily receive air-dropped mail but twice yearly. Letters nominating Mr. Surber for the honor came from 112 persons in 28 states and five foreign countries.

At the award dinner Surber also received a citation from the U. S. Weather Bureau whose personnel he serves so well. The ceremonies were featured, too, by the surprise presentation by GE of a special citation and wrist watch to Mrs. Surber for "help and understanding" as "the most understanding wife of the year" in conjunction with her husband's accomplishment.

Main dinner speaker at the presentation was ARRL General Counsel Paul M. Segal, ex-W3EEA. The master of ceremonies was Warde B. Stringham, GE commercial vice-president. Judges who previously had made the selection of W9NZZ were E. Roland Harriman, President, American National Red Cross; Commissioner George E. Sterling, FCC, W3DF; ARRL President Goodwin L. Dosland, WØTSN; and Gardner Cowles, President and Editor, *Look* magazine.

At the ceremonies, J. Milton Lang, general manager of the GE Tube Department, stated: ". . . We in the Tube Department of the General Electric Company have a great fondness for radio amateurs for several reasons. In the first place, they make fine working associates. We have found that men who have the qualities of resourcefulness, industry, patience and alertness necessary to the successful practice of ham radio also bring these traits to their regular jobs and we . . . are the beneficiaries."

Mrs. Richard M. Walker, W2BTB; Curtis W. Davis (deceased), W5OKM; Edmund H. LeMoine, W1UQW; William C. Jenney, W8FYW; and the Genesee County (Mich.) Radio Club were recipients of Award honorable mention citations for public service work during 1953.

♦

J. Stan Surber, W9NZZ, right, receives the General Electric 1953 Edison Radio Amateur Award trophy as Mrs. Surber looks on. Making the presentation is General Manager J. Milton Lang, GE Tube Department, sponsors of the Award.

The Pigmy Powerhouse

A 40-Watt Bandswitching VFO Rig in Small Space

BY G. L. COUNTRYMAN,* W3HH/4

• Within a half cubic foot of space, W3HH has built a VFO bandswitching transmitter, running at 40 watts input, complete with built-in power supply. Covering five bands, from 80 to 10, it incorporates a pi-section output circuit to feed high- or low-impedance loads. As to TVI, the author says, "There just ain't any."

EVERY two or three years, the author's profession requires that he pack up and move to a new duty station. Normally, there is a period extending from a couple of weeks to a couple of months before furniture arrives and new permanent quarters are found. In the meantime, ham operation is a must, whether it be from a motel, hotel room or temporary furnished apartment. The same situation exists when it is necessary to be absent for an extended period on temporary duty away from home. Such circumstances require compact equipment, easily transportable in the car, or as hand luggage. The receiver usually poses no problem, since excellent compact receivers are available commercially, and it seldom pays to build your own. But such is not the case with transmitters. Most of the appropriate commercial transmitters have been tested out, but all have proved to be inadequate in one respect or another. One that appeared to be just what the doctor ordered had a note reminiscent of an old bullfrog clearing his throat. Others were crystal controlled, required a separate power supply, created TVI, or would not load with a random-wire antenna.

Over the past few years, several rigs have been constructed, and some reported in *QST*.[1] But these too had their limitations in this application. The little transmitter shown in the photographs was a project to end all of the author's rebuilding in the low-power transmitter department. It incorporates every single feature that the author considers desirable, including the advantage that it doubles as the driver for a high-power final at a permanent location. This is important in the interest of economy.

Before we get into constructional details, let's see what the little rig has. Readers will agree that it includes an awful lot of the features that every amateur wants. Some of the more important are listed below:

1) The total weight of the rig is only 26 pounds. The cabinet is 14 inches long, 8 inches high and 8 inches deep. It fits nicely in a large zipper bag.

2) It includes bandswitching for the 80-, 40-, 20-, 15- and 10-meter c.w. bands.

3) It is free of TVI on all bands and on all channels.

4) Keying is clean, click-free, and break-in.

5) A stable VFO is calibrated for all bands.

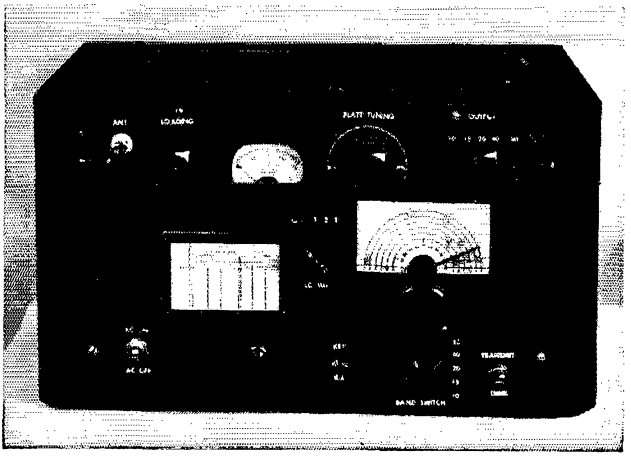
6) The output will load with any antenna or a high-powered final.

7) A switch permits zeroing the VFO on a received signal without putting the transmitter on the air.

8) Power supply is included.

* Capt., USN, 17 Azalea Rd., Wappoo Heights, Charleston, S. C.

[1] Countryman, "A QRP Portable, *QST*, July, 1948; "A VFO/Crystal Exciter," *QST*, Nov., 1948; "The De Luxe Fixed-Portable Package," *QST*, March, 1951; "A Self-Contained VFO Rig," *QST*, Feb., 1953.



The Pigmy Powerhouse is a bandswitching 40-watt VFO transmitter built into a 14 × 8-inch cabinet. The bandswitch to the right, below the VFO dial, is S_2; the one above, S_3. S_4 is to left of the VFO dial. The pi-section input and output condensers are on either side of the milliammeter. No other tuning controls are required.

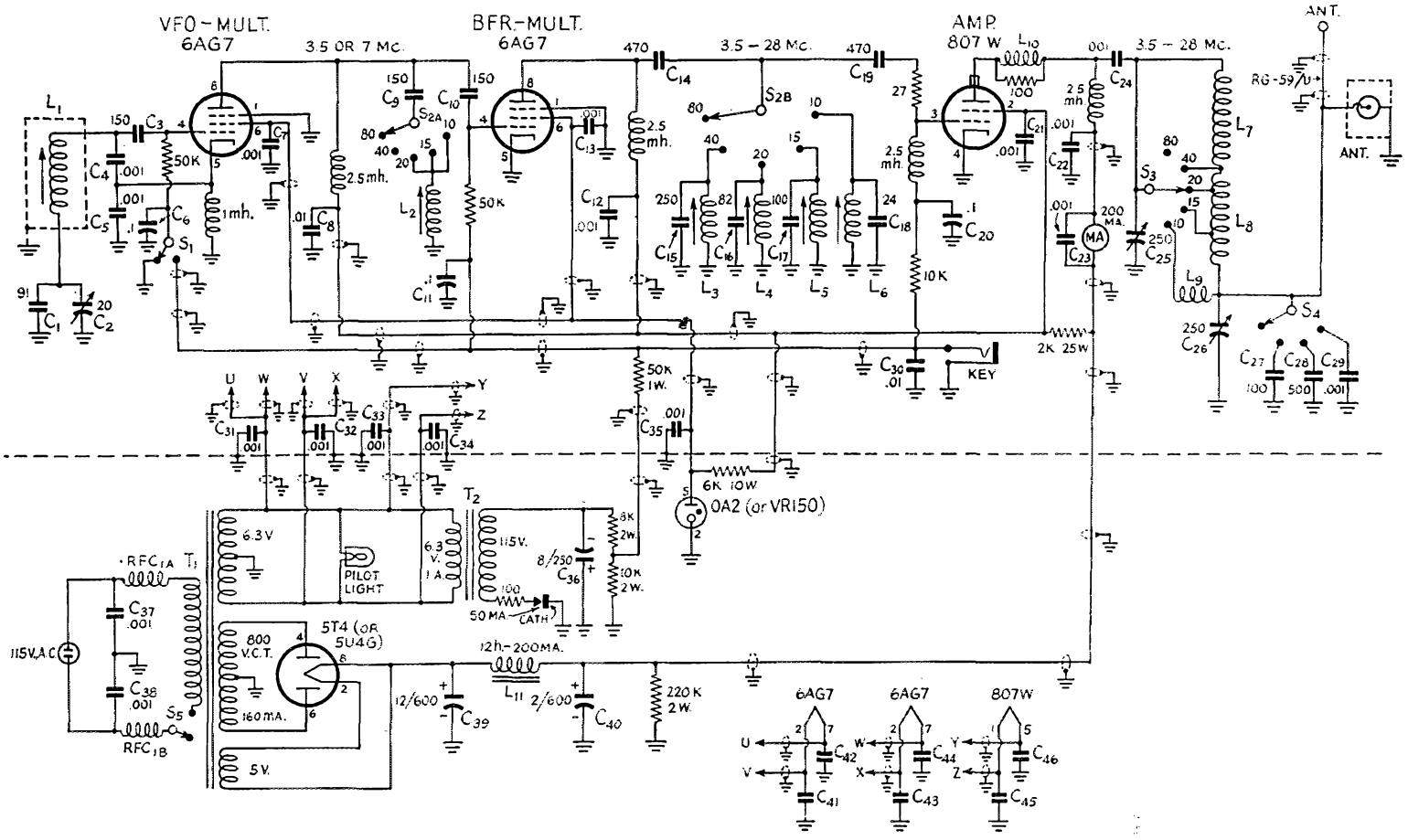


Fig. 1 — Circuit of the Pigmy Powerhouse.

Circuit

Referring to Fig. 1, a series-tuned Colpitts (Clapp) oscillator on 3500 kc. utilizes a 6AG7. In this instance the tuning range has been limited to 3500 to 3700 kc. to provide as much bandspread as possible for the higher-frequency bands. However, this range can be easily increased to include 4 Mc., if desired, by using a 50-$\mu\mu$f. variable at C_2 and readjusting the slug in L_1. The plate circuit of the oscillator tube is untuned on 80 and 40, and broad-tuned to 40 for the other three bands. The plate circuit of the 6AG7 buffer-multiplier is untuned on 80 and broad-tuned to each of the other four bands. Thus the multiplier operates straight through on 80, doubles for 40 and 20, triples for 15 and quadruples for 10. Sufficient grid drive is available for the 807W final to operate straight through on all bands. In this circuit, the 807W will not function too well as a multiplier due to the low value of grid resistor used. The plate of the 807W is parallel-fed, and the output circuit is in the form of a pi-section tank, using coils tapped for the various bands.

Keying

All stages are keyed simultaneously (using the grid-block method) to permit break-in operation; or optionally, by use of the tune-transmit switch, only the last two stages may be keyed if soft bell-like signals are desired.

Originally it was hoped that the grid-blocking voltage could be obtained from a voltage divider on the power supply, but, after some two months of experimenting, this attempt to oversimplify the design was abandoned, and an independent grid-blocking voltage was used. The results proved that the choice was a happy one, as the keying system shown in Fig. 1 is as near the optimum as can be obtained, with complete absence of objectionable clicks and chirps, and with the added advantage of either soft keying for local QSOs or hard keying for DX at the throw of a switch.

TVI

This subject can be summed up in three words: "There ain't any." Starting right off where the 115 volts enters the rig, everything is filtered and by-passed. All power wiring is shielded and by-passed as recommended in *QST* and the ARRL *Handbook*. Disk ceramic by-passes and v.h.f. chokes are used, as necessary, to eliminate parasitics and reduce harmonics. After the rig is wired, a g.d.o. should be used to find any resonances that fall in the TV bands, and they must be eliminated. All cabinet ventilating openings are covered with copper screen, and a folded piece of copper screen makes a good contact between the back of the chassis and the rear of the cabinet. "Electronic Weatherstripping" could also be used here to advantage. Rather than bolting the copper screen over the various openings as was done, a neater job would have resulted if the bare metal around the openings had been smeared with soldering paste, tinned with acid-core solder and a hot iron, and the copper screen soldered directly to the cabinet. In either case, the finish must be removed with varnish remover — an easy task as it turned out. Although unnecessary at the author's location, it is recommended that a cut-down coil shield 3 inches in diameter be fitted over the back of the milliammeter, especially if 10-meter operation will be used in areas where Channel 2 is in use. Surprisingly, no low-pass filter was found necessary, although one is used on the output of the high-powered final which this rig sometimes drives. Fig. 1 indicates all TVI measures necessary in the circuit; however, small differences in components, or their placement, may necessitate slightly different treatment.

Power-Supply Chassis

Underneath this chassis the space is quite crowded with the shield over the coaxial jack, the Ohmite line choke, a.c. socket recessed into the compartment, filter choke, grid-blocking-voltage components, etc. Since the filter choke left little room under the chassis, the VR tube socket had to be mounted on a small subchassis. Its hot lead runs down through the power-supply compartment, by-passed at the r.f. chassis. On top of the chassis is the power transformer and a 6.3-volt reverse connected transformer to furnish grid-blocking voltage. In the power-supply filter, 12 μf. is used at the input and 2 μf. across the

C_1 — Zero-temp. ceramic (Centralab TCZ).
C_2 — Hammarlund MC-20S or MC-20M.
C_3, C_4, C_5, C_9, C_{10}, C_{14}, C_{15}, C_{16}, C_{17}, C_{18}, C_{19} — Silvered mica.
C_6, C_{11}, C_{20} — 0.1 paper.
C_7, C_8, C_{12}, C_{13}, C_{21}, C_{22}, C_{23}, C_{30}, C_{31}, C_{32}, C_{33}, C_{34}, C_{35}, C_{37}, C_{38}, C_{41}, C_{42}, C_{43}, C_{44}, C_{45}, C_{46} — 0.001-μf. disk ceramic.
C_{24}, C_{27}, C_{28}, C_{29} — 1000-volt mica.
C_{25}, C_{26} — Hammarlund MC-250S or MC-250M.
C_{36} — 250-volt electrolytic.
C_{39}, C_{40} — 600-volt electrolytic.
L_1 — Approx. 23 μh. — National XR-61 brass-slug form, wound full with No. 26 exam.
L_2 — Approx. 15 μh. — National XR-50 iron-slug form, wound full with No. 26 enam.
L_3 — Approx. 2 μh. — CTC LS3-10 iron-slug coil with 12 turns removed.
L_4 — Approx. 1.5 μh. — 13 turns No. 26 enam. scramble-wound on CTC LS-3 iron-slug form.
L_5 — Approx. 0.5 μh. — CTC LS3-30 iron-slug coil.
L_6 — Approx. 0.6 μh. — 9 turns No. 26 enam., scramble-wound on CTC LS-3 iron-slug form.
L_7 — Approx. 20 μh., 48 turns No. 22, 1-inch diam., 3 inches long (B&W 3015 Miniductor).
L_8 — Approx. 4.8 μh., 24 turns No. 18, 1-inch diam., 3 inches long, tapped at 7 turns, for 21 Mc., and 12 turns, for 14 Mc., from L_9 end (B&W 3014 Miniductor).
L_9 — Approx. 0.7 μh. — (6½ turns B&W 3007 Miniductor). 6½ turns No. 18, ⅝-inch diam., ⅜ inch long.
L_{10} — 4 turns No. 20 on ½-watt 100-ohm resistor.
L_{11} — Filter choke.
T_1 — Stancor P4081 or similar.
T_2 — Filament transformer, reverse connected.
RFC_1 — Sections of Ohmite Z-20, total 14 μh.
S_1, S_5 — Toggle switch.
S_2 — Two-gang five-position ceramic rotary switch.
S_3 — Five-position ceramic rotary switch.
S_4 — Four-position ceramic rotary switch.
All unrated resistors — ½ watt.

output. This gives adequate filtering and, at the same time, squeezes the last available volt out of the power supply. Under full load, the voltage at the plate of the 807W is 410. With a 2-μf. input condenser the voltage was only 360.

A short length of RG-59/U connects the antenna binding post on the panel to the coaxial jack on the rear chassis apron. To prevent any pick-up of r.f. by the power components, a home-made shield was fitted over the rear of the coax connector, inside the chassis. A small coil shield, 1 inch square, was used with the corners cut up and sides folded back and bolted to the rear chassis apron. The hole to admit the RG-59/U is barely large enough to admit the outer *conductor* (not insulating cover) of the cable. This insulating cover was stripped back and a tight electrical bond between the outer conductor and the shield obtained.

R.F. Chassis

Now we will move over to the r.f. chassis, top side first. The final plate-tuning condenser is mounted on the front panel with the 807W in its shield directly behind. The plate r.f. choke and by-pass condenser are mounted on the chassis, next to the 807W. On each side of the shaft which turns the VFO tuning condenser are small screws protruding through the chassis. These adjust the cores of the slug-tuned buffer-multiplier plate coils. The 6AG7 multiplier tube is located at the right.

At the rear of the chassis is the VFO tuning condenser with the VFO tube at the right. It is unnecessary to shield this condenser. C_1, the zero-temperature-coefficient padding condenser for the Clapp oscillator, is mounted directly on the frame of the tuning condenser at the rear. The protruding screw located at the left adjusts the core of the VFO coil, and the other screw toward the right adjusts the core of the coil in the plate circuit of the VFO tube.

The axes of the final plate inductors (except the ten-meter inductor) are parallel to their tuning-condenser shaft, with connections from taps on the coils running to the output switch, S_3, located on the front panel. The 10-meter inductor, L_9, is soldered between the switch terminal and a pillar insulator to the rear of L_8, with its axis at right angles to the other two coils. At this point some observant reader will note that when the output switch is on the 10-meter tap, the 10-meter coil is "shorted" by L_7 and L_8. Don't write the editor or the author. It's supposed to be that way.

Underneath this chassis, space is also quite crowded. The two 2.5-mh. r.f. chokes are mounted horizontally since, with their ceramic stand-off mounts, they are too long to be mounted vertically. The VFO coil is in a sawed-off coil shield two inches in diameter, across from the VFO tube socket. The photographs give a good idea of the layout, and the care necessary when determining where each component will go. Though crowded, every connection is accessible.

Panel

Let's take a look at the photograph of the front. The top left binding post is an r f. outlet, convenient when connecting to a single antenna wire. Next is the pi-network output condenser, C_{26}, followed by the 200-ma. meter in the amplifier plate circuit and the plate tuning condenser, C_{25}, which is tuned to the dip in plate current. The switch, S_3, at the top right selects the proper number of turns on the final tank coils. This wafer was not incorporated in the band-switching arrangement below the chassis in the final model, in order to keep the leads short and to keep high r.f. current out of the compartment below.

On the next level a National chart frame is provided for logging the approximate settings of all controls for all bands when feeding high- or low-impedance loads. The knob to its right controls a switch, S_4, to add the additional capacity necessary when feeding a low-impedance line on 20, 40 and 80. An additional 100 $\mu\mu$f. is required on 20, 500 $\mu\mu$f. on 40 and 1000 $\mu\mu$f. on 80. The 250-$\mu\mu$f. variable condenser, C_{26}, alone suffices for 10 and 15 meters. The left position of this switch is open for feeding a single-wire antenna or high-impedance loads. The Millen vernier dial is next, calibrated for each band. At the bottom left is the a.c. off-on switch, followed by the pilot light, key jack, bandswitch and tune-transmit switch.

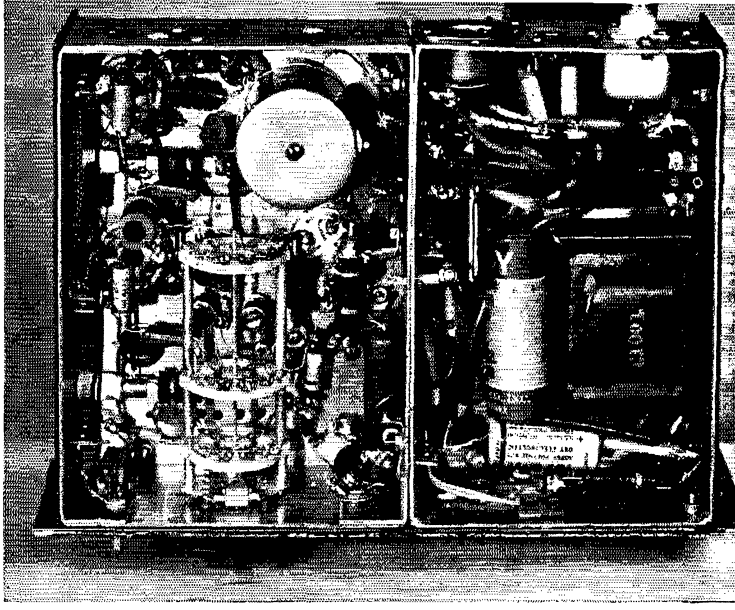
Not shown in the photograph is a small single-pole double-throw knife switch mounted on the cabinet adjacent to the antenna binding post. This permits switching a single-wire antenna from the transmitter to the receiver and is convenient when operating from the 8th floor of the Statler with a single wire hanging out of the window, held away from the side of the building by a jointed fly-casting rod!

Rear Chassis Apron

The only outlets are the recessed a.c. socket and the r.f. coaxial jack, which may be used instead of the front-panel binding post and is convenient when coupling to a high-power final amplifier at a permanent location. As explained before, copper screen insures a good contact between the cabinet and the back of the chassis for TVI suppression.

Construction Hints

It should be remembered that this is not a rig that can be assembled in one week end. Due to its compactness, its construction is a painstaking task but well worth the effort. No nonstandard parts that are hard to locate have been used, with the possible exception of the two chassis. A single chassis 11 inches long, 2½ inches high and 8 inches deep could have been used, provided a partition was added underneath to separate the power supply from the r.f. section. In the author's copy, the power supply chassis is 5¼ inches long and the r.f. chassis is 5¾ inches long. These chassis are of heavy aluminum 1/16 inch thick; the



Bottom view of the compact 40-watt transmitter. Power-supply components are fitted into the chassis at the right. In the r.f. chassis to the left, the slug-tuned VFO coil, L_1, is enclosed in the cut-down shield can at the top. The front wafer of the bandswitch, S_2, at the center, is not used. L_6, to the right of S_2, is the only slug-tuned coil that must be adjusted under the chassis. The slugs of the others may be adjusted from the top.

(Note: plates missing from the input condenser, C_{25}, should be retained.)

front panel is ⅛-inch aluminum and steel chassis braces are used, all of which contribute to the stability of the VFO.

Few amateurs make exact "Chinese copies" of a rig such as this, therefore no chassis layout template is furnished. It is strongly recommended, however, that anyone constructing the rig prepare such a template, full scale, with the chassis top shown on one side, and bottom on the reverse. By doing this, physical interference between components will be avoided. After installing the tube sockets temporarily, place the tuning condenser and dial, and then the bandswitch, underneath (to be sure its knob clears the tuning knob on the dial). Holes for other components may be laid out next, before the condenser and bandswitch are removed. It's convenient to install the power transformer early in the construction so that the rig may be up-ended on the bench with the top of the front panel and top of the power transformer supporting it. This simplifies wiring underneath the chassis.

In accordance with normal practice, use heavy flexible wire in the VFO connections to avoid vibration that might occur with solid bus wire. The author used Hammarlund miniature condensers since their bearings are superior to some.

Initial Tests

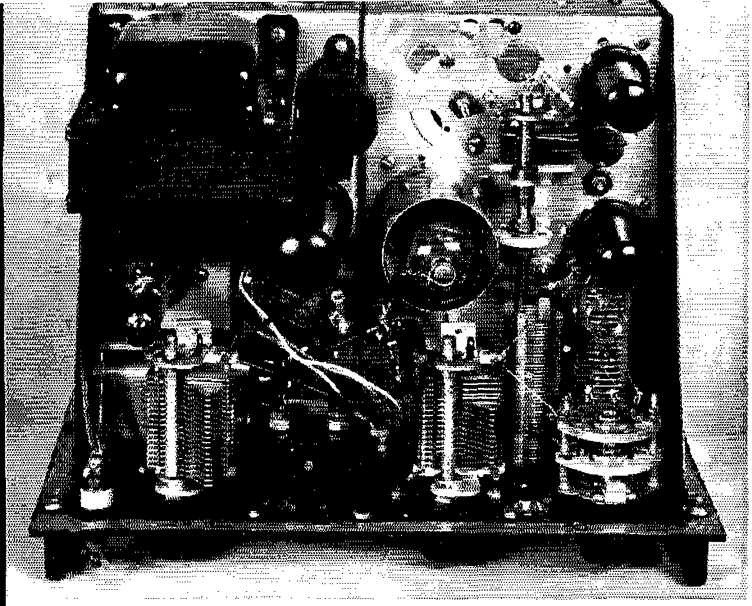
Testing will be easy if values as indicated have been used, and it is remembered that correct operating voltages are obtained only when all tubes are in their sockets and the 807W is loaded. Use a 25-watt electric light bulb across the coaxial socket as a dummy load. The VFO is easily adjusted by varying the coil slug. It is best not to calibrate the tuning dial until all initial adjustments have been made and the rig is bolted in its cabinet. Tune up for each band in turn, starting with 80, which is easy. On the other bands, tune straight through from the oscillator, adjusting the cores in each coil as necessary. Be sure and leave the plate circuit of the oscillator untuned when output on 40 is desired, as shown in the wiring diagram. If L_2 is included in the circuit, there will be erratic performance due to overdriving the final amplifier. Grid current of the 807W should be 3.5 ma. on each band. A clear-cut dip in the 807W plate current should be obtained at resonance on all bands, and the 25-watt bulb should light to normal brilliance on all bands. Use an absorption wavemeter if there is any doubt about the harmonic you are using in the multiplier plate circuit. Key up, screen voltage will be high with zero screen current. Key down, its voltage should be 240 at 8 ma. The plate voltage on the 807W should be 410 volts under a 100-ma. load. Grid-blocking voltage should be 55 volts, key open.

It is a wise precaution to lock the cores of the slug-tuned coils with 6-32 nuts, particularly if the rig will be moved and subject to vibration. It's easy to lock these cores with a socket wrench without disturbing the setting of the cores, which is critical. For broadbanding, a high L/C ratio is desirable. L_2 is an example of the optimum coil for broadbanding. L_3, L_4 and L_5 might well have more inductance and less capacity across them, but the components indicated were used because they were available. The arrangement shown gives adequate broadbanding and drive on all bands.

Don't calibrate the tuning chart on the panel basing the calibration on the dip point of the final amplifier plate meter when using the 25-watt bulb as a dummy load. The bulb indicator is used only to load the final to insure correct voltages when initially tuning up, and the settings of the controls may be different when a single-wire antenna or coaxial cable is connected.

Operation

Plug in the a.c. and the key, tie a wire to the antenna post and you are in business. It's unnecessary to mention specific results. Twenty-



Top view of the Pigmy Powerhouse. T_1 and T_2 are to the rear on the chassis to the left, with the 5T4 and 0A2 in front. The variable to the left is the pi-section output condenser. The output coils and S_3 are to the right, with C_{25} to the left. The VFO tuning condenser at the rear has a shaft extension. The two 6AG7s are to the right; the 807W to the left.

five or thirty watts output, combined with variable frequency control and excellent keying characteristics, will go places. If you use the rig with no additional amplifier, give it a chance. Get that skywire as high and as much in the clear as possible. With the additional capacity which can be switched into the output of the pi network, a 75-ohm Twin-Lead to a dipole can be effectively fed.

The "no-swish" switch, S_1, permits the rig to be set on a received frequency without touching the key. With the switch in the transmit position for break-in operation, keying is hard. For soft keying use the switch in the tune position.

Variations in room temperature and humidity have virtually no effect on the VFO, and it will retain its frequency calibration indefinitely, except for a gradual aging of the components. A check a couple of times a year will suffice. Sure, the cabinet gets hot, but don't let that bother you. The author has operated the rig for over six hours with everything buttoned up tight and the VFO remained right on the nose. After all, feel of the cabinet of your Super-Pro, or your SW-3, after six hours, and it will be hot. The screened louvers and ventilation holes here and there in the cabinet and chassis provide adequate ventilation.

For driving a high-power final amplifier, a length of 75-ohm coaxial cable is used. Tune the rig, the same as with an antenna, for the dip in plate current and you are on frequency over the greater part of any c.w. band without additional retuning.

The VFO has a drift downward in frequency of about 20 cycles per minute, lasting for 25 or 30 minutes from a cold start. The total drift is less than one kilocycle — no greater than that of the average receiver and the rate is steady. After half an hour, the VFO is as steady as a crystal and stays in zero beat with the author's 75A-3 hour after hour. Temperature-compensating condensers were tried, but actually made the drift more erratic during the warm-up period and hindered, rather than helped, QSOs during the first half hour.

If ease of construction is a factor, provision may be made only for those bands which will be used. If you are interested in local rag-chews or traffic, 80 and 40 should suffice. If DX is your forte, 40, 20 and 15 should do the trick. Since the rig was designed to eliminate future rebuilding by the author, 10 meters was included, as he confidently expects to be around for the next sunspot cycle.

True, this was a project to end all rebuilding. However, if another were to be built, the author would use a dual condenser for C_2, one section of 50 $\mu\mu$f. and the other cut down to 20 $\mu\mu$f., with an additional wafer on the switch to throw the larger capacity in the circuit for 3500- to 4000-kc. output only, and the smaller section for the other bands. This would permit full coverage of all bands without reduction of bandspread on the higher frequencies. Each section of the condenser should have its own zero-temperature-coefficient padding condenser of proper value as determined experimentally, since the inductance would be fixed for both sections of the variable condenser.

It will be noted that the photographs show an extra wafer on both the band switch and the output switch. These were utilized during early-stage experimenting, but are unused in the final version and, of course, they may be omitted.

Assorted unused holes scattered here and there around the chassis are also the result of some of the earlier experimenting. They are probably helpful from a ventilation standpoint, and are small enough to keep r.f. where it belongs.

Operating the rig is a real pleasure. You can change bands and tune up on a certain frequency in considerably less than ten seconds, and the VFO can be zeroed easily on a DX station's frequency during his final "dah-de-dah."

Let's Go VFO

Modifying a Crystal-Controlled Rig for VFO Operation

BY LEWIS G. McCOY,* W1ICP

• Here is an interesting article that serves two good purposes. It answers a number of requests we have had for a VFO conversion for the "Novice 35-Watter," and it shows how anyone may add VFO operation to any crystal-controlled transmitter. And, wonder of wonders in this age, it tells how to do it without taking out a second mortgage.

It doesn't take a Novice very long to realize that one of the shortcomings of being a Novice is that he must use crystal control or, in ham vernacular, be "rock-bound." The FCC, of course, has a very good reason for imposing this requirement. The Novice, for his own protection, must have some method to insure operation within his own band. Crystal control helps him to meet this requirement. Naturally, the first important goal of a Novice is to knock the "N" out of his call.

After passing the General Class exam and receiving the coveted license, the ex-Novice's first thought is usually how to incorporate VFO operation quickly and simply into the transmitter he has been using. The easiest method is to build a VFO circuit that will substitute for the crystal in the oscillator stage of the transmitter.

An excellent VFO circuit to use is the series-tuned Colpitts, or Clapp, oscillator. The basic circuit for this oscillator is shown in Fig. 1A. The series-tuned circuit consists of L_1, C_1, C_2 and C_3. In a practical circuit, C_2 and C_3 would be large-capacity condensers, on the order of 0.001 μf. or so. Their function is to form a voltage divider across which the tube is connected in a proper way to oscillate.

Fig. 1B shows the diagram of a "grid-plate" crystal oscillator, one of the more common circuits. The two condensers shown by dotted lines are small-capacity ones, and their function is to form a voltage divider across which the tube is connected, in somewhat the same fashion as above.

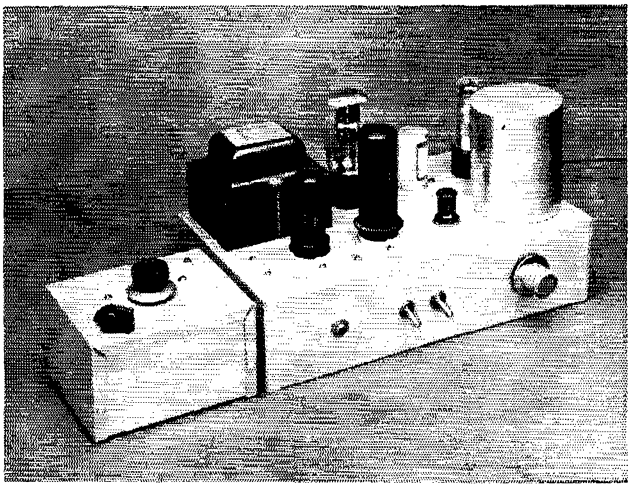
You will notice that the two circuits in Fig. 1 are identical to the right of Points 1, 2 and 3 (with the exception of the dotted condensers in Fig. 1B). This suggests that a combination VFO/crystal oscillator can be devised, and that is, of course, the case.

Naturally, the first question the reader will ask is, "How about my rig; what do I have to change?" That, of course, will depend on the oscillator circuit you now have in your transmitter. If it happens to be the grid-plate type, it would only be necessary to bring out a connection point for the cathode. The crystal socket takes care of the grid and ground connections. For best stability, the screen voltage of the oscillator tube should be regulated. This can be done by adding a VR-150 regulator tube and a dropping resistor to the existing transmitter. In the event that you happen to be using a different type of oscillator, it isn't difficult to change over to the circuit described here.

Since many requests have been received for information on converting the "Novice 35-Watter" [1] to VFO operation, detailed instruc-

* Technical Assistant, *QST*.

[1] McCoy, "A Novice 35-Watter," *QST*, Jan., 1953.



This photograph shows the transmitter and tuning unit plugged together, ready for VFO operation. The controls on top of the box are easier to adjust than they would be on the front of the unit.

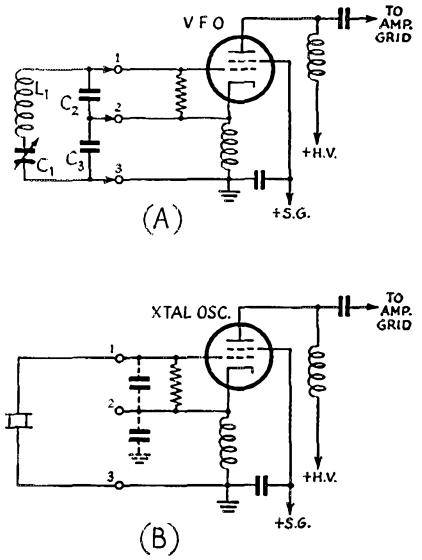


Fig. 1 — (A) Basic circuit diagram of a series-tuned Colpitts oscillator. (B) A grid-plate type crystal oscillator. The condensers indicated by dotted lines are for control of the excitation.

tions for converting it to VFO/crystal use will be given. The same circuit constants will apply, however, to the modification of any other rig using a 6AG7 oscillator.

Circuit Details

Fig. 2A shows the VFO tuning circuit and component values as used in the completed unit. Readers might be confused by the use of three condensers in parallel, while in the *basic* circuit (Fig. 1A), only one tuning condenser was shown. However, if only one condenser were used, it would be found that the circuit refuses to oscillate at the minimum-capacity end of the condenser range. Furthermore, to keep the cost of the unit at a minimum, no geared-down tuning control is used. If a single variable condenser were used in this fashion to cover the range from 3.5 to 4 Mc., it would be found very difficult to set the frequency to the exact value desired. Thus we use three condensers to accomplish the work of the one in Fig. 1A: a fixed condenser to establish the minimum value below which we can't go, a (relatively) large variable, C_1, for noncritical changes in frequency (as when going from the end of a band to the middle) and a small variable, C_2, for critical tuning.

One of the advantages of the Clapp-type VFO is that the tuned circuit need not be immediately adjacent to the oscillator tube. This means there is no need to squeeze components into a crowded transmitter. The tuning unit can be built into a separate box. As can be seen from the photographs, the unit described here was built in a separate box that can be plugged into the side of the transmitter to furnish VFO operation over the entire 80-meter band. There is enough output from the oscillator to furnish sufficient grid drive to a 6V6, 6L6, or similar tube, either on 80 or doubling to 40. To shift back to crystal operation, the unit is unplugged and a crystal inserted in the crystal socket.

Construction

The unit was built in a 3 × 4 × 5-inch aluminum box. The "bandspread" condenser, C_2, was mounted at the center of the top of the box, and C_1 was mounted near the corner. The shafts of the two condensers are too small for the customary ¼-inch knob holes, so it was necessary to do a little padding. This was accomplished by cutting strips of metal (from a tin can) long enough to wrap once around the rotor shafts. This built up the shafts enough for a good fit for the ¼-inch knob holes.

Three connections were needed between the tuned circuit and the transmitter, one from the grid of the oscillator, one from the cathode, and a common ground connection between the two units. These were made through an octal plug and socket. The plug was mounted on the side of the tuning unit, and the socket was placed at a corresponding height on the side of the transmitter.

Three small stand-off insulators (National GS-10) were used to support L_1 and the two 0.001-μf. condensers. The 25-μμf. condenser was mounted on the soldering terminals of C_2.

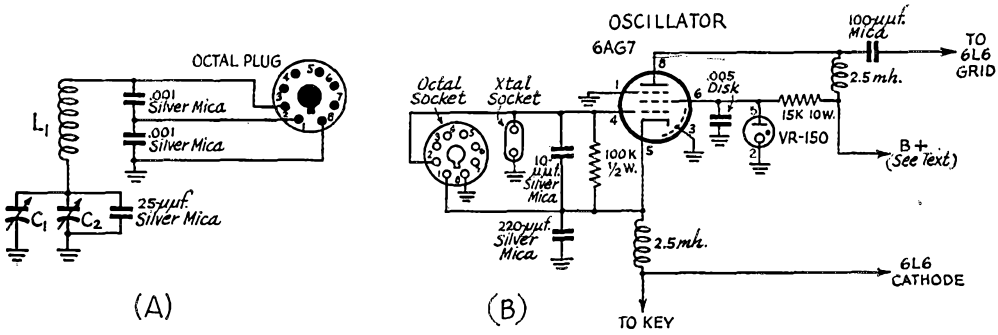
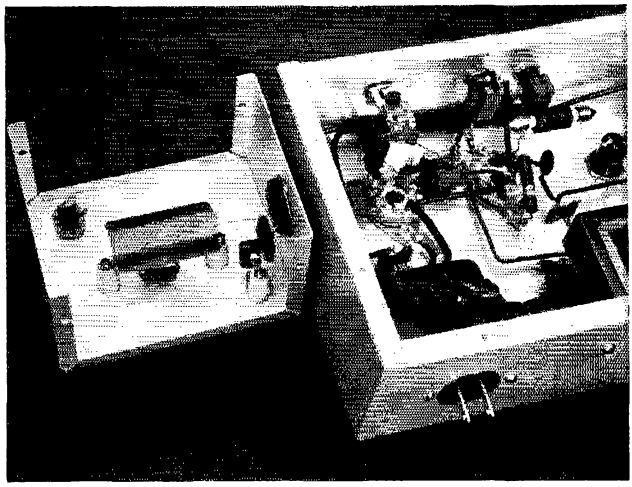


Fig. 2 — (A) Circuit diagram for the VFO tuning unit. (B) The diagram of the oscillator as it could be used for crystal operation. When the two units are connected together, the stage becomes a VFO.

C_1 — 2.6-19.7 μμf. variable (Johnson 20M11).
C_2 — 1.5-5.1 μμf. variable (Johnson 5M11).
L_1 — 66 turns No. 24, 1-inch diam., 32 turns per inch (B & W 3016). See text.



Bottom view of the tuning unit and the modified oscillator circuit of the Novice 35-Watter. In the tuning unit, C_1 appears at the left. C_2 is obscured by the coil, L_1 — the 25-$\mu\mu$f. mica can be seen.

L_1 was mounted in the following manner: First two soldering lugs were soldered together to form one heavy lug. Two of these heavy lugs were needed to hold the coil. The next step was to cement the lugs to the coils. A coating of Duco cement was applied to the ends of one of the coil's polystyrene strips. The lugs were then laid on the cement, with the large holes extending out from the ends of the coil. The cement was allowed to dry and then two additional coats of cement were applied. The holes in the soldering lugs should be large enough to pass the ¼-inch-long 6–32 screws that are used to secure the coil to the threaded stand-off insulators. The coil was then mounted over C_2 and parallel to the sides of the box, keeping the coil as far away as possible from surrounding metal. A good rule of thumb to follow in mounting coils is, whenever possible, to keep them at least their own diameter away from near-by metal.

Transmitter Modifications

If the unit is to be added to a transmitter already using a grid-plate oscillator, it is only necessary to make the connections between the tuning unit and the grid, cathode, and ground of the oscillator stage and, if one isn't already available, to add a regulated voltage source for the screen of the oscillator. In the Novice 35-Watter, the B+ voltage out of the filter was 380 volts. As shown in Fig. 2B, a 15,000-ohm 10-watt resistor and a VR-150 regulator tube furnish the regulated 150 volts.

In our modification, R_1, R_2, C_1, C_2, and RFC_1 (original 35-watter) were removed. Originally, the cathodes of the 6AG7 and the 6L6 were tied together and then connected to the key jack but in the modification, the lead from the 6L6 cathode must be connected to the key jack by a separate lead. The cathode of the 6AG7 should be connected to the key jack through a 2.5-mh. r.f. choke, as shown in Fig. 2B.

If the transmitter is going to be used strictly for VFO work, with no desire for crystal operation, the 10-$\mu\mu$f. grid condenser and the 220-$\mu\mu$f. cathode condenser can be left out of the circuit. However, they must be installed if the rig is to be used for either crystal or VFO operation.

Testing

After the transmitter is modified, the unit is ready to be tested. When constructed with the component values specified in Fig. 2A, the VFO tuning range will be approximately 3350 kc. to 4300 kc. However, due to variations in different components, L_1 should not have 30 turns removed at the first test. Try the coil first with about 20 turns removed. This precautionary measure will insure your reaching the low end of the band, 3500 kc.

With L_1 mounted temporarily, the tuning unit and transmitter are connected together. Be sure to remove the crystal from its holder. Connect a dummy load, such as a light bulb, and turn on the rig. C_1 and C_2 are tuned to *minimum* capacity (plates disengaged). Listening to your receiver, locate the signal from the transmitter. With the minimum condenser settings, the point where you hear the signal will be the highest frequency the VFO can reach. With only 20 turns removed from L_1 you'll probably find that the frequency is well below 4000 kc., the minimum point you'll want to reach. Tune C_1 and C_2 to maximum capacity (fully engaged), and find the signal again. This is the lowest point and it should be well out of the band, probably around 3000 kc. If you reach both ends of the band with L_1 as it is, you don't need to remove more turns. However, it is most likely that you will have to remove some turns from the coil to bracket the band. Try removing 3 or 4 turns and then check again to see how far the signal has moved. When you get the minimum capacity setting slightly above 4000 kc., you're all set to mount L_1 in place permanently.

If the receiver you are using for determining the VFO frequency has poor preselection (poor "image" rejection through lack of front-end selectivity), you must be careful not to adjust

(Continued on page 116)

The Case for the AB_1 Linear

BY GEORGE GRAMMER,* W1DF

• Whether or not to drive a tetrode linear into grid current is a question that can be argued both ways. This article outlines some of the factors favorable to Class AB_1 operation and describes an amplifier that embodies the ideas under discussion.

THE principal advantage of Class AB_1 operation for an r.f. linear amplifier is well known; no driving power is needed, thus grid-circuit problems are neatly sidestepped. This is very desirable, but there is a price — practically all tubes will deliver more output when driven into the grid-current region than they will in AB_1.[1] Notwithstanding the fact that with AB_1 most of the headaches of linear operation vanish, many amateurs find repugnant the idea of sacrificing possible power output.

However, if the traditional objective of getting the last ounce from the final tube can be discarded — it's not easy! — it may turn out that not much is sacrificed after all. The difference in plate efficiency between the various classes of operation for linear amplifier use is not great enough to make a really significant difference in the r.f. output when the d.c. input is held at a fixed value. To illustrate, suppose that a plate supply can be fully utilized by a particular tetrode worked at its maximum capabilities in Class AB_2 or Class B. If we now change to Class AB_1 the possible output will drop to about one-half — but so will the power input. Hence, if we add a second similar tube the input will return to its former value and so will the power output.

The sacrifice, in this case, is not in power output but in the fact that twice as many tubes are used in the amplifier to get the *same* output. This is not always an uneconomical approach, because AB_1 operation may eliminate a driver stage that balances the cost of the extra tube capacity. However that may be, there are other advantages to Class AB_1 with ample plate dissipation capabilities as against grid-current operation with just-enough plate dissipation:

1) The extra plate dissipation provides a worth-while safety factor for making tests and adjustments. How can you tell whether or not an amplifier actually is linear if you don't dare apply a two-tone signal long enough to study it?

2) With more plate-dissipation capacity available, the resting d.c. input can be greater. This reduces the percentage change in d.c. input with voice excitation, helping to relieve the problem of plate-voltage regulation. The output condenser in the supply filter has less work to do.

3) Similarly, there is less strain on the screen supply.

4) It may even be possible to get an a.m. carrier of useful size out of the amplifier.

Just to round out the picture, the well-known advantages of Class AB_1 operation should be tabulated:

5) The driver can be a very small tube and needs no swamping for maintaining linearity.

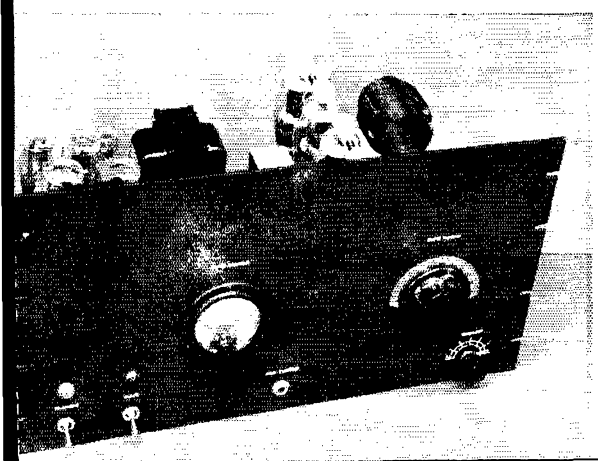
6) The bias supply can be a quite inexpensive, noncritical arrangement instead of requiring special means for insuring that the bias does not change with grid current.

7) A meter in the d.c. grid circuit makes a simple and positive "overmodulation" indicator, practically independent of the modulation waveform.

The list is extensive enough to warrant serious consideration, we believe. Perhaps the greatest advantage of all is that this approach is practically painless, both designwise and operationwise, compared with the "squeeze 'er to the limit" method. No battling with grid-circuit regulation and coupling problems, and the rather comforting knowledge that if you do happen to forget and whistle a fraction of a second too long in the mike you won't burn a hole in the plate.

A Practical Example

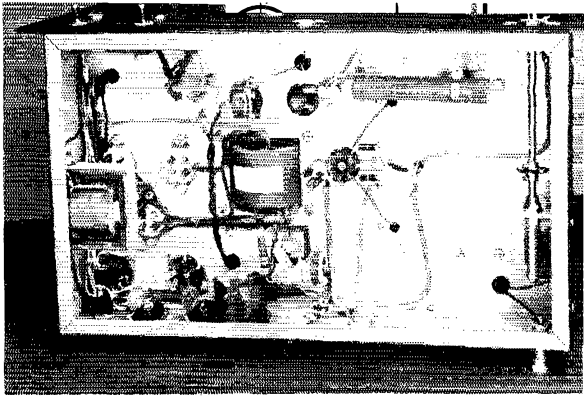
The amplifier shown in the accompanying photographs represents an application of this



This linear amplifier uses four 1625s in push-pull parallel in Class AB_1. It is complete with power and bias supplies on a 17 × 10 × 3-inch chassis. R.f. input and output circuits are designed for coax lines, with the grid circuit bandpassed so that only the plate tank and output coupling need be adjusted. The peak output from the tubes is approximately 200 watts. The grid-current jack is for a meter for monitoring peaks. The panel is 10½ by 19 inches.

* Technical Editor, *QST*.

[1] The 6146 is an exception, since it will deliver almost the same power in AB_1 as in AB_2.



The only r.f. components underneath the chassis are the socket for the grid tank, grid loading resistors, and the variable condenser for output coupling adjustment. The bias supply is the group of components in the lower center in this view. The 12.6-volt filament transformer is mounted on the left chassis wall and the filament transformer for the 83 rectifiers projects through the chassis near the center. The latter transformer is a homewound job, but transformers of similar ratings are available ready-made.

♦

"philosophy of conservatism" with respect to plate-dissipation capacity. In some other respects it is not quite so conservative, although not going too far overboard on getting the most out of components. Basically, the unit represents an answer to exactly the situation mentioned earlier — given the possibility of an economical power supply with definite output limits, to coördinate with it an r.f. amplifier of sufficient plate-dissipation capacity for Class AB_1 operation.

Speech waveforms are such that in s.s.b. linear operation the maximum demand — that is, d.c. as read by the plate milliammeter — on the plate supply is about half the peak d.c. input. Also, this demand occurs only on peaks that in turn occur only at a syllabic rate — that is, intermittently — so the *average* demand is considerably less. Since it is the average demand that determines the heating in the plate-supply components, it is safe to assume that the power capacity of the supply, based on continuous ratings, need not be more than one-third to one-fourth the peak d.c. power required.

In the search for compact, low-cost power the replacement transformer offers a fertile field for moderate power outputs. The largest of these transformers, in terms of voltage, is the 600-volt 200-ma. type. Without considering the choke-input gain in power capacity discussed some time ago[2] the 120-watt output capacity of such a transformer should be good for peak d.c. inputs of 300 to 400 watts on the above basis. Achieving such peak power inputs to a linear amplifier would not be easy at 600 volts, but by using a bridge rectifier and a choke-input filter the d.c. output voltage will be approximately 1000 volts, a more reasonable figure for the purpose.

[2] *QST*, November, 1952, p. 18.

♦

The power supply occupies the right-hand half of the chassis and the r.f. section the left-hand half in this view. The power transformer and filter condenser are near the panel and the filter choke is at the edge of the chassis next to the voltage-regulator tubes.

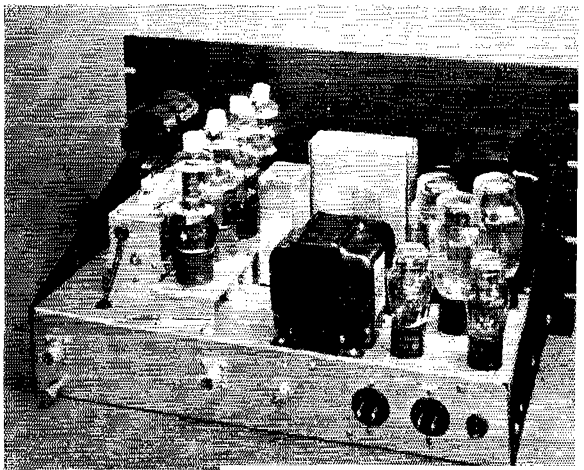
The four r.f. tubes are mounted on an elevated subchassis so that the cathodes can be directly grounded to the top of the main chassis. The plug-in grid circuit is in the can to the right of the tubes. The small ceramic stand-offs visible beneath the subchassis support the metal tabs which form one of the neutralizing condensers. A similar pair, hidden by the shielded grid circuit, supports the other neutralizing condenser.

Class AB_1 operation is practical only with tetrodes. Several types of tubes would work well at this voltage, but 1625s were used because a stock of them purchased at surplus prices was on hand and this seemed a good opportunity to put them to work. A plate voltage of 1000 is of course in excess of any ratings explicitly given in the tube manuals. However, with Class AB_1 operation at this voltage the plate current and plate dissipation are well within the normal ratings. The plate voltage, while higher than the c.w. rating, is not as high as the maximum value reached on peaks at the plate-modulation rating.

Optimum Class AB_1 operation of 1625s calls for a peak instantaneous plate current per tube of 220 ma. at full drive. The corresponding d.c. plate current depends somewhat on the bias voltage, but is approximately 70 ma. per tube. To utilize the power-supply capacity fairly well four tubes are needed, taking a total peak power input of 280 watts. As stated above, this peak is about twice the maximum demand on the supply, so the maximum direct current as indicated by the plate meter is no more than 150 watts. The peak tube output, as taken from the characteristic curves, is approximately 200 watts from the four tubes.

R.F. Circuit

The logical circuit arrangement for four tubes is to use them in push-pull parallel. As shown in Fig. 1, parallel plate feed is used in this amplifier, principally to take the d.c. off the plug-in tank coil for safety reasons. The chokes originally were the familiar 2.5-mh. type, which worked satisfactorily in normal operation on 75 meters ("normal operation" means operation as a linear



amplifier on voice; although the tubes have enough capacity to operate continuously at peak output, these chokes will not stand the peak r.f. voltage continuously). However, the impedance of the 2.5-mh. type turned out to be undesirably low at 14 Mc. so a number of other types were checked. The ones finally used were Millen type 34107, 1 mh.; these showed good characteristics on all three bands.

Tubes in AB_1 require no driving power except that necessary to overcome circuit losses, but most exciters do have a small amount of power output available. This "waste" power can be used to eliminate a tuning control. As shown in Fig. 1, a fixed-tune grid circuit is used. A circuit having a Q of 8 will have substantially uniform response over a 200-kc. band centered at 3900 kc., so the L/C ratio of $L_1C_1C_2$ is chosen to give approximately this Q in conjunction with the loading resistors, R_1 and R_2. The values of R_1 and R_2 were chosen so that the total power dissipated in them would be about one watt at peak excitation. These resistors constitute the only load on the tuned grid circuit — they are in no sense swamping resistors — and since the load is constant it is possible to adjust L_2, the coupling coil, to offer a definite input impedance to the connecting line from the exciter. This can be done quite easily with a standing-wave bridge (the amplifier tubes do not even have to be lit) and in the case of the amplifier shown, the inductances of the coils were adjusted to give close to a 1-to-1 s.w.r. in 75-ohm line at the band center. On the 75-meter band the maximum s.w.r., which occurs at the band edges, 3.8 and 4 Mc., is under 1.5 to 1. The deviation over the 7- and 14-Mc. 'phone bands is less since the percentage bandwidth is less.

This method of adjusting coupling is a great convenience, since the exciter and amplifier can be connected by any length of 75-ohm line with no change in the coupling conditions. The method is far more difficult to use with an amplifier that takes grid current because the load varies with the driving voltage. Also, the small resistance-type s.w.r. bridges cannot be used in

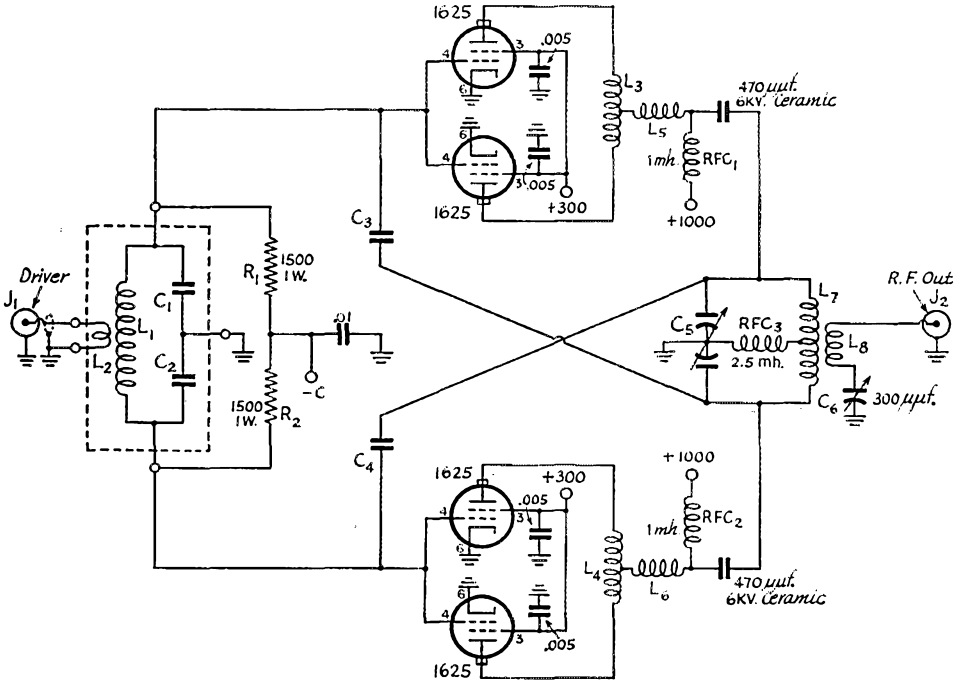


Fig. 1 — Circuit of the r.f. portion of the linear amplifier unit. Unless otherwise specified, capacitances are in μf.

C_3, C_4 — Copper tabs ⅜" wide, app. ¼" separation, ½" overlap.

C_5 — 100-μμf.-per-section, 0.07-inch spacing.

C_6 — 300 μμf., receiving spacing.

L_3, L_4 — 18 turns No. 22 enam. on 1-watt resistor (any high value) as form, tapped at center.

L_5, L_6 — 12 turns No. 22 enam. on same type form.

L_2 wound over L_1 at center on 3.5 and 7 Mc.; interwound with L_1 on 14-Mc. coil. Coil forms 1-inch diam.

L_7 and L_8 made from B & W coil stock, L_7 2-inch diam. (3907 and 3900), L_8 2½-inch diam. (3906), assembly mounted on Millen 40305 plug base.

The grid tuned circuit, enclosed by dashed line, is mounted in Millen 74400 plug-in base and shield.

Tuned Circuits	*3.8–4.0 Mc.*	*7.2–7.3 Mc.*	*14 Mc.*
L_1	31 turns No. 22 enam. close-wound	17 turns No. 22 enam. close-wound	12 turns No. 22 enam. length ⅝-in.
L_2	4½ turns No. 22	2⅜ turns No. 22	2¼ turns No. 22
C_1, C_2	200 μμf. silver mica	100 μμf. silver mica	50 μμf. silver mica
L_7	26 turns No. 16 10 turns/in.	18 turns No. 14 8 turns/in.	8 turns No. 14 8 turns/in.
L_8	10 turns No. 14 8 turns/in.	6 turns No. 14 8 turns/in.	2 turns No. 14 8 turns/in.

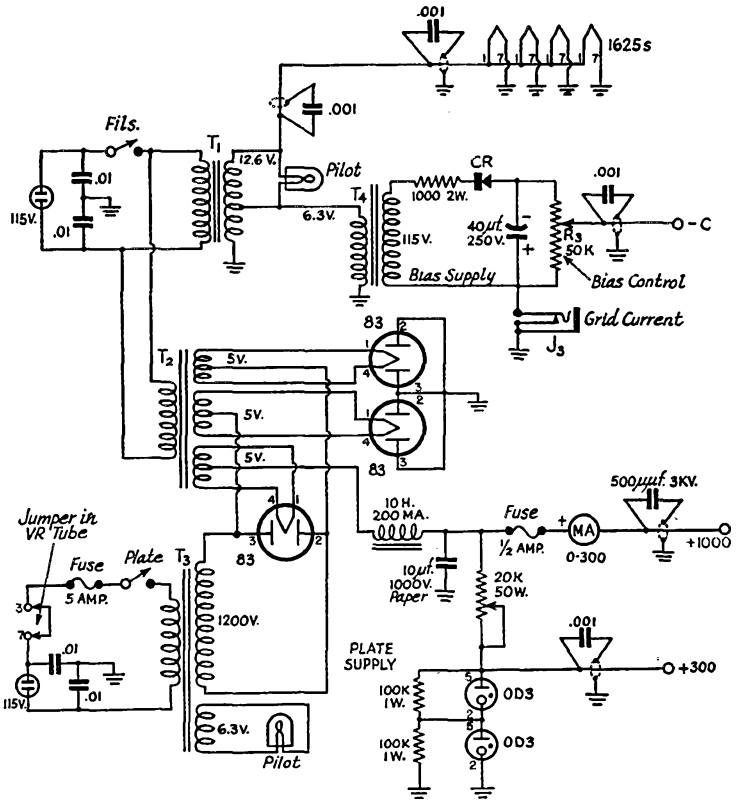


Fig. 2 — Power and bias supplies. Capacitance values are in μf. unless otherwise specified.

T_1 — Filament transformer, 12.6 volts, 2 amp.

T_2 — Rectifier filament transformer, three 5-volt 3-amp. secondaries.

T_3 — 600-volt 200-ma. replacement-type transformer. Filament windings not used except for pilot light.

T_4 — Filament transformer, 6.3 volts, 1 amp.

such a case because the s.w.r. has to be measured at the full driving power level.

Parasitic oscillations were anticipated, and two v.h.f. modes turned out to be present. One, a push-pull type oscillation at around 180 Mc. between the two tubes of each pair, was cured by installing the detuning inductances L_3 and L_4. The other, at about 150 Mc., was the usual type with these tubes and was similarly cured by L_5 and L_6. Except in cases where resonance at a frequency in a particular TV channel has to be avoided to prevent TVI, there is nothing very critical about these coils beyond the fact that they must be large enough to put the plate-circuit lead resonance below the self-neutralizing frequency. With the constants given, this resonance is at about 50 Mc. This is close to Channel 2, so anyone in a Channel 2 region who is interested in a similar circuit arrangement would be well advised to increase the inductances of L_5 and L_6 to move the resonant frequency lower.

The circuit is cross-neutralized by means of C_3 and C_4. The amplifier was wholly stable, insofar as self-oscillation at the operating frequency was concerned, without neutralizing. This is probably attributable to the above-chassis mounting of the tubes, permitting a direct plate return to the cathodes with little or no coupling to the grid circuit. The loading resistors R_1 and R_2 no doubt contribute something in this respect, too. However, tuning the plate circuit with the plate voltage applied and the grids driven just above the grid-current point would swing the grid current through a range of a few hundred microamperes, so the neutralizing condensers were installed to reduce this reaction in the thought that it would improve linearity.

Power Supply

Tests on a "600-volt 200-ma." transformer had shown that it could deliver an r.m.s. current of 200 ma. from the entire high-voltage secondary without undue heating, operating continuously over a period of a few hours. This is an a.c. power of 240 watts, good for a d.c. output of about 200 watts with a choke-input filter having a choke of adequate inductance. Allowing for voltage drops in the rectifier tubes and choke, the output voltage is close to 1000 at a load current of the order of 200 ma.

The entire output current could be available for the amplifier plates if the tubes were used as a "free bleeder," but in the circuit of Fig. 2 part of the current is used for the screen grids to avoid the necessity for a separate screen supply. The peak d.c. screen current does not exceed 40 ma. for the four tubes, and is thus within the current rating of VR tubes. Since the screen current is practically zero with no r.f. on the control grids, the 20,000-ohm dropping resistor is adjusted to make the current in the voltage-regulator circuit 40 ma. under this condition. With a 10-henry filter choke the bleed current required to prevent the output voltage from

building up appreciably above its load value is about 100 ma., so the r.f tubes should be biased to take a minimum of 60 ma. with no signal.

The filter, a single-section affair using a 10-μf. condenser with the 10-henry choke, provides ample filtering and good voltage regulation under AB_1 conditions of operation. A 1000-volt rating on the condenser might seem to be a bit skimpy, considering the fact that loss of bleed and load might send the output voltage up to the a.c. peak, or 1700 volts. However, there is a considerable safety factor in the condenser ratings (commonly, the test voltage is at least 1000 above the rating in a condenser of this size) and the transformer primary circuit is interlocked with the VR tubes which provide enough bleed to keep the voltage from getting near the peak, even though rising above normal.

The r.f. tubes should not be biased beyond cut-off during receiving periods but should continue to run at normal operating bias. Although a T-R system using the same antenna has not been tried, there is no trace of noise from the amplifier when using a separate receiving antenna so long as the last tube in the exciter is cut off. In other words, the amplifier itself does not generate enough noise to be heard, with separate antennas, but it will amplify any noise fed to its grid circuit to the point where it can be quite annoying. The solution is of course simple.

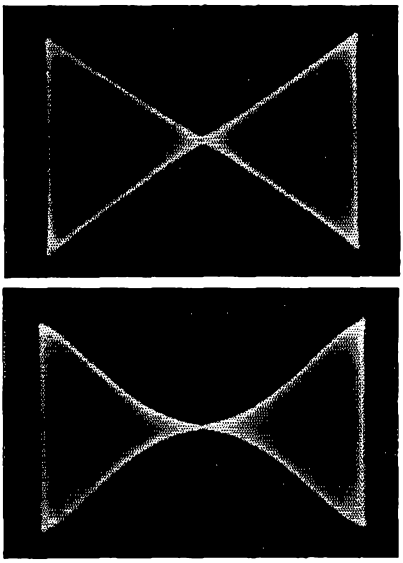


Fig. 3 — Showing the effect of grid bias on linearity. The peak output is the same in both cases. Upper picture, bias set for approximately full rated plate dissipation with no excitation; lower picture, bias near cut-off (approximately 10 ma. total plate current).

The bridge rectifier uses three 83s, which are quite capable of handling the current but are slightly above rating on inverse peak voltage. Since this was a popular combination at the same applied voltage some years back, the writer had no hesitancy in using them. Four 816s could be substituted at a small increase in cost.

The bias supply uses a low-current 6.3-volt filament transformer with its 6.3-volt winding connected to half of the secondary of T_1. With the constants given in the diagram this provides a maximum of about 100 volts bias. The value of the bias control resistor can depart widely from that shown, although it should not be so low as to load the circuit unduly since this would require a larger filter condenser. Neither should the resistance be too high (in the hundreds of thousands of ohms) because high resistance has a limiting effect when peaks run into the grid current region and thus tends to destroy the usefulness of the grid meter as a peak indicator.

Operating Conditions and Adjustment

One disadvantage of operating tubes in push-pull in a linear amplifier is the necessity for very good balance in the driving voltages applied to each side of the circuit. If the driving voltage is higher on one side than the other, the tube or tubes on that side will be driven to peak output before those on the other side, and will start saturating or "flattening" before the full output of the amplifier is realized. The condensers in the grid tank circuit, C_1 and C_2, should be matched in capacitance within a per cent or two, and the usual precautions as to maintaining circuit balance should be observed. The r.f. voltage balance can be checked with an r.f. probe and v.t. voltmeter. Another method would be to provide individual by-passes at the cold ends of R_1 and R_2, running out separate d.c. return leads to separate grid-current jacks to note whether or not the tubes on both sides of the circuit start taking grid current at the same time.

The oscilloscope patterns of Fig. 3 show the effect of grid bias on the linearity. The peak output was the same in both cases, but in the upper pattern the grid bias was set so that the total plate current of the four tubes was 110 ma. without signal (almost full plate dissipation) while the lower one was the best that could be obtained when the bias was near plate-current cut-off. The improvement in linearity resulting from operating at the lowest possible bias is striking, to say the least. The pronounced curvature in the bottom region of the characteristic is typical of over-biased tetrodes.

The plate efficiency obtainable with Class AB_1 operation under the described conditions is such that the total plate loss at peak output is well under the maximum plate dissipation rating of 120 watts for the four tubes. With the bias set for near-maximum dissipation with no signal, the tubes run cooler when driven. However, in selecting the resting plate current by adjustment of the bias voltage it is advisable to make sure that no one tube is overloaded. This can occur even though the total input is less than 120 watts, since there is some variation in the plate currents taken by various tubes at the same bias voltage. Test the tubes individually and, if a selection is possible, choose four that take substantially the same plate current.

The preferable method of adjusting the ampli-

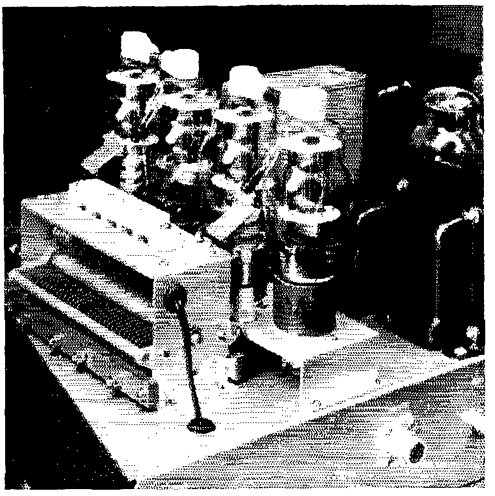
fier tuning for optimum output and linearity is of course to use an oscilloscope with the two-tone test. If the audio oscillator generates a good sine wave and the distortion in the exciter itself is low, the optimum conditions should be secured with a plate current of 180 to 190 ma. when the driving voltage is just at the point where a trace (a few microamperes) of grid current shows. A fairly good job of adjustment can be done without the 'scope, provided the two-tone test can be used and there is independent assurance that the distortion in the exciter is low. Simply maintain the driving voltage just at the grid-current point and adjust the antenna coupling, keeping the plate circuit at resonance, for about 180 ma. plate current. The off-resonance plate current should be only 10 ma. or so larger than the "in-tune" current. Some sort of r.f. output indicator such as an antenna ammeter is helpful; the output should start to drop immediately on even a slight reduction in driving voltage. If the output tends to stay up when the driving voltage is cut slightly, the amplifier is saturating on the peaks and is not loaded heavily enough. The trick is to get the loading just right so that the maximum output is obtained (too-heavy loading will reduce both the output and plate efficiency) at exactly the point where a bit more drive will cause flattening.

Since there is ample plate-dissipation capacity for a.m. operation at the same peak output, the linearity also can be checked by the customary a.m. method if the exciter can furnish an a.m. signal. The trapezoidal pattern should be used, and a very simple 'scope such as is shown in the *Handbook* will suffice.

As stated earlier, the tube curves show that a peak output of approximately 200 watts is obtainable. This is before taking out the incidental losses of the plate-circuit components. Based on measurements of the tank and coupling coils and plate chokes, the calculated losses at 4 Mc. in this amplifier amount to 15 to 20 watts. The power output as calculated from the current in a 75-ohm resistive load showed quite satisfactory agreement with these figures, the current being within a few per cent of the calculated output value. This is within the normal uncertainties of measurements of this type. In voice operation using a resting plate current between 100 and 120 ma., the maximum plate current as registered by the plate meter on voice peaks is about 150 ma.

A Few Pointers

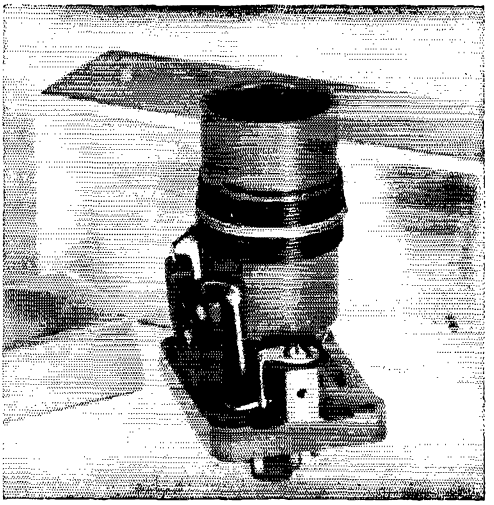
The unit shown here was built primarily to see if four tubes would work well together and not with the thought that it represents a final design. Operation on any band other than 3.8–4 Mc. was given little consideration originally, so no special attention was paid to keeping the minimum capacitances low for higher-frequency operation. As a result, the strays are larger than they need to be, principally because of the method of mounting the plate tank condenser. The stator-plate assembly is quite close to the chassis, which could have been avoided by fashioning taller brackets to increase the separation. The metal



Close-up view of the plate circuit with the tank coil removed to show the blocking condensers, parallel-feed plate chokes and parasitic-suppressor coils. The double lead through the grommets runs from the output-circuit coil to the coupling condenser and coax connector underneath the chassis.

plate on which the coil socket is mounted also adds to the minimum capacity, and it would not be hard to devise a mounting that would avoid this while being easier to construct at the same time Also, the tank condenser actually used was one salvaged from an old transmitter and has about twice the capacity recommended in Fig. 1; this means its minimum is higher than necessary, too. The net result of these things is that the tank Q is about 25 at 14 Mc. even though the coil has been cut to tune with as little variable capacitance as possible.

(Continued on page 118)



Construction of the plug-in grid tanks. The inductances of the two coils are adjusted for an input impedance of 75 ohms at the center of the band. Final pruning of the grid coil can be by adjusting the spacing of an end turn as in this 7-Mc. assembly. The coil form is mounted on a strip of thin insulating material which is mounted on the studs at the sides of the plug-in base.

Transmitter Hunting with the D.F. Loop

A Simple Unit for 10 Meters

BY LOREN R. NORBERG,* W9PYG

• Hidden-transmitter searching has long been a favorite diversion for the mobile members of radio clubs. Here is a directional 10-meter loop antenna that will help you run the "fox" down in a minimum of time. It has proved to be very accurate, even within 100 feet of the transmitter hide-out.

THE increasing popularity of hidden-transmitter hunts, and the author's desire to be among the first few teams to arrive "on location," forced us to consider something more directive than the regular quarter-wave whip mounted on the rear bumper. We needed something economical, convenient, safe to operate, and yet reliable. After several attempts and almost heartbreaking failures, the loop shown in the photograph was developed.

Design Considerations

There are several things one must consider when designing a direction-finding loop antenna. The loop must be small compared to a wavelength, in which case the currents may be considered of the same magnitude and phase throughout the loop. The inner conductor should be less than 0.08 wavelength long.[1] At 29.6 Mc. the inner conductor should be less than 31.9 inches. In other words, the maximum diameter of the loop is about 10 inches for 10 meters.

The inductance of the loop with the distributed capacitance and the capacitance of the tuning condensers forms a series-resonant circuit. When a voltage of the resonant frequency is inserted in series in a resonant circuit, the voltage that appears across either the coil or the condenser is considerably higher than the applied voltage; and is equal to Q times the voltage inserted in series.[2]

This point of maximum voltage in the loop is converted to a point of maximum current in the antenna coil of the converter by a quarter wavelength (electrical wavelength) of coaxial cable. A 67-inch length of coax will provide this transformation with less losses than any other length of lead-in.

The bearing obtained with a loop antenna will be erroneous unless the loop is carefully balanced electrostatically with respect to ground. If the loop is not so balanced there will be a residual antenna effect that distorts the directional pattern of the loop. The accuracy with which electrostatic balance to ground can be obtained in a loop antenna is increased by inclosing the loop in an electrostatic shield. Such a shield ensures that all parts of the loop will always have constant capacitance to ground irrespective of the loop orientation or the nearness of other objects. In constructing the loop from a length of RG-11/U the outer braid serves as an electrostatic shield, while the inner conductor serves as the loop itself. The continuity of the outer shield should be broken at the apex; otherwise the outer shield will act as a closed loop.

A small differential condenser is used to maintain symmetry with respect to ground. This condenser provides a balance to ground that may be varied to compensate for any unbalance introduced by the wiring or placement of parts, etc. The proper adjustment of this condenser may be made by taking advantage of the fact that a properly balanced loop has two nulls differing in direction by exactly 180 degrees.

Constructional Details

The loop shown is made from an 18-inch length of RG-11/U secured to an aluminum box of almost any convenient size, with two coaxial cable hoods (Amphenol 83-1HP/U). The outer shield must be broken at the exact center. C_1

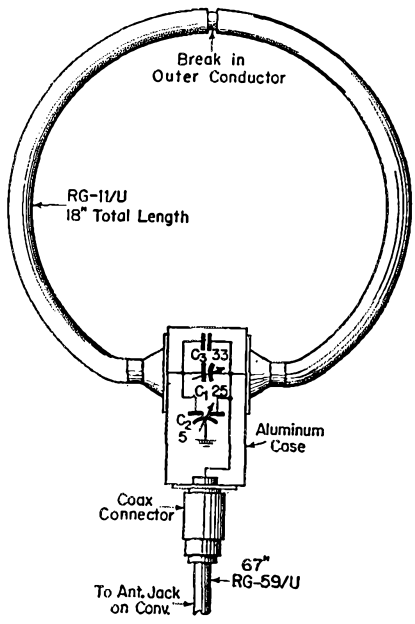
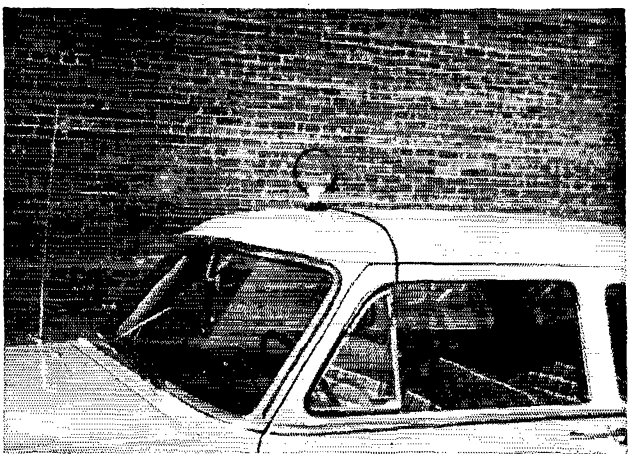


Fig. 1 — Sketch showing constructional details o the transmitter-hunt loop. The outer braid of the coax loop is broken at the center of the loop. The gap is covered with weatherproof tape. Several suitable small aluminum boxes are available on the market.

* Chatham and North, Villa Park, Ill.

[1] *ARRL Antenna Book*, 5th edition, p. 62.

[2] *The Radio Amateur's Handbook*, 30th edition, p. 42.



If desired, the 10-meter d.f. loop can be mounted on the roof of the car with a rubber suction cup.

is a 25-$\mu\mu$f. variable condenser in parallel with a 33-$\mu\mu$f. mica padder condenser, C_3. These values apply at the author's installation when tuned to 29.6 Mc. Any variation in the circuit elements will require a corresponding variation in C_1 or the padder. C_1 must be tuned to the desired frequency while the loop is connected to the converter as it will be operated on the hunt. C_2 is a small differential condenser (Johnson 6MA11) used to provide electrical symmetry. The lead-in to the converter is 67 inches of RG-59/U cable. The smaller cable is more flexible and convenient to use.

One model of this little loop was mounted on a large rubber suction cup as sold by auto-supply stores for auto-top luggage carriers. This is a convenient way of mounting the loop on the auto top for a "fox hunt." The loop may be removed between hunts without any damage to the finish of the car. It is advisable to spray the loop with a weather-resistant coating after it is completed.

This little loop is small enough to be operated within the car and reasonably true bearings may be obtained through the windshield (without center post) when the car is pointed in the general direction of the "fox." Of course, more accurate bearings may be obtained with the loop held out an open window and the signal coming toward the side of the car.

When using the loop on the roof of the car, it will usually be found that an approximate bearing can be taken simply by weaving the car down the road — a complete circle isn't necessary. (Naturally, such a maneuver should be executed with due consideration for traffic conditions!)

Operation

There are several general considerations involved when using this or any other loop. First, the loop must be balanced. To check this, the two nulls should differ in direction by 180 degrees. If not, the loop is unbalanced and should not be trusted.

Second, the residual signal must be reduced to less than the null when using the loop. Otherwise, one will get broad nulls or perhaps no null at all. The author found that the 29.6-Mc. signal was coming in on the b.c. antenna lead to the receiver in such strength as to make very poor nulls. Disconnecting the b.c. antenna lead during the "fox hunt" did the trick. Of course, ignition noises must be reduced to a negligible value. It is assumed that this is already accomplished as part of the mobile installation.[3]

Third, an S-meter is very helpful, and more reliable than the human ear when taking bearings. The author found that simply connecting a 20,000-ohms-per-volt voltmeter across the a.v.c. bus was sufficient to disable partially the a.v.c. as well as to give good meter indications of signal strength.

Finally, one should drive with caution and observe all traffic rules when engaged in this most fascinating aspect of mobile radio. An assistant should always handle the d.f. gear. Happy "Fox Hunting."

[3] Short, "Automotive Radio Noise Elimination," *QST*, April, 1952.

Strays

W2CPG counts eighteen hams, including himself, among the inhabitants of a four-square-block section of Brooklyn. Woe unto the bird who shows up with clicks or splatter.

The accidental death of Herschel C. Griner, W6JKB, as a result of monoxide poisoning, points up a particular need for caution in amateur mobile work. W6JKB succumbed while working on his mobile gear with the car's engine running in an insufficiently ventilated garage.

TVI Checking at Headquarters

In traveling around to ham gatherings of various sorts, members of *QST*'s technical staff have now and then had occasion to refer to the set-up for TVI work at the Headquarters lab. Considerable interest is always shown in the equipment and methods used, and similar interest is also evidenced by visitors to Hq. Since only a comparatively small number of amateurs ever get to visit us in West Hartford, this article is written in the thought that a description of the gear might be equally interesting to *QST* readers.

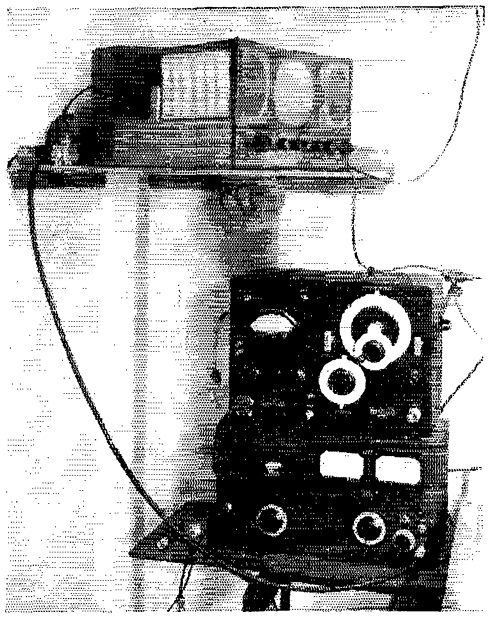
TVI work at Hq. started in 1947, on the heels of the situation created by the opening of Channel 2 in the New York area, when even the small number of TV receivers then in use made it plain that adequate suppression of transmitter harmonics was going to be one of our major problems. There being no TV broadcasting within reach of Hartford at the time, we had nothing much to go on — except the fact that engineering opinion was practically unanimous to the effect that the degree of harmonic suppression required was impossible to attain! However, there were a few basic principles that would have to be applied if any results at all were to be obtained, and to our minds the principal problem was whether or not the application of those principles would in the end turn out to be within the capabilities of the fellow who does his building at home.

Before the year was out we had built a medium power amplifier which met all the requirements — although we didn't know it at the time. Aside from not having a TV signal to check it on, work with the amplifier uncovered a fact that, nowadays, seems rather obvious — you don't start amputating harmonics at the final stage but at the very first tube in the transmitter. Transporting the amplifier to a locality where a TV signal was available would have proved nothing, because nobody else had a "TVI-proof" exciter either! So we had to start over again on the ground floor, but by this time we at least had enough information — and the feeling that the job *could* be done despite the engineering opinion — to give Phil Rand helpful suggestions in the work reported by him in *QST* during 1948. Phil had the TV signals — plenty of them — and did a monumental job in combating the almost universal defeatist attitude on the part of hams at that period both by showing them how to do it and by preaching harmonic reduction at club meetings in the area.

Our only means of checking harmonic strength at this time were crystal-detector wavemeters and an SX-42 receiver, which covered the low v.h.f. TV channels. Neither of them could be correlated with actual interference until mid-1948, when a TV station opened up in New Haven. These crude beginnings were followed by a long period of development during which many schemes both for harmonic reduction and for measuring equipment were thought up, tried, found temporarily useful, and eventually discarded in favor of something better. Transmitter construction for harmonic suppression is now largely a matter of routine, so the present lab set-up is essentially a set of test gear. It is not a static arrangement but is subject to continual modification and improvement, as new ideas come along and as new needs arise.

Checking Transmitters

All of the transmitting equipment built in the lab and described in *QST* is of course checked for harmonic TVI. Our checking problem differs considerably from that of the average amateur because we never know where a copy of a piece of *QST* gear is going to be used. In other words, we have to check under fringe-area conditions on *all* TV channels, even though no one area is going to have any great number of channels available. On the other hand, we have only one v.h.f. TV signal in this area, formerly on Channel 6 but now on Channel 8, and until a number of u.h.f. stations began telecasting recently it was the only signal available.



Set-up for retransmission of TV pictures on any of the 82 v.h.f. and u.h.f. channels. Standard signal generators provide the r.f. carriers, which are modulated by video and sound signals taken from the shielded and filtered TV receiver on the shelf.

To get around this we use the signal-generating arrangement shown in Fig. 1. Since one of the principal difficulties in TVI work is separating actual transmitter harmonics from harmonics generated in the TV receiver by over-

loading, every effort is made to prevent anything except the TV signal from getting into the receiver. The receiving antenna is a Channel 8 Yagi, coupled to an RG-59/U coax line through a double-tuned inductively-coupled matching circuit. A similar double-tuned circuit is used at the receiver end, so in addition to the selectivity of the antenna and the shielding of the line, there are four tuned circuits that an unwanted signal encounters before it gets into the TV receiver itself. The receiver, a by-now ancient 7-inch chassis, is completely enclosed in aluminum and copper-screening shielding, well bonded, and the a.c. enters through a line filter (a commercial unit built by Hopkins Engineering) with its case bonded to the shielding. A TV booster was mounted on the regular chassis to give additional gain and signal-frequency selectivity. Altogether, a ham-band signal has been discouraged to the best of our ability from getting into the set, and we have never had the slightest sign of overload effects even when running a kilowatt into an antenna a few feet away from the TV antenna.

The purpose of all this is to obtain an interference-free composite video and sound signal which can then be used to modulate the r.f. output of a standard signal generator, which of course can be set on any TV channel frequency within its range. The i.f. in the TV receiver has been widened out to pass the sound as well as video signal without attenuation, and after rectification the composite signal is coupled from the video detector to the modulator through a cathode follower that works into a coaxial line. The output of the standard signal generator also is fed to the modulator, which is a crystal diode with simple filters to prevent coupling between the two signal sources. When this system was first tried a few years ago it was discovered immediately that in addition to the desired video and sound signals the output of the video detector also contained a considerable component of i.f. voltage which gave some weird effects when the "rebroadcast" signal was picked up on another TV receiver. The low-pass filter having a 5-Mc. cut-off took care of this. It was also discovered, when trying the set-up with a ham transmitter going, that the transmitter fundamental got into the crystal modulator quite nicely, creating all the overload effects that we had taken such precautions to avoid, so for testing transmitters working at 10 meters and lower frequencies a high-pass filter is inserted in the coax line between the modulator and the "rabbit ears" which serve as the radiator for the recreated TV signal. A similar situation occurs when v.h.f. transmitters are in use, and at present our only recourse is to tuned traps for the 50- and 144-Mc. bands. The next change on the agenda, when time permits, is to build a high-pass filter having a cut-off between 148 and 176 Mc.

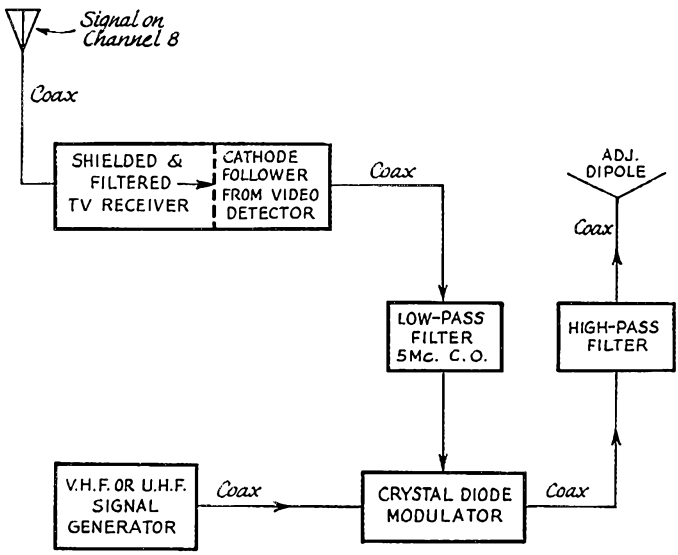


Fig. 1 — Block diagram of TV retransmission system.

This signal-generator arrangement does not exactly duplicate an actual TV signal, since both sidebands are transmitted while the standard TV signal suppresses the lower sideband. However, this makes little difference in the application for which the system was constructed. The v.h.f. signal generator is a Measurements Corporation Model 80 and the u.h.f. generator is a General Radio Type 1021-AU;

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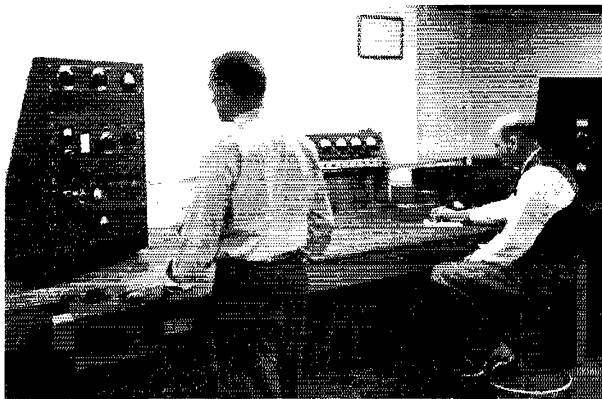


Transmitting gear used in checking TV receivers for overloading and spurious responses. The r.f. units are mounted on table racks, the low-frequency transmitter at the left and v.h.f. at the right. High-voltage power supplies are underneath the bench.

The gents in the picture, W1JEQ and W1HDQ, are there strictly as a concession to the publishing credo that says pictures have to have people in them to be interesting. Actual test work doesn't permit any such comfortable poses!

both generators are of course used for more conventional purposes in the lab.

Checking transmitters for harmonic suppression is chiefly a matter of checking for leakage in shielding and for radiation from leads. Experience has shown that when these are kept under control the harmonics that may be present in the output circuit of the final stage can always be reduced to a satisfactory level by a good low-pass filter, provided the v.h.f. reso-

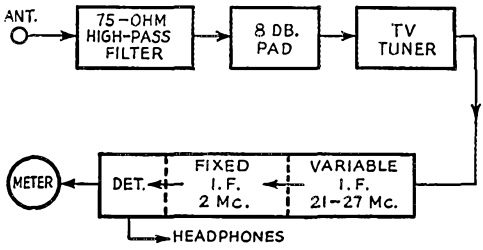


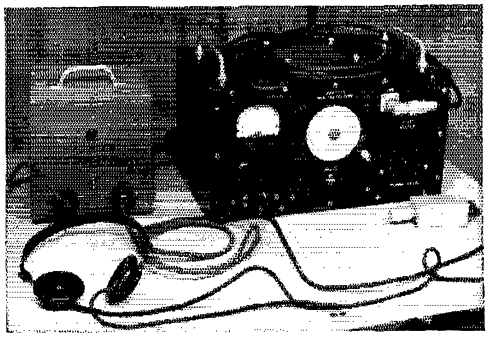
Fig. 2 — Block diagram of receiver for signal measurement and analysis (photo at right, below).

nances in the final stage are kept out of the TV channels. A TV receiver fed a weak "fringe-area" signal usually is the final authority for such tests, but the receiver shown in block-diagram form in Fig. 2, specially designed and built for this work, is a highly useful adjunct. This is a shielded and filtered set covering the v.h.f. channels, but having a tunable first i.f. and a fairly selective second i.f. so that any signal present in a TV channel can be tuned in and out much as on an ordinary communications receiver. The receiver operates a meter calibrated in terms of voltage at the antenna input terminals so that signal strengths can be measured. The set is constructed for coaxial input and has a built-in separately shielded high-pass filter. The filter is connected to the signal-frequency circuit — a Standard Coil TV tuner with its output circuit modified to work into the variable i.f. — through an 8-db. resistive pad. The purpose of the pad is to provide the proper termination for the filter regardless of variations in input impedance of the tuner, and thus not only stabilize the filter attenuation with frequency but also to maintain some degree of consistency in signal-strength readings. Together with the input selectivity of the tuner, the measured attenuation of a signal at the high end of the 28-Mc. band from the antenna terminals to the first grid is 57 db. with the receiver tuned to the low end of Channel 2. The attenuation of course increases rapidly on the higher channels, so there is little likelihood that any front-end overloading will occur.

The variable i.f. is a Command receiver originally covering 6 to 9 Mc. but with the tuned circuits altered to cover 21 to 27 Mc. with a little leeway. The dial is calibrated in megacycles from the low edge of the channel so that any frequency present can be measured. A frequency adjustment is provided so that the picture and sound carriers on an incoming signal can be lined up at the proper points on the dial on each channel. When this set was first tried out there were strong birdies scattered throughout all the channels and the problem of getting rid of them looked almost hopeless, but the application of transmitter TVI techniques to the variable i.f., plus a low-pass coupling arrangement between the TV tuner and the i.f., wiped out all but two or three and left those few only at barely audible strength. This receiver has been calibrated for signal strength indications on each TV channel. A 75- to 300-ohm balun is used for checking signal strength with 300-ohm line.

Because the shielding is quite complete, the receiver is useful as a probe for locating "hot spots" in a transmitter under test. A length of coax line is used for this purpose, with the shield skinned off at the end and the inner conductor bent into a small loop with its end soldered to the shield braid. The source of a particular harmonic is quickly located with this probe.

For u.h.f. work, the receiver is used at present with an ordinary u.h.f. TV converter, the signal-strength readings being obtained by di-



This receiver was specially built for analyzing and measuring interference in the v.h.f. TV channels. It is essentially a calibrated field strength meter with shielding and filtering for preventing fundamental overloading from an amateur transmitter, and having communications-type selectivity for separating signals that may be present simultaneously in a TV channel.

rect comparison with the u.h.f. standard signal generator. Another item on the agenda for construction in the near future is a converter more suitable for use as a u.h.f. front end.

Receiver Checking

The second phase of TVI work at Headquarters is checking TV receivers for overloading. This is done for any manufacturer who wishes to send in a receiver for such a check, and manufacturers are periodically encouraged to do so. Frequently, a member of the set maker's engineering staff accompanies the receiver, an arrangement that we prefer because the engineer can see for himself what happens — a much more

(*Continued on page 120*)

A Radical Approach to Improved 'Phone Reception

Simple Circuit Tricks for Better Receiver Performance

BY LARSON E. RAPP,* WIOU

• It has been some time since *QST* has been able to present an article describing revolutionary new receiver techniques. Although the *QST* laboratory staff has not had an opportunity to confirm Mr. Rapp's findings, past experience with his disclosures has shown us (and our readers) what we can expect from this counselor.

RADIO-RECEIVING techniques are substantially the same as they were five or ten years ago. They have definitely not progressed as fast and far as have other facets of amateur radio communication, despite the steady influx of new tubes and components intended for the more lucrative field of television reception. It is high time that amateurs appreciated their responsibility to the art and started adopting new receiving techniques.

There is little or nothing that can be done to improve code reception, except perhaps to make use of a modern method like the Charactron,[1] which eliminates the need for learning the code. However, radiotelephone reception as we practice it today is still a rather primitive attack on the problem, and it is the object of this paper to point out a few fruitful avenues of approach. Scholars will recall that current receiving techniques give a 15-db. advantage to code reception over 'phone reception[2] — it will be shown that this advantage can be reduced to a minimum.

There are three characteristics that any receiver must have: stability, selectivity, and sensitivity. Current methods for obtaining stability are, in general, satisfactory, although there are still a few receivers that cannot pass a 15-G shock test without a slight change in beat note (at 50 Mc.). The solutions are known, however, and need not be discussed. The only refinement that might be suggested at this time is that receivers be built with rounded edges and corners, and that they be covered with sponge rubber to decrease injury to the hand or fist making the test. Wherever drift is a problem, the receiver can be anchored to the table or other reference plane.

Selectivity

It is amusing to follow some of the valiant but futile attempts on the part of a few engineers and amateurs to improve the selectivity of receivers. Some discerning operators have built receivers that cover a wide range of frequencies, and they have observed that the receivers tuned sharper than they did before the tuning range was increased. This is an inexpensive approach, and has its followers. Others have approached it by restricting the bandwidth of the i.f. amplifier, through the use of either a multiplicity of high-*Q* tuned circuits or an "electromechanical" filter. In either case the result is substantially the same. A few operators will struggle along with this alleged selectivity,[3] in an effort to receive signals that they might not otherwise be able to copy, but the discerning majority knows the basic fault of this approach. Ask any operator why he doesn't like selectivity, and he will reply, "Because it tunes too sharp." A few pioneers have even tried to decrease the tuning rate of the receiver by one means or another, in an effort to utilize high i.f. selectivity, but it isn't popular. And for a good reason: When the tuning rate is reduced, it takes longer to tune across a band! This is untenable.

Obviously the only way that selectivity can become acceptable to all operators is to make the tuning with it just as broad as with an unselective receiver, so that a fast tuning rate (for covering the band quickly) can be used. And the approach is so simple that it is surprising that this is the first time it has been mentioned anywhere. It is,

(Continued on page 188)

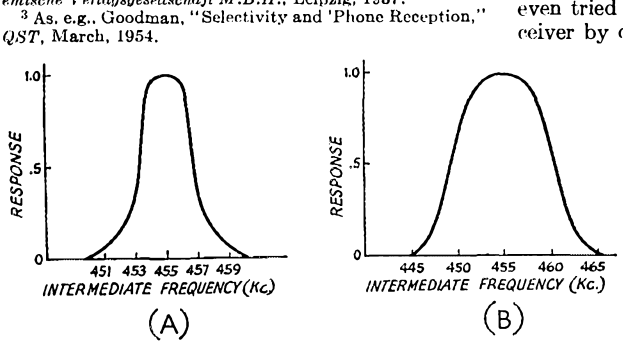


Fig. 1 — The usual type of selectivity (A) gives sharp tuning that is readily overcome by the type of selectivity shown in (B). (These are idealized curves and only represent the general form — they cannot be applied to a particular receiver without modification.)

* Kippering-on-the-Charles, Mass.

[1] McNaney & Jackson, "The Application of the Charactron as a Morse Code Converter," *QST*, March, 1954.

[2] Vilbig, "Lehrbuch der Hochfrequenztechnik, VI," *Akademische Verlagsgesellschaft M.B.H.*, Leipzig, 1937.

[3] As, e.g., Goodman, "Selectivity and 'Phone Reception," *QST*, March, 1954.

Putting the Collins 32V on 160

Extending the Range with Plug-In Adapters

BY JOSEPH ZELLE,* W8FAZ

• **This article shows how W8FAZ gets 160-meter output from his Collins 32V. The modification is quite simple and is done in such a manner that the resale value of the unit is not reduced.**

ALTHOUGH the Collins 32V transmitter has been designed for operation in the 80- to 10-meter amateur bands, many of the earlier models can be revamped quite readily to include the 160-meter band. The 70E-8 VFO actually operates in the 160-meter band, and is followed by an untuned buffer amplifier, also on 160 meters. Then come three stages of "multipliers," beginning with the 6AG7 and followed by two 7C5s, all operating at 80 meters when the bandswitch is set for this band. Lastly, the RK-4D32 operates as a straight r.f. amplifier.

Since the oscillator and buffer are already operating on 160 meters, it was decided that the second multiplier stage could be bridged, leaving only the first and last multipliers to be converted for the 160-meter line-up.

Driver Stages

In order to avoid disturbing the original circuit more than necessary, a plug-in unit was made up

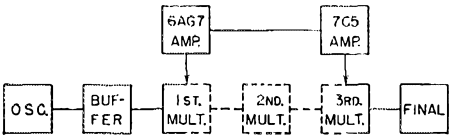


Fig. 1 — Block diagram showing how the 160-meter adapter is fitted into the original 32V line-up.

to fit in the multiplier-tube compartment. In shifting to 160, the three multiplier tubes are removed. The 160-meter adapter plugs into the first and third multiplier-tube sockets, picking up the necessary operating voltages, and making the proper r.f. connections as the unit is plugged in. The first (6AG7) and third (7C5) multiplier tubes are then plugged into the adapter. The first 7C5 is not used. Fig. 1 illustrates the system.

Fig. 2 shows the circuit of the adapter. When the unit is plugged into the original sockets, C_1 by-passes the original 80-meter circuit to ground. The plate circuit of the 6AG7 then consists of the 2.5-mh. r.f. choke, RFC_1, included in the adapter. The 80-meter output circuit of the second multiplier stage is by-passed to ground through C_2 and Pin 6 of the loktal plug. This pin also picks up bias for the 7C5 in the adapter. Through Pin 2 of the loktal plug, C_3 is connected across the original 80-meter output circuit of the third frequency-multiplier, padding it to 160.

Adapter

The construction of the adapter is shown in the sketch of Fig. 3 and the photographs.

* 1227 Addison Rd., Cleveland 3, Ohio.

The plug that fits the octal socket is easily taken care of by the use of a standard flush-mounting octal plug, such as the Amphenol 86-CP-8. The plug that fits the loktal socket, however, must be made from an old tube base having the same pin arrangement as the 7C5. The glass envelope should be broken off very carefully. Then the excess tube elements should be cut or peeled off the wire stems. These stems should then be cleaned very thoroughly, for they do not take solder readily. Tinning these stems may require some patience. The prong should be heated fairly well, some soldering paste applied, and the solder applied after the prong gets good and hot. It is advisable to allow the tube *base* to cool after each wire has been tinned.

The tube base is then fastened to the adapter chassis by means of a circular mounting strap or clamp, similar to those used sometimes for mounting metal-can electrolytic condensers. The plugs are then wired to the corresponding sockets above, using the connections shown in Fig. 2.

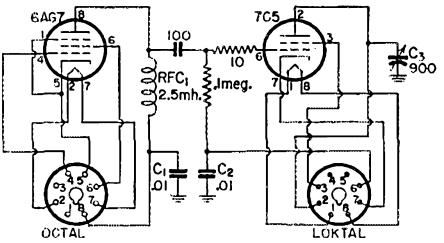


Fig. 2 — Circuit of the plug-in adapter. C_3 is a mica trimmer.

Driver Adjustment

This operation completes the plug-in unit, and it can be tuned up without difficulty. The meter switch should be put in the grid circuit of the final r.f. tube (Position 3). With the band-selector switch in the 3.5-Mc. position, and the control switch in the "tune" position, the padder C_3 can be adjusted until maximum reading is obtained. (This adjustment should be made with care, since it must be done with the plate voltage on — interlock by-passed.) About 12 to 15 ma. of grid current should be obtained without diffi-

culty. The frequency should be checked with an absorption wavemeter to insure proper output frequency. The oscillator dial, of course, will have to be set at twice the frequency of operation desired. For example, to operate at 1890 kc., the 70E-8 must be set at 3780 kc.

Final Amplifier

Now, the final output circuit must be revamped. The values of capacitance available in the 32V place restrictions on the range of impedances that can be matched on 160 meters if reasonable Q is to be maintained. Most 160-meter transmitters are fed into grounded quarter-wave antennas whose feed-point impedances (including average ground-loss resistance) are not far from 52 ohms. This is also the impedance of coax line that can be used to feed an antenna tuner if the antenna impedance is of some other value. Therefore, it was decided to design the output circuit primarily to

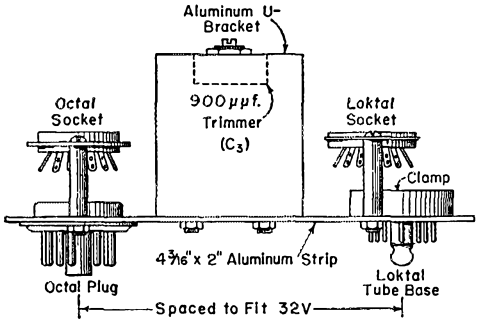
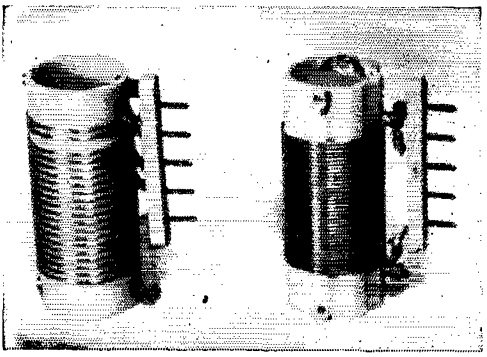


Fig. 3 — Sketch showing the construction of the 160-meter adapter. New sockets for the 6AG7 and 7C5 straddle the adapter plugs. The mica trimmer, C_3, is mounted inside a U-shaped bracket between the two sockets.

match this load, using the maximum available tank capacitance (400 $\mu\mu$f.). Both the tank and output inductances must be increased. This is easily done in the case of the output inductance by adding a coil of about 6.5 μh. externally at the output terminal, in series with the grounded antenna or coax line. A coil of 17 turns, No. 14 wire, 1½ inches in diameter and 2 inches long should be about right.

Replacing the tank inductance also is not a formidable task, since the original tank coil is on top where it can be reached. To make the change between 160 and the original higher-frequency bands convenient, it was decided to mount the original tank coil and the new 160-meter coil so that they could be plugged in. After carefully unsoldering the five connections (coil ends and three taps), the original coil was removed. Then a Millen 41305 coil jack bar was mounted in the coil compartment, and the original leads to the



Final-amplifier coils for the 32V. The original coil, fitted with a plug strip, is at the left. The 160-meter coil is at the right and is wound on a surplus form. This coil may be wound on a standard Millen form, as described in the text.

coil were soldered to the terminals of the jack bar. (It was necessary to grind off about 1/32 inch from one end of the jack bar on an emery wheel so that it would fit the available space.)

The original tank coil was mounted on a Millen 40305 plug strip that fits the jack bar. This strip is shorter than the coil form. To provide a support for the overhanging end of the coil form, a small strip of polystyrene was attached to one end of the plug strip, as shown in the photograph of the coils. The coil ends and taps were then connected to the pins in the plug strip, to correspond to the jack-bar connections.

The tank coil for 160 meters requires an inductance of 34 μh. It can be wound on a Millen 44000 polystyrene form. This form is 1⅞ inches in diameter, has 2½ inches of winding space, and fits the 40305 plug strip. This may be wound with 35 turns of No. 14 enameled wire, close-wound. (The ceramic form shown in the photograph is a surplus item I had on hand.)

This modification will, of course, not be so readily adaptable to the 32V-3, or earlier models having secondary internal shielding and no trap door above the r.f. section. Later models than mine also have VR tubes mounted on top of the multiplier-tube compartment. However, anyone who can make this conversion will find that the rig works beautifully on 160. Working only occasionally, on 'phone and c.w., I've had good solid QSOs with stations in eight states. No BCI or TVI, either! In conclusion, I want to thank W8OOP, who made the photographs.

♦

R.f. end of the 32V, showing the 160-meter adapter plugged in, in the multiplier-tube compartment, foreground, and the 160-meter final-amplifier coil above.

A Lightweight 21-Mc. Three-Element Beam

Utilizing Standard TV Antenna Components and Rotator

BY KATASHI NOSE,* KH6IJ

• One of KH6IJ's specialties is pruning pounds off the weight of three- and four-element beams, as his articles in past issues of *QST* will testify. Here is his latest and lightest creation — one that we believe will be widely duplicated.

THERE is no getting around the fact that a beam has come to be accepted as a necessary adjunct to an amateur station and, for the modest investment, pays for itself many times in increased effectiveness of transmissions. There remains only the question of what kind to put up. Advocates of the collinear, phased, and long wire notwithstanding, the parasitic array is a hard one to beat, considering performance, size, and ease of construction.

The opening of the 21-Mc. band therefore led the author to build a beam similar in construction to one described before,[1] based on the "plumber's delight" principle but using materials readily available. The popularity of TV has led antenna manufacturers to make many items well suited for amateur beams.

Early in the design stage it was decided to take advantage of the streamlining offered by round surfaces, and also of the fact that any extra weight merely adds to the dangers of installation and maintenance. Past experience has shown that dissimilar materials (e.g., wood, brass nuts) add unnecessarily to maintenance problems. I believe this beam represents the minimum weight a beam can be trimmed down to, consistent with good mechanical strength. It has a total weight of only 15 pounds and strength enough to withstand winds that have brought down many TV antennas in the vicinity.

Problems of rotation, support and indication were easily and neatly solved by using a standard TV rotator-and-indicator combination, which sells for about $30.00, mounted on a standard TV mast on the roof. Two sections of TV mast serve as the boom, and standard clamps serve to fasten the elements to the boom.

The elements are EMT electrician's conduit, which is just about the only material used that is not available at radio stores. No welding or braz-

*Kauai High School, Lihue, Kauai, T. H.

[1] Nose, "A Lightweight 14-Mc. Four-Element Beam," *QST*, Nov., 1948.

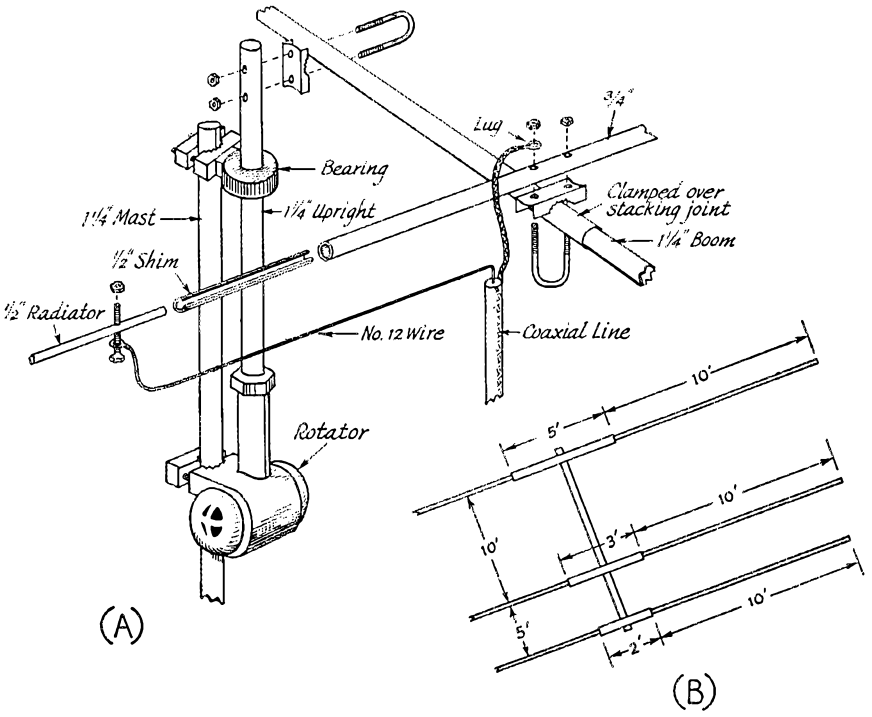
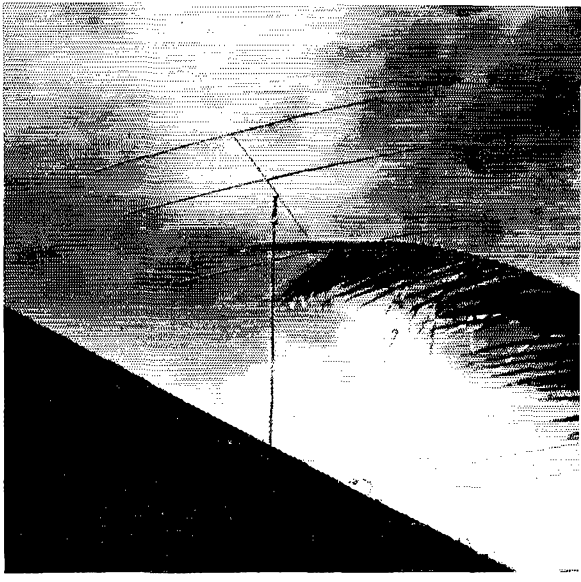


Fig. 1 — The three-element beam is made from TV-antenna accessories combined with electrician's thin-walled conduit. The necessary details are shown at (A) — the over-all dimensions of the antenna are sketched in (B).



The lightweight 21-Mc. beam at KH6IJ is just about as neat and clean as they come. All of the parts used in its construction are readily obtainable. The same construction principles could easily be applied to 28- and 50-Mc. beams.

ing is required, and the entire beam should not take one man (with a hack saw and ¼-inch drill) one afternoon to fabricate and erect, if some thought is given to preliminary planning.

Rotator

Select a rotator with substantial gearing. Ability to support weight means little, as this beam is lighter than most low-band arrays, but torque resistance is a prime consideration. If your dealer is friendly enough, as mine was, open up the rotator to see what the worm gear looks like. A Cornell-Dubilier type TR12 was selected, but others should be just as satisfactory.

Support

If TV installations can go on the roof, why not a 21-Mc. beam? Added height, symmetry to ground, and ease of installation and dismantling make the roof-mounted telescoping mast an attractive choice. The type selected was a 20-foot "slip-up" mast, known as Type HD20 and made by the Tempo TV Products Company of Hollywood. It comes in heights up to 60 feet. For the less hardy soul, a ten-foot mast enables one to put up the preassembled rotator, mast and beam in one operation.

Preliminary assembly of the supporting mast, rotator and beam should be done on the ground for balance and adjustment, after which it can be partially dismantled for reassembly on the roof.

Boom

The boom, always the secret of any installation, consists of two 10-foot sections of lightweight steel TV mast having excellent rigidity and no torsional tendency. This mast is also made by the Tempo Products Company and is 0.035 inch thick, 1¼ inches in diameter, and flared for stacking. Any other mast sections of equivalent weight and temper can be substituted, but they must be of the seamless variety. Five feet is cut off one end, 1½ feet of which will serve as a mount for the beam on the rotator.

Elements

The elements are made of lightweight aluminum electrician's conduit known as EMT. Six 10-foot lengths of ½-inch diameter are required for the element ends with an additional piece for making shims and one 10-foot ¾-inch-diameter section of the same material is needed for the center sections of the elements.

The ¾-inch-diameter piece is cut into three sections of 5, 3 and 2 feet, to become the center sections of the reflector, radiator, and director, respectively. Ten-foot sections of the ½-inch tubing are then inserted into each end of these pieces. A shim must be made of ½-inch tubing before the end pieces will fit snugly. This is easily done by slitting one side of an 8-inch length of tubing with a hack saw and hammering it into place while spreading it apart with a screwdriver. If the shims are too loose, be sure to corrugate their edges to prevent the elements from working loose. In the interest of minimizing galvanic action, use of screws is not recommended.[2]

Experience with about 30 beams built by the author in the past has shown that, after tuning the element lengths to get maximum performance, one invariably comes back to about the lengths as indicated by formula. For the purist, however, any one of the standard procedures should suffice.

Clamping

The problem of fastening the elements to the boom is neatly solved by using a standard TV mast clamp of the type used to mount multielement arrays. Fig. 1 shows the method of fastening the elements. Make a personal selection of these clamps, as many of them are not true and would result in the elements not being at right angles to the boom.

Four clamps are needed for a three-element installation, three for the elements and one to fasten the boom to the rotator upright. The reflector and director are mounted at opposite ends of the boom, and the radiator is clamped directly over the joint in the boom, thus clamping the two sections together tightly. The element spacing is 0.1D and 0.2R, which leaves room for mounting a fourth element if desired.

The boom is fastened to the rotator upright by the same type of clamp. The holes should be drilled in the upright instead of in the boom, to prevent weakening at this crucial point and

(*Continued on page 126*)

[2] This is a debatable point. Some constructors may wish to add clamps at these points, for greater safety. However, the antenna will look cleaner if they can be omitted.—Ed.

Modifying the S-40 for S.S.B. Reception

BY EDWARD H. SOMMERFIELD,* W3SGF

• It's an old saw that "everyone talks about the weather but no one does anything about it." The same statement is practically true if you substitute "his receiver" for "weather." An exception, fortunately, is a man like W3SGF, whose saga is presented on these pages. He did something about his receiver, and he ended up with a box he likes better than many costing considerably more. Read it — it may give you some ideas.

ALTHOUGH it has been pointed out in *QST* and elsewhere that any communications receiver worthy of the name is capable of receiving s.s.b. signals quite satisfactorily, it is also generally agreed that there are a few things that the receiver should have if the advantages of s.s.b. communication are to be realized to the utmost. In the writer's opinion, the main requirements for good reception of s.s.b. signals are a steep-sided 4-kc.-wide i.f. bandpass characteristic, a stable b.f.o., and a means for varying the b.f.o. injection.[1] Several changes were made in the author's S-40 receiver, in an effort to meet these requirements, and they resulted in a marked improvement in performance.

The Bandpass Filter

To obtain the desirable sharp i.f. characteristic, a half-lattice crystal filter [2] was added between the first and second i.f. tubes. Fig. 1 shows the circuit — the crystals are the well-known

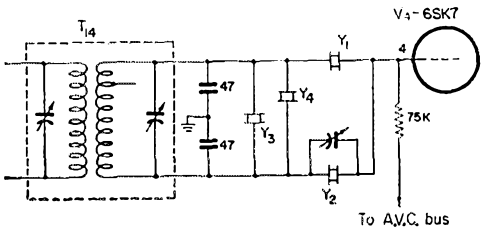


Fig. 1 — The bandpass crystal filter is inserted between the first and second i.f. amplifier stages.
Y_1 — Channel 346, 480.55 kc.
Y_2 — Channel 348, 483.31 kc.
Y_3 — Channel 345, 479.16 kc.
Y_4 — Channel 349, 484.69 kc.
Crystals of these exact frequencies are not required, but the same relative channel (frequency) intervals should be used.

surplus crystals that are used in s.s.b. exciters and filters.

The grid tap lead was removed from the secondary of T_{14} and the full secondary used, as shown in Fig. 1. A metal bracket for holding the four crystal sockets of the filter was built and mounted under the chassis. In order to place the bracket directly under T_{14} and thereby take advantage of the transformer's mounting bolts, it was necessary to remove the S-meter socket, SO_2, from the rear of the chassis. Wires that had used the pins of socket SO_2 as tie-points were replaced by wires running straight through.

Third I.F. Stage

Adding the crystal filter results in a loss of gain in the receiver, and hence a third i.f. amplifier stage was added. To do this, the old V_7 socket was rewired for the new 6SK7 amplifier (the V_7 functions were taken over by additional changes to be described later), and the old V_5 socket was removed to make room for the additional i.f. transformer. The old V_7 socket and the new transformer were wired as shown in Fig. 2. The b.f.o. injection is at the grid of this third i.f. stage

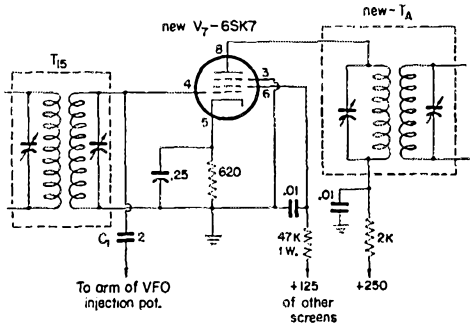


Fig. 2 — Wiring diagram of the new third i.f. amplifier stage.
T_A — 456-kc. output transformer (Meissner 16-6660).

because it was found to give more adequate injection than at the second detector. With variable injection amplitude, getting the proper b.f.o. voltage is no problem.

2nd Detector, Noise Limiter and A.V.C.

The audio stage that was originally combined in V_5 was replaced by an audio stage combined

* % Civil Aeronautics Administration, Federal Bldg., N. Y. International Airport, Jamaica, N. Y.

[1] Two of these are controversial points. Many operators prefer a bandwidth of only 3 kc. or less, arguing that this is sufficient to pass all of the essential frequencies. No one argues the stable b.f.o. point, of course, because frequency stability is vitally important throughout the receiver, from high-frequency oscillator(s) to b.f.o. The advantages of variable b.f.o. injection should be negligible, since the only requirement is that the b.f.o. voltage be appreciably greater than any signal voltage reaching the detector. It is considered to be more important to prevent any b.f.o. voltage getting into the "front end" of the i.f. amplifier, because this will then reduce the signal-handling capabilities of later stages. Another desirable feature of a s.s.b. receiver is a slow tuning rate. — ED.

[2] Good, "Crystal Filter for 'Phone Reception," *QST*, Oct., 1951.

with the b.f.o. and will be described later. The second-detector, a.v.c. and noise-limiter functions were taken over by the circuit shown in Fig. 3.

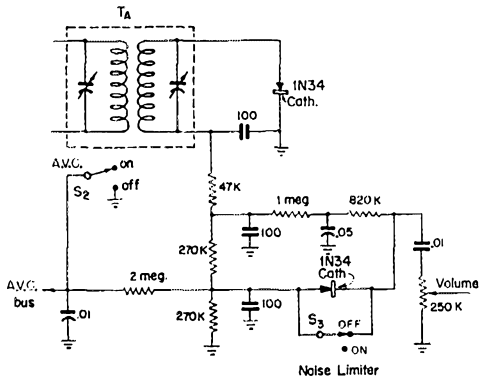


Fig. 3 — The modified 2nd detector and noise-limiter circuits use 1N34 crystal diodes.
T_A — See Fig. 2.
S_2, S_3 — As originally in receiver.

To conserve space, 1N34 crystal diodes were used. The noise-limiter circuit was borrowed from the HQ-129 receiver.

The small components of the circuit of Fig. 3 were mounted on the terminal strip that runs alongside the V_5 and V_7 socket holes.

B.F.O. and 1st Audio

Later models of the S-40 use a dual triode for the b.f.o. and 1st audio stages, and the same dodge was used in this revision. A prime requisite for single-knob s.s.b. reception is a stable b.f.o. Although both self-controlled (Clapp-circuit) and crystal-controlled b.f.o. circuits have been tried in this receiver with good results, our personal preference lies with the crystal oscillator, for stability and ease of alignment (described later). However, since all operators might not prefer the crystal oscillator, both circuits are given in Fig. 4.

Admittedly the crystals used in the b.f.o. circuit do not fall exactly on the outer edges of the crystal-filter passband. However, I found that they lie close enough to work satisfactorily. The two crystals were mounted in crystal sockets that were in turn mounted on a small metal bracket fastened to the crystal-selector switch S_1 (Fig. 4-A). The switch was then installed in the hole from which T_{17} was removed. The tone control (S_4 in the original wiring diagram) was removed and the 0.25-megohm "Injection" control installed in its place.

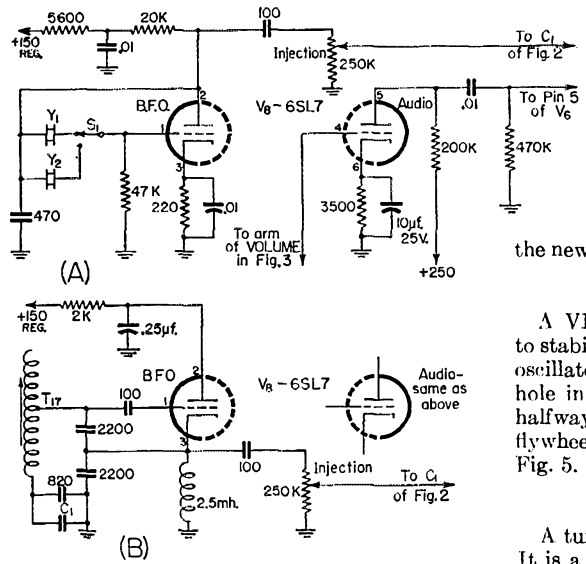


Fig. 4 — Circuit diagrams of (A) the crystal-controlled b.f.o. and (B) the self-controlled b.f.o.
Y_1 — Channel 348, 483.31 kc.
Y_2 — Channel 346, 480.55 kc.
C_1 — Sufficient to bring b.f.o. within range. About 100 or 200 $\mu\mu f$.
S_1 — S.p.d.t. rotary switch mounted in "Pitch Control" hole.

Admittedly the crystals used in the b.f.o. circuit do not fall exactly on the outer edges of the crystal-filter passband. However, I found that they lie close enough to work satisfactorily. The two crystals were mounted in crystal sockets that were in turn mounted on a small metal bracket fastened to the crystal-selector switch S_1 (Fig. 4-A). The switch was then installed in the hole from which T_{17} was removed. The tone control (S_4 in the original wiring diagram) was removed and the 0.25-megohm "Injection" control installed in its place.

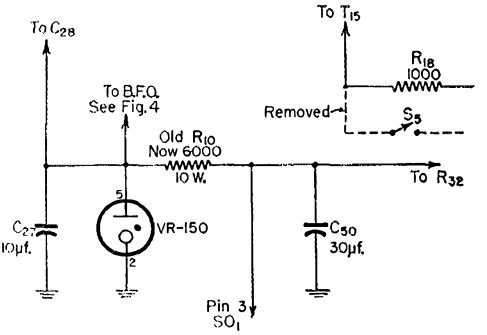


Fig. 5 — Voltage stabilization is added to the S-40 by changing one resistor (R_{10}) and a few leads.

In removing the tone control, the tone circuit for "Medium" was left in the circuit by grounding R_{25} (original wiring diagram), and the former "C.W.-A.M." switch (S_5) was used as the a.c. switch (S_{4A} in original). The b.f.o. is left on all of the time — for a.m. reception the new "Injection" control is turned to zero.

Voltage Stabilization

A VR-150 voltage regulator tube was added to stabilize both the b.f.o. and the high-frequency oscillator. This required cutting a new socket hole in the chassis, near the front panel about halfway between the loudspeaker and the tuning flywheel. The circuit was changed as shown in Fig. 5.

Tuning Indicator

A tuning eye was added for ease of alignment. It is a standard 6E5 circuit [3] with the grid tied to the a.v.c. bus. The mounting bracket for the tube was mounted in the upper left-hand corner of the panel, so that the eye poked through a hole punched out where the words "Model S-40" are found in a new receiver.

(Continued on page 188)

[3] For example, Fig. 5-21A of the *Radio Amateur's Handbook*. 1954 edition.

Happenings of the Month

AMATEUR RADIO WEEK PROPOSED

A Resolution authorizing the President to designate the third week in June of each year as National Amateur Radio Week has been introduced in the U. S. Senate by Senators Bush and Purtell of Connecticut, and Smathers of Florida. Known as S.J. Resolution 124, the measure has been referred to the Judiciary Committee of the Senate. If finally passed by the Senate, the bill will then go to the House for similar action. The text is as follows:

"RESOLVED *by the Senate and House of Representatives of the United States of America in Congress assembled,* That the President of the United States is authorized to designate the third week in June of each year as National Amateur Radio Week, and to issue a proclamation inviting the people of the United States to observe the week with appropriate exercises to further and stimulate interest in amateur radio in the United States."

At this point interested amateurs and club groups who would like to see such a "week" can help by writing brief letters to members of the Senate Judiciary Committee urging favorable action on the resolution; individuals and groups in the states represented on the committee can be most effective. The list of Senate members, who can be addressed simply at the U. S. Senate Office Bldg., Washington, D. C., is:

Arkansas — John L. McClellan
Idaho — Herman Welker
Illinois — Everett McKinley Dirkson
Indiana — William E. Jenner
Maryland — John Marshall Butler
Mississippi — James O. Eastland
Missouri — Thomas C. Hennings, jr.
Nevada — Pat McCarran
New Jersey — Robert C. Hendrickson
North Dakota — William Langer
South Carolina — Olin D. Johnston
Tennessee — Estes Kefauver
Utah — Arthur V. Watkins
West Virginia — Harley M. Kilgore
Wisconsin — Alexander Wiley

Joseph R. Lebo, W2OEU, and Jesse M. Kimmons, W4OVO, have both independently been promoting the special "week" idea through Senators Bush and Smathers. The League was asked last year by Senator Bush's office for its recommendations on a suitable week, and the Board of Directors suggested the customary week in June when the ARRL Field Day is staged.

ELECTION INJUNCTION DENIED

As reported under this department in the January issue of *QST*, several candidates in last autumn's director elections were dissatisfied with the action of the ARRL Executive Committee in ruling them ineligible because of insufficient continuity of League membership, and joined forces with the Rock Creek Amateur Radio Association (Washington, D. C.) to request in the Superior Court at Hartford an injunction to overrule the Committee's action. A permanent injunction against the League was sought to require the Committee to declare said candidates eligible under the plaintiffs' interpretation of the Articles of Association; a temporary injunction to the same effect was also requested, so that a reasonably prompt ruling might be obtained from the court.

In mid-February the court issued its decision, denying the request for temporary injunction. In two memoranda, Judge Shapiro upheld the ruling of the Executive Committee that James W. John, W3OMN, was ineligible as an Atlantic Division director candidate because he was not possessed of four years' membership at the time of election; he further confirmed the Executive Committee's interpretation of the Articles in declaring John W. Gore, W3PRL, and Paul M. Bossoletti, WØGZD, not eligible to be candidates because their past four years' memberships had been interrupted by lapses.

STAFF NOTES

Sixteen Hq. employees, members of the Ten-Year Club, on January 28th joined in a dinner party to celebrate the completion of 25 years' ARRL service by Chief Accountant and Assistant Treasurer Alice V. Scanlan. Five members of the staff have now passed the 25-year mark: Treasurer D. H. Houghton; General Manager A. L. Budlong, W1BUD; Vice-President and Communications Manager F. E. Handy, W1BDI; Circulation Supervisor Cecelia C. Hatch; and Miss Scanlan.

We regret to report the resignations from our staff, late last year, of Harold K. Isham, W1MFA, and John E. Cann, W1RWS. "Hal" for nearly 16 years supervised the mail room and shipping operations of the League, a formidable responsibility which he handled capably not only in the strenuous rush of annual *Handbook* appearances but especially in the difficult war years. W1RWS came to Hq. in 1949 to take over DXCC supervision, becoming Assistant Secretary in 1952 and involved in such things as the administration of IARU, conventions and hamfests, and similar secretarial matters.

The League staff has a new Assistant Secretary — Lee W. Aurick, W1RDV. Lee got his ticket in 1946, and finds varied interests in ham operating — Field Days, Sweepstakes and DX

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ARRL's Chief Accountant and Asst. Treasurer Alice V. Scanlan on the morning of her 25th anniversary with the League found her desk loaded with messages and tokens of congratulations. Adding their own good wishes are Margaret Crowe and Charlotte Clark of the accounting department, and General Manager Budlong.

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Contests as well as general rag-chewing and experimenting. He is a charter member and past president of the Braintree (Mass.) Amateur Radio Club, which this year had as its principal project a 12-week training course for the public interested in becoming amateurs. (The XYL, who took the course, is now WN1ZSN.) He'll be signing Headquarters letters now and getting around to visit you at your club soon.

TVI SHOW TO WEST COAST

Coverage of the eastern half of the country now substantially completed, the League is currently planning to stage the ARRL TVI demonstration (see p. 16, October *QST*) in a number of far western cities. While available time and transportation schedules will not permit visiting every one of the points where low-band TV channels are in operation, as many as possible are being included in offers to appear if the local club groups will take the responsibility for sponsoring meetings. The demonstration is aimed primarily at service technicians but has also a considerable interest for amateurs, so check the following tentative itinerary to see if your vicinity is included:

April 6th, Salt Lake City; *8th*, Denver; *12th*, Billings; *14th*, Spokane; *16th*, Seattle; *19th*, Portland; *22nd–23rd*, San Francisco area; *25th–27th*, Los Angeles area; *29th*, San Diego; *May 3rd*, Albuquerque; *5th*, El Paso; *7th*, Dallas.

F.C.C. PROPOSALS

In the latter part of 1952 the League made formal requests of the Federal Communications Commission for changes in the amateur rules, resulting from decisions of the Board of Directors at its meeting that year, to provide:

a) an expanded 10-meter voice band, 28,250–29,700 kc.
b) an expanded 20-meter voice band, 14,200–14,350 kc.
c) duplex (AØ) operation in 51–54 Mc.
d) one-year temporary Novice c.w. or voice operation in 51–53 Mc.
e) a voice band for mobile operation, 3775–3800 kc.

In a notice of proposed rule-making, the Commission now proposes to amend the amateur rules to incorporate the first three of the requests tabulated above. As concerns Novices operating in our 50-Mc. band, FCC feels that the limited technical ability of the Novice may not enable him to cope successfully with potential co-channel interference to television reception, and therefore is not at this time proposing such a privilege. On the last of the five items, a mobile voice band, FCC chooses to defer the specific request and instead solicits comment on the over-all question of whether or not it is desirable to subdivide the amateur bands for special purposes or groups.

A copy of the document follows. The closing date for comment is May 17th, but an extension of two weeks has been requested by ARRL to permit a filing to be made by the League based on decisions of the Board of Directors to be made at its meeting this year in mid-May.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

In the Matter of Petitions of the American Radio Relay League for amendment of Part 12, "Rules Governing Amateur Radio Service."	Docket No. 10927

NOTICE OF PROPOSED RULE MAKING

1. Notice is hereby given of proposed rule making in the above-entitled matter.
2. The Commission has before it for consideration two petitions for rule making, filed by the American Radio Relay League. The petitions both relate to the same subject and, hence, are here considered together.
3 The first petition requests that the Commission amend Section 12.111 of Part 12, "Rules Governing Amateur Radio Service," which allocates frequencies for amateur operation and specifies the types of emission in each frequency band by subdividing the frequency band 3500–4000 kc so that 25 kilocycles in that band (3775–3800 kc) would be available only to amateur mobile stations for use with radiotelephony. The petitioner states that interest in amateur mobile operation is growing and that there has been a shift of interest from the other bands to the 3800–4000 kc band. Deteriorating propagation conditions in the 28 Mc band is cited as a reason for the shift of mobile operation to 3800–4000 kc. Petitioner also alleges that the limited antenna efficiency and the limited transmitter power imposed by mobile operation indicate the desirability of a mobile band separate from the interference from fixed stations using higher power and more efficient antennas.
4 The petition requests, further, that the Commission enlarge the frequency space in the band 14,000–14,350 kc available for use of radiotelephony by providing for use

of A3 and narrow band frequency or phase modulation for radiotelephony in the frequency band 14,300–14,350 kc. Existing rules provide for such emissions only on the frequencies 14,200–14,300 kc. Petitioner states that of all amateur frequency bands, where radiotelephony is permitted, the voice segment of the 14 megacycle band is the most congested, indicating a need for increasing the voice space in that band. Petitioner also points out that since 1945 the Commission has increased the voice space available in comparable amateur frequency bands without making similar changes in the 14 megacycle band.

5. The petition also requests that the Commission provide additional space for voice emissions in the frequency band 28.0–29.7 Mc. The requested expansion would add 250 kc; that is, 28,250–28,500 kc to the 28,500–29,700 kc space presently available for telephony. Petitioner states that its investigation of amateur activity in this band in 1946 and again in 1952 showed a definite increase of interest in respect to use of voice emissions and that radiotelegraph activity in this band has decreased.

6. The second petition is addressed exclusively to the amateur frequency band 50.0–54.0 Mc. Petitioner asks that the Commission amend Section 12.23(e), which designates the frequencies available for Novice Class operators and specifies the emissions they may use in each frequency band, be amended by the addition of the frequency band 51.0–53.0 Mc, and that this band be available for Novice use with both A1 and A3 emissions for a trial period of one year, in the interest of increasing the occupancy of this band.

7. The second petition also requests that Section 12.111 of Part 12 be amended to permit use of AØ emission in the amateur frequency band 51.0–54.0 Mc. It is stated that few amateurs now operate in this band, but, if permitted to use AØ emission, many would be attracted thereto by the prospect of duplex telephone operation. With the migration of more amateurs to this band, there would be less congestion on the lower frequency amateur telephony bands.

8. Relative to the request that space be made available in the frequency band 3500–4000 kc for exclusive use of mobile amateur radio stations using telephony, the Commission has from time to time considered the feasibility of subdividing the amateur frequency bands for purposes of providing frequencies for the exclusive use of different amateur groups interested in certain phases of amateur radio. In considering a somewhat similar request from the Chicagoland Mobile Radio Club, Inc., the Commission (Docket No. 10237) held that the setting aside of portions of the amateur frequency bands for the exclusive use of special groups would not permit the fullest and most diversified use of all frequencies available for amateur radio operation. The information supplied in the League's petition concerning the growth of amateur interest in mobile operation does not seem to warrant reversal of that decision. Further, the petition would encourage the construction of mobile equipment in a portion of the amateur band which may not be available in time of war. All indications are that there will be a large demand for mobile stations in time of war as there is in normal times when disaster strikes. However, studies made at the time of establishment of the RACES indicated that, from the point of view of civil defense, the whole RACES band should be available to all types of amateur activities as the proportion of space required for each activity might well vary from locality to locality. For these reasons the Commission is not proposing the requested modification but is inviting comment as to the propriety of subdividing not only this but also other amateur bands and of subdividing the amateur bands for other purposes as well as for mobile radiotelephone.

9. Relative to the request that additional voice space be provided in the frequency bands 14,000–14,350 kc and 28.0–29.7 Mc, petitioner's statement concerning congestion in the voice portion of the 14,000–14,350 kc band is confirmed by Commission investigation of this matter. Aware of the fact that proportionately less voice space is provided in this band than in comparable amateur frequency bands, the Commission proposes to institute rule-making proceedings looking toward sub-allocation of that band as requested. While the occupancy conditions set forth by the petitioner as reasons for requesting additional space for telephony in the 28.0–29.7 Mc. band have not existed in the recent past, the Commission recognizes that improved propagation conditions probably will, in the near future, bring about a recurrence of a heavy occupancy of this band, and, therefore, proposes rule-making proceedings looking toward the sub-allocation of that band as requested.

10. In considering the request that rule-making procedures be instituted for the purpose of providing, on a temporary or trial basis, additional frequency space in the band 50.0–54.0 Mc for use of Novice operators with both A1 and A3 emissions, the Commission believes that, because of the adjacency of this band to television channels, serious problems of interference to television reception are likely to result from operations in the band. Because the Novice, in general, cannot be expected to have the experience and technique to successfully cope with such problems, the Commission believes it to be unwise to permit Novice operation in this band and, therefore, is not proposing rule changes which would provide for such use at this time.

11. Encouragement and improvement of the amateur radio service would seem to result from the use of AØ emission in the 50.0–54.0 Mc band, and rule-making procedures looking toward the provision for the use of such emission in this band are being undertaken at this time.

12. Authority for issuance of the amendments contained in the attached Appendix is vested in the Commission by virtue of Sections 4(i) and 303(f) and (r) of the Communications Act of 1934, as amended.

13. Any interested party may file with the Commission on or before May 17, 1954, a written statement or brief setting forth comment in favor or opposed to the proposed amendments. Comments or briefs in reply to the original comments or briefs may be filed within fifteen (15) days from the last day for filing the said original comments or briefs. The Commission will consider all such comments, briefs, and statements before taking final action. If any comments are received which appear to warrant the Commission in holding oral argument before final action is taken, notice of the time and place of such oral argument will be given interested parties.

14. In accordance with the provisions of Section 1.764 of the Commission's Rules, an original and four copies of all statements, briefs, or comments shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION
MARY JANE MORRIS
Secretary

Attachment:
Appendix
Adopted: February 17, 1954
Released: February 23, 1954

APPENDIX

PART 12, RULES GOVERNING AMATEUR RADIO SERVICE, IS PROPOSED TO BE AMENDED IN THE FOLLOWING PARTICULARS:

1. Amend Section 12.111(d) to read as follows:
   (d) 14,000 to 14,350 kc, using type A1 emission, 14,000 to 14,200 kc, using type F1 emission, and on frequencies 14,200 to 14,350 kc, type A3 emission or narrow band frequency or phase modulation for radiotelephony.
2. Amend Section 12.111(g) to read as follows:
   (g) 28.0 to 29.7 Mc, using type A1 emission, and on frequencies 28.25 to 29.70 Mc, using type A3 emission and narrow band frequency or phase modulation for radiotelephony, and on frequencies 29.0 to 29.7 Mc, using special emission for frequency modulation (radiotelephone transmissions and radiotelegraph transmissions employing carrier shift or other frequency modulation techniques).
3. Amend Section 12.111(h) to read as follows:
   (h) 50.0 to 54.0 Mc, using types A1, A2, A3, and A4 emissions, and narrow band frequency or phase modulation for radiotelephony, 51.0 to 54.0 Mc, using type AØ emission, and on frequencies 52.5 to 54.0 Mc, special emission for frequency modulation (radiotelephone transmissions and radiotelegraph transmissions employing carrier shift or other frequency modulation techniques).
4. Amend Section 12.131 to read as follows:
   Modulation of carrier wave. Except for brief tests or adjustments and except for operation in the band 26.96 to 27.23 Mc, an amateur radiotelephone station shall not emit a carrier wave on frequencies below 50 Mc unless modulated for the purpose of communication.

The 1953 SET Shindig

AREC and RACES Groups by the Hundreds Demonstrate Their Ability To Serve in an Emergency

BY GEORGE HART,* WINJM

A GOOD MANY AREC groups took advantage of the latitude in SET dates allowed in the 1953 SET by conducting their exercises in conjunction with regular civil defense or Red Cross tests scheduled for that time of the year. This made participation high, but not so concentrated on one week end. As a result, the traffic during the SET week end itself seemed lower than usual, with the result that some stations monitoring the NCE frequencies complained that there were long periods of inactivity when no traffic was coming in.

Reports of SET activity were received from 180 ECs, a considerable decrease from the previous year. We do not believe this indicates a decrease in interest of AREC activity, however. The SET dates this year coincided with an ARRL League Officials night activity in which ECs are urged to participate, which may have had a slight detracting influence. Two World Series games were played on this week end. More AREC groups are regularly participating in civil defense test activities these days and feel less need for this regular annual workout. And lastly, we did not send out follow-up reminder cards to ECs to get their reports in, which may account for much of the difference.

Activities pretty much followed the pattern of previous years. ARRL Emergency Coördinators called their groups to alert and conducted a test drill, either in conjunction with civic officials or by themselves. Participating AREC members reported their presence to their EC in regular message form. In most instances, other test traffic was also passed on behalf of agencies being served — Civil Defense, Red Cross, Police, Fire, commercial concerns or what have you. ECs each originated a message to ARRL summarizing activities, and each AREC unit originated, if obtainable, a message from the local Red Cross chairman to American National Red Cross in Washington and a message from the local civil defense director to the state civil defense director. Much publicity was obtained, as usual, both locally and through press agencies.

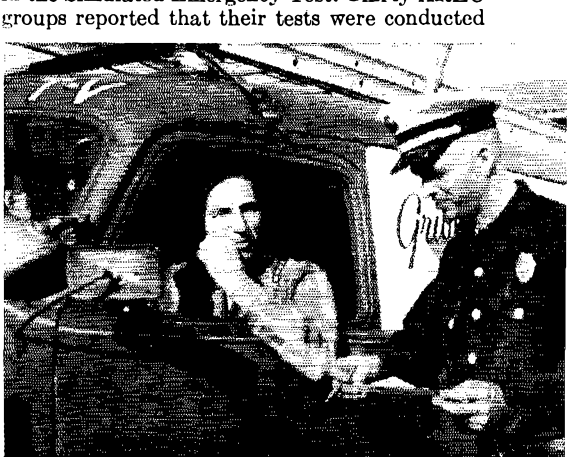
Although we received only 180 mail reports from ECs, we know that a total of 200 ECs participated, since twenty reported by radio but not by mail. There were 81 ECs who reported *both* by radio and mail, and 99 from whom only a mail report was received.

The turnover of reports was again considerable, less than half of the total mail reporters being "repeaters." Ninety-three of those listed in the tabulation below are new since 1952, although some of them can be found listed in previous SETs. This also means that a considerable number of those who reported activities in 1952 did not again do so in 1953.

While naturally we would like to see more AREC groups participate in the SET, we do not consider the 1952-to-1953 decrease alarming. There continues to be just as high a degree of amateur interest in emergency work as ever; even more so, since civil defense activities have come to the fore. We think we can prove this, too, if we can introduce some new angles into the SET to make it more interesting. In the 1953 SET Bulletin we proposed an annual TEA (Test Emergency Alert) and asked ECs to indicate on their annual reports if they would like to have a TEA *instead* of the SET. Of those commenting, 78 were in favor, 52 opposed, 13 thought we should have both, and one disgruntled EC opined we should have neither.

This can hardly be considered a mandate from ECs to drop the SET and adopt the TEA. If we consider those who voted for "both" in the negative column, the vote in favor would only be 78 to 65 — hardly overwhelming. We suspect, however, that but for the wording, many of the "NOs" would have been "YESs," since a lot of ECs would just as soon try out the TEA, but don't want to drop SET. There was method in our madness in using the word "instead": we cannot sponsor an additional activity at this time. But very likely, in this year's SET, it will be possible to combine the two, adopting the more favorable aspects of each.

The civil defense influence was again strong in the Simulated Emergency Test. Thirty AREC groups reported that their tests were conducted



W6YUH/mobile passes some traffic from the Eureka, Calif., firehouse to K6NRU, net control station, while the fire captain looks on.

* National Emergency Coördinator, ARRL.

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entirely on RACES frequencies, while 39 indicated part of their test was devoted to c.d. Seventy-four groups operated out of RACES frequencies entirely, but even among these there was a strong civil defense influence.

All statistics were down from 1952, as is to be expected with fewer ECs reporting. Here is a summary of figures on the 1953 test:

Total mail reports of activity — 180 (206)
AREC members in areas reported — 5234
Total known participation — 2522 (3012)
Mobiles & portables — 1149 (1553)
Fixed stations on emergency power — 200 (241)
Messages from participants to ECs — 1841 (2021)
EC radio reports to ARRL — 116 (163)
EC radio reports received at ARRL — 101 (140)
Total points — 23,334 (28,515)

The figures in parentheses are equivalent data from the 1952 SET, showing to what extent reports of activity were lower in 1953. Well, we can't show an increase all the time. But take a look at the following alphabetical listing of reported areas. Is your neck of the woods included? If so, were you in on it? If not, how about getting out there with your AREC gang this fall? Hmmm?

Albany & Berkeley, Calif. (W6DNX).119
Albany Co., N. Y. (W2AWF).....194
Amesbury, Mass. (W1ICU)[1].....58
Arlington, Mass. (W1LLY)[2].....82
Atlantic Area, C. Z. (KZ5IA).....74
Bakersfield & E. Kern Co., Calif. (W6OPR).....87
Beckham Co., Okla. (W5UCK)[3].....80
Belleville, N. J. (W2JYW)[1].....92
Belleville Dist., Ont. (VE3AUU).....58
Bellevue, Wash. (W7AWG).....114
Bergen & Passaic Co., N. J. (W2CFV)[21, 22].....941
Berrien Co., Mich. (W8FGB)[1].....103
Bexar Co., Texas (W5PY).....197
Big Spring, Texas (W5AW)[1, 4].....61
Billings & Vic., Mont. (W7OPM)....167
Bloomfield, N. J. (W2ZPD).....174
Bristol, Tenn.-Va. (W4IYI).....85
Broward Co., Fla. (W4NJM).....175
Buffalo & Erie Co., N. Y. (W2PPY)[5]..189
Buncombe Co., N. C. (W4OPF).....86
Burlington, Iowa (WØQVA)[1].....105
Butte, Mont. (W7JFR).....84
Calgary & Dist., Alta. (VE6TK)[6]....228
Cascade Co., Great Falls, Mont. (W7DSS).....99
Cassia Co., Idaho (W7HAH)[1].....50
Cedar Rapids, Iowa (WØHDX).....138
Centinella Valley, Calif. (W6OD)[7].... —
Central Area, C. Z. (KZ5WA).....47
Chambly, Laprarie & Vercheres Cos., Que. (VE2KG).....266
Charleston Co., S. C. (W4BIZ).....152
Chittenden Co., Vt. (W1VSA)[1].....154
Coeur d'Alene, Idaho (W7FIS).....35
Colorado Springs, Colo. (WØTV)....107
Columbus & Franklin Co., Ohio[1].....369
Concord-Walnut Creek, Calif. (W6TCU).....91
Conway, Ark. (W5TID).....34
Cook Co., Ill. (W9HPG).....654
Cuyahoga Co., Ohio (W8AJH).....687
Dade Co., Fla. (W4MVR)[1].....257
Daytona Beach, Fla. (W4RWM)[1].....80
Decatur, Ala. (W4BFM)..... —
Dedham, Mass. (W1SH)[8].....80
Delaware Co., Ind. (W9FYC)[9].....104
Dona Ana & Luna Cos., N. M. (W5QKJ).....83
Duluth, Minn. (WØHRY)[9].....125
Elko Co., Nev. (W7KOA).....65
Erie Co., Pa. (W3QN)[8].....154
Eureka Area, Calif. (W6SLX).....105
Fort Smith, Ark. (W5HPL).....79
Framingham, Mass. (W1MEG).....102
Frederick Area, Md. (W3WN)[1, 10].....61
Glencoe Area, Ont. (VE3WY).....58
Groton, Conn. (W1CUH)[1].....78
Groveland, Mass. (W1MRQ).....44
Hamden, Conn. (W1NFG)[11].....229
Hamilton Area, Ont. (VE3KM)[1].....158
Hancock Co., Ohio.....108
Harlowton, Mont. (W7NPV).....76
Henderson Co., N. C. (W4INV).....70
Herkimer Co., N. Y. (W2PYC).....43
Highland Co., Ohio (W8CRL).....37
Hingham, Mass. (W1MD).....100
Hobbs, N. M. (W5CEE).....88
Howard Co., Ind. (W9DKR).....51
Hughes Co., Okla. (W5ADC).....15
Isabella Co., Mich. (W8YNG).....37
Jackson Co., Miss. (W5LBY)[1].....109
Jacksonville & Duval Co., Fla. (W4UHY)[9].....48
Kankakee Co., Ill. (W9ILW).....75
Kenosha, Wis. (W9KCL)[1].....96
Kent Co., Mich. (W8FCP)[1, 12].....273
Kings Co., N. Y. (W2KGN)[1].....719
Kingston/Ulster Co., N. Y. (W2VP)[1]..83
La Crosse Co., Wis. (W9AKY).....119
Lakewood, Calif. (W6FUA).....106
Lewiston, Idaho (W7IDZ).....103
Lincoln, Nebr. (WØRYG).....92
Little Rock, Ark. (W5AY).....180
Lucas Co., Ohio (W8HNP).....296
Macon Co., Ill. (W9EAD)..... —
Manatee Co., Fla. (W4TAS).....45
Marion Co., Fla. (W4DVR).....65
Marion Co., Ind. (W9KAS)[1, 13].....307
Mason, Cabell & Wayne Cos., W. Va. (W8FUM).....139
Memphis & Vic., Tenn. (W4BAQ)[1, 3]..247
Mercer, McDowell & Wyoming Cos., W. Va. (W8DFC).....73
Mercer Co., Pa. (W3CJF)[1, 14].....87
Merrimack Co., N. H. (W1COC)....109
Middletown, R. I. (W1OIK).....54
Millinocket, E. Millinocket & Lincoln, Me. (W1KEZ).....32
Milwaukee Co., Wis. (W9RUF).....370
Modesto, Calif. (W6KFC).....42
Monroe Co., Fla. (W4KOH).....101
Monroe Co., Ill. (W9ICF).....27
Monroe Co., N. Y. (W2QY).....172
Montgomery Co., Md. (W3NPQ).....86
Morgan & Noble Co., Ohio (W8LG)[1]..93
Morgan Co., Ala. (W4BFM)[1].....65
Morgan Co., Ind. (W9DUD)[1].....90
Morris Plains, N. J. (K2BI).....81
Mount Kisco, N. Y. (W2WQL)..... —
Muskingum Co., Ohio (W8HTP)[1]....129
Napa Co., Calif. (W6CAN)..... —
Nassau Co., N. Y. (W2FI).....803
New Bedford, Mass. (W1AVY).....58
New Britain, Conn. (W1AYY)[1].....45
New Port Richey & Vic., Fla. (W4KJ)..39
Newport Co., R. I. (W1JFF).....71
Norfolk, Va. (W4PAK).....379
Northampton Co., Pa. (W3PYF)[8]...200
North Arlington, N. J. (W2LOB).....79
Oak Ridge, Tenn. (W4NDE).....167
Ogden, Utah (W7GPN)[1].....142
Okeechobee, Fla. (W4PZT).....33
Onondaga Co., N. Y. (W2CYD).....174
Orange Co., Calif. (W6DEY).....251
Ossining, N. Y. (W2PSH).....61
Oswego Co., N. Y. (W2ZHU).....51
Pacific Area, C. Z. (KZ5RV).....104
Palm Beach Co., Fla. (W4SJK).....127
Park & Sweetgrass Cos., Mont. (W7FGB)..... —
Polk & Haralson Cos., Ga. (W4IMQ) — —
Polk Co., Fla. (W4VIE).....27
Portsmouth, R. I. (W1BBN).....23
Pullman & Whitman Co., Wash. (W7BMK).....81
Quebec & Vic., Que. (VE2QN)[1].....316
Racine Co., Wis. (W9SZL)[1].....111
Richmond, Calif. (W6QDE).....124
Ridgewood, N. J. (W2KYH).....98
Rockingham Co., N. H. (W1CDX)....155
Roswell Area, N. M. (W5ZU).....180
Rutherford, N. J. (W2DRA)[1, 13].....191
Rutland Co., Vt. (W1AVP)[7].....71
Sacramento Valley, Calif. (W6AVZ)[15]..96
Saginaw, Mich. (W8TPT).....93
St. Louis, Mo. (WØRCE)[1].....432
St. Paul, Minn. (WØHKF)[1].....248
San Bernardino Area, Calif. (W6HKD) 261
San Diego Area, Calif. (W6VFT)[16]...419
San Jose, Calif. (W6IXJ).....86
Sarasota County, Fla. (W4LMT)[1]....77
Seneca Co., N. Y. (W2HXG).....59
Sheboygan Co., Wis. (W9MYG).....64
Shirley, Mass. (W1IPZ).....40
Skagit Valley, Wash. (W7PQT).....89
South Norfolk, Va. (W4LJE)[16]..... —
Southbridge, Charlton, Sturbridge, Mass. (W1EFC)[1].....87
Springfield Area, Mo. (WØEBE)[1].....177
Staten Island, N. Y. (W2VKF)[1].....224
Stearns Co., Minn. (WØBRA)[7].....27
Superior & Douglas Cos., Wis. (W9GMY)[8].....27
Tompkins Co., N. Y. (W2UYS).....50
Toronto Area, Ont. (VE3IL)[17].....356
Trussville, Ala. (W4PPK).....25
Tucson Area, Ariz. (W7PLM).....100
Tucumcari, N. M. (W5NUN).....62
Tulsa Co., Okla. (W5KY)[1].....383
Tuscarawas Co., Ohio (W8MEI)[1].....72
Virgin Islands (KV4DB).....193
Wabash Valley, Ind.-Ill. (W9FT).....154
Wakefield, Mass. (W1ORA)[10].....23
Waltham, Mass. (W1JSM)[1, 7].....113
Washington Co., Wis. (W9SAA).....21
Washington Co., Md. (W3OYX)[18]....76
Washington Co., Okla. (W5CKT).....79
Wausau, Wis. (W9VHA)[8].....149
Wayne Co., Ind. (W9MUR)[1].....114
Wayne Co., N. Y. (W2VEY)[1].....94
Weakley Co., Tenn. (W4HFO).....61
Webster, Mass. (W1LIB).....41
West New Orleans, La. (W5IIA)[8]....118
Whittier, Calif. (W6BLY)[1].....169
Wilmington Vic., Ohio (W8HOX).....42
Winthrop, Mass. (W1BB)[20].....197
Worcester Area, Mass. (W1SPF) 269
Grand total for nation.....23,334

[1] Bettered last year's score. [2] Sept. 29. [3] Oct. 2. [4] Oct. 9. [5] Oct. 15. [6] Oct. 13. [7] Oct. 5. [8] Oct. 6. [9] Oct. 11. [10] Oct. 27. [11] Oct. 28-31. [12] Oct. 19. [13] Oct. 14. [14] Oct. 10-11. [15] Section-wide exercise and report. [16] Included with Norfolk, Va., report. [17] Includes consolidated reports of ECs VE3IAB, VE3NG, VE3RG and VE3EAM. [18] Sept. 13. [19] Sept. 27. [20] Sept. 28. [21] Sept. 30. [22] Includes report of EC W2GNQ.

Hints and Kinks For the Experimenter

USES FOR OLD FLUORESCENT STARTERS

DEFECTIVE fluorescent starters deserve a place in the amateur junk box — not in the nearest wastebasket. Most of the starters consist of five main parts, each of which can be put to work around the shack. Sections A through E of Fig. 1 illustrate some of the applications found for starter parts here at VE1OC.

First, there is the outer case or container of the starter. This may be used to mount a 'phone jack as an outboard connector as shown in A. Flanges of the case hold the jack in place at one end. This case may also be used as a shield for a small in-

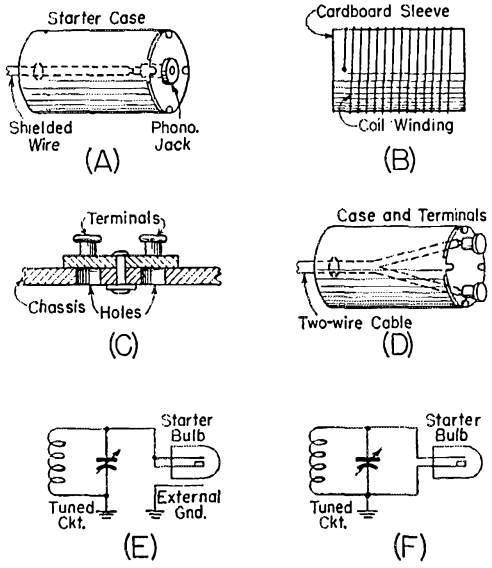


Fig. 1 — Five methods of using parts removed from burnt-out fluorescent starters. VE1OC explains why the circuit shown as F should not be used.

ductance. The shield may be mounted by means of the four flanges provided.

Next, the starter contains a cardboard sleeve having a ¾-inch diameter and a length of 1¼ inches. Section B of the drawing shows the sleeve used as a coil form.

The bottom of the starter is made up of a two-prong male plug, consisting of two brass prongs mounted on a fiber base. This may be used as a two-terminal tie-point or test strip when mounted on a chassis as shown in C.

As shown in D, the starter case and terminal block may be used as a two-prong male cable connector. A female fluorescent starter jack can be used as the socket for the plug.

A fourth main part in a starter is a small bulb similar to a standard neon bulb. These jobs are not as sensitive as a regular neon, but they may be used as r.f. indicators. Be sure to test the bulb if it has been removed from a defective starter. If r.f. is to be applied to the terminals, it is suggested that the terminals be tied together as shown in E of Fig. 1. The external ground shown in E is actually a piece of wire or metal placed close to the bulb to increase its sensitivity. Do not use the bulb with the contacts tied across a tuned circuit as shown in F. When used in this fashion, the terminals will short due to the design of the bulb.

The starter also contains a miniature 0.01-μf. 250-volt condenser. This capacitor is inductive by virtue of its construction and is therefore not recommended for r.f. by-pass use. However, it may be used for audio work. Naturally, the unit should undergo a standard test before it is reused.

A small piece (¾-inch diameter) of mica will also be found in a starter. The ingenious amateur will find uses for this component when insulation problems arise.

The construction of fluorescent starters varies with types and manufacturers. The author refers to parts secured from a Type FS-4 starter produced by the Marvel Mfg. Co., Hoboken, N. J.

— *Aaron Solomon, VE1OC*

USING THE MEISSNER TYPE EX SIGNAL SHIFTER AT 1.8 MC.

DURING the transatlantic tests on 1.8 Mc. last year I soon tired of my one crystal-controlled frequency. This condition was soon remedied by modifying the transmitter so as to permit using the Shifter as a source of 160-meter excitation. The method outlined below should work with any turret-type Meissner Signal Shifter and with many other types of exciters using doubler (to eighty meters) output stages.

The Signal Shifter here at W9PNE drives a bandswitching 809 buffer stage that is in turn followed by an 8005 final. A 365-$\mu\mu$f. variable capacitor was connected in parallel with the regular 100-$\mu\mu$f. job already in the 809 grid circuit. The 809 grid coil was then rewound so that it resonated at eighty meters with the 365- and 100-$\mu\mu$f. condensers set for minimum and one-third capacitance, respectively. The tank circuit then tuned to 160 meters with the large capacitor nearly meshed. Several turns were added to the large 300-ohm coupling link which was wound directly over the grid coil at the grounded end.

With the Shifter tuned for output at 3.6 Mc. and the 809 grid circuit resonated at 18 Mc., the

(Continued on page 138)

YL NEWS and VIEWS

BY ELEANOR WILSON,* W1QON

If you have contacted on the air any of the YLs pictured on these facing pages, you may not know that they are sightless — there is no reason why you should. It is not the intent to single them out as a special group. Rather, we present them here with the hope, expressed by each, that other girls and women in similar circumstances might be encouraged to pursue amateur radio, too.

Each of the girls has her own story of how she became interested in the hobby, how she went about getting her license, what her current activities are, and what the hobby means to her. Space precludes relating each story in detail, but it is interesting to recount one. Rosemarie Deisinger, W9AWI, has written:

My introduction to amateur radio came in the spring of 1947. Until then, the word "ham" signified nothing more to me than a picnic delicacy with which one served German potato salad and cole slaw.

That spring I came to know Johnny Ludwig, a veteran bedridden with multiple sclerosis, who lived in my parish. Johnny had learned of me through one of our parish priests, Father Andrew Redig. Because he liked to do nice things for people, he sent me a subscription to a Braille magazine. When I went to thank him for it, I found Johnny was not only a wonderful person but a ham, W9BLY, as well. His sickroom was cluttered with equipment, all strange to me.

Moreover, I learned that Father Andy was just then in the process of preparing for his license exam. He took the test soon afterward and got his call, W9ZNE. In my succeeding visits with Johnny, he began to drop broad hints to the effect that Milwaukee needed a YL operator, a rare species of humanity missing here since the wartime clampdown on amateur radio operators. Usually I ignored these innuendos but one day Fr. Andy tricked me into admitting it might be interesting to learn more about hamming. With that innocent remark, my fate was sealed. A *License Manual*, a code machine, and records all arrived at my house within a few days. Well, the challenge appealed to me so I plunged in.

The code came quickly and easily. My good sister-in-law helped me master the *Manual*, mainly as a matter of memory. Fr. Redig helped me with the diagrams and Johnny taught me theory. (In the last respect, I advanced slowly from my initial complete confusion to a state of bewilderment bordering on dim understanding.)

To my horror, Fr. Andy announced one June day that he had made an appointment for me to take the exam in Chicago. The examination went very well and on June 21, 1947, I received the call W9AWI. The good Father had a rig all set up in my home; and by prearrangement with Johnny's mother, his receiver was set to my frequency. When he heard me calling him he was too excited to work the controls. It was a very happy occasion for both of us. That same evening I worked W9KSP, another Johnny whose handsome voice I had often heard while eavesdropping before I got my call. It turned out he was also a good friend of W9BLY and the three of us had many wonderful QSOs together.

Johnny's strength faded and in the fall he died. I think it is a great tribute to the hobby he loved so well, that in his dying hours, when he was delirious, he "signed off" to all his old ham friends. You can understand with what fondness and admiration I will remember him.

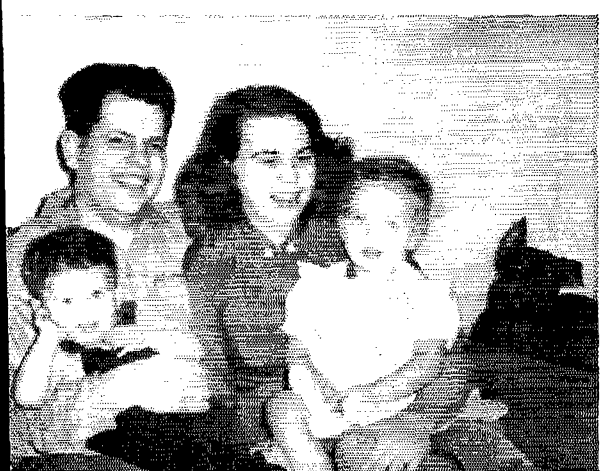
In August, 1950, W9KSP [the handsome voice — ED.] and I were married. We now have two blue-eyed blondes who keep us from doing much serious operating. The solution to our problem is a 75-meter rig in the car. We can take the family for a drive and do our operating at the same time.

It would be impossible to measure the enjoyment, happiness, and thrills hamming brought me that summer and in the years since. Blind people are severely handicapped in the ability to get out and make friends. Amateur radio brings a host of friends from all over the country right into the hamshack — and they're real friends too. I would certainly say to an aspiring YL who is blind that the rewards justify any expenditure of time and energy.

W2ZRO, Mary Torpey of Scottsville, New York, was licensed in 1949 when she was a junior in high school. Mary claims that "C.w. is my first love — a good snappy rag-chew or break-in QSO with someone who really knows how to handle a bug is my favorite way of spending my time on the air." Mary runs 25 watts to a BC-457 on 80 c.w. and 75 'phone and also has a 10-watt rig on 40 and 20. A typist at one of the State University of New York Teachers Colleges, she spends the remainder of her "spare time" taking college courses.

W4VDL, Eileen Pendleton, is one of Alabama's most active YLs. A member of the Central Gulf Coast Hurricane Net which meets daily, Eileen enjoys traffic handling as well as rag-chewing on several bands — both 'phone and c.w. She is proud that two of her "pupils" are on the air now, too. Eileen's OM is W4VDK.

W9BCA, Helen Boddy of Chicago, shown here with her guide dog Troll, was recently made



W9AWI and family. OM W9KSP keeps track of Christopher while Rosemarie holds little Regina.

* YL Editor, *QST*. Please send all contributions to W1QON's home address: 318 Fisher St., Walpole, Mass.

Publicity Chairman of the LARK (Ladies Amateur Radio Klub). Helen concludes that "with the Braille *License Manual*, an instructograph and maybe a few willing and helpful ham friends, the FCC exam need not be terrifying to a sightless person." Helen's OM, W9SHI, is building her a 100–150-watt bandswitching rig for 10, 15, 20, 40 and 80.

W8UDA, Dottie Eagle of Pontiac, Michigan, licensed in 1939, was perhaps the first sightless YL operator in either this country or the world. A well-known c.w. operator, she has been District Chairman and Vice-President of the YLRL. Dottie, photographed with her Leader dog Prince, finds that "Radio is the best hobby for a blind person for it gives us much confidence and gets us out with the public."

W9BCA (left) and W8UDA.

W2SCI, Lucille Briemer, of Rochester, N. Y., concludes, "Like all hams, I especially enjoy meeting so many people from such widely separated areas. I feel acquainted with practically every corner of the earth through these contacts." Lucille has another reason for thinking amateur radio a worth-while avocation, too — "Romance came to me via the airways, for that is how I met my husband, W2OTW. Although Dick lived here in Rochester also, I'm sure our paths would never have crossed except for our mutual hobby.' Lucille works all 'phone bands, especially 75 and 10 meters.

W2SCI

YLRL Party Results

Veteran contest winner W1FTJ, Dorothy Evans, scored highest again in the 'phone section of the 14th Annual YLRL Anniversary Party conducted last December. (See March '53 *QST*, page 53, for other information on Dot's contest winnings.) W4RLG, Frances Shannon, led the girls in the c.w. section. Congratulations to all high scorers! Comments received on the contest were generally quite favorable. YLRL Vice-President and Contest Chairman W2OWL did express regret, however, that far too few participants submitted logs as requested. The complete results follow:

'Phone Section — *Top scorers:* W1FTJ 25,462.5, W3OQF-MAX 18,225, W8HLF 14,850.

Top scorers by YLRL districts: W1VOS 8250, W2FBZ 5880, W3WPP 10,360, W4KYI 12,300, W5SPV 2000, W6QYL 6247.5, W7OOY 2730, W8HWX 12,870, (no W9 logs received), WØZWL 5445, VE3AJR 7695.

Other scores: W1s TRE 7020, SCS 6500, VYH 4200, WTQ 3570, QON 3240; W2s JZX 2100, PVS 900, EEO/2 440; W3s MDJ 6960, UUG 4920, RXJ 4050, TYC 3960, MSU 337.5; W4s RIG 10,260, SGD 9425, TVO 5775, RLG 4950, UTO 367.5; W6s QGX 5270, JZA 4950, KER 2275, WRT 2047.5, CEE 1837.5, EWV 240, EHA 105; W7TGG 360; W8s HUX 12,615, ATB 8845, GYU 3150, KLZ 1710, FPT 1500; WØUA 770; VE3DFC 4350.

C.W. Section — *Top scorers:* W4RLG 8100, W8HLF 7287.5, VE3AJR 5635.

Top scorers by YLRL districts: W1FTJ 2975, K2DYO 3081.25, W3OQF-MAX 2800, W4SGD 3150, W5IKC 1100, W6QMO 750, W8GYU 4593.75, WØZWL 1168.75.

Other scores: W1s WTQ 2450, RLQ 1968.75, WPX 1662.5, YYM 1662.5, VOS 1575, QON 187.5; W2s EBW 1530, EEO 555; W3s SVY 2000, TYC 1837.5, MSU 1200, LSX 780, TSC 150; W4s UTO 2300, TIE 156.25, KYI 45; W6s PCA 262.5, WRT 187.5; W8s HWX 3562.5, KLZ 1487.5, HUX 187.5, WUT 125; WØFVE 687.5.

(Continued on page 136)

W4VDL

W2ZRO

Correspondence From Members-

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

813 RIG

14860 Cedargrove Ave.
Detroit 5, Michigan

Editor, *QST:*

Congrats to Vern Chambers, W1JEQ, on the 813 transmitter in January, 1954, *QST*. This is the best job, any way ya' look at it, that I've seen in 35 years of *QST*s. And best of all, homebuilt stuff like we useta use — not factory-boughten. Home building seems to be a lost art, in this day of the fast buck. . . .

I'm gonna use your homemade all-band tanks, and for the final-final mebbe Grammer's pi-net output. Darn it — maybe we blast you Hq. guys sometimes, but we also take our hats off to ya'. For the life of me, I can't see how you could improve *QST*. There are still a few of us old buzzards who like to build our own gear!

— *R. P. Theireau, W8FX*

3234 Ellenda Ave.
Los Angeles 34, Calif.

Editor, *QST:*

Have read your article on the three-control six-band 813 transmitter. It seems that someone has finally come up with a good table-top transmitter with more than low power. . . .

Keep these articles coming — they're swell.

— *Don Shugg, W6ETJ*

Adams State College of Colo.
Alamosa, Colorado

Editor, *QST:*

. . . My wife, WØQKD, had been looking for a rig of high "crunch-power" for use in traffic, and I had been looking for one that would not cost a fortune. This one seems to be the answer to our prayer.

— *James H. Craft*

116 No. Symington Ave
Catonsville 28, Md.

Editor, *QST:*

I have spent every free moment of this year studying your recent article on the six-band 813 transmitter, and have decided to duplicate this rig. This looks like a mighty fine job and it incorporates just about every feature I have planned on. Consequently, I intend to make an exact duplicate — as nearly as I possibly can.

— *Norman G. Tulp, W3HXA*

26 W. Spring St.
Alexandria, Va.

Editor, *QST:*

Mighty fine business — inside, outside, and all around the circuit.

— *Walter Stewart, W4UBE*

152 Bayard Drive
Claymont, Del.

Editor, *QST:*

. . . It is a beautiful job indeed!

— *Russell S. Dennis, W3LML*

[EDITOR'S NOTE: In response to numerous requests, we are prepared to furnish 8" × 10" glossy prints of any or all of the photographs illustrating the article, at $1 per print, postpaid.]

ABOLISH C.W.?

P. O. Box 481
Hilo, Hawaii

Editor, *QST:*

The day that the ARRL goes out with all guns loaded to abolish the code requirement, and open at least part of each band (the present 'phone section will do) to this codeless license, which may be stiffer than the present General Class without objection from me, that day I will join the ARRL.

Those decadent diehards that still insist on c.w. may keep their portion of the band and be happy therewith.

— *G. W. Ginn, WH6BAQ*

MORE REGENERATION

Deer Park Road
Owings Mills, Md.

Editor, *QST:*

I was very happy to see a plug for regeneration in February's "Correspondence from Members." I am referring to the letter from WN1YDX, page 51.

For some reason, regeneration seems to have fallen into disfavor with hams. I think that this may be due to the mistaken idea that regeneration deteriorates the noise figure of an r.f. amplifier. This is definitely not so. Valley and Wallman, in "Vacuum Tube Amplifiers," definitely state that regeneration does not affect the noise figure. . . . The sharpness of tuning is due to the raising of the effective *Q* of the tuned circuit. It does not change the *shape* of the selectivity curve. A very moderate amount of regeneration can make a single-stage r.f. amplifier the equivalent in gain and image rejection of two stages of nonregenerative r.f. amplification.

It seems ungrateful to spurn regeneration when it served the ham so well for so long. From the time of its discovery by Major Armstrong in 1912 until the middle '30s, the regenerative set was standard. And even later, hundreds of hams used regenerative r.f. amplifiers, mixers, i.f. amplifiers, and second detectors in superhets. It worked FB! And regeneration works just as well today as it ever did. Let's have more of it.

— *Harry R. Hyder, W3NVL*

C-P QRM

% CAA
Iliamna, Alaska

Editor, *QST:*

Recently I tuned in W6OWP to copy his scheduled code-proficiency transmissions. After canceling all other engagements and shoving a true story magazine into the XYLs hands, I sat down to my mill, inserted a blank piece of paper and tuned in W6OWP on 3590 kc. Everything was fine during his test transmissions and announcements of the forthcoming code examination. Then, all of a sudden, I hear a station tune directly on top of W6OWP and began calling CQ and with his potent signal, you guessed it, he made contact and proceeded to have a nice long QSO. Due to the QRM from this station and a few others near the frequency, I was unable to copy W6OWP's previous S9 signal and missed out on the code examination for that month. . . .

I am sure I am not the first person to encounter this trouble while attempting to acquire a code-proficiency certificate. . . .

— *Thomas M. Sorrick, KL7AOL*

APPRAISAL

8421 8th Ave., No.
Birmingham 6, Ala.

Editor, *QST:*

This has reference to two different articles in the January issue of *QST*. One is the editorial and the other is the article on receiver operating. It was stated that upgrading of licenses was practically nil in 1953, and also, that Hq. receives quite a few letters demanding action on a particular matter where, if the writer had known the subject about which he was writing, he would never have written. Now to

me, this bears out what I have long thought and said, that a big percentage of the amateur gang are only interested in twisting knobs and letting off steam at the mike (never a bug). What makes it work, they don't know and don't care.

For any service to survive, it has to keep abreast of the art. True, there are a few people who bring out new apparatus, but the people who operate it are "knob twirlers."

Let's have it changed. Surely, the directors are aware of this. Someone should know how to remedy the situation. Let's tell the directors and SCMs. If the ability of the amateur service can't be proved, I hate to think of what may happen at the next one or two international telecommunications conferences on frequency allocations.

— *Marc Molyneux, W4MVM*

COÖPERATIVE MONITORING

518 March St.
Beardstown, Ill.

Editor, *QST:*

Enclosed you will find one of several answers I have received from the OO cards that I have mailed out since becoming an OO. This is typical of all the answers I have received. All are of thanks of course, all in different manners, but I have not as yet received an ungrateful answer.

I was a little worried when I first signed up to become an OO that maybe a lot would get sore and I might create a few enemies that would not care to QSO with me on the air, but since I have received these cards, I am glad and proud that I am able to be of help to some. If something was wrong with my signal I am sure I would be glad to hear about it from an OO before the FCC heard it.

— *Charles E. Bailey, W9HUX*

STARTING RIGHT

914 Naptle Ave.
Phila. 11, Pa.

Editor, *QST:*

Just a line to let you know that I have built your transmitter described in *How to Become a Radio Amateur*. It is a 6L6 and runs 17 watts to a 130-foot end-fed antenna. I have been a Novice only a few weeks and enjoy it very much. So far I have worked 26 stations in 5 states. I have very good results with it ranging from S7 to S9. Thanks for all the help from the League and all the training aids and helpful literature.

— *George Pfisterer, jr., WN3YJG*

QRP FOR NOVICES

2504 W. Main St.
Muncie, Ind.

Editor, *QST:*

Sometimes I wonder if I should try again for my General Class license. (Tried once, and didn't make it.) With only four days left on my license, I decided I would try to make the most of it. I was all set to work my first Nebraska contact when BANG! — two W9s came pounding on the frequency. It was a perfectly clear channel until this happened. My only request to General Class licensees is that they stay off the Novice bands except to work Novices. When you do work us, reduce your power a little. It's not going to hurt you and it will simplify things greatly. And too, the majority of you guys are VFO, so move to a clear spot to call CQ. Thanks!

— *Mike Elliott, WN9WRO*

905 W. Johnson Ave.
Johnson City, Tenn.

Editor, *QST:*

I would like to suggest that perhaps a lot of the enthusiasm (for new Novice tickets) might have been cooled down in the prospective hams after listening to the 80-meter Novice band. I am not referring to the crowded conditions due to the Novice operators, but rather, the gallon and in most cases half-gallon General and Advanced operator who comes down to chat with the boys. This is fine for the one he decides to chat with, but it certainly knocks out a big hole in that small 50 kc. that the rest of us are trying to work.

So "wat sa, OM" — how about cutting it to our maximum of 75 watts? We're happy to have you but let's keep it possible for us all to squeeze in.

— *Stan Head, WN4BBD*

SIMPLE BUT EFFECTIVE!

12th Radio Sq. Mobile
APO 61, % PM, N. Y., N. Y.

Editor, *QST:*

The "Simplest Modulator" in September *QST* may be the simplest, but it is mighty effective. It most certainly deserves a place in the *Handbook*.

I built one two days after I got the magazine, and went on voice for the first time on my own rig. Heretofore, parts available to make a neat lash-up were holding me back from modulating my 60 watts c.w., but when I found that the modulator would cost less than a microphone, I went ahead intending to use it mostly for local.

When on the air I would ask every station for modulation comments — percentage and quality. In every case it was, ". . . at least 85 per cent and excellent quality." Many times it was, ". . . good modulation, OM, sounds like plate and screen." If the number of people I have "read" the circuit to is any indication, Europe will start showing up with "Grid Bias Modulation."

Several long QSOs have convinced me to increase my c.w. output and keep on with the "Simplest Modulator." Every time I say I am thinking of going "plate," everyone says, "No! Increase your r.f., but leave that modulation alone." Incidentally, no 6Y6 was available, but a 6L6 is doing fine with no alterations in circuit.

— *Richard B. Mathews, W5TVQ/DL4NP*

4140 SW Green Hills Way
Portland, Oregon

Editor, *QST:*

I recently completed the sweep-tube rig which was in the April, 1953, *QST*. In a little over a month I have had several FB QSOs with 12 states, VE7, and WH6. The best DX has been Florida. I haven't had a bit of trouble with TVI, and always get a T9x report. Physically, the rig fits into the station nicely and looks very nice, getting compliments from visitors. When I get a new rig, it will be just right for c.d., FD, and other situations requiring a small rig. Congratulations on a FB rig.

— *Dave Dierdorff, WN?TUV*

Silent Keys

IT IS with deep regret that we record the passing of these amateurs:

W1PRQ, Lewis K. Scott, Melrose, Mass.
W1QW, Wellesley P. Wheeler, Newburyport, Mass.
W2GCU, W. Raymond Tomlinson, Trenton, N. J.
W3AQK, Francis E. Maguire, Vandergrift, Penna.
W3DG, George J. Vacek, Baltimore, Md.
W3IL, Harry L. Strang, Washington, D. C.
W3KSW, John Van Buskirk, McKeesport, Penna.
W4DYM, John H. Thornton, Birmingham, Ala.
W4JAQ, M. E. Beimler, Phoebus, Va.
W4YLJ, Lt. C. T. James, USN, Richmond, Va.
W4YUK, Joseph B. Adams, Richmond, Va.
W5OUQ, Frank C. Smith, Moulton, Texas
W6ARX, Raymond M. Moore, Escondido, Calif.
W6DBT, Clyde W. Hackett, San Gabriel, Calif.
ex-W6DFT, Maj. Walter E. Scott, USMC, Chelsea, Mass.
W6JKB, Herschel Griner, Downey, Calif.
W6KID, A. Paul Sorber, Los Angeles, Calif.
W7QXK, Col. James L. Hatcher, Tucson, Ariz.
W8IJQ, Robert M. McGranahan, Youngstown, Ohio
W8ILK, Charles W. Likens, Romney, W. Va.
W8PQB, Lawrence E. Kline, Detroit, Mich.
W8QEB, Charles W. Moorman, Cincinnati, Ohio
W8TNO, Leon M. See, Pontiac, Mich.
W9ICM, Robert A. Gillham, Winchester, Ill.
ex-9LX, Howard H. Giles, Saxonburg, Penna.
WØIXR, Cecil R. Malmgren, Minneapolis, Minn.
WØOJC, Robert H. Payne, Marshall, Mo.
VE1HI, K. S. Rogers, Charlottetown, P. E. I.
VE5GI, S. V. Tomecko, Lipton, Sask.
VE5RP, R. Piper, Spy Hill, Sask.
VE7MQ, Archie Mitchell, Vancouver, B. C.
ex-SV1KE, C. Tavaniotis, Athens, Greece

Strays

Amateurs in the Boston area will be interested in a series of four Sunday afternoon programs on WHIL, 1430 kc., telling the story of amateur radio to the public. The Quannapowitt Radio Association is arranging the programs, the first of which is scheduled for 4:30 P.M., April 4th, and the Standard Duplicating Machines Agency of Newton Highlands has provided sponsorship. W1s GAG, FSK, INC, CTS, CDJ, PZ, SVN, TRE, VYM, WOS, YPH, BB, AAE, MQO, QWT, SS and RK are among those participating.

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You'll see signs like this while motoring along main routes entering Huntsville, Ala., erected by W4BSG and the Huntsville Amateur Radio Club.

—···—

Two well-known amateurs and *QST* authors are among the winners of the recently concluded Transistor Application Contest conducted by Raytheon Manufacturing Co. They are Peter G. Sulzer, W3HFW, who won second prize of $2000 for his entry of a transistorized audio-frequency and voltage standard, and G. Franklin Montgomery, W3FQB, whose general-purpose a.c.-d.c. voltmeter won the $1000 third prize. First prize of $5000 went to Robert T. Bayne, Los Angeles, for his transistor audio-frequency meter, and fourth prize of $500 to Lt. Robert Perkins, Navy dentist, for his transistorized "Vitalometer," a device for measuring the condition of tooth pulp.

W6HEV is attempting to help a friend, stricken with polio and confined to an iron lung, to get started in amateur radio. The principal problem at the moment is the design of a keying device to send code, which must be operated by the jaws, or perhaps through light air pressure from the mouth. He would appreciate hearing from anyone who has had previous experience in a matter of this sort. Write G. E. Wills, 2666 Lambert Drive, Pasadena 8, Calif.

PRINCIPAL CHARACTERISTICS OF STANDARD-FREQUENCY AND TIME-SIGNAL STATIONS[1]

Stations		Hawaii	Rugby	Tokyo	Torino	Washington	Johannesburg[18]
Call sign		WWVH	MSF	JJY	IBF	WWV	ZRE21
Carrier power (kw.)		2[2,5]	0.5[5]	1[5]	0.3[6, 14]	10[2,5]	0.1[18]
Number of simultaneous transmissions		3	3	1	1	6	1
Number of frequencies used		3	3	3	1	6	1
Emissions	*Days per week*	7	7	3[9, 10, 11]	1[15]	7	7
	Hours per day	22	24[6]	24	6[16]	24	24
Standard frequencies used	*Carrier Freq. (Mc.)*	5, 10, 15	2.5, 5, 10[7]	2.5[9], 5[10], 10[11, 12]	5	2.5, 5, 10, 15, 20, 25	5
	Modulation Freq. (c.p.s.)	1[3], 440, 600	1[3], 1000	1[13], 1000	1[3], 440, 1000	1[3], 440, 600	1[3]
Duration of tone modulation (minutes)		4 out of 5[4]	5 out of 15	9 out of 20	5 out of 10[17]	4 out of 5[4]	—
Accuracy, frequencies, parts in 10[8]		± 2	± 2	± 2	± 2	± 2	± 10
Duration of time signals (minutes)		continuous	5 of each 15	continuous	5 of each 10	continuous	continuous
Accuracy of time intervals		± 2 × 10⁻⁸ ± 1 microsecond	± 2 × 10⁻⁸ ± 1 microsecond	± 2 × 10⁻⁸ ± 1 microsecond	± 2 × 10⁻⁸ ± 1 microsecond	± 2 × 10⁻⁸ ± 1 microsecond	± 10 × 10⁻⁸ ± 50 microseconds[18]

[1] Compiled by the CCIR in London, September, 1953.

[2] These are maximum values on certain frequencies. On certain days reduced power is used.

[3] 5 cycles of 1000-c.p.s. modulation pulses.

[4] 440- and 600-c.p.s. tones alternately.

[5] Vertical dipole antenna.

[6] Interruption of complete signal from Minute 15 to Minute 20 of each hour.

[7] Transmissions are also made on 60 kc.

[8] Horizontal antenna.

[9] Mondays.

[10] Wednesdays.

[11] Fridays.

[12] Transmissions are also made on 4 and 8 Mc.

[13] 7 cycles of 1400-c.p.s. modulation pulses.

[14] Maximum radiation in NW and SE directions.

[15] Tuesdays.

[16] From 0800 to 1100 and from 1300 to 1600 GCT.

[17] 440- and 1000-c.p.s. tones alternately.

[18] Transmissions are made by the Union Observatory of the Union of South Africa. The accuracy will be improved when new equipment becomes available.

CONDUCTED BY E. P. TILTON,* W1HDQ

IN THE interval between the V.H.F. Sweepstakes and the spring upturn there is always a period when v.h.f. activity tends to slip back to the winter normal. "Normal" in too many places means little doing, or nothing at all. For years we've been preaching in these pages that this need not be inevitable.

The main reason for the cold-weather slump is the largely-erroneous belief that interesting operation is possible on 50 Mc. and higher bands only in warm weather. Some of the gang have been dimly aware that the v.h.f. bands "open" in the winter months, too, but they conclude that the good periods are too far apart to be worth bothering with. The best way to dispel this defeatist attitude toward cold-weather v.h.f. DX is to set up and *maintain* schedules. Never has the value of schedules in the promotion of v.h.f. interest been demonstrated as effectively as during the winter season now drawing to a close.

Religiously-kept skeds have shown, in recent months, that there is little variation in the maximum *reliable* working range on the v.h.f. bands between winter and summer. What's more, they show that favorable conditions occur much more often, the year around, than most of us have realized.

With today's big antennas (and resultant sharp patterns) v.h.f. schedules are an absolute must if we are to have regular activity. Publicize your skeds as widely as possible, and ask your associates to do likewise. When you finish your scheduled contact (or try for a contact) listen carefully for other stations in the same direction. Try a few CQs if you don't hear anything at once. Chances are good that others in the same direction as your scheduled station have been checking on your results from night to night; they'll welcome a shot at you now and then, too.

And don't forget to make and keep some appointments with the local gang. Work over the limit of our operating range is highly worthwhile, but we need to talk within our local circles, too, if interest is to be maintained the year around. A healthy level of v.h.f. activity cannot exist on DX alone. The locals are good fellows, too — just being 300 miles away is no magic property that transforms an ordinary ham into an intellectual giant!

Here and There on the V.H.F. Bands

The big dish installation at W2SC is still not completed as we go to press. Delays in shipment of special parts have slowed down the project, but otherwise the set-up is ready to go. The transmitter has been on the air and contacts have been made locally with a small beam. W1AW and other ARRL Bulletin stations will carry information on the W2SC operating schedule as soon as the station is ready for operation on the big antenna. The frequency is 144.69 Mc.

International DX is still being worked on 50 Mc. W5FXN relays word from OQ5LL that OQ5FM recently worked an FA8 on 6. No details as to time or date are given, but this appears to be sporadic-*E* DX that might be expected at this season of the year in equatorial regions.

Did you get one of those Ohio-mailed Iron Curtain 50-Mc. listener cards? Quite a bunch of them hit the 6-meter gang simultaneously, judging from the number of inquiries we've received about them. The cards refer to dates in

WØZJB.....48	W5VY.....48	W8OJN.....39
WØBJV.....48	W5MJD.....47	W8LPD.....37
WØCJS.....48	W5GNQ.....46	
W5AJG.....48	W5ONS.....45	W9ZHB.....48
W9ZHL.....48	W5JTI.....44	W9QUV.....48
W9OCA.....48	W5ML.....44	W9HGE.....47
W6OB.....48	W5JLY.....43	W9PK.....47
WØINI.....48	W5JME.....43	W9VZP.....47
W1HDQ.....48	W5SFW.....44	W9RQM.....47
	W5VV.....42	W9ALU.....47
W1CLS.....46	W5FAL.....41	W9QKM.....46
W1CGY.....46	W5FSC.....41	W9UIA.....45
W1LLL.....46	W5HLD.....40	W9UNS.....45
W1LSN.....44	W5HEZ.....38	
W1HMS.....43	W5LIU.....37	WØQIN.....47
W1DJ.....41	W5FXN.....37	WØDZM.....47
		WØNFM.....47
W2AMJ.....46	W6WNN.....48	WØTKX.....47
W2MEU.....46	W6ANN.....45	WØKYF.....47
W2RLV.....45	W6TMI.....45	WØHVW.....45
W2IDZ.....45	W6IWS.....41	WØMVG.....44
W2FHJ.....44	W6OVK.....40	WØJOL.....44
W2GYV.....40	W6GCG.....35	WØTJF.....44
W2QVH.....38	W6BWG.....29	WØWKB.....43
W2ZUW.....35		WØJHS.....43
	W7HEA.....47	WØPKD.....43
W3OJU.....46	W7ERA.....47	WØIPI.....41
W3NKM.....41	W7BQX.....47	
W3MQU.....39	W7FDJ.....46	VE3ANY.....42
W3RUE.....37	W7DYD.....45	VE3AET.....41
W3OTC.....37	W7JRG.....44	VE1QZ.....34
W3FPH.....35	W7BOC.....42	VE1QY.....31
	W7JPA.....42	XE1GE.....25
W4FBH.....46	W7FIV.....41	CO6WW.....21
W4EQM.....44	W7CAM.....40	
W4QN.....44	W7ACD.....40	Calls in **boldface** are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.
W4FWH.....42		
W4CPZ.....42	W8NSS.....46	
W4FLW.....42	W8NQD.....45	
W4OXC.....41	W8UZ.....45	
W4MS.....40	W8CMS.....43	
W4FNR.....39	W8BFQ.....42	
W4IUJ.....38	W8YLS.....41	
W4BEN.....35	W8RFW.....41	

* V.H.F. Editor, *QST*.

1947 to 1949 when 50 Mc. was open. Some are F_2 DX periods, but others are openings that were obviously sporadic-*E*. All were mailed from Proctorville, Ohio, but addressed in the handwriting of the sender, Sibirsky, who has also recently been up to some strange business in hard-to-get QSLs from rare DX countries behind the Iron Curtain.

We look with considerable suspicion on summertime "heard" reports from anywhere in Europe, in view of the scarcity of substantial evidence of v.h.f. transatlantic propagation by sporadic-*E*. The reports are not sufficiently detailed to provide a positive check from the logs of the stations reported heard, so we suggest that the cards be taken with a grain of salt unless more details are forthcoming from the sender than we've seen so far.

A factor preventing more general use of the 6-meter band has been the lack of commercial equipment that will work well on 6. A number of fellows have expressed interest in using the Viking II on 50 Mc., for instance. *QST* for December, 1952, carried information by W1LFI and W1IXJ on the conversion of the Viking I to operation on 6 without impairing its effectiveness on lower bands. Has anyone operated on the later model successfully? If so, how about the details, for the rest of the gang?

Monitoring the CAP frequency, 148.14 Mc., has shown W1MMN, Orange, Vt., how convenient it is to have a calling frequency for all to use. George is one of those geographically-isolated fellows who must put in a lot of time tuning the 2-meter band if he is to make any contacts. How nice it would be, he feels, if everyone would use a single frequency for calling CQs. There are clinkers in this approach, of course. It is not easy to get agreement on just what frequency to use. Then, there is the tendency to use the calling frequency after contact has been established, which renders it useless for its intended purpose over a large area. And there are those who would not respect it, anyway, through ignorance or otherwise. We put the question forward for what it's worth. Do you want a national calling frequency in the 2-meter band? If so, what frequency? And how wide a channel should be protected?

The area around New London, Conn., is set up for 145.26 Mc. for c.d. and general rag-chewing purposes. W1VLT says that standardization on this channel has been a great aid to mobile operators, particularly, as the channel is monitored a high percentage of the time, making contacts possible much more often than would be the case in the use of random frequencies.

One trouble with spot-frequency operation is that it is seldom possible to hit frequencies close enough with miscellaneous transmitters so that the channel can be monitored effectively with a highly-selective receiver. W5HGH, Buffalo, Okla., solves this problem by running his converter into a Command receiver in the 7-Mc. range. The passband of the i.f. is broad enough so that anyone using the local channel is heard at once. Lee installed a 1N34 crystal diode noise limiter (ARRL *Handbook* circuit) in his BC-455, and the receiver runs very quietly. In working with weak signals, he changes over to a more selective communications receiver, for better signal-to-noise ratio, but using the Command receiver for an i.f. enabled him to run up more than 800 QSOs last year, in an area that is not overburdened with 2-meter stations.

The usefulness of the 2-meter band for tieing into traffic systems is becoming more apparent every day. W2KQC, Flushing, N. Y., is net control for a N.Y.C.-L. I. traffic net operating each Tuesday and Thursday evening at 2000, and Sundays at 1030. The frequency is 146.25 Mc. Alternate Control W2ONG uses 146.1 Mc. for eastern portions of Long Island. Both nets tie into the country-wide 75-meter 'phone net via W2KFV and W2ZJJ.

Peace has come to Wichita, Kansas. (Well, something approximating peace, anyway.) When KEDD went on the air on Channel 16, a full-scale war was in prospect between the 2-meter hams of Wichita and the owners of strip-converted TV sets. It *was* war — ask WØZJB — until a solution was worked out by the TVI Committee of the Wichita Amateur Radio Club and the management of KEDD. Calls coming into the station are handled by taking the complainant's name and address, the type of receiver, and the name of the dealer or service agency. This information is then turned over to the receiver distributor for investigation. If the TVI is the result of 2-meter operation, a strip that will correct the trouble is installed, the complainant paying the cost of the service call. Since this "Wichita Plan" went into effect, life at WØZJB has dropped back to peaceful status again, as it has for most of the rest of Wichita's 2-meter fraternity. Only one case of real trouble developed; this where a landlord was involved as complainant.

International DX on 144 Mc. in Southern California: W6COH, operating as XE2XC, has worked many W6s, as has XE1VA, and Mexican interest in 144 Mc. is growing.

On the northern border of this country the VE7s are also hot on 2. VE7FJ lists VE7s GR YM YZ VY NT AKV and ALL as active. Polarization is vertical, to tie in with the W7s, though the VE7s would prefer horizontal. The V.H.F. SS brought a big turnout, and VE7FJ's first contacts with Oregon, W7OKV/7 and WN7UNT/7, a distance of about 250 miles. Not bad for 10 watts or so at each end!

You v.h.f. men in the Middle West want to work an old friend? W3VAM, Hagerstown, Md., formerly W9JMS of Cory, Ind., is all set on both 6 and 2, with 400 watts and crystal-controlled converters for both bands. Howard would like schedules with stations to the west, and since Hagerstown is considerably to the west of most other Maryland 2-meter activity, he should be in a good position to keep up his end of the bargain. He would particularly like to try mornings, before 0800 EST.

Attention 220-Mc. enthusiasts: The Riddley Park Radio Club (Philadelphia) operates on 220 Mc. each Sunday night at 2100, according to W3VMN. From Athens, Ga., W4UML writes for information on 220-Mc. activity in the Peach State.

W3VIR, Willow Grove, Pa., is operating on 435.3 Mc. each Tuesday, Thursday, Saturday and Sunday at 2200, and on Monday, Wednesday and Friday at 2300. W2QED, Seabrook, N. J., maintains his long-standing 420 schedule at 2200 Tuesdays, but on a new frequency, 432.07 Mc.

Interest in amateur television is running high, says W4MS. The American Amateur Television Society now has 74 members, and much work with cameras is in process. Eddie says that a first-rate camera can be built for under 200 dollars, even if you start with every part new — and who does?

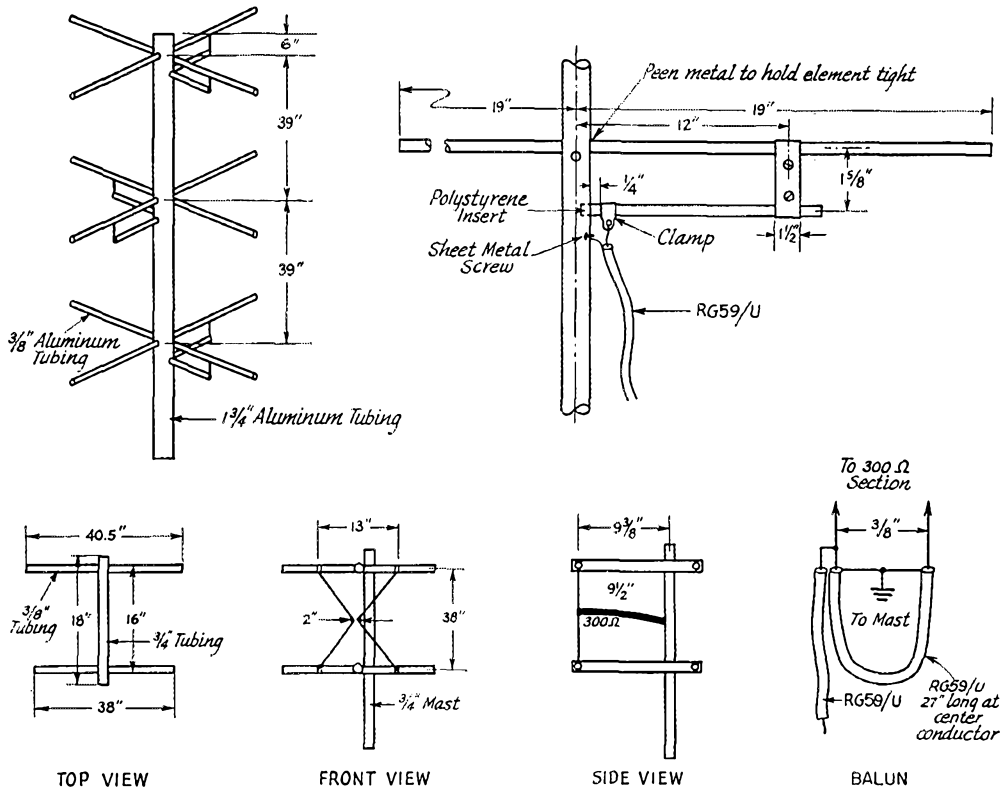
Some interesting suggestions for improving 420-Mc. mixer performance come from British correspondent Sven Webber. Good r.f. amplifier tubes for 420 have been all but impossible to come by on the other side of the Atlantic, so the boys over there have concentrated on the improvement of their mixers. Sven points out that a high-*Q* filter in the output stage of the oscillator-multiplier chain in crystal-controlled converters is important, not only for reducing the amplitude of unwanted frequencies in the injection chain output, but also to provide a high impedance to voltages in the mixer of signal frequency. This prevents what otherwise could be a considerable absorption of the signal voltage n the injection output circuitry.

A design for a converter using this type of filter appeared in the *RSGB Bulletin* for June, 1953. Webber mentions that the filter may work as much as 20 db. improvement in the absolute sensitivity of a converter having no r.f. stage. He also reports that his checks have indicated that "the best place for the mixer crystal is as far up the hot end of the mixer line as possible, the best arrangement being with the crystal as an extension of the mixer line, not as an appendage to it."

OES Notes

We have several good ideas in the OES file this month. That's one aim of the Official Experimental Station appointment: to provide a clearing-house for ideas having a v.h.f. aspect. We hope that one of these days this section of *QST* will have enough of this sort of thing to give the "Hints and Kinks" department a run for its money. You probably have several such in use in your station; why not send them in? If an idea serves a useful purpose for you, others are sure to find it of interest.

The first suggestion is from W1CTW, Arlington, Mass. Cal says that the current crop of TV tubes should not be overlooked for potential ham applications. One good type is the 6CL6, a natural for crystal oscillator — multiplier service. A rugged tube with a plate dissipation of 7 watts, the 6CL6 may give better service than receiving tubes of lesser power-handling capabilities. Cal recommends the grid-plate oscillator, similar to that used with a 5763 in the exciter described in recent editions of the ARRL *Handbook*, Chapter 17. Good output can be obtained on up to the 4th



Details of 2-meter antenna systems designed for the Atlanta c.d. organization by W4LNG.

harmonic of the crystal frequency, with as little as 180 volts on the plate of the 6CL6.

Your conductor ran across another TV tube type that deserves use in v.h.f. transmitting applications. At George Grammer's suggestion, we substituted a 12BH7 for the last 12AT7 in the 220-Mc. rig described in February *QST*. It was necessary to reduce the size of the plate coil, and to increase the grid resistor to 22,000 ohms, but these changes resulted in more than twice the output on 220 Mc. that was obtainable with the 12AT7. The 12BH7 should make a fine v.h.f. final amplifier for mobile and portable rigs running at 10 to 18 watts input.

W4LNG was given the job of designing antenna installations for the Atlanta c.d. 145-Mc. net. A control station near the center of the city had to be able to work four outlying stations, all in different directions, simultaneously. Horizontal polarization was wanted, to tie in with regular amateur activity in the area, so Ruddy came up with a turnstile for the control station and stacked 2-over-2 arrays for the area stations.

The turnstile should be of interest to others who want omnidirectional coverage, with some gain, and horizontal polarization. The all-metal construction and gamma feed shown provide a rugged design that is quite easily built. The three bays are stacked a half wave apart, with interconnecting lines of RG-59/U a full wavelength (52 inches) long. Adjacent elements are phased 90 degrees apart by connecting them with quarter-wave (13-inch) lengths of coax. The elements run through the vertical support, grounding them at the center, but the gamma sections are supported at the inner end on polystyrene inserts.

The outlying stations normally contact only the main control station, but in case of disaster each should be able to take over the function of main control. As they are in the approximate four corners of the city, a directive antenna with a broad pattern, but with reduced radiation off the back, would do the trick. The 2-over-2 system shown in the lower part of the drawing was a simple way of accomplishing this. The driven elements are delta fed, and the junction of the two deltas is brought over to the support through 300-ohm Twin-Lead. At this point a bazooka is connected to step down to the 75-ohm feed line. Both types of antennas have low s.w.r., and the desired coverage of the Atlanta area has been obtained handily.

We think that the idea-of-the-month award should go to W6PIV and W6LSB for a TVI stub suggestion. If you've ever tried trimming an open quarter-wave stub for TVI elimination, you know that there is no good way of determining the optimum length in advance. You just clip and clip — until suddenly you realize that you've gone too far! The cure for this is to trim slightly past the optimum point, then cut out the polyethylene web for about two inches at the open end, making sure that some of the insulating material is left covering the two wires. The ends are then twisted together to form a tuning capacitor, and the stub can be tuned precisely to the optimum rejection frequency. A little household cement will hold it at the proper capacitance setting indefinitely.

A good place to apply this hint would be the Rochester, N. Y., area, where Channel 10-itis has put a crimp in 2-meter activity. W2UTH reports that practically all the complaints have been from owners of 1950-'52 Motorola receivers, models that have had image troubles in other Channel 10 areas. The stub required is about 18 inches in this instance and may be the answer to your problems.

W3OTC, Silver Spring, Md., got the surprise of his 6-meter life when CM2GX answered his 50-Mc. CQ at 2011 Feb. 12th. CO2PT was worked at 2027. Now this is not an unusual distance for 50-Mc. skip (around 1000 miles or so, which is about the optimum) but too many of the 6-meter gang have written off nine months of the year as being of no DX interest. Actually, sporadic-*E* DX can happen any time, and it is only one of the forms of propagation that could make life interesting on 6, if more fellows were in there trying more of the time.

Bob says that 6-meter men in the Washington area now have crystals for 50.57 Mc., this spot to be used for a calling frequency, as well as for the Sunday-morning workouts.

W3UQJ, York, Pa., operates on 435.7 Mc. each Monday, Wednesday and Friday from 2100 to 2300 EST.

He starts with his beam toward Philadelphia, shifting toward New York and New England in the latter part of the period. He also has a 220-Mc. rig under construction.

A new OES this month, W4FIG, Birmingham, Ala., is working on a flying-spot scanner for amateur TV. He lists W4s FSW WR 8YX OZK KCQ ELV FBI and EW as active on 144 Mc. in the Birmingham area, and he and W4FSW are on 50 Mc.

W4HHK, Collierville, Tenn., is keeping 144-Mc. schedules with W9WOK, Bensenville, Ill., twice weekly. This is just under 500 miles, but contact has been made regularly. Signals appear to be much the same as those encountered on the W8BFQ-W1HDQ circuit, 450 miles. Signals are always heard, and there is no great variation from night to night, except for rare tropospheric openings that bring signal levels up over such long paths.

One thing appears certain: Communication can be maintained over distances up to 500 miles on 144 Mc., regardless of weather and season, if high power, big antennas, low-noise converters *and* high-selectivity c.w. techniques are employed. Distances of more than 200 miles can be spanned consistently with power levels as low as 100 watts and moderate-sized arrays, as evidenced by the W2QED–W1HDQ circuit that has been functioning for more than two years, with close to 100 per cent success in the past six months. Even 432 Mc. is within a very few decibels of reliability over this 210-mile hop.

W5SCX, Ardmore, Okla., reports 144-Mc. coverage of 150 to 200 miles through the winter months, with signal levels rising with favorable weather conditions. Bill is working on a 50-Mc. portable, and is planning to burst forth on 432 with a 4X150A before long.

OES reports from W5FPB and W5RFF indicate that New Mexico is definitely on the 2-meter map. The possibility of remote-controlling a 2-meter station atop the 10,800-foot Sandia Crest is under discussion. A 2-meter net operates each Friday night in the Albuquerque area, and a dozen or more stations are participating.

W8DPW, Dayton, Ohio, says that several of the gang are using the new 6360 tubes (where'd they get 'em?) on 144 and 220 Mc. This new dual tetrode appears to be a good substitute for the 832A. It is being used without neutralization on both bands, and requires very little drive. The Dayton gang got out 54 members for the V.H.F. Sweepstakes, certainly an outstanding showing.

One of the weirdest antenna ideas we've yet heard of comes from K6BAO via W6RLB. K6BAO became interested in 2-meter transmitter hunts, and came up with the detection system to end all detection systems. He installed a motor-driven vertical beam consisting of quarter-wave rods on a ground plane on the top of his car. This is driven at about two revolutions per second. The indicator is a high-persistance 'scope with its vertical deflection tied into the a.v.c. line of the receiver, and the horizontal connected to a position-indicating potentiometer.

Used in open country, this electronic bird-dog works wonderfully, but in the hills of the Berkeley area it succeeds merely in plotting graphically the many paths by which a 2-meter signal arrives at a receiving antenna. It can be counted on, however, to amaze the populace of any area in which it is operated!

2-METER STANDINGS

	Call States	Areas	Miles		Call States	Areas	Miles
W1HDQ	18	6	850	W6WSQ	3	3	1390
W1IZY	16	6	750	W6BAZ	3	2	320
W1RFU	15	7	1150	W6NLZ	3	2	247
W1MNF	14	5	600	W6GCG	2	2	210
W1BCN	14	5	580	W6QAC	2	2	200
W1DJK	13	5	520	W6EXH	2	2	193
W1MMN	10	5	520				
				W7JU	3	2	243
W2UK	23	7	1075	W7LEE	3	2	240
W2NLY	22	7	1050	W7YZU	3	2	240
W2ORI	21	8	1000	W7JUO	2	2	140
W2AZL	20	7	1050	W7RAP	2	1	165
W2QED	19	7	1020				
W2PAU	16	6	740	W8BFQ	24	8	775
W2AMJ	14	5	550	W8WJC	24	8	775
W2BLV	14	5	450	W8WXV	21	8	1200
W2QNZ	14	5	400	W8WRN	20	8	670
W2UTH	13	7	880	W8DX	19	7	675
W2SFK	13	6	—	W8BAX	19	7	655
W2AOC	13	5	400	W8UKS	18	7	720
W2DFV	13	5	350	W8RMH	18	7	690
W2CET	13	5	405	W8RWW	17	7	630
				W8EP	17	7	—
W3QKI	22	8	820	W8WSE	16	7	830
W3RUE	21	8	760				
W3NKM	19	7	660	W9EHX	23	7	725
W3KWL	16	7	720	W9FVJ	22	8	850
W3LMA	16	7	720	W9EQC	21	8	820
W3FPH	16	7	—	W9BPV	20	7	1000
W3GKP	15	6	800	W9UCH	20	7	750
W3IBH	13	5	570	W9LF	19	—	—
				W9WOK	17	6	600
W4HHK	23	7	850	W9ZHL	17	6	—
W4AO	21	7	950	W9MBI	16	7	660
W4JFV	18	7	830	W9KLR	16	7	—
W4MKJ	16	7	665	W9BOV	15	6	—
W4OXC	14	7	500	W9LEE	14	6	780
W4JHC	14	5	720	W9DDG	14	6	700
W4LKZ	13	5	720	W9FAN	13	—	680
W4JFU	13	5	720	W9UIA	12	7	540
W4UMF	13	5	600	W9GTA	11	5	540
W4WCB	9	4	650	W9JBF	10	5	760
W4UDQ	8	4	850	W9DSP	10	4	700
W4TLA	7	4	850				
				WØEMS	24	8	1175
W5RCI	20	7	925	WØGUD	22	7	1065
W5JTI	14	5	670	WØIHD	19	7	725
W5QNL	10	5	1400	WØONQ	17	6	1090
W5CVW	10	5	1180	WØINI	14	6	830
W5AJG	10	4	1260	WØZJB	12	7	1097
W5MWW	9	4	570	WØOAC	12	5	725
W5ML	9	3	700	WØWGZ	11	5	760
W5ABN	9	3	780				
W5ERD	8	3	570	VE3AIB	20	8	890
W5VX	7	4	—	VE3DIR	17	7	790
W5VY	7	3	1200	VE3BQN	14	7	790
W5FEK	7	2	580	VE3BPB	12	6	715
W5ONS	7	2	950	VE3AQG	11	7	800
				VE1QY	11	4	900
W6ZL	3	3	1400	VE3DER	10	6	800
W6PJA	3	3	1390	VE2AOK	7	3	440

Late Report — W2SC In Operation

The 50-foot parabolic-reflector array at W2SC, Belmar, N. J., was tested for the first time on Saturday, March 6th. The coaxial-line feed was imperfectly matched, and the array could be moved only in a horizontal plane, but these conditions will be corrected shortly.

W2SC will be in operation each week end from here on, using 144.69 Mc., c.w., m.c.w. and voice. DX tests of various kinds will be conducted on schedule. The antenna will be set to track the moon, and aurora reflection will be tried at propitious times. Details of special tests will be on W1AW and other ARRL bulletin stations.

During the March 6th test the W2SC signal was heard with good readability on voice at distances up to 170 miles under unfavorable propagation conditions. Reports of any unusual reception of the signal are welcomed and may be sent to Director, Evans Signal Laboratory, Belmar, N. J.

Strays

Ex-W3MVT-K9AAO of the National Bureau of Standards recently sent us the photo of a Wisconsin "W4SQF" license plate, a snap he took through his car's windshield while motoring through Alexandria, Virginia. Now along comes W4TKL with a "W2ZGA/4" Alabama tag. W2ZGA is a soldier stationed at Redstone Arsenal, Huntsville.

Seventh V.H.F. Sweepstakes Breaks All Records

Individual and Club Scores at All-Time High

SINCE 1951 there had been a steady rise in participation in our Annual V.H.F. Sweepstakes. In that year there were 298 logs submitted, followed by 365 in 1952 and 385 in 1953. We expected these figures to be exceeded in the 7th running of this popular wintertime activity, but we were hardly prepared for the avalanche that fell on us right after January 10th. When the air had cleared, we had a total of 610 logs from 43 ARRL sections, with some 41 clubs mentioned by participants.

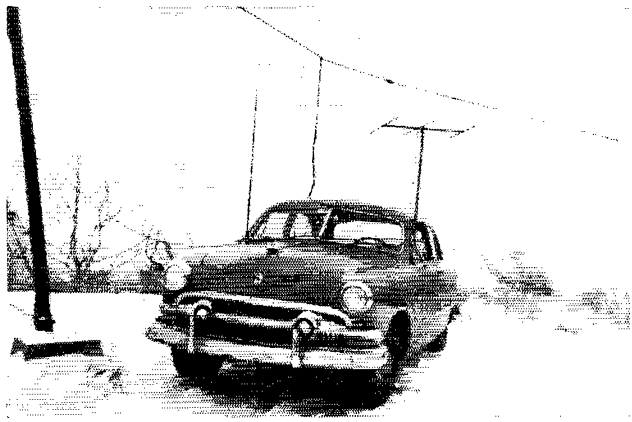
Greater club competition seems to be the answer, and some fine organizational effort obviously was responsible for such amazing totals as the 44,174 points amassed by the South Jersey Radio Association, who added another V.H.F. SS gavel to their collection. The Dayton Amateur Radio Association put Ohio on the 2-meter map in a big way, with 12,147 points, the first 5-figure total to be turned in by a club group outside of the heavy-population area between New York and Philadelphia.

Smaller clubs rigged local competitions of their own to boost interest and provide incentives for everyone to get in for all their worth. The Hampden County Radio Club and the Hartford County Amateur Radio Association, for example, set up a private contest for supremacy in the Connecticut Valley. Every member was pressed into service insofar as equipment available would allow. Result: 4th and 5th places in the national ranking for these two relatively-small clubs, and much fun for all hands. A similar rivalry between the Waltham Amateur Radio Association and the El-Ray Amateur Radio Club boosted their respective aggregates to three times their previous best totals.

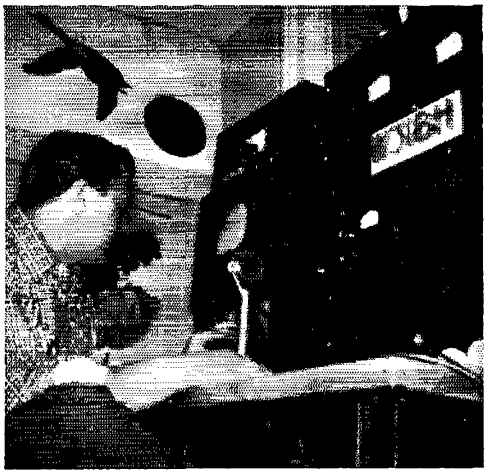
The heroic efforts of W3PZK/8 were recounted last month. To this story should be added credit for W1ELP/1 and W1VLH/1, who stuck it out in unheated lookout towers for practically the entire party. W1MMN erected a new 16-element beam in subzero weather, and then operated in a heatless shack for several hours to provide Vermont Section multipliers to a fortunate few. W2BVU/1 spent the entire contest period, except for a few hours of sleep around dawn, on ice-covered Prospect Hill, Waltham, Mass., operating a 6- and 2-meter mobile set-up with specially-erected antennas, winning top place in the highly-competitive Eastern Massachusetts Section.

Ohio Section winner, Al Burson, W8WXV, posted outstanding inland score, 3288 points, on 144 Mc. only.

Areas once low in v.h.f. interest now show surprising activity in our contests. Note 76 logs from the Ohio Section, largely resulting from the pressure put on by the Dayton gang. This burst of activity netted some fine scores throughout the Middle West, and produced one of the closest finishes for a section award on record. W8WXV, Shiloh, Ohio, nosed out perennial award-winner W8BFQ by a single contact, 137



Sticking it out atop ice-covered Prospect Hill, Waltham, Mass., W2BVU/1 paced busy E. Mass. Section. Antennas used on the mobile rigs included two 50-Mc. dipoles, 3-element 2-meter beam and a vertical whip.



Charlie Clements, W3IBH, set one-band record with 3492-point total on 144 Mc., tops in E. Pa. Section.

to 136, each with 12 sections. Al's accomplishment was made the more noteworthy by the fact that he did all his work on 144 Mc.!

Other "photo finishes" were recorded in the Ontario and Santa Clara Valley sections. In the former, VE3DIR pumped the 2-meter band dry in nosing out VE3AIB, to become the first one-band section winner in Ontario v.h.f. competition history. W6CGA and W6TFZ worked 127 in 5 each, but incomplete exchanges in W6TFZ's total dropped him a few points out of a tie.

The enthusiasm of newcomers was a big factor in the success of the V.H.F. SS, as it always has been since the advent of the Novice and Technician tickets. Better than 10 per cent of the calls in the tabulation contain an "N." KN2EIZ with 119 contacts in 7 sections for 1652 points, led the country's yearlings. KN2EGA and WN3VIR were close behind him.

V.h.f. enthusiasts in localities lacking the ham population density or the geographically-small ARRL sections that characterize the Eastern Seaboard cities often feel that they have no chance in a v.h.f. contest. To be sure, the big scores do make the headlines, but consistent effort can win a section award anywhere. Recognizing the advantage that would accrue to participants in the big city areas if national awards were offered, your contest committee has set up awards on an ARRL-section basis only.

You compete only with hams in your own section, so nearly everyone has an equal chance. When you read the tabulation below, take note of the section winners in the areas where activity is *not* high. Often their 25 or 40 contacts may represent as outstanding work as does a 200-plus total in Northern New Jersey or Eastern Pennsylvania, and the fellow who pushes over the 100-contact mark in Northern or Southern California has earned top billing with the eastern and middle-western leaders. Only his section multiplier is lower.

CLUB SCORES

Club	*Aggregate*	*Certificate Winner*
South Jersey Radio Association	44,174	W2BLV
York Road Radio Club	21,770	W3IBH
Dayton Amateur Radio Assn.	12,147	W8SVI
Hampden County Radio Club	8650	W1RFU
Hartford County Amateur Radio Assn.	7946	W1PHR
Lake Success Radio Club	7268	W2DLO
Lakeland Amateur Radio Assn.	6570	W2RGV
Windblowers V.H.F. Society	6496	K2BC
Northeast Radio Club	4970	W3TYX
Morris Radio Club	4448	W2WKL
Waltham Amateur Radio Assn.	4400	W2BVU/1
El-Ray Amateur Radio Club	4019	W1AQE
Amateur U.H.F. Club of Jamaica	2724	KN2EGA
San Mateo County Amateur Radio Club	2496	W6TFZ
Nassau Radio Club	2240	W2GLU
Ohio Valley Amateur Radio Assn.	1824	W8LPD
DX Club	1620	W3TDF
Mid-Island Radio Club	1606	W2JBQ
Providence Radio Assn.	1570	W1KCS
Levittown Amateur Radio Club	1563	K2DCJ
Two Meters and Down Radio Club	1538	W6QGX
Rochester V.H.F. Group	1356	W2UTH
West Side Radio Club	1152	VE3AIB
Philadelphia High Frequency Radio Club	931	W3AYG
Portland Amateur Radio Club	372	W7OKV/7
Lake Washington Amateur Radio Club	182	W7IEE
Albuquerque V.H.F. Club	40	W5FPB

The following clubs were also mentioned on less than three valid entries: IBM Radio Club, Conn. Wireless Assn., NEW VHF Club, North Shore Radio Club, Nortown Amateur Radio Club, Steel City Radio Club, ARC of Falls Church, Delaware Valley Radio Assn., Hart House ARC, Old Colony ARA, ARA of Springfield, Ohio, North Suburban RC, Chesapeake ARC, Whiteside V.H.F. Net, Detroit Metropolitan RC.

♦

Harryette Barker, W6QGX, Los Angeles Section leader, worked 130 stations on 144 Mc. The 2-meter rig doesn't show in this shot of Harryette at the operating position.

♦

In the following tabulation, scores are listed by ARRL divisions and sections. Unless otherwise noted, the top scorer in each section receives a certificate award. The highest Novice or Technician licensee also receives a certificate in each section where at least three such licensees submitted valid contest logs; asterisks denote these winners. Columns indicate the final score, the number of contacts, the section multiplier, and the bands used. A represents 50 Mc., B 144 Mc., C 220 Mc., D 420 Mc. Multiple-operator stations, with calls of participating operators, are shown at the end of each section tabulation.

ATLANTIC DIVISION

E. Pennsylvania

W3IBH.....3492-194- 9-B
W3TYX.....2282-163- 7-B
W3SAO.....2142-153- 7-B
W3UKI.....1584- 99- 8-AB
W3TDF.....1472- 92- 8-B
WN3VIR/W3VIR*
1470-105- 7-BCD
W3GRY.....1284-107- 6-AB
W3IAU.....1112-139- 4-B
W3BWQ.....1040-132- 4-B
W3RZU.....930- 93- 5-B
W3PKJ.....888-111- 4-B
W3BHP.....840- 70- 6-B
WN3VTP.....824-103- 4-B
W3CLT.....800-100- 4-AB
W3MXR/3...768- 96- 4-B
W3HWV.....724- 92- 4-B
W3DJ.....688- 86- 4-B
W3DHH.....630-105- 3-B
W3VMJ.....616- 77- 4-B
W3KIW.....608- 76- 4-B
W3UMT.....606-101- 3-B
WN3WED...600-100- 3-B
W3NKD.....579- 97- 3-B
W3HYJ.....420-110- 2-B
W3SOB.....402- 67- 3-B
W3AYG.....327- 55- 3-B
W3QAS.....320- 80- 2-B
W3QVK.....314- 79- 2-B
W3TEC.....304- 76- 2-B
W3ALB.....240- 40- 3-AB
WN3YCL....232- 58- 2-B
W3QV.....216- 54- 2-B
W3NXT.....172- 43- 2-B
WN3WIM....154- 39- 2-B
W3AJF.....150- 25- 3-AB
W3BNU.....148- 37- 2-B
W3OZP.....136- 34- 2-B
W3FAA.....120- 30- 2-B
W3QB.....108- 18- 3-B
W3SSU.....108- 27- 2-B
W3VOC.....108- 27- 2-B
W3DYL.....92- 23- 2-B
W3FX.....92- 23- 2-B
W3PMG.....84- 11- 4-B
W3LVF.....80- 20- 2-AB
W3RKB.....68- 17- 2-B
W3ARD.....60- 15- 2-B
W3FXG.....56- 14- 2-B
W3FWZ.....48- 12- 2-B
W3HIX.....40- 10- 2-B
W3SOH.....6- 3- 1-B

Md.-Del.-D. C.

W3CGV.....1284-107- 6-ABCD
W3LMC.....612- 51- 6-B
W3PRB.....525- 53- 5-ABC
W3YHI.....516- 43- 6-B
W3CJN.....280- 35- 4-B
W3VAM.....174- 29- 3-B
W3ONP.....144- 18- 4-B
W3BYG.....126- 21- 3-B
W3AHM.....78- 13- 3-B
W3NH.....78- 13- 3-B
W3OTC.....24- 6- 2-A

Southern New Jersey

W2BLV.....3564-198- 9-BD
W2UK.....3036-127-12-B
W2PAU.....2590-185- 7-AB
W2QED.....2336-146- 8-ABCD
W2BV.....2331-167- 7-B
W2GLV.....2002-143- 7-B
W2TBD.....1740-145- 6-B
W2JAV.....1440-120- 6-B
W2LBX.....1100-110- 5-B
W2ADA.....1090-109- 5-AB
W2DAJ.....1072-134- 4-B
W2KHW....1072-134- 4-B
W2ORA.....1060-106- 5-AB
K2AFJ.....1040-130- 4-B
W2CNI.....1032-129- 4-B
W2EH.....1008- 84- 6-BD
W2BAY.....1000-100- 5-AB
W2NFL.....1000-100- 5-B
W2EWN.....944-118- 4-BD
W2QKO.....840-105- 4-B
W2VX.....840- 84- 5-B
W2GQO.....824-103- 4-B
W2JRO.....800-100- 4-B
W2PFQ.....800-100- 4-B
W2FCV.....776- 97- 4-B
W2UCV.....678-113- 3-B
W2LYL.....654-109- 3-B
W2OGZ.....606-101- 3-B
W2REB.....606-101- 3-B
W2ASG.....600-100- 3-B
W2YRW.....600-100- 3-B
KN2DAP*...536- 68- 4-B
W2SPV.....520- 65- 4-B
W2OSD.....516- 86- 3-B

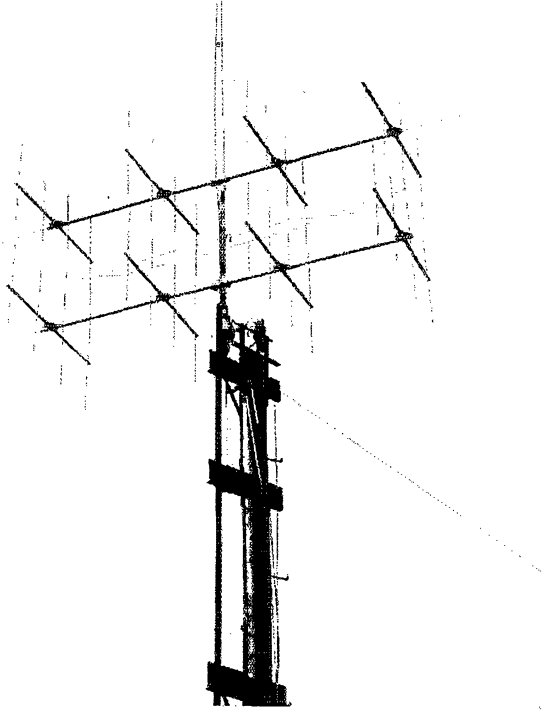
♦

Country's No. 2 score, 3564 points, was made on 144 and 420 Mc. by George Harrold, W2BLV, Haddon Heights, N. J., in winning S. N. J. Section award.

♦

Leading West Coast scorer and winner in Santa Clara Valley Section, Joe Wilcox, W6CGA, Redwood City.

W2LY.....492- 82- 3-B
W2OQN.....474- 79- 3-B
K2AIM.....468- 78- 3-B
W2RBF.....450- 75- 3-B
W2FXT.....426- 71- 3-B
W2ZUL.....423- 71- 3-AB
KN2DGQ....414- 69- 3-B
W2KVJ.....408- 51- 4-B
W2EET.....405- 68- 3-B
W2HEK.....378- 63- 3-BD
W2SDO.....366- 61- 3-B
W2EFM.....348- 58- 3-B
K2AJD.....348- 58- 3-B
W2DMU.....342- 57- 3-AB
W2N8J.....300- 50- 3-B
W2TAV/2....300- 50- 3-B
KN2GHY....300- 75- 2-B
W2TM.....222- 37- 3-B
W3LTC/2....194- 49- 2-B
W2EVS.....176- 22- 4-B
K2BG.....164- 41- 2-B
W2DBP.....136- 34- 2-B
W2OSV.....129- 22- 3-B
W2OXV.....124- 31- 2-B
KN2DWY....116- 29- 2-B
W2ABQ.....108- 27- 2-B
W2EXB.....90- 15- 3-B
W2PZX/M....80- 20- 2-B
W2BGF.....72- 18- 2-B
W2SEZ.....54- 9- 3-B
W2ZDG.....52- 13- 2-B
W2UQ.....48- 12- 2-B
KN2DGQ/M..44- 11- 2-B
W2PTM.....38- 19- 1-B
W2ZQ (W2s JWA NDO UAE UPS ZI KN2CLD)
608- 76- 4-B



The 32-element vertical array at W1DBM, Redding Ridge, Conn. Phil also worked horizontal with 10-element array in winning Connecticut award. The vertical element above the big 32-element structure is the radiator of a 10-meter ground-plane.

♦

Western New York

W2ORI.....1278- 71- 9-B
W2RUI.....1030-103- 5-AB
W2CCR.....840- 70- 6-B
W2UTH.....600- 60- 5-AB
K2CEH.....500- 50- 5-B
W2ALR.....488- 61- 4-AB
W2ZOC.....408- 51- 4-B
W2DV.....180- 18- 5-B
KN2CUY....160- 40- 2-B
KN2EPV....156- 39- 2-B
W2UXP.....152- 38- 2-B
K2DBB.....116- 29- 2-B
W2QY.....104- 26- 2-B
W2FFU.....96- 24- 2-B
W2RHQ.....92- 23- 2-B
W2UVF.....72- 18- 2-AB
W2CTA.....14- 7- 1-B
W2PRX (W2s PRX TGU)
1232- 77- 8-B

Western Pennsylvania

W3KXI.....138- 23- 3-B
W3KWH (W3s RXT UHM WHY) 168- 21- 4-B

CENTRAL DIVISION

Illinois

W9WOK....2430-135- 9-AB
W9QXP....1090-109- 5-B
W9NJS/9...1036- 74- 7-B
W9PPA.....672- 84- 4-B
WN9AFP*...528- 66- 4-B
W9QKM....468- 78- 3-AB
W9FPO.....440- 55- 4-B
W9ZEX.....416- 52- 4-B
W9OTV.....270- 45- 3-B
W9VNW.....212- 53- 2-B
W9USI.....210- 35- 3-B
W9YNQ/9...184- 23- 4-B
WN9YRT....178- 46- 2-B
W9SEF.....168- 42- 2-B
W9LXD.....152- 38- 2-B
W9ADO.....124- 31- 2-B
W9ILR/9....116- 30- 2-B
W9KLD.....102- 17- 3-B
W9CT.....76- 38- 1-B
W9BUK.....32- 16- 1-B
W9PZP.....32- 16- 1-B
W9ECP.....18- 9- 1-B
WN9WPJ.....4- 2- 1-B
W9JYG (W9s IIO JYG)
306- 51- 3-B

Indiana

W9OAC.....460- 46- 5-B
W9BUM.....210- 30- 4-B
W9TOF.....96- 24- 2-B
WN9YQA.....68- 17- 2-B
W9MTV.....48- 12- 2-B

Wisconsin

W9UJM.....138- 23- 3-B
W9TQ.....124- 31- 2-AB
W9RXS.....100- 25- 2-B
W9BTI.....84- 42- 2-AB
W9NVK.....64- 16- 2-B
WN9AAX.....60- 15- 2-B
W9ZJA.....8- 4- 1-B

DAKOTA DIVISION

Minnesota

WØJHS.....36- 9- 2-B
WNØOFY*....16- 8- 1-B
WNØPYC.....6- 3- 1-B
WNØOFZ.....4- 2- 1-B

DELTA DIVISION

Tennessee

W4HHK (W4s HHK UDQ)[1]
42- 7- 3-B

GREAT LAKES DIVISION

Kentucky

W4PCT.....472- 59- 4-B

Michigan

W8DX.....1040- 65- 8-BC
W8UMI.....380- 48- 4-BC
W8IEE.....355- 36- 5-B
W8GZN.....210- 35- 3-B
W8DDO.....186- 31- 3-B
WN8ONS....147- 25- 3-B
W8BGY.....144- 24- 3-B
W8GYU.....144- 24- 3-B
W8DIV.....138- 23- 3-B
WN8NSH....81- 14- 3-B
W8IPS.....2- 1- 1-C

Ohio

W8WXV....3288-137-12-B
W8BFQ.....3252-136-12-ABCD
W8SVI.....1617-116- 7-BC
W8LPD.....1380-115- 6-AB
W8HOH.....970- 97- 5-B
W8LOF.....660- 66- 5-B
W8LHK.....600- 50- 6-AB
W8SDJ.....560—70- 4-B
W8DRN.....540- 45- 6-AB
W8LUZ.....540- 90- 3-B
W8BMO.....510- 85- 3-ABC
W8HCD.....510- 85- 3-B
W8MCW.....486- 81- 3-B
W8SEM.....486- 81- 3-B
W8DPW.....468- 78- 3-B
W8LFH.....456- 76- 3-B
W8BLN.....450- 75- 3-B
W8KOM.....444- 74- 3-B
W8HUT.....432- 72- 3-B
W8IXA.....420- 70- 3-B
WN8NEE*...414- 69- 3-B
W8ZOA.....378- 63- 3-B
WN8NFP/8..342- 57- 3-B
W8PTF.....300- 50- 3-B
W8ZPH.....300- 50- 3-B
W8HQK.....288- 48- 3-AB
WN8NPY....288- 36- 4-B
W8ZJM.....280- 70- 2-B
WN8MVL....264- 44- 3-B
W8GFN.....258- 65- 2-B
W8KTM.....248- 62- 2-B
W8WRN.....240- 30- 4-BC
W8MVA.....234- 39- 3-B
W8DDT.....216- 54- 2-B
W8FV.....160- 40- 2-B
W8GVG.....126- 63- 1-B
W8LJ.....112- 56- 1-B
WN8NHW...106- 53- 1-B
W8FGR.....100- 50- 1-B
W8NFU.....100- 50- 1-B
W8ENH.....94- 47- 1-B
WN8PKS.....92- 23- 2-B
W8HVM.....90- 45- 1-B
W8LAX.....90- 45- 1-B
W8ZSK.....90- 45- 1-B
W8JSW.....88- 22- 2-B
W8NAF.....88- 44- 1-B
WN8ODQ....84- 21- 2-B
W8OSH.....84- 42- 1-B
W8PMJ.....84- 21- 2-B
W8GQ.....82- 41- 1-B
W8DWT.....80- 40- 1-B
W8HTR.....80- 20- 2-B
W8DHJ.....76- 38- 1-B
W8OVG.....72- 36- 1-B
W8BFP.....70- 35- 1-B
W8ZOF.....70- 35- 1-B
W8BOV.....68- 34- 1-B
WN8MXR....68- 17- 2-B
W8HUA.....64- 16- 2-B
W8KFC.....60- 30- 1-B
W8MGH.....60- 30- 1-B
W8UEY.....60- 15- 2-B
W8TYL.....50- 25- 1-B
WN8NMV....47- 24- 1-B
W8SXT.....46- 23- 1-B
W8QLB.....40- 20- 1-AB
W8JNU.....36- 18- 1-BC
W8LCY.....32- 16- 1-B
W8YCP.....32- 16- 1-B
WN8NJY....30- 15- 1-B
WN8OIN....26- 13- 1-B
W8FAZ.....22- 11- 1-B
WN8OIM....18- 9- 1-B
W8WUP.....14- 7- 1-B
W8INQ.....12- 6- 1-C
W8KJT.....6- 3- 1-C

HUDSON DIVISION

Eastern New York

W2RTE.....880- 55- 8-B
W2IP.....320- 40- 4-B
K2ATG.....272- 34- 4-B
K2CXP.....250- 25- 5-B
W2OPW.....168- 21- 4-B
W2IRQ/2.....66- 11- 3-B
KN2DRV (KN2s DKI DRV)
28- 7- 2-B

N. Y. C.-L. I.

W2SMX....2470-124-10-B
W2FHJ....2400-150- 8-AB
W2DLO....2240-140- 8-AB
K2CHM....1662-142- 6-B
KN2EGA*..1488-124- 6-B
W2BNX/2..1332-111- 6-B
W2KIR.....1218- 87- 7-B
KN2DNH...1152- 96- 6-B
W2AOD.....1092- 91- 6-B
W2GLU.....1030-103- 5-B
W2CET.....896- 64- 7-B
W2EEN.....800- 80- 5-B
W2JBQ.....670- 67- 5-B
K2BWV.....600- 60- 5-B
W2ZJJ.....584- 73- 4-B
W2KDC.....570- 57- 5-B
W2QAN.....560- 70- 4-B
K2DCJ.....544- 68- 4-B
KN2EWB....544- 68- 4-B
W2LGG.....510- 85- 3-B
W2ENW.....504- 63- 4-B
W2DVK.....480- 48- 5-B
W2GLO.....440- 56- 4-B
W2IN.....420- 43- 5-B
W2KU.....416- 52- 4-B
W2ISA.....405- 41- 5-B
W2ONG.....392- 49- 4-B
W2KTF/M...372- 47- 4-B
W2JUN.....369- 62- 3-B
W2FBL.....357- 60- 3-B
W2YSL.....320- 40- 4-B
KN2GBO....318- 53- 3-B
K2BIC.....288- 36- 4-B
W2ODB.....276- 46- 3-B
W2OME.....204- 34- 3-B
W2ELT.....200- 50- 2-B
W2TNF.....192- 24- 4-B
W2KAC.....180- 30- 3-B
W2WOS.....168- 42- 2-B
W2CLG.....160- 40- 2-B
W2WOK.....156- 26- 3-B
K2BBO.....156- 26- 3-B
K2CQP.....128- 32- 2-B
W2NQR.....112- 28- 2-B
KN2ESZ.....110- 28- 2-B
W2LID/M...104- 52- 1-B
KN2GCP.....92- 23- 2-B
W2TNI.....88- 22- 2-B

(*Continued on page 130*)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W1VMW

How:

W6VBY strikes a keynote this month with his topical editorial in the February number of Southern California DX Club's *Bulletin*. To wit:

> Nobody likes it, but we gotta face it. . . . There are a few countries which are *taboo*. Judging from the sound of 40 these past few weeks, some of our brethren just don't know this, don't care, or just plain forgot. HL1AA still finds customers — and HS1D . . . has the whole band jumping every morning. Those who worked them may find their QSLs coming from FCC. This may mean nothing more drastic than writing an explanation, but it's hardly worth the trouble when you realize you can't count the countries anyhow, and QSLs will not be accepted for DXCC. . . .

"Don't know" and "forgot" are the more likely possibilities in Herb's surmise — the "don't cares," if any, would fit better in less responsible hobbies. Uncle Sam's DXers, especially those not constantly active, do find it difficult to keep up with the FCC-banned countries situation. If you go off the air and get out of touch with the grapevine for a time it's understandable, though not excusable, how you could walk right into citations for heeding calls from HL1s, FI8s, etc.

For a time after FCC's original Notice countries got themselves removed from the list with a regularity that resulted in frequent *QST* restatement of ban status. Of late this hasn't been true. Awareness of status quo being just as important as awareness of change, periodically hereafter the box appearing at the top of the following page will appear.

We'll continue to report news from within these countries bearing on the restrictions or the lifting thereof — Austrian nationals look to be the next beneficiaries of removal from the list. Let's hope we soon get the remaining prefixes back from the SWL bailiwick so they'll make sense on the air and in "What" once more.

The subject in detail is rather involved; for the intricate why and wherefor we refer you to the bibliography on page 67, Dec., 1953, *QST*.

What:

In the band synopses to follow, frequencies (given in number of kc. above the lower band-limit) appear in parentheses, times without. E.g., (9) = 14,009 kc., if the paragraph deals with 20-meter work. Times are 24-hour time, zone or GCT specified, using the nearest whole-hour figure, such as 7 for 0720 or 0650, 0 for 0015 or 2349. Other data are included as available.

We touch upon *one-sixty* first. Activity in the 1.8-Mc. range undoubtedly reached its highest postwar peak this February and March. Conditions, however, took a turn toward the mediocre and the Atlantic paths became mere shadows of their "normal" selves. Although plenty of the W/K gang were in on the hunt, actual workable DX coming through was very thinly spread. W3RGQ hit the high spots for a nice bag: CN2AO, EI9J, Gs 2HX 2PL 3ATU 3BKF 3ERN 3GGN 3HRW 3PU 5JU 5RI 6BQ 6CJ 6GM 8AX, GW3ZV, HB9CM, KP4KD (86), KV4AA, KZ5DE (86), VP6EB (72–85), VP7NM (80), VR2BJ (80) and ZL3RB (97) . . . . QSOs with EI9J and KZ5DE make two more stations with which KP4KD has chatted on *six* bands. Ev, running 100 watts to a quarter-wave wire, also caught G6BQ, GD3UB, VPs 6EB and 7NM . . . . . QSOs reported here and there follow. At *W1BB:* HB9CM. *W8WC:* CN2AO, EI9J, G3PU, GW3ZV, KV4AA, KZ5DE, VP7NM. *W8QHH:* G5JU, KZ5DE, VPs 7NM 9BK. *W5WEH:* ZL3RB. *W6KIP:* ZL3RB. *W6NDI:* KP4KD, KV4AA. *W8GDQ:* ZL1WW, 2-way 'phone at 8 GCT. *WØIFH:* KZ5DE, VP7NM. *WØNCS:* KV4AA, VR2BJ . . . . . Canadians are rare catches for overseas DX on 160. VE1EA brought joy to CN2AO, EI9J, Gs 3ERN 3PU 5JJ 5KM 5RI 6BQ 6CJ 6GM 8JR, HB9CM, KV4AA and VP7NM. CN2AO, Gs 2HX 3ATU 3BKF 3ERN 3GGN 3GOZ 3PU 5JU 5RI 6BQ 6CJ 6GM 6LB 8JR, GW3ZV and VP7NM succumbed to persistent VE2AIE . . . . . DL1KV states that DLs and DJs are not authorized to use 160. The DL1IX mentioned previously therefore must have been performing in a listening capacity. It's regrettable that so many overseas points bar 160 to their amateurs. W1BB reports special Transatlantic Test period authorizations issued by some countries . . . . . ZC4s CA (40) and GF (40) have had little 160 luck of late although they've been hearing Gs regularly. Prankish winds play hob with their balloon skywires and the 1.8-Mc. noise level on Cyprus is forbidding. Czechoslovakia is best DX to date but they're still bearing down . . . . . Activity will taper off on Top Band as warmer weather hits W/VE climes. But as the QRN builds up in our northern hemisphere, remember that it declines Down Under. Who'll break the ice to VK-land? . . . . . DX not previously mentioned in this rundown, supposedly candidates on 160: GC2CNC, HB9s HW T, HC1KV (85), LU1EP (28), VP9BDA, XE2OK, YU1AD (28) and OK1 3-letter stations. North Americans not mentioned in the preceding who were reported active on 1.8 Mc. this season: W1s AHX AQE BMV DBE EF EFN LMU LYV MZP ORP PBE QCA RAN SS TCR TSX VDB WPO YVT ZL, W2s AMC BWR DOD EQS FW GGL HCW HH JIL JME MAH MCU NPJ PP TRK

* DX Editor, *QST*.

UKS WH WWP YDI ZVW, W3s EIS FNF GL OKU PA PSF QB TBG UX VKW, W4s AWY BRB BZE CKD HQN IV JSS KFC NAD PL PNK POB SHW SNH VHH ZCM, W5s GWT IJM WSF, W6AMI. W7IIC, W8s ANO BNJ EEI EGP EJL FGB IKN JBO KCY LCY NSF, W9s CVQ CZT DIN EWC FIM HZY KGL NH RKC ZJH, WØs EJN EQK FOG FSG HVN IPW NWX ZPH, K2s ANR DPS and VE1ZZ. W1BB, W3s EIS RGQ and W9PNE deserve thanks for especially full reporting on one-sixty doings this year.

Now for dat ole debbil *twenty* c.w., lately made more palatable by the arrival of our vernal equinox but still having plenty of room for improvement. The band comes in early and goes out late down South. W4ZAE's results bear this out: C2AC (65), CRs 4AE (78), 6AI (57), EA9BC (75), FB8XX (78), FF8JC (45), FL8UU (77), FQ8AP (49), FY8YY (10), HC1KD, HZ1TA (30), KR6s AA (2), BA (48), LX1CS (75), OD5s AV (90), AX (68), OQ5GU (45), OX3s AP (28), MQ (75), OY3GA (62–76), PJ2CC (40), VPs 6GT (47), 8AP (20), VQs 3EO (20), 3JB (38), 4AQ (22), 4BO (48), 8FP, ZC4GF (30), 4S7s AP (75), XD (30), 4X4s DK (24), FE (92), LL (100) and RF (80). Not all of these were raised but all were pouring into Tallahassee . . . . . CRs 4AV (40), 7IZ (12), EA9AZ (18), EL2X (20), ET2PA (38), FK8AO (65), FQ8AT (35), HA7OL (92), HH3RC (78), Trieste IIs BLF (40), YCV (82), IS1SZU (90), LU7ZM (25) of So. Orkneys, OD5XX (62), OQØDZ (60), SPs 2KAC (33), 5KAB (38), TA3AA (54), ZB1BJ (15), ZK1AB (16), ZS7H (60) and 9S4BS (55) came back to W9HUZ. Van also worked LB9IC of Andöy Island; it's near the LA mainland à la Key West. Some very welcome recent QSL arrivals in the W9HUZ mailbox: CEØAA, EA9DD, I5LV, KC6AF, VQs 1RO 5RO, ZC5VS and ZD7A . . . . . W2LYO finds 20-meter afternoons this productive: EA6AF (60), FF8AC (40), FQ8AF (24), HA5KBX (44), two OD5s, a VQ3, VQ4s CF (44), EI (20), YI2AM (92), ZE3JP (58) and 4X4DR (74). These helped bring him to the century mark . . . . . W9TGY manages to collect nifties like CRs 6OZ (42), 7AN (35), CTs 2BO (3), 3AB (39), EAs 8BK (71), 9AP (3), ET2NG (54), FP8AP (63), an FQ8, JA3BB (84), LB8YB of Jan Mayen (39), LZ1KPZ (70), two VQ4s, VQ2GW (12), ZD2HAH (68) and 3V8AN (3) from his Illinois QTH . . . . . Luck reported hither and thither: *K2CBM:* GC2FZC, OQ5VN, 5A4TI and many ZSs. *K2GFQ:* EA8BC, EL2P, an FF8, SU1HS (15) and VQ2DS. *K6AHV:* JA2AT, KAs 7AR 9DR, KX6BG and TF3MB. *W1APU:* LU4ZI of So. Shetlands, LZ1 OD5 ZS7 customers and 4X4FQ. *W4SXS:* EL2X, HR1AT, PJ2AE, SP3AN, YV5FV, ZE5JA and 5A1TM. *W6GPB:* VQ5OL (45), VR3D (64) and ZS8D (40). *W7CSW*, now up to 127: DU1DO, GC4LI, KC6AA, KR6LP, OQ5VN, OY2Z, VP8s AK AQ, VQ2AB and ZE5JJ. *W8DLZ:* OQ5PU (85), an EA9, TI9AA and VP3VN (20). *W9KXK:* EA8BF, 9S4AX and Jan Mayen's LB8YB. *VO6U:* a VQ3, VQ4AQ (32) and a ZE3 . . . . . Recommendations from the West Gulf DX Club *DX Bulletin* (W5FXN): CR6CS (172) 15 *CST*, DU7SV (80) 18, EA9BC (15) 16, FK8AC (75) 15, FM7WP (38) 17–18, FO8AD (30) 17–18, FQ8AG (79) 14, FR7ZA (21) 10–11, GD3IBQ (62) 7, JAs 1AQ (40) 18, 3CA (20) 23–0, 4BB (10) 18, KA2KS (25) 0, PX1AC (60) 8–9, PZ1AL (101) 15, TF3AB (70) 9, ZDs 2J (72) 7–8, 4BM (95) 15. From the So. Calif DX Club *Bulletin:* VQ4s EG (15) 10 *PST*, ET (45) 12–13 and ZS8B (30) 11. From No. Calif. DX Club *DXer:* C3BF, CRs 6CJ 7AF, EA8BP, FM7WD, FW8AB (5) 23–0 *PST*, HK1TH, VKs 1AC of Macquarie, 9WZ (58), VP8AT of So. Georgia, VQs 4DO (44) 12, 4SS (85), 5UF (79), VR1C (120) of the Gilberts, VS9AS (81) and scrumptious AC4NC (120). EA9DE, Rio de Oro (and possibly Ifni later), has been causing quite a rumpus.

CAUTION

Under this country's treaty obligations and on formal notice received from other nations, FCC-licensed amateurs are warned to engage in no communications with stations in the countries listed below. This is in accordance with FCC Public Notice of December 21, 1950, (p. 23, Feb., 1951, *QST*) and as since revised.

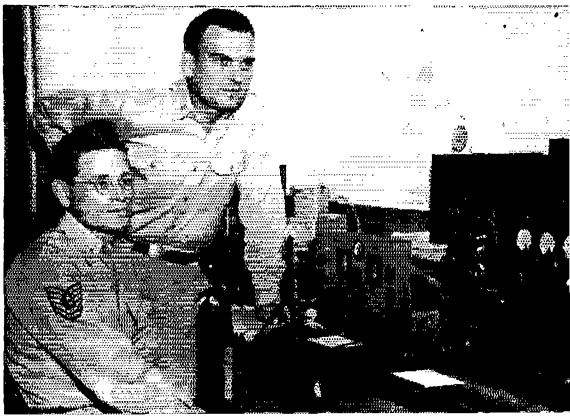
Austria (except FKS8, MB9 and OE13), *French Indo-China* (including Cambodia, Laos and Viet-Nam), *Republic of Indonesia*, *Iran*, *Korea* and *Thailand*.

Prefixes to be avoided: *OE* (except OE13), *FI8-XW8-3W8*, *PK* (Netherlands territories excepted), *EP-EQ*, *HL* and *HS*.

Twenty 'phone is being beaten to a pulp by W2KJG. Steve plucked CN8s CO CS GI MM, CS3AC, HR1JM, KG4AT, KT1s DD PU, PJ2AF, TI2s FG TG, VP6GT, YI2AM, YV4AA, ZB1CM, 5As 1TZ 3TC and 4TJ from the clutches of OM QSB. He has oodles of the more common varieties, too, which aren't easy to come by these days. Also VP2KB of the Leewards . . . . . VO6U worked many ZSs, FF8AP (156) and ZS3E (147) . . . . . W2KE solved ZD4BF's s.s.b. and W4SXS scored with HP1RW and YS1MS . . . . . CN8FL, FA9WD, GD3UB, HR1AA and OQ5DE fell prey to W2GBC's homebuilt 4D32 100-watter and 3-el. squirter. Bill still stalks EA8AX (170), FP8AP (185), HZ1AC (160), long-path VK2QR (165) and ZB2A (115) . . . . . SWL J. R. Pickering hears the following below 14,200 kc. (times *EST*): CN2AD 12, CRs 4AM 16, 6CR 15, CT2AG 14, EAs 9AR 13, ØAB 17, ET2ZZ 13, FQ8AK 15, I5FT 14, OQØDZ 14, VP1GG 17, VQ3EO 15 and ZE3JY 14 . . . . . WGDXC notes for A3, times *CST:* CR6s AI (135) 15, BX (128) 15, EL9A (342) 15, FM7WM (126) 7, KS4AV (217) 14–15, PJ2CL (137) 15, ST2NW (153) 15, VP8AQ (117) 19, VQ4s AC (131) 13–14, RF (138) 15 and ZD9AB, ZD9AA's Tristan da Cunha replacement, on 14,320 kc. in the afternoons . . . . . *Newark News* Radio Club's gang specifies active 14-Mc. 'phones that go well in any log: CP5AB, CR7AF, EAØAC, FB8AC, FM7WO, GC3EBK, GD3NK, HA5KX, HC8GI, KR6KS, LUs 4ZO ØZA, SP1RB, TA3EFA, TG9RB, VPs 1AB 2DC, VQ8AL, VSs 5AQ 9AD, YO3GL, ZC6UNJ, ZD4BF, ZS3s F J and P . . . . . Watch for AC4NC (120) and ZM6AA (117), A3ers pointed out by the *DXer*.

Clap hands, here comes *forty*. C.w., that is. W9HUZ did well with CX6AD (7028), FA9VN (37), FF8AC (30), KC6AF (10), OQ5GU (10), VK9WZ (22), ZK1AB (17) and 9S4AX (1) . . . . . W4ZAE tangled with FY8YG

Pacific pictorial hopscotch across these facing pages takes us to the shacks of KG6AEX, KAØIJ, KA7RC and KX6BU. At *left*, Steve Barnes operates Guam's KG6AEX, the rig consisting of four separate 833A finals for 7 through 28 Mc. with an ARC-5 exciter for each. Steve, with the U. S. Bureau of Standards, formerly was ticketed as KH6AEX, KP6AA and W3CRW. *Left center*, the shack of KAØIJ on Iwo Jima, a station set up in a truck trailer near the island's airstrip. T/Sgt. Clayton Dalton (seated) becomes chief op when Capt. "Tex" Crayton, standing, gets his impending transfer to Japan. They are ex-W7BSG and W5EXR, respectively. A third op not shown is



(5), HH2OT (10), VQs 2LW (33), 3JB (19), 4AA (4) and 4X4DK (12) . . . . DUs 1DO 7SV, JAs 1AA 1CB 1CR 3WA 5AL and VS1FM replied to K6AHV . . . . W2WC, who rightly decries QRO rag-chewing on the low edge of 40 when DX is nigh, caught CR4AG, LB6IE of Jan Mayen, TA3AA, VQ3EO and ZB1TD . . . . MP4BBD is a goodie at W6LW, while W5WZQ wrapped these up with his 50 watts and dipole: CR7LU, CN8FL (25) 0 *CST*, ET2NG (40) 23, HKs 1 TH 3CV 4DP, HR1s AA (3) 21, AT, ZE (20) 18, LB8YB on Jan Mayen (17) 22, PJ2s CC CE CF (20–40), VP6s AF, AG (8) 0, AM (40) 17, GT (21) 17, GT (58) 5, WR (19) 3, VP8AW of So. Shetlands (2) 20, YV5s DE ES FV and 4X4DK (5) 17 . . . . WØGHX, with 45 7-Mc. countries since last November, reeled in EA9AP, FY7YC, HC1FG, KB6AY, KG4AE, KG6FAA, KX6BE, PJ2AJ, VPs 2MD 3YG, YV5FH, ZP1AC and many more . . . . The Novice slot, 7175–7200 kc., is inhabited at times by such as CM6RL, CO6ZE, KH6AUJ, KP4s CC WE YC, KZ5GH, TI2TG, WP4s VH YD and XE2KA. WNØPWN worked many of these and they're enough to give many a Novice the DX bite . . . . W7UAB cut a swath through Oceania for FO8AC and JA8AI. One VR6AC got away . . . . Who can touch W2RDK's 7-Mc. country total of 152? OD5XX is Charlie's latest. Levittown Amateur Radio Club doings keep W2RDK a-hoppin' . . . . K2CPR snatched up CT3AB (25), FK8AO (18), GC2FZC (33), GD3UB (18), KC6AA (26), MF2AG (13), SPs 3AN (26), 9KAD (11), SU1BC (30), TA1DEV (37), VPs 2AD (24), 8AK (8), YO3RF (25), ZP9VV (21), 5A2FA (22) and 9S4AX (7), all fine 40-meter species. A ground-plane is Jack's weapon . . . . KX6BU (28) worked W8PCS and W6LRU caught Jan Mayen, JA6AA (18), an MP4 and many others . . . . CN8MM and VP8AQ (25) appear on W3LEZ's voluminous 2-week catch list — another ground-plane enthusiast . . . . From WGDXC and SCDXC organs these 7-Mc. entries: FB8BX (40) at 17 *CST*, HZ1TA (21) 9, IT1TKK (20) 9, KR6AA (135) 7, LU6ZE (7) 23, MP4BAE (8) 5–6, OX3PW (15) 22, ST2AR (21) 9, VK9s GM (10) 1, OK (15) 5, VK1AC (17) 1, VRs 2AS (22) 7, 3D (20) 23 and ZS9I (8) 9–22.

Eighty c.w., now, if space holds out. Light-sleeper W9HUZ has FA9VN (3517), KL7AWB (8), LU1EP (9), SP3AN (2) and ZS3K (8) checked off . . . . Glances at sundry lists reveal, at *W8UOE*: KG4AE (30), ZL1CI (15). *W8WC*: CT2BO, FY7YC, GD3UB, VP6EB, 9S4AX. *W2LYO* (heard): HA5KBP, YO7FX. *W8YGR*: HH3RC (10). *W8IFP*: FA8DA, a 9S4 and many Europeans. *W9RRG*: an FA8, KL7PI, LU4DAV, ZL3s GK and JT. *W8AND*: PY5VF (8), VE8OG (1) and an LU4.

Fifteen? It's still with us. W6ZZ successfully shook his tonsils at HR1RZ, KH6s AR AWM AYG IJ, KJ6BA, KL7s ALJ AON ATC BBI RZ, KP4s KD YC WI, KV4BD, KZ5s DG ML, TI2EA, OA4N, VKs 2ID 3CI, VP6PV, VR2CG, XE1s OE OM QB, ZLs 1AIX 1BY IGW 2BE, ZSs 1BV 5JY 6AJC 6CV 6DW and 6EG. "Pretty skimpy," he says . . . . W7AHX agrees, but still accounts for FO8AD, HK4FV, HP3FL, PJ2AP, ZL4GC and ZS9G, all on 'phone. Geo. has trouble with a 120-mile-distant TV station on Ch. 6 but the pressure should ease soon.

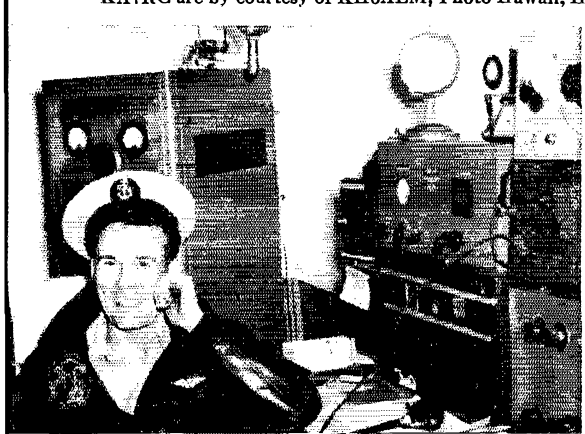
There are a few strong hearts trying to swipe *ten* back from the Indians. W3MO, W4NQM, W4WVM and W4ZAE detected signs of 10-meter life ('phone, of course) on the parts of LUs 1DCE 3FL 4DZI, CR7IV, ZE4LW and a few Uruguayans. Say, what ever became of *eleven*?

Where:

Scads of activity on the QTH front this month. KZ5IL (ex-KW6AR) suggests KW6BB as a good bet to relay unlisted-KW6 QSLs . . . . From VO6U: "I am at present handling QSL cards for VO6s. There is delay in getting cards from boys along the coast for there isn't much of a mail system during the winter. So if you worked a VO6 and haven't received the card as yet, it will get out in the spring." . . . . ZS1FD informs, "I will keep on handling Red's [ZD9AA's] cards for whoever might still need them." The legit ZD9AA closed down on Christmas of 1953 and ZS1FD has the logs . . . . ZB2A's present ops report they have no logs for the station's activity prior to September, 1953. Only QSOs made thereafter can be confirmed; full QSO particulars are required . . . . KG4AD having left Guantanamo Bay, KG4 QSLs may now go via: LeRoy Davie, KG4AU, Navy 115, Box 13, FPO, New York, N. Y. . . . . ON4IB calls attention to a bureau for Saar QSLs that should take care of unlisted 9S4s: KWACS, Post Box 310, Saarbrücken, Saar . . . . From G6LX (3A2AY): "Future cards for 3A2 stations can be addressed in care of 3A2AH, or 3A2AY-via-RSGB, unless the station is definitely known to be a DXpedition giving other QSL address. This will ensure that cards for [bona fide] contacts will reach the stations concerned as quickly as possible and cards for phonies will be returned to senders." Ron already has bounced over 400 cards confirming QSOs with n.g. 3A2s . . . . "[Because] there is no regular postal connection between Norway and Jan Mayen Island, QSL cards for LB6IE, LB6XD and LB8YB need not be sent by air mail addressed directly to them but may be sent through the Norwegian Radio Relay League. In due time QSLs will be received from this bureau." So writes NRRL secretary LA6QB . . . . KC6AA enlightens: "I will be glad to handle and forward all [Trust Territory of the Pacific Islands] QSL cards. Surface mail is rather slow and unreliable but air mail service is quite good — one plane each week." The Trust Territory includes all KC6 areas and the Marshall Islands part of KX6-land . . . . Reminders: QSLs for VQ3 VQ4 VQ5 VP1 VP2 VP3, etc., call signs ending in "RO" may go via RSGB. The same goes for Middle Eastern and African calls ending in "UU." QSLs for VQ1 VQ3 VQ4 VQ5 and VQ9 labels ending in "NZK" should go directly to W6NZK . . . . For the usual roster of individual QTHs we go into paragraph form this month:

CE2GW, Philip L. Meredith, U. S. Naval Mission to Chile, Casilla 58V, Valparaiso, Chile . . . . CR5AC, Anibal do Quental Barbosa, Vicente Santana, Cesimbra, Portugal . . . . CS3AC, 1936th AACS Sqdn., APO 406, % Postmaster, New York, N. Y. . . . . ex-DL4JN, Bill Stull, W4LAP, Box 38, Montverde, Fla. . . . . ET2PA, Box 379, Asmara, Eritrea . . . . FB8BP, B. P. 587, Tananarive, Madagascar . . . . FK8AC, Felix Franchette, P.O. Box 104, Noumea, New Caledonia . . . . HK1TH, G. E. Tietjen, Box 814, Barranquilla, Colombia . . . . HZ1AR, (W9OEB; QSL via W9CFT) . . . . KA7PL, R. E. McAllister (WØHEE), 483rd Comm. Sqdn., APO 75, % Post-

S/Sgt. Bob Olson. *Right center*, the set-up at KA7RC of Iwakuni, near Hiroshima, with operator Bob, ex-W6WBY in the driver's seat. KA7RC runs 800 watts to 813s feeding stacked rhombics erected over swampy ground. A 75-foot-high 3-element rotary is on hand to build up rhombic nulls. *Far right*, Navy club station KX6BU of Kwajalein, op Warren Carter, ex-KH6ACK-W6VIC, at the mike. KX6BU gets around well with a BC-610 rig, a double Sterba curtain, 75A-2 and Hammarlund receivers; a Globe King transmitter stands by. All photos except that of KA7RC are by courtesy of KH6ALM, Photo Hawaii, Honolulu.



master, San Francisco, Calif. _ . . . _ **KA8SC,** 50th Sig. Bn. Corps, 8174th AU, APO 14, % Postmaster, San Francisco, Calif. _ . . . _ **KC6ZA,** (Novice; QSL to KC6AF) _ . . . _ **KG6SA,** Leonard A. Westbo, jr. (W7MCU) % Coast Guard Loran Stn., Saipan, M.I. _ . . . _ **KJ6BA,** Leon L. Downing, 1959th AFCS Sqdn., Box 8, APO 334, % Postmaster, San Francisco, Calif. _ . . . _ **KL7FAI,** APO 942-7, % Postmaster, Seattle, Wash. _ . . . _ **KR6OE,** A2c Rae Hoopes (W5ZRV), 10th Operations Sqdn., Box 135, APO 239, % Postmaster, San Francisco, Calif. _ . . . _ ex-**KW6AR,** Ivan C. Lundblom, KZ5IL, Box 35, Cocoli, C. Z. _ . . . _ ex-**KX6BB,** (QSL to W1KKZ) _ . . . _ **LUØDDH,** (QSL via RCA, Argentina) _ . . . _ **OD5LX,** Ted S. Truszkowski, P. O. Box 1217, Beruit, Lebanon _ . . . _ **OH2RY,** Fjalar "Ed" Lindström, Lohja, Kaartokatu 3, Finland _ . . . _ ex-**PK1TM,** J. Bakker, Fuchsiapad 4, Lent O. B., Netherlands _ . . . _ **SU1FA,** (QSL via RSGB) _ . . . _ **SU1GG,** (QSL via RSGB) _ . . . _ **TI9AA,** (QSL via TI2TG) _ . . . _ **VK1EM,** (Macquarie Is.) E. L. Macklin, 112 Barrow St., Coburg, Victoria, Australia _ . . . _ **VP6AM,** Geoff. H. Scholey (G3CDR), 24 Highgate Gardens, Upper Collymore Rock, St. Michael, Barbadoes, B. W. I. _ . . . _ **VP8AQ,** Opr. Graham, Base H, South Orkney Islands, % Postmaster, Falkland Islands _ . . . _ ex-**VP8AU,** G. W. J. Bowles, 72 Warminster Road, Bathampton, Bath, Somerset, England _ . . . _ **VQ4CF,** Box 5163, Nairobi, Kenya _ . . . _ **VR3D,** Ray Baty, ex-VK2ANB, % Cable & Wireless, Fanning Island _ . . . _ ex-**VU5AB,** (G3JKV; QSL via G4ZU) _ . . . _ ex-**W2AOS/KG6,** Cmdr. Charles E. Biele, USN, 310 Buttonwood St., Mt. Holly, N. J. _ . . . _ **W5YAA/KG6,** Jerry Wilkinson, 852nd AC&W Sqdn., Box 8, APO 334, % Postmaster, San Francisco, Calif. _ . . . _ **YU1GM,** R. W. Thompson (W4GMP), Philco TechRep, AMAY Postal Officer, APO 777, % Postmaster, New York, N. Y. _ . . . _ ex-**ZD9AA,** (QSL via ZS1FD) _ . . . _ **5A2CO,** Butch H. Orrell (G3JHO), % Cable & Wireless, Ltd. Benghazi, Cyrenaica, Libya.

Contributors W1s APA APU DX JEL RAN WPO WPR, W2LYO, W6s ATO GPB, W8YGR, W9s CFT HUZ TGY, WØNCS, West Gulf DX Club *DX Bulletin* (W5FXN), and Mr. LeRoy Waite helped furnish the glossary preceding.

Whence:

Asia — Afghanistan notes from WØERC, instructing in English and radio fundamentals at the Afghan Institute of Technology in Kabul: "As yet no [amateur] licenses have been granted. There are several others working toward the same end and perhaps, if we can present a strong enough argument, YA might get on the [active] list before long. I have a 75A-2 and a 2-wavelength Vee beam, but so far very little is coming through from the States on 20, and nothing on 15 or 10. This is a DX paradise, though, so far as the variety of calls heard goes. They have granted one American group permission to contact each other from one city to another within the country, but not to anywhere outside. It is a precedent, though, and may be indicative of better times." Good luck to WØERC and those ham missionary efforts! . _ . _ . _ "C1CQ, C6AA and C9AA appear to be in Red China and all give QSL QTH as care of CARL, Shanghai." — W2AOS/KG6 . _ . _ . _ W3MGL, W4GJF, W4ZKC and K4WAF do the operating at MARS AB1US, a newly authorized station on Formosa . _ . _ . _ From KA7PL: "I have been on the air over here for about a year and have had many good Stateside contacts. DX hasn't been too good. A few European openings now and then, Ws coming through fine in the A.M., but Africa is out of the picture altogether." . _ . _ . _ KR6OE tells us that KR6ME (W2WMN), confined in an Okinawa hospital for an operation, brought his station along and worked, among others, Capt. Kurt Carlsen aboard *Flying Enterprise II* in Singapore. KR6OE was an eyewitness marooned in an adjacent bunk with a suspected case of appendicitis that didn't pan out . _ . _ . _ W7VCL, W2GKI and W9VAA man the paraphernalia at KA8SC. The boys include s.s.b. on their agenda . _ . _ . _ KR6AA (W4VE, ex-KA2AA-KA9AA) reports that KR6s now may use 7125–7150 kc. on c.w. and anticipates further increase in the allocation, perhaps the whole band, soon. Fred has a 10-wavelength long-wire with one lobe firing at the eastern U. S. A. _ . _ . _ HS1D is none other than Jim Fry, W4VHL, ex-W5HBQ-TA3FAS. He's in a spot that doesn't permit him to chew with W/K stations but he can be reached by mail sent in care of the American Embassy, Bangkok, Thailand. HS1D is able to work all bands with 100 watts and long-wire — let's hope we'll be able to work HS1D soon.

Africa — Ex-VS9AO-MT2E is now perking as 5A2CO in Cyrenaica. Butch confirmed the six QSOs he made while on Kamaran Island last year. Kamaran, by the way, goes with Aden on the Countries List and one of its features is a quarantine station for incoming Mecca-bound pilgrims . _ . _ . _ W9OEB's Arabian oil job allows him to put HZ1AR on the air sporadically, as verified by back-home friend W9CFT . _ . _ . _ A 5A4TG letter to W2OBU states that ham tickets cost three pounds in Libya. Paul's shack is just 400 yards from the sea, necessitating considerable receiver audio gain. Local ether must be shared between amateurs, AACS, and MARS stations, so 5A4TG is not quite as active as he would like to be. Among his other difficulties is the maintaining of a nonsoft stock of 6AK5s — they go fast over there . _ . _ . _ FB8BP makes Madagascar workable with a 15-watt grid-modulated 14-Mc. 'phone piped into a Windom . _ . _ . _ Although ZD9AA is QRT, ZD9AB should be making himself more popular on DX bands from now on . _ . _ . _ EA9DE was hoping for some Ifni operation in early March, according to W5FXN and WGDX's *DX Bulletin*.

Oceania — More on Pacific Trust Territory doings from KC6AA: "The Territory is made up of five districts, their surrounding small islands and atolls, with the district administrative centers being Majuro, Marshall Islands; Ponape, eastern Carolines; Truk, eastern Carolines; Yap, western Carolines; and Koror (Palau), western Carolines. There are fellows licensed in all these districts but some are not too active right now. There have been club station licenses issued for all given district centers, also, and we hope to have a club station going in each of them soon. The more active at present are: KC6AA, Yap; KC6AF, Yap; KC6AG, Ponape; KC6KU, Kusai (Ponape district); KC6UZ, Truk; and KC6AE, Koror. These stations can be found almost nightly on 20 or 40, 'phone or c.w. We have been making progress here on Yap with our club station, KC6YI. We have constructed our own typhoon-proof building, have a 50-foot tower for a beam, plans laid out for a Vee beamed on the States, and a kw. rig under construction (a Viking driving a 450TH modulated by 810s). We plan to be on both 20 and 40, 'phone and c.w., very soon." _ . _ . _ Fanning Island's VR3D gets the once-over for us by W8BKP and W6DZZ. Now active on 20 and 40, it appears Ray will be on Fanning for two years or so. He runs

The pair of chatfests recorded below is typical of what goes on when DXers congregate. In the picture at left, seated from left to right, are XE2DB, W9AND and LMRE (Mexico) president XE1N; standing, XE1NK, XE1BB, XE1GE, contest phenom XE1A-XF1A, and XE1JK. The occasion was a recent LMRE meeting with ARRL Director (and adept DXer) W9AND attending as guest. The GIs in the shot at right are (l. to r.) KR6AZ, KR6BA and KR6IT, no strangers to the realm of 20-meter DX doings. They're sorting incoming DX QSLs on Okinawa and may cause a little confusion in their own right because all three are named Bates.

20 watts and has been observed most available around 0500 and 1000 GCT. VR3D allows as how he's somewhat more popular at that QTH than he was as a VK2! In his first three weeks of activity he QSOd 300 stations in 20 countries, plus 25 United States. Ray has plans for a 60-watter and also is thinking of 160 meters. The earliest Fanning mail delivery — they are very infrequent — is scheduled for the end of this month. Get those cards on the road! . . . . . Novices and DXers specializing in Novice DX will be interested to note the availability of KC6ZA on Yap. She is KC6AF's 10-year-old daughter, Judy, and it seems that she accomplished quite a few "firsts" in procuring that license! This tip thanks to W9HUZ . . . . . Ex-KX6BB (W1KKZ) states he's standing by to answer QSL requests in his back-home Maine QTH — full QSO data are prerequisite . . . . . WØOCA, now probably WØOCA/1, mentions KG6GX activity on Chichi Jima. In Joe's 68 days of Guam activity he contacted 110 countries using mostly c.w.; a 730-foot east-west rhombic helped . . . . . Ex-KW6AR (see "Where"), now making noises as KZ5IL, is QRX for any QSL inquiries pertinent to his Wake activities. Ivan is with CAA . . . . . Saipan's KG6SA, operated by W7MCU, usually hangs around 7030 kc. from 0700 to 0900 daily (GCT). Leonard heads back to the mainland shortly and hopes to have his Saipan baton taken up by active-ham replacements . . . . . ZL3OX, accumulator of 77 7-Mc. countries from Timaru, will take up residence in Lethbridge, Alta., in June. "I intend hitting the air as soon as possible after arriving. Have been active for five years, the last four spent mostly on c.w. My competitor, ZL3GQ, is 300 yards down the road and has worked near the 100-mark on 40, about top score for ZL." Jack is curious as to how his VE6 come-back percentage will compare with ZL3 work . . . . . The Marianas Amateur Radio Club now boasts seventy members, thirty of whom are on the air.

Europe — G6LX (3A2AY) contributes Monaco information in addition to that appearing in "Where." Monaco's resident-amateur activity lines up as follows: 3A2AH, 7, 14 and 21 Mc.; 3A2AJ, 14 Mc.; 3A2AM, active only on school holidays; 3A2AU, likewise; 3A2AX, 14 Mc., QRP; and 3A2BA, the same. These native Monaco hams work no c.w. and aren't very DXish. Three other 3A2s — AW AY and BM — were operated during 1953 by SM5ARP (due back there this May), G4QK-G6LX, and G5MP. Speaking for G4QK and himself, Ron writes, "We hope to be active again from either 3A2 or another semi-rare European country next summer." . . . . . The British Two-Call Club now has 122 members in 22 countries whose call signs number 369 among 73 prefixes. Membership is available to all British subjects who have held call signs in any two countries. This from club secretary G2DHV (ex-XAHV-GW2DHV-G3HEV) . . . . . W1RAN notes that OH2RY recently passed the 200-worked mark . . . . . Concerning mail contact with Jan Mayen, LA6QB states, "I can tell you that before summer there are only spurious visits at Jan Mayen by fishing vessels. . . . These vessels carry no mail at all." . . . . . Ex-DL4JN (W4LAP) tallies his 18-month Germany activity at 123 countries worked and 107 so far confirmed. Bill was the first DL to qualify for WAE. Now that he has retired from the Air Force a Lt. Col., he can really hit those kc. heavily . . . . . Another returner is ex-DL4EF, back in business as W3ORO . . . . . Old-school DXers will be sorry to note ex-SV1KE's call in this month's Silent Keys. Charlie was amateur radio's principal pioneer in Greece and, although not on the air in recent years, SV1KE was one of the prewar European standouts on 14 Mc. He handled the SVØ QSL bureau up to the time of his passing . . . . . No sooner do we mention ex-CN8EG's firing up again in Massachusetts (W1PWK) than he's over the horizon again, this time personally visiting CT1 IT1 SVØ and sundry other European vicinities. TVI, Steve? . . . . . Ex-F7BS-W7MIC has settled down at Mt. Clemens, Mich., and Woody already has 49 countries confirmed as W8PWB . . . . . WØMGB tests his tonsils at the mike of CS3AC, according to W1WPR . . . . . American winners in the c.w. portion of the Sixth All-European DX Contest, 1952, are Ws 1RY 2WZ 3OCU 4CEN 5FNA 6BAX 7PQE 8DLZ and 9FKC (no zeroes listed). W2WZ has the highest score, 7502 points. OK1HI's 5360 points is tops on the Continent. Sponsor of the 1952 shindig was EDR (Denmark) . . . . . There's an unusual Yugoslav station about to open up. Yank W4GMP was issued a 1st-Class 250-watt permit to operate as YU1GM. He'll be using a Viking II, c.w. and 'phone, on several DX bands; W4s FBH and ZD are shipping the gear that will do the job.

South America — Regarding the proposed DXpedition to Trinidad (not the VP4 job), Mr. Flavio Serrano of LABRE (Brazil) writes that it has been postponed again, "But, as its organizer, I can assure you that I am making every possible effort to make it real. Hams to go along include PYs 1ANU 1BV 2BEN 2CK 3DZ 4IE and 4KL." The probable call is PYØAA. Effective advance notice is promised . . . . . G. W. J. Bowles, former op at VP8AU, regrets that he will not be able to return to South Georgia, for reasons of health. "I ceased to be VP8AU on Dec. 31, 1953, and have been QRT since March, 1953. All QSOs have been QSLd through bureaus but if anyone is still awaiting a card from me I will be pleased to oblige." See "Where." . . . . . W8WEG, with a freshly-received card from PZ1W, wonders whose call was mistaken for his own; he didn't work the fellow. The QSL lingered in the Detroit post office for eight years.

(Continued on page 138)

DX CENTURY CLUB AWARDS

HONOR ROLL

W8HGW....253	W6VFR....246	G6RH.....243
W1FH.....252	W6ENV.....245	W3JTC.....242
W3BES....250	W2BXA.....244	W3KT.....241
G2PL.....250	G6ZO.....244	LU6DJX....241
WØYXO.....248	W3GHD.....243	PAØUN.....241
	W6AM.....243	

RADIOTELEPHONE

PY2CK.....231	ZS6BW.....212	W8HGW....205
W1FH.....224	W1NWO....210	SM5KP.....205
VQ4ERR....221	W1JCX.....209	W2APU.....202
XE1AC.....215	W1MCW....205	W9RBI.....200

From January 15, to February 15, 1954, DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

LU3EB.....120	CN8AF.....106	G3EBH.....101
W4KL.....115	W5UCQ.....105	PAØKE.....101
W1MX.....112	W2MZB.....103	PAØTAU....101
PY5AK.....109	W3PGB.....103	SU1XZ.....101
W3EFZ.....107	VE1BK.....103	K2GFQ.....100
ZC4IP.....107	W3PA.....102	W9ESQ.....100
W9MQK....106	LX1AS.....102	DL1BS.....100

RADIOTELEPHONE

OZ3Y.....122	W8CLR.....105	W9DPI.....101
LU3EB.....110	CO2BK.....104	W2FXE.....100
ZL2JB.....106	W1PST.....101	W3PA.....100
W7AHX.....105		XE2KW.....100

ENDORSEMENTS

W6MEK....240	KV4BB.....156	W5OLG.....135
W6ZCY.....221	LA6U.....155	DL1YA.....132
ZS6BW.....220	VE2BV.....151	W1MIJ.....130
W4TM.....214	CX1BZ.....151	W2CWK.....130
W1GKK.....210	W5BNO.....150	W4HQN.....128
W3DHD....200	HB9MQ.....150	W2FXE.....124
W5LXY.....200	SM3ARE....150	G5IV.....122
W6UHA.....194	VE1HG.....150	W9NN.....120
W6LW.....185	YV5AE.....150	W6JU.....115
W2PRN.....180	G8RC.....146	W8NGO.....114
W6GPB.....180	W2AZS.....144	W8CLR.....112
F8PQ.....180	G3CBN.....142	ZE3JP.....111
W3ALB.....171	W4EPA.....141	W2ESO.....110
CN8MM....163	W9UZS.....141	W9IOP.....110
W1LZE.....162	W2OCI.....140	W9KXK.....110
	W6DBP.....140	

RADIOTELEPHONE

W2AFQ.....190	W5KUC.....139	WØJRY.....122
CM9AA.....170	KV4BB.....134	W6GVM.....122
G3DO.....170	LU4DMG...132	W3DWA.....115
PY1AQT....152	W1GKK.....130	I1CQD.....113
W8DMD....151	F9PH.....123	W8NGO.....110

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
R. L. WHITE, W1WPO, Asst. Comm. Mgr., C.W.
PHIL SIMMONS, W1ZDP, Communications Asst.

GEORGE HART, W1NJM, Natl. Emerg. Coördinator
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, WN1ZJE, Administrative Aide

You and Civil Defense; AREC/RACES Demonstrations Helpful. A coördinated system of precautions has been formulated, embracing communications as one important section of the nation's civil defense. But there is a degree of public apathy, and lack of appreciation of the realities. Inertia perhaps is founded on a sort of fatalism. In view of the fact that the store of guided missiles and bombs is increasing on both sides every day, the position of defense is daily a more pressing and vital concern. We communicators with technical know-how can understand those realities. Also in our own sphere, we communicators have seen the recent need for use of stand-by radio emergency provisions in Waco, Flint and Worcester. Preparing to cope with the worst possible disaster requires that effort in all directions be *stepped up*. Should a sneak attack hit in this atom-powered era, it would indeed be the worst possible disaster.

Recruiting, testing and extending *amateur* communication plans within the AREC and RACES framework is much needed. RACES plans have indeed been rolling into Washington. The full number having FCC-FCDA approval had come up to 71 by January, including the plans of 17 states, and with more on the road to approval. Under these plans, set up as explained in April '53 *QST*, there can be, under each, one or a large number of FCC amateur station authorizations in the Radio Amateur Civil Emergency Service. Some amateurs may have missed the significance that *just* the station authorizations under RACES would count: those in fixed and flexible plans at the points needed in c.d. work, after an attack. Please review that *QST* article; then through your local ARRL Coördinator or Radio Officer *explore what progress has been made* in your own city, county or state; get signed up in an approved plan if you can.

RACES station authorizations may be made only by FCC under an approved c.d. plan. RACES rules are a sub-part of the amateur service rules, complete text in the ARRL *License Manual*. (1) Individual amateur programs should embrace RACES, not only to get RACES going on a larger scale, but to be making broader usage under our own regulations. (2) ARRL recommends to all ECs and ROs that they implement and test their groups in exercises approved by their appropriate local-government c.d. authorities. This should be done with fullest deployment of AREC- and RACES-signed persons within this group in the key and strategic c.d. spots (and frequencies), considering that they might be the only ones to carry along after Conelrad conditions prevail. (3) All concerned, we think, should demonstrate physically, for the group and the public as well, the stage of preparedness reached. This can be done by communications tests and in support of other c.d. exercises. As we see it, *all* the noise and excitement, properly supported by the press and local officialdom, can have important results in three directions: the forging and perfection of a single-facility radio stand-by for c.d.; the arousing of the public to the real state of their preparedness; and the proper crediting of the amateur part in plans so truly in our public service tradition.

Tip to Watch Harmonics. All harmonic shadows of our oscillator frequencies are worth constant and careful watching. Harmonics beyond the useful ones should be attenuated or suppressed. Those in multiplier stages can be bottled up by shielding, kept where they belong by lead filtering and faraday shields. The *Handbook* spells out the fairly obvious remedies. ARRL Observers, knowing about such faulty techniques, continue to help individuals keep out of trouble with FCC through their sending of co-operative-notice forms. A report from OO W1IKW reads: "Have noted quite a few ham signals around 5460 kc. . . . all users of 40 meters. Evidently these are third harmonics of 160-meter oscillators. While the 4th harmonic ends up on 40, it would appear that 3rd harmonic content is in the final and being accepted by the antenna. A W2, S8 on 5468 kc., mentioned operating on 40 'phone."

Originate and Relay Only Complete Messages. Pacific Area Net News (W7FIX) reports: "In an effort to place speed ahead of accuracy, stations have been leaving out important parts of the preamble, check or word count and the place of origin. Traffic handling, like golf or pinochle, is a game; but you or other players would justifiably howl to high heaven if one playing with you departed from the set rules in those games. There are traffic handling rules on the parts and order of the messages which should be observed *if you want to play right.*" In accepting traffic for relay don't be willing to accept or receipt for an incomplete message. Such practices degrade our standards of service as well as your individual standing as an operator with know-how. By use of procedure signals to the operator giving you traffic or a service message back to the originating station, you can get those missing parts and put the bee back on the originator of defective traffic, whoever he is.

Net Practice of Leaving a Receiver on the Frequency. Many amateur expressions extol the virtues of nets for their high communications ability, or their inclusion of stations otherwise working at random in the bands. In speaking of the ways of using nets VE7QC in the So. Alberta Amateur Radio Club's *R.F.* writes, "I would like to see the chaps take realistic views toward the net, and balance faults against good points with open minds. [In our AREC Net] we have any number of low-power stations checking in, some of them using as low a power as one watt. These chaps are heard only at net time and depend on the net to get them through. . . . Many stand by or listen on the channel who are not active in the round table. Ask if so-and-so is on, nine times out of ten you will get an answer. . . . It is a practice of all net members, whenever they are home, to leave their receivers tuned [on the net frequency] so that if a call comes through it will be heard."

TCC, Area, Regional, and Section Nets. The National Traffic System has been established on an area and regional basis as prescribed in the League's governing rules, to benefit all members and amateurs and to provide a systematic interchange plan for traffic to and from all sections — national coverage. All of you who read these pages may use your own Section Net (see Net Directory, sent on request) by reporting into it on frequency at the proper hour to clear any word you wish to send by radiogram to another part of the U. S. A. or Canada.

The NCSs of our traffic nets ask and welcome stations nightly, at least one from each city and town and hamlet in their section's geographical area. This is to make the system not only nationwide, but capable of as complete as possible local delivery service or coverage. Daily attendance is needed where we have but one reporting station per town. The ARRL Regional and Area (time zone) Nets are the interconnecting system between the states or sections. These nets are provided organizationally for systematic transfer of traffic in the over-all picture between times of operation of the section nets. Local nets designate stations (can be different ones on different days) to "give and take" into these higher nets. It works beautifully where fully staffed, and a TCC (Transcontinental Corps) group is this season operating. The TCC fills gaps and surmounts the peculiar seasonal "skip" troubles that have beset nets as well as DX this year. TCC men observe schedules, at times and on frequencies of their best mutual convenience, in order to take traffic over particular hops known to the NTS Manager (ARRL). Daytime frequencies for daytime work, teletype, c.w., 'phone, facsimile, *any* amateur facilities or methods can be used — provided there is a similar station to be paired off at or near the points where the traffic flow east-to-west or west-to-east, etc., requires. A good level of *power* is desirable for reliable skeds between areas; the last and an essential requirement is that each end of a link reconnect through its own or companion facilities in the same neck of the woods, to relay onward into the correct area and regional net distribution system, of course. Traffic men are not all speed merchants, though they develop high copying ability and no mistake. Any volunteers? Drop a line to ARRL Hq., Attn. NTS Mgr., to be put on a waiting list to help fill out TCC.

— *F. E. H.*

JANUARY CD QSO PARTIES

For the first time in the popular quarterly CD Parties, open to holders of ARRL Communications Department appointments, the top spot in the c.w. section went to a Texan. Official Observer W5RID did the trick, totaling 132,750 points. Close on his heels was CD enthusiast W6BIP, ORS out San Francisco way, with a 127,832-point tally. And M.I.T.'s W1MX, piloted by W4YHD, made a peachy showing with the third highest score of 116,400 points. In the sections-worked department, W1JYH took top honors with 61, followed by W1MX and W4HQN at 60 apiece.

In the 'phone party the next week end, W4HQN, with OPS W4NTZ running the rig, chalked up 164 contacts in 52 sections for 43,680 points, smashing all previous records for number of contacts and sections worked. And by doubling the number of QSOs he made in October, OPS W9KDV moved up into the number two slot, scoring 35,775 points, 159 contacts, 45 sections. The West Coast was ably represented by OBS W6UGA, whose 33,669-point total, highest ever from W6, easily earned him third position.

Listed below are the highest claimed scores. Figures following each call indicate claimed score, number of contacts and number of ARRL sections worked. Final and complete results will appear in the April CD Bulletin.

C.W.

W5RID	132,750–447–59	W3DVO	67,340–252–52
W6BIP	127,832–241–58	WØIUB	65,880–244–53
W1MX[1]	116,400–381–60	W2IFP	62,250–242–50
W7CCC	112,752–232–54	W9CMC	61,040–214–56
W1JYH	111,325–359–61	W1IKE	65,525–262–45
WØTKX	104,725–348–59	W4VHH	59,925–235–51
W4UJJ[2]	97,645–331–59	W2CWK	58,590–211–54
W4PNK	96,280–332–58	W8GBF	56,430–191–57
W4YZC	96,040–338–56	W8IFX	56,160–216–52
W6ISQ	95,975–190–55	W1ODW	55,620–206–54
W4HQN	91,200–297–60	W4VBX	55,550–202–55
W3KUN	91,000–318–56	W2LPJ	54,060–207–51
W2ANG	90,200–323–55	W2IVS	53,865–182–57
W4WKQ	89,030–307–58	W5MRK	53,560–201–52
W4NH	87,920–314–56	W3LMM	53,040–200–52
W6CMN	86,130–175–54	WØOLB	52,380–187–54
W1EOB	85,550–283–59	W8LHK	51,255–201–51
W8NOH	82,500–290–56	W1RAN/1	51,075–221–45
W8TZO	79,650–288–54	WØPHR	50,700–195–52
WØFQB	79,490–261–53	W3AXA	50,490–193–51
W2ZVW	77,280–269–56	W2DGW	50,290–214–47
W3EEB	73,425–262–55	WØSMV	50,250–201–50
W4BZE	72,800–255–56	WØOMC	50,180–186–52
W1ZDP	72,080–265–53	W1AQE	50,160–209–48
W4SNH	70,740–257–54	W4OGG	50,150–200–50

'PHONE

W4HQN[3]	43,680–164–52	W3VKD	11,550– 77–30
W9KDV	35,775–159–45	W4KRR	11,550– 59–35
W6UGA	33,669– 87–43	W5APW	9075– 51–33
W8NOH	31,500–145–42	W8FUM	8450– 65–26
W2ZVW	26,660–117–43	W5IWJ	8060– 52–31
W4NYN	26,640–148–36	WØHRY	7695– 53–27
W4YE	22,800–120–38	W5MFX	7685– 47–29
W2MHE	22,680–108–42	W1AQE	7670– 59–26
W4LK	19,425–105–37	W4JUJ	7280– 49–26
W1CJK	18,900– 90–42	W3LMM	6600– 51–24
W1CRW	16,320–102–32	W8PM	6500– 50–26
W6QJH	16,065– 51–35	W9RZS	6440– 46–28
W1FZ	15,900–101–30	W8URM	6315– 43–27
W4UJJ[4]	15,355– 83–37	W3KUN	6095– 46–23
W8MGC	15,170– 82–37	W9SAA	6000– 44–25
W3RVS	14,430– 78–37	W9VBZ	5250– 42–25
W9WFS	12,540– 71–33	W4WHC	5160– 43–24
W8HOX	11,900– 65–34	W1YYM	5035– 46–19

[1] W4YHD, opr. [2] W4ARE, opr. [3] W4NTZ, opr. [4] Four oprs.

With an increasing number of RACES authorizations being made, the demand for over-all guidance in setting up and operating in RACES has become greater. Amateurs naturally turn to their ARRL for such guidance. So far, the amount we have been able to give is limited by the extent to which our sponsoring federal government agency has been able to consider the aspects of amateur participation in civil defense communications through RACES.

The Federal Civil Defense Administration is divided into several "offices," one of which is the Warning and Communications Office under Col. William M. Talbot (USAF, ret.). Within Col. Bill's office there are two divisions, the Local Warning and Communications Division and the Federal Warning and Communications Division, under Mr. A. P. Miller and Mr. W. A. LaRue, respectively. In the Local Communications Division sits Mr. G. S. O'Connor (W3BDR) who takes care of many matters, one of which is the processing of RACES applications. The only other amateur in that division is its Deputy Chief, John Morris, W3IFS. In the Federal Warning and Communications Divisions are two more amateurs, Ed Webb, W3UP, and Royce Williams, W3UH. While these amateurs are interested and occasionally participate in RACES matters needing interdepartmental coördination, Stew O'Connor has the basic responsibility for processing RACES plans on the way to FCC, along with his many other responsibilities.

Repeatedly, ARRL has tried to convince Col. Bill and Al Miller that there is a necessity and desirability of having at least one qualified man spend *full* time on RACES at the Washington level, that there is more to consider in civil defense communications than matching funds and plans of large commercial manufacturing and communications service concerns. Repeatedly, our pleas have fallen on sympathetic but unresponding ears. The situation being what it is, RACES plans receive the part-time attention of one man; RACES procedures, implementation and promotion, little or no attention.

The question then facing us is this: with this amount of federal implementation of RACES, what can *we* (ARRL) do to give amateurs the guidance in RACES that they require? The answer is obvious, but not easy: extend to a maximum our own time and effort, to the extent it is welcomed, in assisting FCDA to promulgate, sponsor and officially recommend the measures necessary to promote RACES. This we have done and are constantly doing.

One of the things which have recently come out of this policy is an article by John Morris, W3IFS (of FCDA), on the subject of Communications in Civil Defense. While dealing with the amateur only along with all other existing facilities, the article paints a very liberal and quite lucid background of civil defense communications — a background which, it occurred to us, we amateurs ought to have, even though much of it has nothing to do with amateur radio itself.

We had hopes of being able to present the final coördinated result in this issue of *QST*, but government publicity bureaux do not move quite that fast. Now we are aiming at May *QST*. We hope all amateurs interested in civil defense will read the article by W3IFS carefully and get some idea of the tremendous scope and complexity of the civil defense communications problems FCDA has to deal with.

If all goes well, we hope to follow up with additional *QST* articles dealing with some of the details of RACES. We thought and FCDA agreed that an initial article should define the size and shape of the problem in its proper perspective, for two reasons: (1) so that some amateurs will be disabused of the notion that RACES is all things to all civil defense directors, while (2) other amateurs will be apprised of just how much reliance is being placed on us for civil defense communications.

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A parted telephone cable near Macon, Georgia, severed communications with the Macon airport on October 4, 1953. Since Macon is important as an alternate landing field for Atlanta, W4FKE, who works at the Atlanta airport, called upon W4TJS in Hapeville, near the airport, to establish communication with Macon. They finally succeeding in contacting W4LXE in Macon, and subsequently the Macon Amateur Radio Club station, W4BKM, was set up at Cochran Field with W4TED as operator. W4LXE operated mobile, while W4SPD operated the W4LXE fixed station. Other Macon operators were W4s UMN and JMW. K4FAL at Warner Robbins AFB also assisted in handling traffic, with W4UZS doing the operating there.

Outlets were also needed at Savannah and Montgomery. These were supplied by W4KGP (himself and W4OPE operating) and W4DJW for Savannah, and by W4AUP at Montgomery. Traffic was handled for Eastern Air Lines, Delta-C&S Air Lines, Southern Airways, C.A.A. Communications, U. S. Weather Bureau and Air Route Traffic Control Center. Traffic consisted of flight plans, company clearances, airways clearances, weather reports, plane dispatches and weight manifests. W4TJS did an especially fine job at the Atlanta end by 'phone patch to the above agencies at the Atlanta Municipal Airport, where messages received were perforated for teletype and fed to the normal circuits. This emergency came at a time when many of the amateurs were engaged in the ARRL Simulated Emergency Test. W4LXE, W4KGP and W4AUP are ECs for their respective

NATIONAL CALLING AND EMERGENCY FREQUENCIES

C. W.	*'PHONE*
3550 kc. 14,050 kc.	3875 kc. 14,225 kc.
7100 kc. 21,050 kc.	7250 kc. 21,400 kc.
28,100 kc.	29,640 kc.

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be *vacated immediately* to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: *c.w.* — 3535, 7050, 14,060; *'phone* — 3765, 14,160, 28,250 kc.

NATIONAL RTTY CALLING AND WORKING FREQUENCY

3620 kc.

The City of Malden, Mass., donated a paddy wagon to its hams to be built into a mobile communications unit for civil defense. In picture at left, snapped on the occasion of a demonstration visit to Lynn, are (left to right) W1s HRA JLN LD WCB and HKG. *Photo by W1VRK.*

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counties. The entire operation made a very favorable impression on civil defense officials in the areas involved.

— *W4HYW*

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December SEC reports were received from SECs of N. Y. C.-L. I., So. Dak., New Mex., W. N. Y., Nevada, San Joaquin Valley, Ont., Tenn., Wis., W. Va., E. Fla., and Los Angeles. None of these was a new section for 1953. AREC members numbering 2866 were represented.

That about winds us up for another year. Report-wise, 1953 was less successful than 1952. Following are some comparative figures:

One-hundred per centers: Nevada, Western N. Y., Eastern Fla. and Wisconsin. Eastern Fla. and Western N. Y. were also 100 per cent in 1952. Others reporting better than 6 of the 12 months: S. Dak. (11), E. Bay (10), N. Y. C.-L. I. (10), Vt. (10), W. Va. (8). Six times or under: Los Angeles (6), So. N. J. (6), New Mex. (6), Santa Clara Valley (5), British Columbia (4), Iowa (3), Nebraska (3), Ontario (3), Colo. (2), Okla. (2), San Joaquin Valley (2), Montana (1), Sacramento Valley (1). This totals 25 different sections compared to 29 in 1952, 154 reports altogether compared to 204 in 1952.

Sections not listed above have not favored us with a single SEC report in 1953. As mentioned once before in this column, reporting isn't everything, but it would be nice if every SEC could drop us a report *at least once per year* to let us know he's alive. Forms 8 are available to any SEC upon request.

ELECTION NOTICE

(*To all ARRL members residing in the Sections listed below.*)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Sections. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are *required* on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested: (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL [place and date]
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the .....
.....ARRL Section of the .....
Division, hereby nominate .....
as candidate for Section Communications Manager for this Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— *F. E. Handy, Communications Manager*

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon *	Apr. 15, 1954	W. R. Williamson	Mar. 17, 1949
West Indies	Apr. 15, 1954	William Werner	Aug. 15, 1952
Utah	Apr. 15, 1954	Floyd L. Hinshaw	Feb. 18, 1954
Washington	Apr. 15, 1954	Laurence Sebring	Mar. 10, 1954
Nevada	Apr. 15, 1954	Ray T. Warner	June 15, 1954
Eastern Mass.	Apr. 15, 1954	Frank L. Baker, jr.	June 15, 1954
Ontario *	Apr. 15, 1954	G. Eric Farquhar	June 15, 1954
Idaho	Apr. 15, 1954	Alan K. Ross	June 17, 1954
Kentucky	Apr. 15, 1954	Ivan C. Kelly	Resigned
No. New Jersey	May 14, 1954	Lloyd H. Manamon	July 26, 1954
New Hampshire	June 15, 1954	Carroll A. Currier	Aug. 15, 1954
Nebraska	June 15, 1954	Floyd B. Campbell	Aug. 15, 1954
Arkansas	June 15, 1954	Fred Ward	Aug. 16, 1954
Montana	June 15, 1954	Edward G. Brown	Sept. 1, 1954

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

East Bay	Guy Black, W6RLB	Feb. 15, 1954
Maritime	Douglas C. Johnson, VE1OM	Feb. 15, 1954
No. Dakota	Earl Kirkeby, WØHNV	Feb. 15, 1954
Tennessee	Harry C. Simpson, W4SCF	Apr. 15, 1954
Arizona	Albert H. Steinbrecher, W7LVR	Apr. 15, 1954
Alberta	Sidney T. Jones, VE6MJ	May 1, 1954

In the Virginia Section of the Roanoke Division, Mr. John Carl Morgan, W4KX, and Mr. Fred J. Friel, jr., W4KRR, were nominated. Mr. Morgan received 182 votes and Mr. Friel received 124 votes. Mr. Morgan's term of office began February 11, 1954.

A.R.R.L. ACTIVITIES CALENDAR

Apr. 2nd: CP Qualifying Run — W6OWP
Apr. 10th-11th: CD QSO Party (c.w.)
Apr. 12th: CP Qualifying Run — W1AW
Apr. 17th-18th: CD QSO Party ('phone)
May 1st: CP Qualifying Run — W6OWP
May 11th: CP Qualifying Run — W1AW
June 5th-6th: V.H.F. QSO Party
June 6th: CP Qualifying Run — W6OWP
June 16th: CP Qualifying Run — W1AW
June 19th-20th: ARRL Field Day
July 2nd: CP Qualifying Run — W6OWP
July 15th: CP Qualifying Run — W1AW
July 17th-18th: CD QSO Party (c.w.)
July 24th-25th: CD QSO Party ('phone)

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Here's a group picture of the Amateur Radio Caravan Club of New Mexico, Albuquerque Chapter, taken on the occasion of deputization of 22 Caravan Club members by the Sheriff of Bernalillo County, N. M. The Caravan Club holds most of its meetings on the air, occasionally uses the club rooms of the Sandia Base Radio Club. All members have mobiles. (*Photo by Skrondahl*)

FCC exams comprised the "finals" for students of the Braintree (Mass.) Amateur Radio Club. Seventeen students made the grade in December thanks to the code and theory instructions of W1s AUU EKG GM JOB MPT OSX QPT QVN and RDV.

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BRASS POUNDERS LEAGUE

Winners of BPL Certificates for January traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3CUL	296	2131	1621	488	4536
KA7LJ	625	1890	1734	153	4402
W6IAB	74	1568	1485	83	3210
WØTQD	7	1380	1375	5	2767
W7JEF	105	1198	1077	121	2501
KL7AIR	24	1042	933	95	2094
W4PL	21	1014	872	100	2007
KA3AC	870	921	125	54	1970
W7BA	32	789	752	33	1606
KØAIR	20	774	777	17	1588
WØBDR	9	786	770	8	1573
W9JUJ	19	772	681	56	1528
W5MV	55	693	393	296	1437
W4YIP	17	705	645	51	1418
W2BTB	121	610	526	119	1376
WØSCA	3	565	556	8	1132
K7FAE	33	522	477	45	1077
KA7RC	142	446	126	20	1034
K4WAR	118	448	359	89	1014
W4PJU	24	490	409	81	1004
W6ELQ	10	463	452	37	962
W7PGY	21	458	443	15	937
KH6FAA	98	390	314	55	857
W9NZZ	269	290	1	287	847
WØKHQ	6	405	399	3	813
W4USA	35	360	284	104	783
WØCPI	14	343	307	36	700
W6GJP	7	321	328	43	699
W9VBZ	30	320	251	69	670
W2CQB	13	323	287	29	652
W7NOW	49	7	586	7	649
W4OGG	17	308	271	31	627
K5FEF	77	270	247	20	614
W3WIQ	22	284	286	20	612
W6QJH	7	298	290	15	610
W9TT	25	319	227	36	607
W3USA	35	273	168	105	581
W2RUF	31	275	247	26	579
W2KFV	44	254	186	68	552
W7QYN	7	277	250	5	539
W1CRW	11	263	254	7	535
VO6U	123	204	34	170	531
Late Reports:					
K6FCA (Dec.)	39	1174	1191	22	2426
KA8AB (Dec.)	259	750	675	75	1759
W3USA (Dec.)	125	340	216	124	805

BPL for 100 more *originations-plus-deliveries:*

W9QIN	148	W9UNJ	109	Late Reports:	
WØRTA	148	W9IMN	107	W9CGC/9 (Dec.)	301
W6YAS	117	WØUSY	103	K1WAV (Dec.)	185
W4DRD	110	W2AEE	100	WØRTA (Dec.)	121

The BPL is open to all operators who report to their SCM a message total of 500 or more, or 100 or more originations-plus-deliveries for any calendar month.

TRAFFIC TOPICS

On February 10th, at an impressive ceremony in Washington, W9NZZ was presented with the 1953 Edison Amateur Radio Award. We had the honor to be present as an invited guest of General Electric. To say that we were mighty proud of Stan would be putting it mildly, and this pride was heightened when, after being praised and honored to the very skies by dignitaries in both industry and government, Stan acknowledged briefly in a mien which equaled, if it did not exceed, the dignity and ease of those who made the various speeches preceding the presentation.

Although gratified that Stan was the 1953 recipient of the Edison Award (and well deserved it was, too), we want to point out that in our own small way we recognized his service to isolated Arctic personnel long ago. In *QST* for March, 1952, page 65, we recognized Stan's extraordinary performance by saying that perhaps the call of W9NZZ in BPL "ought to have a gold star after it." Under date of Feb. 11, 1953, he was issued an ARRL Public Service Certificate for "maintenance of contact with and handling morale and emergency traffic with and for personnel of Far North weather installations."

The presentation of the GE Edison Award to W9NZZ, while a great honor to Stan, was also an honor to and recognition of the traffic-handling fraternity of amateurs, of which you and I are members. (See page 16.)

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Have you seen the new ARRL Net Directory? A total of 292 nets are registered on 321 different frequencies. Of these, 169 also registered last year, but 123 are new ones. Seventy-three nets registered last year did not reregister. There are 205 'phone nets, 116 c.w. nets. By bands, they break down like this: 160 meters — 13; 80-meter c.w. — 96; 75-meter 'phone — 101; 40-meter c.w. — 20; 40-meter 'phone — 3; 20-meter 'phone — 1; 10-meter 'phone — 54; 6-meter 'phone — 6; 2-meter 'phone — 28.

As well as could be ascertained from information submitted, there are 40 section-level nets in NTS, several of them covering more than one section to make section representation at 47. This does not mean that other sections are not covered by NTS, of course. With the 11 regional and area NTS nets, our system comprises 51 separate but coordinated nets. Most of these are c.w. nets, but a few are 'phone.

There are 96 nets devoted exclusively to traffic work, 92 exclusively emergency work (including civil defense), 39 which divide their activity between traffic and emergency, and one rag-chew and traffic. Thus, 136 nets handle traffic, 131 prepare for emergencies. Additionally, six nets are the rag-chew variety, three are for "practice" and two are "social." Many registering nets did not indicate their purpose.

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We have three late miscellaneous reports. In December the Transcontinental Relay Net handled 8612 messages in 31 sessions, eight stations participating. The Sound Traffic Net handled 145 messages in 21 sessions, averaging 7 per session; 148 stations checked in. The Early Bird Transcontinental Net piled up a December traffic total of 2145.

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National Traffic System. We have had one comment on the new "rate" column in the NTS tabulation below. As mentioned in Feb. *QST*, the "rate" is the number of messages per minute which the net handled during that session of the month when the greatest number of messages were handled. The comment received claims that the "rate" discriminates against the larger nets (takes longer to get everybody checked in) and the nets with beginners participating. At section level, where we encourage beginner participation to the utmost, the "rate" would seem to de-

emphasize this policy; so we're henceforth omitting it from section net data. As for regional and area nets, participation is generally by more experienced personnel, and usually limited to section or regional representatives, as the case may be. Rate of traffic handled per minute is a good measure of efficiency, and we would like to see an indication of this in the monthly NTS tabulation. Area nets in particular should be high in this respect.

We also received a suggestion to include a "representation" column, to show the percentage of representation of sections in regional nets and regions in area nets. This suggestion is being adopted in place of the "Most Consistent" column, starting with the tabulation below.

One more thing: we have been assuming that all net managers reporting net data for this column count their net traffic in the manner described in Traffic Topics in *QST* for March, 1953, page 68. We suggest you all check. The net traffic count is only traffic *actually handled while the net is QND*. Traffic reported in but not actually handled is *not* included. Only traffic actually sent *and* receipted for on the net is included.

January reports:

Net	Sessions	Traffic	Rate	Average	Representation
EAN	21	402		19	96.8%
CAN	21	362		18.1	90
PAN	21	618		29.4	95.2
1RN	20	179		8.9	90
2RN	42	174		4.1	89.7
3RN	35	139	0.32	4.0	84.8
4RN	42	428		10.2	67.6
RN6	43	526	0.84	12	30
8RN	17	65		5.4	80.4
9RN (TLJ)	30	2126	1.08	70.9	99.2
TEN	38	1155		30.4	72.4
TRN	42	88	0.70	2.1	77.7
Sections*	304	1883		6.1	
Summary	675	8145	1.08	12.1	9RN
Record	675	8145	1.08	12.1	100%

*Section nets reporting: LSN, WIN, NLI, TLCN, QKS, AENB, QIN, WSN, Minn. C.W., Minn. 'Phone, WVN.

Poor conditions are keeping net traffic totals low, considering what they might be. The boys are doing an excellent job, considering everything, and note above that records are still falling; W8SCW has released another FB EAN Bulletin in which he summarizes 1953 activities and comments on things to come. PAN is now operating on Saturday nights at the regular time and frequency. W7NH intends to resign as PAN Manager in April and go off the air to rebuild for higher power. 3RN is having some QRM from a W5 net on 3590 kc. At this writing we are still negotiating for a RN5 manager. W6IPW wants to give someone else a chance at managing RN6.

TCC progress has been considerable. W8RLR has taken EAN-PAN responsibility on Monday, skedding W6WOC for this purpose. VE3EAM, with VE3TM alternating, has taken over liaison with CAN on Thursday, relieving overworked W8UPB. W4AGC is now receiving EAN traffic from PAN on Monday and Wednesday. In the Central Area, newcomers are W9UNJ, who is receiving traffic from W6KPQ on the PAN-CAN circuit, and W9RXD, who is alternate to W5KRX at Station E on Friday and regular Station F (waiting for a West Coast schedule) the same night.

There is still a total of twelve vacancies. If you would like to have a wiggle at handling some transcontinental traffic in NTS, inform your Area TCC Director (W8UPB, W9JUJ, W6JZ) and see what he has vacant. If one of the vacancies does not appeal to you, maybe an alternate spot will.

W1AW OPERATING NOTE

Effective April 25th, 1954, all W1AW operation as detailed on page 59, February, 1954, *QST*, will change to *Eastern Daylight Saving Time*. This means that, to copy code practice, bulletins, etc., you will have to listen one hour earlier by your clock if you are in areas which remain on standard time. Similarly, all general operation shown in the chart on page 73, October, 1953, *QST*, will be conducted on EDST instead of EST until further notice. The complete W1AW summer schedule of operations will appear in the Operating News section of May *QST*.

CODE-PROFICIENCY PROGRAM

Have you received an ARRL Code Proficiency Certificate yet? Twice each month special transmissions are made to enable you to qualify for the award. The next qualifying run from W1AW will be made on April 12th at 2130 EST. Identical tests will be sent simultaneously by automatic transmitters on 1885, 3555, 7125, 14,100, 21,020, 52,000 and 145,600 kc. The next qualifying run *from W6OWP only* will be transmitted on April 2nd at 2100 PST on 3590 and 7138 kc.

Any person may apply; neither ARRL membership nor an amateur license is required. Send copies of *all* qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions will be made from W1AW each evening through April 24th at 2130 EST. Effective April 25th, they will be sent at 2130 *Eastern Daylight Saving Time*. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text is reversed during certain of the slow-speed transmissions. To get sending practice, hook up your own key and buzzer and attempt to send with W1AW.

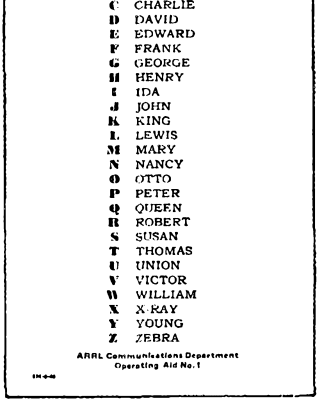
Date	Subject of Practice Text from February *QST*
Apr. 1st:	*Impedance Characteristics of Harmonic Antennas*, p. 10
Apr. 6th:	*Checking R. F. Chokes with the G.D.O.*, p. 15
Apr. 9th:	*Crystal Control on 220 Mc.*, p. 16
Apr. 14th:	*'Phone Selectivity for the BC-312*, p. 19
Apr. 20th:	*Amplitude Limiting for the VFO*, p. 25
Apr. 23rd:	*A Simple 144-Mc. Rig for C. D. Work*, p. 31
Apr. 26th:	*VR Break-In Keying*, p. 33
Apr. 29th:	*A Beginner's Code-Practice Set*, p. 36

FILMSTRIP FAVORITES

A popular educational feature among ARRL *affiliated* clubs are filmstrips, subject to advance booking, reviewing Reactance, A.C., Vacuum Tubes, R.F. Amplification, Tuning, Wire Sizes, Principles of Gas-Filled Tubes, etc.

"A FOR ADAM"

Crowded-band conditions, static crashes, fading, etc., tend to make "copy" difficult on our voice frequencies. Phonetic substitutes, when used properly, can (and *do*) markedly increase voice intelligibility. Need an example? Imagine copying a call such as W6SFC, then see how a few



basic phonetic substitutes can clarify doubt. "W6SFC, W6 Susan Frank Charlie, W6SFC" is hard to beat for clarity, simplicity and effectiveness. A convenient card copy of the ARRL Phonetic Alphabet, as pictured in miniature above, is available from the Communications Department to help you clarify, when in doubt.

All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, W. H. Wiand, W3BIP — SEC: IGW. RM: AXA. PAM: PYF. E. Pa. Nets: 3610, 3850 kc. Reports are very gratifying with six clubs reporting, individual reporting high, and requests for appointments running above average. The Car-Le RC reports new officers as follows: OP, pres.; OWP, vice-pres.; AIW, secy.-treas.; RXW, act. mgr. WJY and WN3WJM are new members of the Club. Frankford RC, with new officers K2CPR, pres.; LVF, vice-pres.; EVW, secy.; EQA, treas.; JNQ, act. mgr.; held its fifth annual joint meeting with the Potomac Valley RC of Washington, D. C., at the Casa Conti Hotel, Glenside, on Jan. 31st. One of the highlights of the day was a visit to the antenna farms of CTJ and W2SAI. Newly-elected officers of the Northeast RC are DWR, pres.; ULR, vice-pres.; DYL, secy.; VHZ, treas. The Phil-Mont Mobile RC had an excellent fifteen-minute broadcast over radio station WPWA at 1:15 P.M. Jan. 16th. Yours truly enjoyed every minute of the program. New officers of the Club are VVS, pres.; IRS and PIT, vice-pres.; QQH, secy.; DSG, treas. The Reading RC has been reactivated and meetings now are being held the 1st Fri. of each month at the Berks County Police Home on Pricetown Road. The officers are BN, pres.; MLY, vice-pres.; CCH, secy.; CDS, treas. OLG is editor of the club bulletin. New officers of the West Philadelphia ARA are OWK, pres.; UQV, vice-pres.; VCE, secy.; FWI, treas.; RKP, corr. secy. The club station, MKA, participated in the Sweepstakes Contest, with HSG and VDN operating. DLARC is equipping a communications trailer for c.d. use in the Bethlehem Area. The Club also is making ready for Field Day. RSC is building a stand-by rig for 75 meters and Field Day use. VN is sporting a new Viking. VDE is on s.s.b. now. GES is a member of the City Council in Red Lion. IOU is a new Pennsylvania 'Phone Net regular. WPN, ex-9ZIW, is operating on all bands with 100 watts and expects to run a half-gallon soon. TEC soon will have a new Viking on the air. Using a Gonset Communicator and a Brownie beam, Joe ran up a nice score in the V.H.F. Sweepstakes. UIL is working out FB on 40 meters with his new quarter-wave vertical. Traffic: W3CUL 4536, BFF 284, KAG 83, PYF 78, AEQ 74, NOK 41, TEJ 39, RSC 27, AXA 25, BIP 25, DUI 10, OZV 10, CDT 8, PVY 7, UOE 7, UIL 5, AD 4.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Arthur W. Plummer, W3EQK — SEC: PRL. Maryland EC: JE. D.C. EC: PWB. Delaware EC: SPL. AEL finally got up his three-element wide-spaced job for the DX Test. CDQ's antenna blew down in a snowstorm. WR Club meetings now are held the 1st and 3rd Fri. CQS is in the Early Bird Net each morning on 3845 kc. ECP says the newly-acquired Panadapter is a big help in station operation. EEB needs only 7 cards for DXCC. He now has new prop pitch motor in operation. FNO's nine-year-old Jim now is WN3YHZ. He got his ticket Jan. 9th just in time to make the Novice Roundup and his first contact was the contest champ, 4KFC. HKS was in the CD Party on c.w. JZY is enthusiastic over his new Viking II working 10 to 160 meters. JE is active in MEPN, VFN, and TCPN. He is the new EC for Maryland and SPL of Dover, Del., replaces DB as Delaware EC. KMA keeps regular skeds with Devon, Conn., Kansas City, Mo., and St. Joseph, Mo. He gave his new 500-watt pi-network final a six-week workout and feels mighty good about the way it works. LUL reports half of his contacts for January were during 30 minutes of the CD Contest! LVJ bemoans the fact that his new QTH at 13314 Keating St., Rockville, Md., has no trees from which to hang antennas. NNX, with new 1954 Mercury, is really mobiling nowadays with his Elmac, Gonset Supersix, Leece-Neville alternator, and Web-Wip Band Spanner antenna. The early session of 3RN is running more traffic by 50 per cent than the regular session, according to ONB. KCY, GHQ, KWK, and QWM, all members of the Rag Chewers Club, had a 2½-hour QSO Jan. 24th. OUX, GHQ, KWK, and QWM had a 4-hour ragchew the following Sunday. OSF is building a 10-watt rig. PZ reports interesting work on 420 Mc. recently while in Connecticut. QCB, operator at W3USA, has just returned from a leave of absence. QQS operated K4AF for the Washington Radio Club Jan. 31st during the chess game between the Washington Chess Club and Pittsburgh Chess Club. QZC says he finally got the output transformer backward idea going so he can go 'phone. "Hook the mike into the hi-fi Williamson and stick an output transformer backwards across it. The second transformer then goes in the cathode of the 814 final of the rig." Woodrow Wilson High School Radio Club (Wash., D. C.) is now JEP with WBI as trustee. General Class licensees in the Club are VPB, WBI, and WBJ. Novices (also Tech. Class) are VKE, WBK, YIV, and YJL. *Ex-WN6IIK is* president. EQK and PRL attended the ESARC dinner meeting Jan. 29th. Director YA was the featured speaker and honored guest. OSF would like those interested in a Md.-Del.-D. C. Contest to contact him. YA and son, SMF, visited USA and QCB MARS station at Fort George G. Meade, Md., Jan. 28th. On Jan. 5th the ARA reëlected its present officers: RAH, pres.; VAM, vice-pres.; CIQ, secy.-treas.; NZT, act. mgr. Novice licenses have been received by five Hagerstown High students who were instructed by VAM. They are YFY, YFZ, YGA, YGB, and YGC. MCG, back from White Sands, reports PZA is out of operation as the result of the sale of the building by the Red Cross. The Washington Mobile Club has been very active in local c.d. work. We hear ECP really has been burning the candle in organizing RACES in D. C. VLL, EQK, and NNX are pleased with the performance of their new Web-Wip Band Spanner mobile antennas. A gratifying response to the SCM's request for reports from appointees was noted this month but how about some action from little ol' Delaware? New officers of Capitol Suburban Radio Club in Washington, D. C., are IZL, pres.; SUA, vice-pres.; KAN, secy.; QMG, treas.; VAA, rec. secy. Newly-elected officers of the Chesapeake Amateur Radio Club are AYS, pres.; BYG, vice-pres.; FLG, secy.; URZ, treas.; DWX, sgt. at arms. SUA now is EC of Prince George County in Maryland. Traffic: (Jan.) W3USA 581, CVE 152, JE 106, ONB 93, ECP 76, JZY 33, CQS 24, WV 22, MCG 21, PKC 20, HC 14, PZ 10, NNX 6, QCB 6, OYX 5, NPQ 4. (Dec.) W3USA 805, JE 104, COK 85, JZY 62, WSE 15, QCB 11, NPQ 8, KMA 7. (Nov.) W3MCG 10.

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — SEC: UCV. PAM: ZI. It is with regret that we report the passing of GCU, president of the Hamilton Twp. Radio Assn. CEH is now president of the Assn. ZVW is Net Control of EAN on Fri. night. South Jersey Radio Assn. membership really turned out in full force in the recent V.H.F. Contest. YRW is the SJRA president. UK and AZL were guest speakers at the SJRA January meeting, giving forth with plenty of information on 2-meter operation. The RACES program is shaping up very well in Burlington County (Area 10) under the leadership of UA. JRO has installed a new 10-meter rig in the family car. Conditions continue to be very bad on 80 meters but NJN is handling traffic despite the long skip. ZI made 100 contacts in 38 sections in the recent CD Party. RG continues to do a fine job as Net Control of CDNJ Net every Sun. at 7 P.M. I would appreciate receiving reports of activities in Salem, Cumberland, Cape May, and Atlantic Counties. ORA reports plenty of activity every Sun. A.M. and Mon. P.M. on the 6-meter round table. EBW has been working European DX on 20 meters. Traffic: W2RG 174, ZVW 58, K2BG 45, W2ZI 18, HAZ 6, K2CPR 4.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — Asst. SCM: Jeanne Walker, 2BTB. SEC: UTH. RM: RUF. PAM: GSS. NYS meets on 3615 kc. at 6:30 P.M. and on 3925 kc. at 6 P.M.; NYSS on 3595 kc. at 8 P.M.; NYS C.D. on 3509.5 and 3970 kc. at 9 A.M. Sun. Please note the following changes: NYS C.W. Net meets at 6:30 P.M. NYS 'Phone now is on 3925 kc. NYS C.D. is on 3970 kc. at 9:00 A.M. Sun. NAI is manager of the Interstate Net on 3980 kc. Mon. through Sat. at 1500 to 1600 EST. The Net covers the second call area and has liaison with NTS, MARS, TCPM, Deep Sea, and DN. K2CZN is on 75 meters using Temco 600, 129X receiver. SD has a Viking. NM is back on the air after a sojourn in the hospital. UGB is on 75 meters mobile and fixed. PES is using a Windom antenna. DSS is active in the NYS Net. MTT and WHK are on 40 meters. UTH spoke at Binghamton and Lyons Club meetings on AREC and c.d. SUK has 50 watts on 160- and 75-meter 'phone from home QTH, and 400 watts as /2 from Keuka Lake. K2BZC has BC-457 on 75-meter 'phone and 80-meter c.w. and BC-458 on 40 meters. K2ECI is now /3

(Continued on page 76)

NEW! NC-98

TWO MONTHS AGO on this page we discussed the use of the crystal filter. Over the years we have conducted numerous experiments with various devices, trying to improve on the readability of AM signals through heavy interference, and the crystal filter used by an experienced operator always proved to be the best bet. This discussion was particularly timely from our point of view, since this month in this issue we are announcing a new receiver, priced very low, and equipped with a variable selectivity crystal filter. This receiver is known as the NC-98, the logical big brother to the NC-88.

Some of the features found in this receiver are usually available only in much higher priced receivers. One of these new features is the crystal filter which has a very selective position for CW (450 cycles) as well as medium (1.5 Kc) and broad (7 Kc) positions for AM phone (all figures at 6 DB). Throughout the development of this receiver, as well as the NC-88, there was constant attention to two things — cost and performance: Cost to arrive at a price to suit the majority, and performance to satisfy all. The problem of obtaining premium performance with a minimum of production cost is not an easy one. However, the tougher the job is for the engineer, the more you as a purchaser receive for each dollar spent.

Another feature included in this receiver is the S meter. It is the same high quality meter used in the HRO, incidentally. The usefulness of the S meter has been pretty well accepted, so little is needed on this subject. Even the old timers who have used receivers without S meters for years find that having one in a receiver for only a short time will make it seem like flying blind to be without one. Orienting directive antennas and intelligently comparing signals for relative strength with AVC controlling audio output levels are only a couple of the uses.

The NC-98 also has an accessory socket for use with the NFM-83-50 FM adapter or for a converter with reasonable power requirements. This accessory socket is also useful for remote switching of the receiver to reduce the number of control functions necessary to switch from receive to transmit.

There are 9 tubes (including rectifier) in all in the NC-98 — only one less than in the original HRO. Other features include one stage of R.F., two I.F., separate compensated H.F. oscillator stage, highly stable B.F.O., easy-to-read lucite dials with separate calibrated bandspread dial and continuous electrical bandspread at all frequencies. A separate speaker is available.

In spite of its compactness there is adequate room for all components without crowding. The receiver can be easily serviced, should the occasion arise.

Examine this new receiver in detail at your first opportunity. We know you will agree that here is an outstanding performer at the price.

BILL BARTELL, W1PIJ

IMPORTANT NOTE! Our last month's QST ad showed the NC-88 price as $129.95. It's well worth every cent but at the new price of $119.95 it's a whale of a buy.

(*Continued from page 74*)

from Carnegie Tech. K2DVD has an SX-71 receiver and Elmac for mobile. His XYL received the call K2GHF. The RAWNY conducted its annual auction. PPY spoke at a KBT meeting on AREC and c.d. Congrats to BTB on receiving a Special Citation from the 1953 Edison Award judges. GVJ has an 183-D receiver and is using a Windom antenna on 15 meters. LXE is using a full-wave antenna on 40-meter 'phone and c.w. New officers of the Sidney ARC are JGJ, pres.; SHZ, vice-pres.-treas.; MSJ, secy. The Club project is building walkie-talkies. MTB, UPT, GFD, and TSX have units finished. Net certificates have been issued to K2BZC, BVE, BYO, and W2DYD. K2DHU and DJP have Viking IIs and 75-A1s. FE is busy with FMTs, LO-Nites, and CD Parties. ARK has appointed K2BFX as Asst. EC for Livingston County. KT1UX, ex-UUX, returned to Tangiers Jan. 26th and will be on 20-, 15-, and 10-meter 'phone and c.w. ARK is busy chasing DX on 80-meter c.w. YYI is active on 2 meters with 32-element beam. ØGCQ/2, ex-YYP, is home after discharge from the Air Force. RMR is the mayor of Mt. Morris. K2CUQ is the XYL of K2DBB. TQ and CYQ renewed EC appointments. Don't forget the W.N.Y. Hamfest, sponsored by RARA, to be held May 15th at Doud Post, Buffalo Rd., Rochester, price $3.75. VS is mobile with Elmac gear. K2CBD, at Fort Dix, would like to hear from the Rochester gang. AFQ worked an FB8 on 20-meter 'phone. K2BUI has 75-A, Viking II, and VFO and brother K2GCR uses the Elmac gear. FMX revamped the front end of the 2-meter receiver using new noise generator. HAX has 750-watt rig on 2 meters. TCI now is c.d. coördinator for Rome. The Ft. Stanwick ARA sponsored a meeting and banquet of CNY hams at Blue Valley Inn in January. The Utica Club had charge of the December meeting. RPO spoke at the RARA v.h.f. meeting on speech clippers. K2DG upped power to 125 watts. K2BFX is new ORS. Renewals: QAA as OPS and OO, KEL as ORS and OBS, UTH as OES, RUF as ORS and RM, QHH as ORS. QAA has s.s.b. 805s, 300 watts on 75, 600 watts a.m. on 14 Mc. Traffic: (Jan.) W2BTB 1376, RUF 579, ZOL 326, BNC 138, HKA 135, K2BZC 80, ACA 79, W2DSS 37, JMT 37, K2DYB 36, W2RUT 30, K2CUE 20, W2EMW 20, K2DG 18, W2DVE 18, K2CUQ 17, W2SJV 16, RQF 14, K2DBB 4. (Dec.) K2BUI 54, CUQ 13, CBM 6.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — SEC: CA. RMs: NUG, GEG, UHN. PAMs: AER, LXE. The BVARA was host club in Beaver, Pa., to the Western Pennsylvania Amateur Radio Club Council which met at the courthouse and formulated new by-laws for governing the Council and gave reports on the TVI committee activity since the last meeting. A report was received this month from George Moyer, secretary of the Fort Venango Mike and Key Club, in Franklin, Penna. George says the Club's latest activity was holding demonstration of amateur radio for the c.d. and the volunteer fire departments. Five stations were fitted with equipment and mobile units were operated in squad cars, simulated fires were covered, keeping all units completely in touch with the situation. Those taking part were LKC, SDN, BRC, LST, and DIL. WSP and JCQ are working on new rigs. SRG is on 75-meter mobile. SRH is on 75 meters. BRC is active in traffic. IDJ is on 20 meters. UGM is trying his new Heathkit. KNQ, in Erie, reports a good turnout at his code classes held in the YMCA. TMK is practically alone on s.s.b. in Erie. WAX is going all out for 220 Mc. KVB is sweating out cards confirming DXCC. RLJ, ODF, and OIH still are working on the club truck. VNB is awaiting his General Class ticket. KJM, new at Edinboro Rd. QTH, now is on 10 and 6 meters. TLA now is mobile. *Kilowatt Harmonics* of the Steel City Amateur Radio Club still arrives but the editors are having the same trouble as I — no news being sent in. The Club had a fine Christmas Party and is beginning plans toward Field Day. The Washington County Amateur Radio Club bulletin just got in under the wire. It tells that NRE, IDO, VFN, and SUK attended the WPARCC Beaver meeting. The last club meeting had an interesting program on the Transistor by Mr. R. G. Fithian of the Bell Telephone Co. Traffic: W3WIQ 612, NRE 201, QPQ 152, UHN 54, YA 41, KUN 24, SIJ 22, NCD 15, VKD 9, KNQ 8, NCJ 6, NMJ 5, TSY 4.

CENTRAL DIVISION

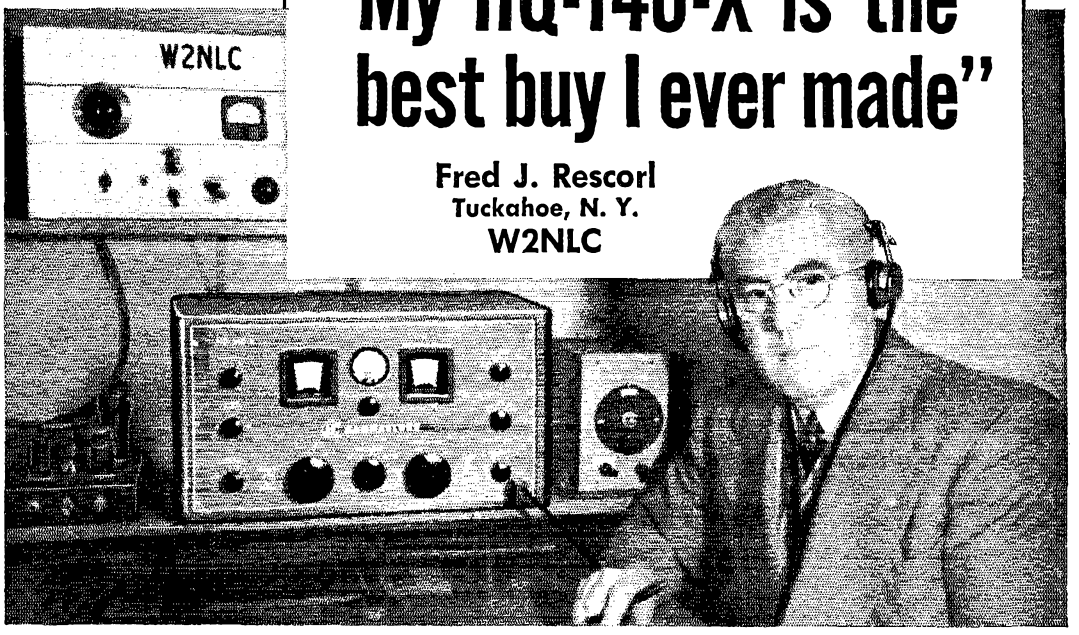
ILLINOIS — SCM, George T. Schreiber, W9YIX — Section nets: ILN (c.w.) 3515 kc.; IEN ('phone). SEC: HOA. Cook County EC: HPG. RM: BUK. PAM: UQT. New officers of the Chicago Area Radio Council are HPG, chairman; AVH, vice-chairman; WFK, secy.; GME, treas. The Hamfesters elected KLV, pres.; PCB, vice-pres.; VAZ, rec. secy.; IGC, fin. secy.; QNQ, sgt.-at-arms. The Chicago Suburban Radio Assn. reëlected PBJ, pres.; LQF, vice-pres.; FVU, treas.; and GPV, secy. The Elgin Amateur Radio Service Club picked Novice WTC, pres.; YWR, vice-pres.; and Novice ZOS, secy. The Central Illinois Radio Club chose CFV, pres.; MRT, vice-pres.; and SXL, secy.-treas. OR, who lives in an apartment building has a No. 30 wire antenna which no one has seen yet. He gets out, too, with no TVI. MRQ has a new Viking II. WAX is running

(*Continued on page 78*)

Science Teacher-Ham says—

"My HQ-140-X is the best buy I ever made"

Fred J. Rescorl
Tuckahoe, N. Y.
W2NLC

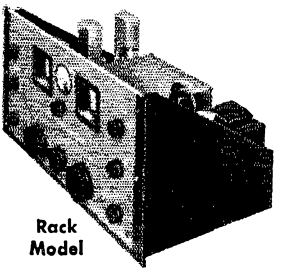


Fred J. Rescorl is both a science teacher and a ham, and as such can appreciate both the practical and theoretical sides of radio. Fred has been a satisfied Hammarlund customer for years, using Hammarlund capacitors and other components in home-built equipment, and now has a Hammarlund HQ-140-X receiver in his ham station.

Fred is enthusiastic about Hammarlund products. In his latest letter, he says, "My HQ-140-X is the best buy I ever made. It's the receiver I recommend to my friends. It has performed the way you said it would — outstanding sensitivity and selectivity, with almost no frequency drift."

Fred J. Rescorl's happy experience with Hammarlund products is no accident. Rather, it is the result of careful engineering exemplified in the professional characteristics of the HQ-140-X.

Be completely satisfied with your next receiver. Get an HQ-140-X! It's available either as a cabinet model or for rack-mounting. For complete details, write to The Hammarlund Manufacturing Co., Inc., 460 W. 34th Street, New York 1, N. Y. Ask for Bulletin 601.


Rack Model

HAMMARLUND

65 watts with a TR-75. FRP, BUK, SXL, and WFS renewed their appointments. NIU went to St. Louis to pick up a used Viking for the Starved Rock Radio Club and bought a little rig for himself. GTI built a 2-meter mobile. CDS visited in Chicago long enough to get an Elmac installed in his car and then took off for Arizona to live permanently. OAL returned to 75-meter 'phone and met up with NN, who forsook 20-meter DX just to chat with him. PGW has little time to operate his fine mobile rig because his ham friends keep him busy building duplicates for them. YMI has given up his antenna experiments and has switched to vertical. KHJ reports he sent his XYL and family to Arizona so "I could have free operating time during the DX Contest." NN latched on to two more certificates, Worked All Americas and Worked All Cuba. FKC is new chairman of the W9-DXCC Club and plans a big wing-ding next September. He is assisted in his plans by FID, ABA, and GRV. DEI has erected a new off-center-fed antenna along with his 10-meter beam. His friends are taking up a collection to buy ATH a lavalier mike to hang around his neck while he's on the stepladder redecorating the house. OVA conducts the Gas Bag Net at noon, on 14,210 kc. Novice ALO claims to be the ham farthest south in Illinois. JMG is back on the air with a little 30-watter with built-in VFO which he uses in contests. UZP put AD's p.p. 813s on 75-meter 'phone and he operates 80-meter c.w. with an 829B. CGC/9, the call of the Fifth Ave. Ham Club, operates from a north-side store window and made the BPL in December. Assistant operators are VEZ, QXW, IRR, SFF, ØGAR, and ØOHJ. OIN raised his antenna and has a new VFO. BA, EC downstate, revalued his Emergency Corps and then started a drive for new members. MRH won a two-week cruise in southern waters. Novice BWX is a new ham in Bloomington. BPU is enjoying a new Elmac mobile. UMV is on 75 and 20 meters with p.p. 810s. HUX has a new Clapp oscillator. Belleville hams 5YOU/9, KFX, KQO, SCE, CHS, PHR, and SBW had a hidden transmitter hunt with BA the fox. YFB has a new Globe Trotter and works 75 meters. IMN, chief operator at CGC/9, is back on the air from home. 6CIW/9 suggests that ILN and IEN send representatives to each other's sessions for better coverage. He also suggests that perhaps some of the 80-meter c.w. nets could move to 160 meters. AND meets the boys on all frequencies and can always get a QSO because he has something to tell them. Traffic: (Jan.) W9QIN 282, OR 119, IMN 118, USA 114, SME 86, CGC/9 85, UVM 63, YIX 60, W6CIW/9 55, W9LXD 55, CTZ 43, STZ 31, FRP 18, MRQ 12, PHE 4, UIN 4, WAX 3, BPU 2, LMC 1. (Dec.) W9CGC/9 304, LXD 63.

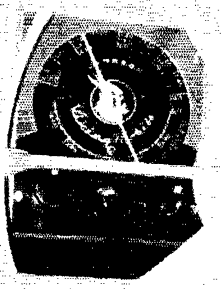
INDIANA — SCM, George H. Graue, W9BKJ — SEC: LZI. REC: TT. RMs: JUJ, WWT, YWE, JBQ. PAMs: DOK, NTA. All Hoosier hams join in congratulating NZZ, the winner of the Edison Award for 1953. JUJ, NZZ, and TT again made BPL. CMT is new NCS on IFN. ØIZA/9, now DED, is heard regularly on IFN. YB, Purdue U. station, will be active on QIN soon. JUJ was ill with mumps for a week and traffic took a slump at her station. AZB is new editor for DADA. NTR is erecting a new tower. YWI has gone mobile on his welding truck. Terre Haute has 14 mobile rigs in operation on 50.6 Mc. SYM is dividing his time between 3.9-Mc. 'phone and 3.6-Mc. c.w. GUX has a new 813 final. CTA and CYE are new WNs in Evansville. BBC has 14-Mc. vertical. FJI is moving his gear into the basement. BDP still finds time for net work even though farm chores are very heavy. A 1-kw. rig is in the making at EQO. NYK has the Viking working FB. The 9 A.M. IFN net takes on a Regional Net appearance with the many neighboring states reporting in with traffic regularly. DKR is working over a BC-230 for mobile operation. JIP has a new vertical for 80 and 40 meters, also ground plane antenna for 15 and 10 meters. SNT is a free-lance traffic-handler on 20-meter 'phone. YEO again is active after 4 years inactivity. ZIB is building a 500-watt rig for 143.7 Mc. YWE is QRL work at b.c. station. QIN misses you. NTA reports the IFN morning net monthly traffic total as 212, the evening net as 30 messages. KLR is vacationing for a month. DDV is home for a short stay before entering Illinois U. for postgraduate work. JUH is home from Germany. FFF is aeronautical mobile. UMS is mobile in the new car. ZZY has lost his spot at the bottom of the totem pole. ZZZ, in Wisconsin, now is low man. YMW is new president of TARA and WQS is secretary. The FWRC held its annual auction of radio gear. JBQ reports total traffic for RFN as 116. Traffic: (Jan.) W9JUJ 1528, NZZ 847, TT 607, JBQ 139, SNT 132, STC 118, UQP 116, QYQ 75, YWE 57, IFR 41, OLX 32, KDV 31, VNV 31, DOK 29, FYM 26, WBA 25, PPS 21, TG 21, CMT 18, SKP 16, OWZ 14, ZIB 9, DKR 8, QR 8, VNE 8, JIP 6, SYM 6, GUX 5, NYK 5, EQO 4, NTR 4. (Dec.) W9OWZ 282, IFR 50, DHJ 47, VNE 34, ERB 24, CMT 23, NYK 4.

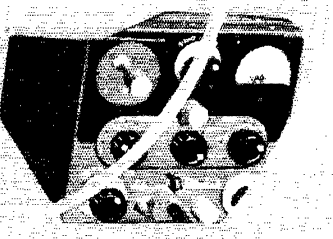
WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAM: ESJ. RMs: MQV, UNJ. Nets: WIN, 3625 kc. 6 P.M. daily; BEN, 3950 kc., 6 P.M. daily; Wisconsin State 'Phone Net, 3950 kc., 1215 P.M. Mon.-Fri., 9 A.M. Sun. State mobile and c.d. frequency: 29,620 kc. VBZ has added cards from EA9DD, 4X4RE, KL7, and CR6AL. Running up a nice traffic total from his dad's station, W9EBL, we find KL7ATO back in the States waiting for his own W9 call. New certificates (WIN) were issued to

(Continued on page 80)

This Spring Go Mobile!

... with Johnson Transmitting Equipment





VIKING MOBILE VFO

QSY quickly and easily with the diminutive JOHNSON Mobile VFO. Only 4"x4½"x5", it is suitable for convenient steering post mounting, and features ceramic insulated tank components and rugged design to minimize frequency shift due to road shock and vibration. The large, easy to read edge-lighted dial is calibrated for 75, 40, 20, 15, 11 and 10 meters with 7 to 1 vernier tuning. Temperature compensated and voltage regulated oscillator and separate buffer multiplier stage provide exceptional frequency stability and adequate output to drive the Viking Mobile or other transmitters.

Tube lineup consists of a 6BH6 oscillator, 6BH6 isolation amplifier–frequency multiplier and OA2 voltage regulator.

Cat. No. 240-152-1 Viking Mobile VFO in complete kit form with assembly and operating instructions, less tubes.....$29.45 Amateur Net

Cat. No. 240-152-2 Viking Mobile VFO wired and tested, less tubes.....$44.95 Amateur Net

VIKING MOBILE TRANSMITTER

Rated at 60 watts maximum PA input, the power packed Viking Mobile features *instant bandswitching* 75, 40, 20, 15, 11 and 10 meters, *gang tuning* and *variable antenna loading*.

Check these outstanding features . . . Powerful audio punch with high gain speech section and PP 807 modulators. Exciter stages and 807 final amplifier gang tuned for maximum operating ease. Single control, ganged output link circuits designed for quick, easy antenna loading. Tune-Transmit-Receive switch allows VFO zero beating. Easily wired for push-to-talk. RF bias supply conserves power. May be wired for 6 or 12 volt operation.

Supplied as a complete kit with all parts and assembly and operating instructions or as a wired and tested unit. Requires 300 to 600 volts at 200 MA.

Cat. No. 240-141-1 Viking Mobile Kit, less tubes.....$ 99.50 Amateur Net

Cat. No. 240-141-2 Viking Mobile wired and tested, less tubes.....$144.50 Amateur Net

DYNAMOTOR BASE KITS

Cat. No. 239-101 6 volt base kit only, less dynamotor.....$16.50 Amateur Net

Cat. No. 239-102 Complete 6 volt base kit with connectors and 500 VDC dynamotor.....$89.50 Amateur Net

Cat. No. 239-103 12 volt base kit only, less dynamotor.....$17.40 Amateur Net

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UNJ, RTP, UTV, SAA, UIM, LGR, LSK, RUB, and LUE. SAA now is mobile. KWJ received MARS 10th Air Force Station of the Month award. WWJ has new 75A-3 and Viking II. FUS worked VQ3EOE on 14 Mc. VKR was active in the CD Party. JM has new Elmac transmitter. UIM has new HQ-140X and has fired up his Viking on 'phone. UNJ has a perfect attendance record on WIN in January, being there 31 out of 31 days. New appointments: UTV, RUB, LUE, and RKP as ORS; RKP as OBS. Appointment renewals: OVO as SEC; SDK as ORS; DSP as OES. IQW is mobile on 75 meters with small aircraft transmitter and homemade converter. Two new calls in Black River Falls are WN9DOE and DOH. CGO, at Antigo, is on 144 Mc. General Class tickets were received by AAR, AEM, UEP, and ZAN. IXA is organizing a radio club in his area. LSR has deserted 7 Mc. for a fling at 3.5 Mc. The FLARC elected UFX, pres.; MQK, vice-pres.; UGT, secy.; RUB, treas.; NJH, LNM, and YSZ, directors. Members of the FLARC furnished a fixed station, HMG, and mobiles NJH, RUB, and UGT for the Percharee held at Madison. LUE, formerly KL7ZD, is active from Milwaukee with an HRO-7 and a BC-696A. The Green Bay Mike and Key Club celebrated its fifteenth anniversary of affiliation with ARRL with a dinner Feb. 27th. OMM keeps skeds twice a week with KP4 on 14 Mc. JHI is on with a new push-push rig. The N.E.W. VHF Club has received its charter of affiliation with ARRL. Traffic: W9VBZ 670, EBL 312, UNJ 212, SAA 106, MQV 84, LUE 57, GMY 39, KWJ 34, LSK 27, WWJ 26, IXA 21, SAA 20, CFP 17, RTP 15, RQM 12, CXY 11, IQW 11, FUS 10, VKR 5, WN9AEM 5, W9OVO 2.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Earl Kirkeby, WØHNV — SEC: RRW. RM: LHB. PAM: EOZ. Put a circle around July 18th, gang, that's the day set for the biggest and best North Dakota hamfest yet. The "Hamboree," as it has been named, will be held at Grand Forks in Riverside Park. Someone is going to go home with a Viking II that day. A receiver also will be given away, as well as many more prizes. PHH reports that Lyle Beebe, ex-9DIW, has moved to Houston, Tex., and received his old call back, 5DIW. His old friends will remember him filling the ether from Grand Forks. We expected to hear from more of you traffic men and gals this month. How about it? We're looking for more ECs, too. Traffic: WØLHB 204, USY 119, FVG 56, EXO 40, PHH 4, LCL 2.

SOUTH DAKOTA — SCM, J. W. Sikorski, WØRRN — Asst. SCMs: Earl Shirley, ØYQR; Martha Shirley, ØZWL. SEC: GCP. RM: OLB. PAMs: NEO, PRL. DTB, formerly of Centerville, is in the Navy at Great Lakes, Ill. New call: SCT, Centerville. Les has applied for ORS appointment. He's editor of the Prairie Dog ARC *S-s-s-Barks*, and is on the air with Viking II and S-40. WNØNAB now is Tech. Class. New Novices: SDM and SDQ, Brookings; SDJ, Redfield; and SDH, Watertown. KYA received General Class ticket. MPQ is ORS. BJH worked his first DX station — an EI. The Sioux Falls ARC met at the KSOO transmitter, where UIR is chief engineer. GDE is running a new code and theory class. Sioux Falls ARC has a class in operation. CSD is sending code practice on 160 meters. GXH says he's going into amateur TV. OLB needs more sign-ins on the c.w. net. The 75-meter 'phone net met 26 times in January, with 223 stations answering. Traffic: (Jan.) WØQLB 82, GDE 81, SMV 17, SCT 13, MPQ 7, ZWL 6, WUU 2. (Dec.) WØQLB 145.

MINNESOTA — SCM, Charles M. Bove, WØMXC — KFF and K6EA have set up a communications training program at Bemidji free to any in the 15 counties in the Third Civil Defense Area in Northwestern Minnesota. After training classes are going well K6EA will return to California to his old job as radio operator aboard ship. Anyone wishing to join these classes, drop a letter or postcard to MSU, Commander, Third Civil Defense Area, Bemidji, Minn., in care of Roy Aune. SBR is the call of the station of the Mills Radio Club which was just organized. The Club is located in the Groveland School at 17300 Minnetonka Blvd., on Highway 101. OUK is the EC for this club. GTX is EC for Douglas County and now has 11 mobiles in his county belonging to the Emergency Corps. EPZ now is W9BTV located at Moline, Ill. OTU has been transferred back to St. Paul and is located at St. Vincent's Parish. RIL and QEI are both on the air with single sideband. RHL is building a new final consisting of a pair of 4-250As. PBK is on the air at the U. of M. SYG and his XYL have a new pair of twin girls at their house. DQL has his new OT certificate after being a ham for more than 20 years. BWF now has an HT-18 for his Viking. LVG was in the hospital for a spell but is doing well now. KJZ has been keeping a sked with K4FDC. He also contacts SII, of St. Paul, who is stationed in Florida. RTH is a YL in St. Paul formerly from Indiana. ANU has a new 32V-3. FID, LUX, and OJH have been reporting into the MSN. KJZ and KLG are taking regular turns as NCS on MSN. OMC had a nice visit with TKX, CGK, DQL, KJZ, and URQ. W9IMN paid JNC a nice visit. Traffic: WØKLG 148, UCV 147, OMC 95, KFN 53, KJZ 53, SWB 53, NPP 51, GTX 46, HUX 42, AGD 40, EHO 40, TJA 38, GTX 36, GGQ 32, CXM 31, KTZ 26, MVH 26, BUO 24, BZG 24, MXC 24, K6EA 23, WØIRJ 23, LUX 19, FFU 17, PCU 17, EMH 15, IKJ 15, KNR 14, JIE 12, LST 12, WTP 12, FIT 10, KMI 10, ALW 6, LIG 5, JNC 4, CWJ 3, OPA 3.

DELTA DIVISION

ARKANSAS — SCM, Fred E. Ward, W5LUX — At the first State Civil Defense meeting held in Little Rock recently, plans were outlined for civil defense and disaster relief in our State. The SCM and SEC attended the meeting. At present plans are so new that the part amateurs will play is vague. I was advised that communications would be handled by the state-owned radio systems, with amateurs assisting. Perhaps the best we can do until communication plans are worked out is to contact c.d. chairmen, mayors, and county judges and offer your services on a local level. There can be no RACES type of operation until plans are further along at the State level. FMF has renewed as EC for the Gentry Area. A lot of you fellows have let your appointments lapse. Let's all look up the dates and send those certificates in for renewal.

MISSISSIPPI — SCM, Dr. A. R. Cortese, WO5TD — This should be quite a large section for Mississippi this month with two months reports at once. The MEN had to QSY because of QRM and can now be found on 3590 kc. Let's give the boys a lot of traffic. The Keesler boys are working on Field Day. TIR has a Matchbox and likes it. JHS's son is now W4ZFK. He dropped the "N." CSH is a new Novice in Crystal Springs. ZZZ also is on with 70 watts. The Jackson Club now meets at the Naval Reserve station and on Fri. night instead of Thurs. Don't forget the hamfest in Mobile, May 30th. The Magnolia Net still meets on Sun. afternoon at 1:30 on 3870 kc. We need ECs, OBSs, ORSs, and OESs. How about it, men? Traffic: W5JHS 79, K5FBB 77, W5TIR 31, OTD 8, YHB 2.

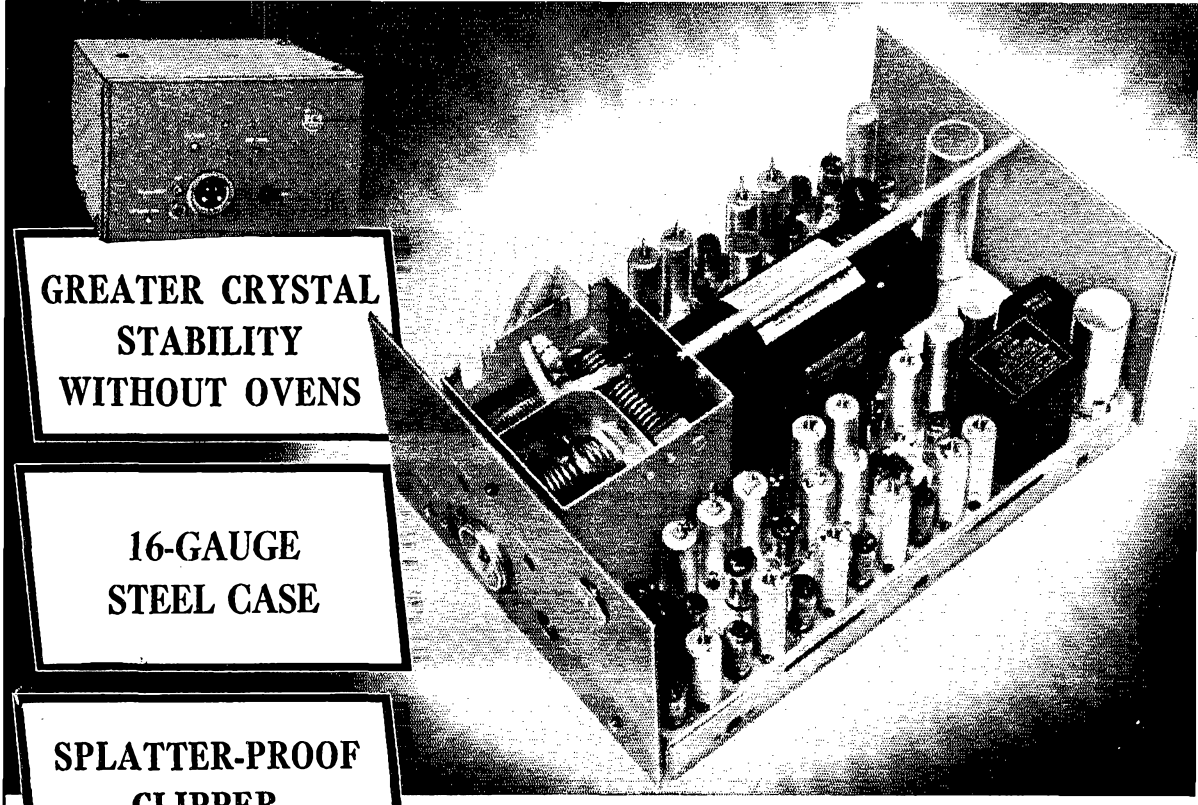
TENNESSEE — SCM, Mark M. Bowelle, W4CXY/WLG — Our two leading cities, so far as emergency work is concerned, continue to be Memphis and Kingsport. (Perhaps others are active but they don't send us reports.) Memphis is going all-out for 2-meter f.m. and not doing badly with it at all, and the whole Memphis gang is finding the TVI going much better now that the local TV stations have pushed their towers higher. The Kingsport gang at the Bays Mountain Club has a nice line-up of equipment and a fine store-bought 1-kw. transmitter, although the last word we received was that said transmitter was acting up, even to the point of blowing the 60-amp. 440 fuses! After 19 years of trying, DTI worked Nevada for his 80-meter WAS. WQW blew up a final, a stunt that seems to be popular with the Tennessee c.w. gang, and like some of the rest of us discovered that an exciter got out about as well as the higher power. As is to be expected, traffic has taken a slump after the holiday season, but there is slight drop in the number of reports. We want to commend the gang for reporting. It does our old heart good to see the way those reports come in, even when some stations have no traffic totals to report. Please keep it up, gang. Traffic: W4PL 2007, YIP 1418, OGG 627, OEZ 300, PFP 267, APC 85, UWA 55, UIO 50, SCF 43, WGJ 36, ZJY 34, IIB 31, WQW 20, DTI 19, SUH 19, RRV 12, TIE 9, PHQ 8, HIH 4, RET 2.

GREAT LAKES DIVISION

KENTUCKY — Acting SCM, Robert E. Fields, W4SBI — A new AREC member in Eastern Kentucky, as well as a newcomer to amateur radio, is AZQ. JPP, our PAM, is doing a good job with the KFN in spite of the skip on 75-meter 'phone. It sure looks like TUT is laying away the ole pump key for some honest-to-goodness government down Somerset way, but we have a feeling we will be hearing a lot from that QTH. The OARC (Owensboro Amateur Radio Club) is going full blast with YYI in the driver's seat. The Club is affiliated with ARRL. QJU/M relays traffic from his mobile station as he drives along the highways. K4WBG is about ready to start RTTY on 80 meters. KZF has been installing a mechanical filter in his BC-342N receiver. WXL is working for WAS and needs about 4 more states. JUI is building more measuring equipment. Look out, fellows, he can split a cycle now! KKG has been working DX on 15 meters. BAZ now is Acting RM and tells me that they sure need some c.w. relay stations on the KYN. Fellows, here is a chance to get the old fist back in again. New OO appointees are MGT and OMW. URF went in the Army in February, and wants the Corn Crackers to hold everything in the middle of the road until he gets back. Traffic: W4ZLK 93, SBI 44, WXL 40, NIZ 38, MGT 31, QJU/M 16, KKG 8, JUI 2, SZB 2.

MICHIGAN — SCM, Fabian T. McAllister, W8HKT — Asst. SCMs: Joseph Beljan, 8SCW; Robert Cooper, 8AQA; Mickey Wills, 8CPB. SEC: GJH. New appointments: OPS to YNA. The new slate of officers of the Allegan Area Radio Club includes PQO, pres.; COM, vice-pres.; FLA, secy.-treas.; SAY, act. mgr. The Mount Pleasant Club is going places with six active stations on the air, plus a club station, and fourteen SWLs. KOD, KPF, JRA, QAH, PHA, and PDF keep traffic for that area rolling, and PHU is the Club station. Rogers City is represented by "Red," OWJ, and "Ren," OQH. No wonder we get 'em mixed up! Please

(*Continued on page 82*)



Fleetfone—RCA 2-Way Radio for 30-50 mc band. (Top left: Single-case construction encloses compact transmitter-receiver.)

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note that the QMN nets now meet one-half hour earlier. Several of the regulars are being missed: RTN drew a night shift, HSG is QRL in the State Senate, and IEA is working on his thesis for an engineering degree. At the same time we have noticed a few newcomers to the nets. A hearty welcome to you, fellows, may your stay be long and frequent. The Huron Valley Club has a good start on c.d. affairs. The Club has a fine mobile station set up in an ex-bus, and the equipment is being provided by the Club and the County c.d. organization. It shows what can be done if you go after it in the right way. The Club's members have been asked to coördinate the activities of c.d. communication services for the County. Traffic: (Jan.) W8RJC 403, NUL 312, FLM 292, ELW 222, ZLK 116, SCW 109, IKX 87, ILP 84, RTN 84, URM 66, QIX 59, NOH 42, FX 39, NEK 38, IV 35, WXO 31, SJF 30, TQP 30, SWG 27, YKC 22, WVL 16, PHA 14, GTM 13, OQH 13, AQA 12, KOD 10, DLZ 8, EGI 7, HKT 6, HSG 5, GNK 3. (Dec.) W8TQP 60, SPF 57, NIT 27, AQA 22, FSZ 19, FGB 13, FX 12, WN8ORM 2.

OHIO — SCM, John E. Siringer, W8AJW — Asst. SCMs: C. D. Hall, 8PUN ('phone); J. C. Erickson, 8DAE (c.w.); and W. B. Davis, 8JNF (adm.). SEC: UPB, PAM: PUN. RMs: DAE and PMJ. New appointees are ECs — ERR, HUB, JNR, RZ, and YFJ. OPS — AMH and HQH. OO — AMH. The Dayton Hamvention will be held at the Biltmore Hotel, Apr. 3rd. This convention has been the largest amateur get-together in the Great Lakes Division the past two years and this one promises to be the best yet. Don't forget the Ohio Intrastate QSO Party. Let's top the 17 entries which were submitted last year. JRT is getting the Jackson Co. Net underway. PBX has a Viking II and threatens to elevate his traffic count. UQAA3 is the call/sign assigned to the Toledo group, in HNP's name, in the Ohio Disaster Communications Service. Thirty-two members of the Medina County Club attended the last meeting, which was held at AQ's domicile. BUM has crossed the century in countries worked. IFX worked 41 states in ten hours in the last CD Party. HSW has installed a 50-foot pole in his backyard. The West Park Radiops are joyful over HGW's taking over top spot on the DXCC totem pole. New Novice licensees in Berea are OIS, PZD, PZE, PTV, and PTP, according to GAV, Westlake's secretary. Mobile winners of the Jan. 24th Lucas Co. hidden transmitter hunt were MBE on 160 and BN on 10 meters. Second place winners were WIT and QUO. AJH, Cuyahoga Co. EC, reported to the CACARC that seven emergency power generators, 93 mobile units, and 121 emergency stations are registered in the local AREC. The FHARA bulletin states new club officers are UFF, pres.; DCE, vice-pres.; ODW, rec. secy; ODO, corr. secy.; and UNW, treas. Dayton's *RF Carrier* reports that 54 club members participated in the V.H.F. SS. NEO is leaving the USAAF and will live in San Antonio. ENH is moving to Tampa. KOM and MCW received their RCC certificates, and LJ has completed an s.s.b. transmitter. The Columbus *Carascope* advises that APF, CXD, KEM, LVF, and WXY are active on the local 2-meter f.m. net; EYE, GGG, GCX, JDK, JUM, and MSA are among the Matchbox-happy boys about town; 300 copies of *Carascope* were run off in January, and for the second time FYW received a Special Citation of the Edison Award for his outstanding work

(*Continued on page 84*)

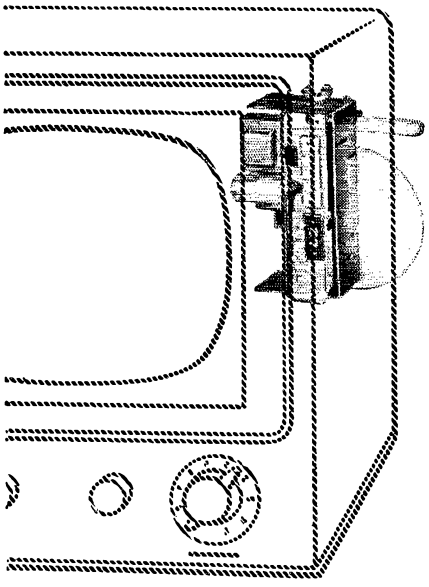
SECOND ANNUAL OHIO INTRASTATE QSO PARTY APRIL 17-18

The Ohio Council of Amateur Radio Clubs will sponsor a QSO party, open to all Ohio amateurs, which will be held April 17-18, 1954, from 6:00 P.M. EST Saturday until 6:00 P.M. EST Sunday. All Ohio amateurs are urged to participate in this affair and to submit their logs to the contest manager.

Any and all amateur bands and any mode of emission may be used. There will be no power restrictions. Scoring: multiply the number of Ohio stations worked by the number of Ohio counties contacted. Each station may be worked but once regardless of band or mode of emission used. Logs should include call signs of stations worked, time, date, signal reports sent and received and the county in which the station is located. Operation near the following frequencies is recommended: 3550, 3740, 3860, 7100, and 7250. On the other bands, take your pick. The call "CQ Ohio" should be used on both 'phone and c.w. At least five appropriate certificates will be awarded to the highest scoring stations. Certificates will also be awarded to the Novices, the number of certificates being contingent upon the degree of activity.

All contest logs must be postmarked no later than May 1st, 1954, and should be sent to the contest manager, Hamlin King, W8EQN, 353 So. Arlington Ave., Springfield, Ohio.

MALLORY HAM BULLETIN



New MALLORY '188' UHF Converter Mounts Inside Any TV Cabinet

Supplied with mounting hardware and special Lucite tuning dial

After many weeks of field testing, the announcement can now be made that the desirable, smooth, all-channel tuning characteristics of the standard Mallory '88' UHF Cabinet Converter can be had with the tuning mechanism entirely concealed inside the cabinet of any standard TV set.

Installation and tuning problems have been overcome so that such conversion is entirely practicable for any professional serviceman. Amateurs, too, will find the job within the scope of the tools found in the average ham shack. Alteration of the TV set is not necessary nor is its operation changed or impaired. The '188' Converter chassis is supplied with plate and filament power directly from its own transformer-operated supply.

Installation is usually made by screwing the converter chassis to an inside wall of the TV cabinet in such a way that the lucite tuning dial and switch lever project on the side or top of the cabinet at the rear. However, the universal metal mounting bracket also allows the converter to be attached to the fiberboard rear enclosure of the set when the sidewall is made of metal or plastic.

A complete set of parts, including a wired and aligned converter chassis, a special tuning dial, switch lever, mounting bracket and all mounting hardware needed to make the conversion, has been prepared as a package and is available from your Authorized Mallory Distributor.

Ask for the Mallory UHF Concealed Converter, Model '188'.

Incidentally, if you are not familiar with the operating specifications of the Mallory '88' Converter chassis, they were listed on Page 2, of the January, 1954 QST. Or if you drop us a card at P. R. Mallory & Co. Inc., Box 1558, Indianapolis 6, Indiana, we will be glad to send you this information.

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at the Blind School. Eastern Ohio's *Ham Flashes*, edited by FRY, informs us 3YCU has moved into Youngstown; BUC is using a 1200-foot long wire antenna; ARX is happy with his new Viking II; the Boardman Radio Club meets at the town's high school on alternate Mon. evenings at 1930; and UX now is in Dayton working out of Wright Field. On Feb. 7/8 the Cleveland gang held its Novice/Regular Contest. It was generally agreed that the Novices sounded better than many of the old-timers. *Shack Gossip* of Toledo failed to show this month. We are wondering if the gals have been trying some of their own recipes, which would account for their inability to get their bulletin out in time. No BPLs were issued for January operation but it is gratifying to note the increase in traffic reports. Keep it up! Traffic: (Jan.) W8UPB 403, FYO 344, YCP 122, DAE 110, RO 69, GDB 62, AMH 61, ARO 61, IFX 61, NYY 42, AL 35, LMB 35, HQH 32, DL 31, QIE 30, DG 22, EQN 18, FSM 18, IJH 17, AJW 16, HUX 14, KIH 14, CTZ 12, RLR 12, BEW 11, ET 11, HXB 11, UZJ 10, IZQ 9, AOX 8, TLW 8, KZM 7, PBX 7, CTO 6, AQ 4, HPP 4, MGC 4, RN 4, SPU 4, WJB 4, YGR 4, DZO 3, RZ 3, BUM 2, CSN 2, HFR 2, HIE 2, MEI 2, NQQ 2, PIY 2, WRT 2. (Dec.) W8SRF 102, AMH 56, ILC 9.

HUDSON DIVISION

EASTERN NEW YORK — SCM, Stephen J. Neason, W2ILI — SEC: RTE. RMs: TYC, KBT. PAMs: JQI, GDD. The SLRC held a very successful first annual dinner at Krucker's Restaurant in Pomona. YVP and OGP engineered the affair. KNs GPK and GVA are new Novices associated with the Club. Congrats to the HHRL of Mount Kisco on the publication of its first bulletin, *Zerobeat*. Briarcliff High has formed a radio club with K2BAJ as prexy and KN2CSO as his right arm. Construction of a club station has begun. K2AVY has a new HQ-140. K2CQS has a new 813 final. WQL moved to Bedford Hills and increased power to 140 watts on 7 Mc. AWQ is scanning the back yard for a good antenna location. KN2DRN is reworking his Audar 60; his basement neighbor is K2AVZ. PCP is QRL. R. J. Stupp, of the G. E. Research Lab., was the guest speaker at SARA. His talk featured u.h.f. converters, feedlines, etc. MRQ has a new Globe Champion. GDD is very active on NYSEPN and doing an excellent job as our new PAM. MHE did well in the CD Contest with ILI for competition. ZBS wants to hear from the 10-meter gang. Rolf can be found on 29,490 kc. every evening from 10 to 11 P.M. New on 144 Mc. are LBC and MVS; also KNs DQW and DQY. CFU is rebuilding. Congrats to LEL on the new jr. operator. HZZ has completed a new VFO. TYC is trying to find room for a suitable antenna and may have to give up traffic temporarily. OKI is converting a BC-459 for 7 Mc. OPD was awarded a Section Net certificate for activity on NYSS. New in Albany are KNs GSB and GSL. EQD and LRW are doing a good job on NYS. Don't forget our Section V.H.F. Net. Write RTE for information. AREC needs you; register now. Traffic: (Jan.) K2BSD 85, W2IFP 70, MRQ 65, ILI 56, LRW 45, MHE 45, K2EOQ 34, W2EFU 31, GDD 21, APH 17, WSS 17, BSH 6, OKI 6, TYC 4, PHO 2. (Dec.) W2EQD 86, K2BE 34, W2KBT 10.

NEW YORK CITY AND LONG ISLAND — SCM, Carleton L. Coleman, W2YBT — Asst. SCM: Harry Dannals, 2TUK. SEC: ZAI. PAM: JZX. RM: VNJ. Northern Nassau Amateur Radio Club officers for 1954 are NFU, pres.; ZDB, vice-pres.; CJY, rec. secy.; NEK, corr. secy.; CNN, treas. The New York State 'Phone Emergency and Traffic Net has moved to 3925 kc., the same time, 6 P.M. daily. SNA has a new "matchbox" and multiband antenna. TUK is operating at K4WBX around 3930 kc. KJG is back on 75 meters after trying his hand at DX. MUM finally made WAS. KGN is busy with school and job but manages to keep the EC job going. OME made his first W6 QSO on 75-meter 'phone and reports an FB QSO Party. PF is working on the s.s.b. rig. K2CQP keeps 11 net skeds a night. OJX is moving to Huntington. CKD and GCJ are new members of the New York Radio Club. BO now is mobile on all bands, in addition to being a very active traffic man. AEE is working on RTTY project. JOA reports school exams cut into traffic; he and KJG are new MARS members. GP, one of those solid c.w. men, is thinking about operating 'phone these days, with that new rig on 40 and 80 meters with a pair of 807s. OMG is sporting a new BC-348 with DB20. GXC is trying to keep the receiver from blocking on LPJ, who is 60 feet away. IIG enjoyed his first CD Party in January. LPJ takes part in both c.w. and 'phone nets to get those traffic figures he sports. JZX, back on 2 meters, reports that she will set up an organization of communications net for the Women's Transcontinental Air Race to be held July 3rd to 6th, starting to Long Beach, Calif., and ending at Knoxville, Tenn. RWQ is spending most of his time on experimental projects. EEY, IN, PF, and NJL are taking part in MARS activities. K2CUI de-TVIed the rig, put in break-in and is getting ready to increase power on 20-meter 'phone. KFV makes BPL the hard way these days with the XYL, KEB, not far behind. VNJ reports conditions still are erratic but traffic and attendance are holding up well on the NLI traffic net. VVH

(Continued on page 86)

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- **Operation**—VFO or crystal. VFO is built-in, accurately calibrated, highly stable.
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POPULAR BEAMS

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All beams use any standard transmission line. Full data supplied with each beam. All GOTHAM beams assemble quickly, are adjustable over the entire band, and can easily be stacked on a single mast. Every beam complete with all hardware, fittings and castings. All aluminum tubing is 61ST6 alloy, with wall thickness of .049".

10 M. BEAMS

S103T • Std. 10m 3-El. T match, $18.95. 1 — 8' Boom, ¾" Alum. Tubing; 3 — 6' Center Elements, ¾" Alum. Tubing 6 — 6' End Inserts, ⅝" Alum. Tubing; 1 — T Match 4'), Polystyrene Tubing; 1 — Beam Mount.

D103T • DeLuxe 10m 3-El. T match, $25.95. 1 — 8' Boom, 1" Alum. Tubing; 3 — 6' Center Elements, 1" Alum. Tubing; 6 — 6' End Inserts, ⅞" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

S104T • Std. 10m 4-El. T match, $24.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, ¾" Alum. Tubing; 8 — 6' End Inserts, ⅝" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

D104T • DeLuxe 10m 4-El. T match, $30.95. 1 — 12' Boom, 1" Alum. Tubing; 4 — 6' Center Elements, 1" Alum. Tubing; 8 — 6' End Inserts, ⅞" Alum. Tubing; 1 — T Match (4'), Polystyrene Tubing; 1 — Beam Mount.

15 M. BEAMS

S152T • Std. 15m 2-El. T match, $22.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, ¾" Alum. Tubing; 2 — 5' End Inserts, ⅝" Alum. Tubing; 2 — 7' End Inserts, ⅝" Alum. Tubing; 1 — T Match (6'), Polystyrene Tubing; 1 — Beam Mount.

D153T • DeLuxe 15m 3-El. T match, $39.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 2 — 5' End Inserts, ⅞" Alum. Tubing; 2 — 6' End Inserts, ⅞" Alum. Tubing; 2 — 7' End Inserts, ¾" Alum. Tubing; 1 — T Match (6'), Polystyrene Tubing; 1 — Beam Mount.

20 M. BEAMS

S202N • Std. 20m 2-El. (No T), $21.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 4 — 12' End Inserts, ⅝" Alum. Tubing; 1 — Beam Mount.

S202T • Std. 20m 2-El. T match, $24.95. 1 — 12' Boom, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 4 — 12' End Inserts, ⅞" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Mount.

D202N • DeLuxe 20m 2-El. (No T), $31.95. 2 — 12' Booms, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 4 — 12' End Inserts, ⅞" Alum. Tubing; 1 — Beam Crosspiece, 1" Alum. Tubing; 1 — Beam Mount.

D202T • DeLuxe 20m 2-El. T match, $34.95. 2 — 12' Booms, 1" Alum. Tubing; 2 — 12' Center Elements, 1" Alum. Tubing; 4 — 12' End Inserts, ⅞" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Crosspiece, 1" Alum. Tubing; 1 — Beam Mount.

S203N • Std. 20m 3-El. (No T), $34.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 6 — 12' End Inserts, ⅞" Alum. Tubing; 1 — Beam Mount.

S203T • Std. 20m 3-El. T match, $37.95. 1 — 12' Boom, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 6 — 12' End Inserts, ⅞" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Mount.

D203N • DeLuxe 20m 3-El. (No T , $46.95. 2 — 12' Booms, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 6 — 12' End Inserts, ⅞" Alum. Tubing; 1 — Beam Crosspiece, 1" Alum. Tubing; 1 — Beam Mount.

D203T • DeLuxe 20m 3-El. T match, $49.95. 2 — 12' Booms, 1" Alum. Tubing; 3 — 12' Center Elements, 1" Alum. Tubing; 6 — 12' End Inserts, ⅞" Alum. Tubing; 1 — T Match (8'), Polystyrene Tubing; 1 — Beam Crosspiece, 1" Alum. Tubing; 1 — Beam Mount.

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is going in for ham TV. VMIX would like to contact anyone interested in microwave work. Ex-ZZA now is ØMPW. YSI now is in Huntington. NTB has a 20-meter vertical. Welcome to the Fordham and Franklin Square Radio Clubs, two new ARRL affiliates. Call letter license plates again are up before Albany. Lake Success Radio Club officers are YSL, pres.; DLO, vice-pres.; QAN, secy.; TNI, treas. IAG reports Queens AREC and c.d. nets have combined and operate Mon. nights. FI is processing RACES station licenses for Nassau and some already have been issued. The L.I. unit of YLRL officers recently elected KDP, pres.; KAE, vice-pres.; CFF, secy.; JZX, treas.; SUR and BXT, board of directors. All nets reported poor conditions on 75 and 80 meters during the month. LGK still is running 25 watts to those old p.p. 45s and needs a ham piano player. K2CQP is a new ORS. IVX, on s.s.b., resigned as EC. K2DEH has a new Viking. New officers of the Suffolk County RC are OQI, pres.; JFU, vice-pres.; MZB, secy.; OKK, treas. AOD is building 144-Mc. portable job and has been very active on 420 Mc. KQC is doing an FB job with NLI 2-meter Net. IVU and JOA are doing good work with the TAN organization and bulletins. TAN is on 3630 kc. at 1815 daily. K2BGJ and his dad, W2MQZ, both ill at Nassau County Sanitorium, D.P. 3, Farmingdale, N. Y., would appreciate mail from the gang. JYG has been seriously ill in the hospital since Jan. 23rd. Traffic: W2KFV 552, VNJ 451, BO 415, KEB 363, LPJ 306, AEE 291, JOA 232, K2CQP 199, W2NJL 185, EC 138, JZX 78, GP 63, GXC 51, IVS 45, LGK 36, PF 35, OMG 27, OME 23, IIG 19, NTB 17, KGN 13, IAG 9, OBU 9, IN 5, MUM 4, K2CUI 2, W2JBQ 2.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: NKD. PAM: CCS. RMs: NKD, CGG, WCL. K2DSW, Asst. NCS for the Northeast Traffic Net, which meets on 3746 kc. at 1545 hours, Mon. through Fri., is looking for new net members. Novice operators will be welcomed into this net. While convalescing at home CQB had a bit of time on his hands and made BPL two months in a row. CFB is on the air with the new 813 rig. KN2GAS and KN2GBJ have just passed the General Class exam. KN2GBJ would appreciate help from Newark amateurs in helping him to get started as a full-fledged amateur. DRV is on NJN with low power. YVQ reports several hours of operation in the recent CD QSO Party. CGG is back in NJN in a big way. DXD is on the high seas again. The RVRC gang visited Headquarters on Lincoln's Birthday. K2EUN proved an excellent operator in the CD Party at QW. UK is in great demand as a club speaker; his subject is V.H.F. DX. VPL runs second in demand, his topic being radio propagation and astronomy. K2BEV holds the RVRC record for traveling the greatest distance to club meetings. SW is back on the air. The RVRC clubhouse is gaining fame because of its Podunk Hollow atmosphere. IVU, IFP, and JOA are publishing the *Teen Agers' Net Bulletin*. News items for the bulletin are requested from all net members. Send them to JOA, 340 Burns Street, Forest Hills 75, N. Y. The Windblowers V.H.F. Society of Paterson now is an affiliated club. The GSARA annual dinner was a huge success. OUS is doing a fine job as NCS for AREC Monmouth County 2-meter Net. K2BEV is a new OO appointee. K2BWP is new OPS. EG is about ready to go on 2 meters with 829 final. K2EBL has completed new final for 144 Mc. and will run 400 watts to a pair of 4-125As. CVF reports an average of 100 stations reporting in weekly on the Bergen County Emergency Net. CBT is doing his usual fine job as NCS on N. J. Civil Defense Net, 3993 kc., Sun. at 0930. EGM is heard regularly on 144 Mc. with his new Communicator. News from the N. J. License Plate Committee shows a very favorable trend toward getting our call letters on our license plates during the present session of the Legislature Contact W2NUI for further information but do not contact any Legislative personnel regarding this matter for the present. A new State Law has just been passed in New Jersey making civil defense responsible for all disaster operations during peacetime. Assurance has been given that the present RACES plan will not be changed as a result of the new law. Funds have just been approved by the state treasurer for the purchase of 13 complete RACES control stations on the FCDA matching fund basis. Each station will be completely equipped with transmitters and receivers for each of the RACES bands. NKD received a nice scroll from the Radio Club of Argentina as verification of a QSO on 3509 kc. with LU5ZO while that experimental station was located at Antarctica. Traffic: (Jan.) W2CQB 652, CGG 210, EAS 112, DXD 84, K2DSW 35, W2FPM 26, DRV 7, CJX 4, YVQ 4, CFB 1. (Dec.) K2WAH 101, W2NKD 37.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — BDR dethroned our traffic king this month with a margin of 441 and Doc seems to like it. Russ did it the hard way this time. His recorders being out of order, he had to use his Braille writer. Incidentally, SCA beat all his previous January records. SRQ is trying to get SCA on 'phone.

(*Continued on page 88*)

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New officers of the Des Moines Club are NWX, pres.; AUL, vice-pres.; ERP secy.-treas. NYX maintains his home in Newton. WNØPAN made a total of 1584 points in the Novice Roundup. HDX has been recommended, by vote of the Cedar Rapids Club, to continue as EC. The Sioux City Club reports these officers for 1954: CRF, pres.; POY, vice-pres.; DXD secy.; URB, treas.; FVO, sgt. at arms. The Newton Club officers are WML, pres.; OZO, vice-pres.; JDV, secy.-treas. QVA reports new members on TLCN are PFR, SMV of Sioux Falls, S. D., and DWD. BBZ left for Newport, R. I., for Naval OCS. CGY now has ½ kw. UWF now is at KCRI in Cedar Rapids. BVE has 2nd-class 'phone ticket and is shooting for 1st class and the new Extra Class. BDR has made BPL 16 consecutive times. SCA has made it 36 times in 41 months. JDV, WML, NWX, and OZO helped with emergency communications in the recent $300,000 fire at Newton. MG is president of the Waterloo Club. TEN has an extra session at 1700 to try to beat skip with BDR and SCA NCS, Mon. through Sat. Traffic: WØBDR 1573, SCA 1132, CZ 137, OZO 78, YTA 70, BBZ 64, ERP 58, QVA 35, BLH 32, GXH 23, SEF 14, EHH 13, PUR 8, NYX 1.

KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. PAM: FNS. RM: KXL. The Lawrence Amateur Radio Club elected VBQ president and FKO secretary for 1954. The Hutchinson Amateur Radio Club has an FB c.d. set-up with the c.d. station, consisting of a Viking II and an SX-71, located at Kansas State Fair Grounds. The Club has more than 40 members. The SeKan Radio Club put on a c.d. communication drill Dec. 13th at Howard with mobiles NXJ, ONF, MIJ, FNS, IFR, IEW, FLZ, and 5IXJ participating. The fixed station, IFR, operated on emergency power and received simulated warnings from Wichita, Manhattan, and Topeka. Scott City amateurs are well publicized by their local newspapers who put the meeting notices on the front page, gave the new call letter license plates a good write-up, and are running a series of pictures of each amateur and his rig with the write-up of his achievements. *The Colby Free-Press Tribune* gave the story of the new license plates and a tribute to the amateur on the front page recently. PSL, of Salina, is active with his Viking II on Kansas nets. WNØQIZ is adding a pair of 832s to the final of his rig. SEH is a new ham in Oakley. QML has new 32V-3 and HRO at Ft. Hayes. A new club known as the Sedgwick County Radio Club has been formed in Wichita. IWS, now active on 20 meters, is picking up some traffic for Kansas. Traffic: WØBLI 390, NIY 224, FEO 186, EOT 102, YOS 64, ICV 49, TNA 35, MLG 34, BET 33, FON 31, YFE 31, FDJ 25, VBQ 24, DEL 21, KSY 19, MXG 17, IWS 15, KFS 15, GCH 12, WGM 10, LOW 9, ABJ 8, IUB 3, LIX 2, RBO 2, ZUX 2.

MISSOURI — SCM, Clarence L. Arundale, WØGBJ — SEC: VRF. PAMs: AZL, BVL. RMs: OUD, QXO. The Ferguson High School Radio Club has been reorganized and the following officers elected: GEU, pres.; PWO, vice-pres.; and PWN, secy. QXO has a new granddaughter who is getting his attention now. FUM is back on the air after being inactive for some time. WNØSAK runs 20 watts to a 6L6. WNØRTW is on the air with a Heathkit AT-1 and S-40B. WNØRRX has a TBS-50 on the air. IJS has modified a BC-459 for 20 meters. ARH has added VQ3 and EA9 to his DX list. ZVS has renewed his ORS appointment and again is active in traffic work. WNØPWN has 70 watts operating on 40 meters. OUD has the old 807 rig on 80 meters until the Stancor can be repaired. CXE is rebuilding oscilloscope and frequency meter. JHY is on his two-week Naval Reserve cruise. NGX has a new SX-71. GCL is rebuilding the rig. TSZ has a new doublet for 75 meters. MTB installed a Harvey-Wells in his new Pontiac. AXL is building new antenna Matchbox. OMG has successfully TVIed his rig. KZR is wiring his Viking II. QMF is looking for more contacts on 2 meters. CPI is the only station to make the BPL in January. Reports reflect the poor conditions existing at the state level. New ORS: ZVS. New OO: NXA. New AREC members: NXA and OBJ. The Lebanon Amateur Radio Club is off to a good start with several reports delivered in person. Traffic: WØCPI 700, GAR 296, BVL 154, IJS 153, QXO 142, ZVS 77, GBJ 42, CKQ 36, HUI 25, ZLN 20, EBE 13, WAP 10, OUD 9, OMG 8, PKV 7, BUL 6, CXE 6, QMF 6, ARH 3, KIK 3, NGX 3, BZK 2, CIA 2, WNØQBX 2, WØFKM 1, FUM 1, JHY 1, QGR 1, WNØSAK 1, WØWIS 1.

NEBRASKA — SCM, Floyd B. Campbell, WØCBH — Asst. SCM/NCS: Tom Boydston, ØVYX. SEC: JDJ. New officers of the Ak-Sar-Ben Club are IOS, pres.; AQJ, vice-pres.; JJK, secy.; NPA, treas. JJK and FRN report mobile-to-mobile QSO on 420 Mc. Al reports 4 active stations on 420 Mc. in Omaha. NCSs for the C.W. Net are: Sun. IXL, Mon. EUT, Tue. JDJ, Wed. RDN, Thurs. FQB, Fri. IXL, Sat. RDN. Meeting time for the C.W. Net has been changed to 1845 CST daily. New members on the C.W. Net are PUT and HTA. ZJF is busy as liaison between the c.w. and 'phone nets. AIN received a Viking VFO from Santa. PZH is on with 200 watts. AIN has higher antenna. The Lewellen boys are all working on mobile. JDJ suggests that the State c.d. gang get rigs on 160 meters to beat skip and QRM. Your SCM had a nice QSO with OCU and KDW. RDN is on NEB, TEN, and CAN

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reporting TCC sked being FB. DHO says 75 per cent of the NENRC members are s.s.b. and the Club will be 100 per cent by the end of the year. New officers of NENRC are DHO, pres.; APS, secy.; ZUT, treas. New officers of the North Platte Club are LBA, pres.; CBH, vice-pres.; SAI, secy.-treas. The North Platte Club has been holding meetings the 2nd Tue. and 4th Thurs. of each month. RDN is doing very well as RM for the C.W. Net. Traffic: (Jan.) WØTQD 2767, KØAIR 1588, WØRDN 418, FQB 148, ZJF 82, VYX 68, JDJ 58, KØWBF 32, WØKDW 18, UVU 18, HQQ 15, NAA 14, CBH 12, MAO 12, BOQ 11, EUT 11, OFL 10, EGQ 7, HTA 7, DDP 6, KLB 6, PPT 6, UPY 6, LRK 5, AEM 4, BIA 4, DJU 4, IRW 4, BEA 3, QOU 3. RAM 3. KØFBD 2, WØHQN 2, ORW 2, AIN 1. (Dec.) WØAIN 7.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Roger C. Amundsen, W1-HYF — SEC: LKF. PAM: RRE. RM: KYQ. CN-3640, CPN-3880, CEN-29,580. RRE is Acting PAM until our new SCM takes over, replacing FOB, who resigned because of the pressure of personal affairs. Many thanks Al for an FB job. RMT, BGT, and CUH as ECs and VW as OO and OPS are all renewals, while GIX sports new OO, OBS, and OPS appointments. UNG worked his 24th country on 7 Mc. AOS once again comes through with his nice long letter. CGD renewed his many appointments. EFW now is manager of the Morning Net. RAN has been busy with exams. APA renewed ORS appointment and listed some juicy DX worked. A nice bulletin was received from TAN. CFE is taking over c.d. in Woodbridge. RWD reports the India Net is gaining. Stamford AREC now is SARC with TLZ, pres.; SSN, vice-pres.; WSZ, secy.-treas.; NOA, publicity; NOF, c.d. RO. AYC is on again. CTI is planning a new rig. The Annual V.H.F. Meeting was held Feb. 20th in Hartford. ODW has a new DB23. BGT wants to know how many have s.s.b. in Connecticut. Stratford ARC officers are VIY, pres.; ZTY, vice-pres.; VJG, secy.; ZNU, treas. WAV, comm. off.; WML, asst.; RFJ, act. mgr.; WZV, asst. WPO, YYM, and ZDP attended the banquet given by the Frankford RC and Potomac Valley RC at Glenside, Pa. WPO is the first all-Novice WAS. UNW, YPA, and YQQ are after AREC membership. JYP is building a new shack. Traffic: (Jan.) W1AW 128, EFW 123, KYQ 113, YBH 95, RRE 56, UNG 54, HYF 53, YYM 45, CUH 40, VOV 36, BDI 32, QJM 31, BVB 24, RFJ 19, KV 17, FTM 15, RAN 12, WPR 12, VOS 11, AYC 4, ODW 4. (Dec.) W1CGD 24, AOS 2.

MAINE — SCM, Bernard Seamon, W1AFT — With the advent of Daylight Saving Time all nets in the State will cease operations for the usual summer hiatus. It has been a tough winter for net operation, with QRM reaching a new high and propagation conditions at a new low. A large bouquet to our PAM, BTY, for his fine direction of the Sea Gull Net through a stormy season. RSC, who is wintering at West Palm Beach, sends greetings to all the gang. HUL reports a fine midwinter hamfest held at Limestone by the Aroostock Amateur Radio Club. YDA is prexy. The Portland Amateur Wireless Assn., with SPJ as head man, meets Thurs. at the Lee Recreation Building in the Forest City. JIS recently celebrated his 77th birthday. The Gardiner Civilian Defense Amateur Radio Club meets Mon. at the Fire Station in Gardiner and is building a c.d. transmitter. IKE is rebuilding from the ground up, from rig to new skyhook. My RM, OHT, is having a rough time with frozen water pipes, conked-out oil burners and, to top it all, a plugged sewer. WN1YDX finally worked his Delaware Novice. Please keep the news coming through the spring and summer months. Traffic: W1LKP 100, VYA 63, TVB 44, OHT 38, BX 25, UDD 14, AFT 11, JIS 2, WN1YDX 2.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — New appointments: ECs — SIP Methuen, EKG Braintree, GAG Stoneham, QQB Watertown, OTK Somerville, DFS member of Region 5 Radio Comm. OOs — UIR, AVY, WSN. Appointments endorsed: ECs — TQP, WB Region 5 Comm., UE Wellfleet, ORA Wakefield, KTG Cambridge, MKX Lowell, PST Brookline, WAG Taunton, MRQ Groveland, TVD Andover, PZ Lynnfield. OESs — JOJ, AOG. OPSs — MRQ, TNK, PZ. ORSs — MRQ, TY, AQE, AOG. OBS — TNK. RM for 40 meters — AQE. Sorry to have to report the death of QW and PRQ. WN1ZSN is RDV's XYL. YTA is on 40 and 80 meters. QZO and KWD give code practice on 2 meters each night. VMU is on 10 meters. 2BVU/1, DBH, MSF, and WN1ZSS are on 2 meters. LBA has a Gonset Communicator on 2 meters. Region 5 Radio Comm. held 2 meetings in January with DFS, KTG, RM, NJN, OTK, ALP, DOF, BL, IPA, and TQP present. The Wellesley Amateur Radio Society had a talk by Mr. Kulberg of Sylvania Elec. Co. ZFD is on 2 meters. Give him a call if you hear him; he is blind but don't mention it to him. HWC gave a talk on portable equipment used by the Boston Edison Co. at the Braintree Radio Club. BGW is on 3620 and 7140 kc. RTTY. The Framingham Radio Club had an auction with RVA as auctioneer and talks by PAW and YCR. OLP and QON have a new Viking II and Johnson Matchbox. QON's brother is WN1ZSP in Quincy. The

(Continued on page 92)

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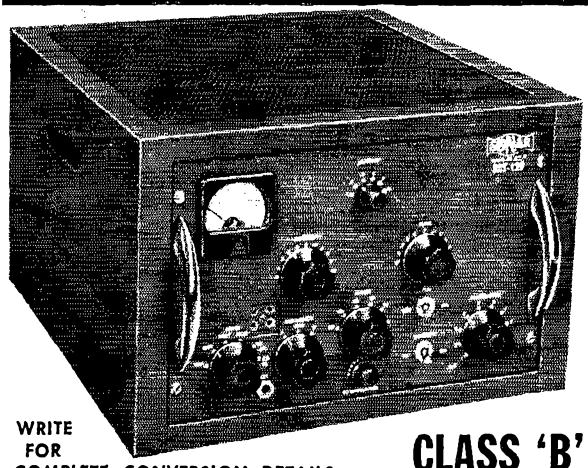

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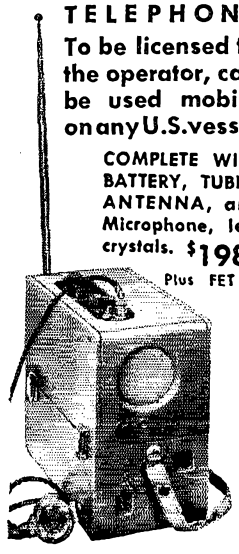


Arlington C.D. Net assisted the Mothers' March on Polio with mobiles and a station set up at the March of Dimes Headquarters. The Hingham Radio Club has two new RME 2-11 v.h.f. receivers and a second TBS-50 at the fire station. MKW reports a c.d. test crossband 160 to 80 and 2 meters with CFQ, BCN, MNF, UUM, MFI, and ARC on. The South Shore Club had a talk on basic electronic subjects by Bill Charette. The Quannapowitt Radio Assn. elected AWA, pres.; RK, vice-pres.; UFM, secy.; KI, treas. The El-Ray Radio Club's new officers are EIQ, pres.; PNW, vice-pres.; RSR, secy.; PAW, treas.; OTH, act. mgr.; JSM, chief eng. The Old Colony Radio Association's new officers are SE, pres.; WUW, vice-pres.; QKM, secy.; TQF, treas.; *HPV* and UAW, exec. board; LKM and IZY, auditing board. A new club in Lynn, the North Shore Radio Assn. for C.D., meets the 4th Thurs. of the month at Forresters Hall, Boston St., Lynn. Officers are HRA, pres.; SHV, vice-pres.; JZV, secy.; OGK, treas.; VMD, JLN, VRK, and RNM, board of directors; TY, ham tamer. TVD and VSU have mobile rigs for c.d. work in Andover. The South Eastern Mass. Amateur Radio Assn. has its own quarters at Blackmer St. in New Bedford. WGN is Asst. EC. 3PZS/1 is on 10-75-meter 'phone down there. The Brookline c.d. group has several Communicators on 2 meters. BHD's brother is YNF. WN1ZQM is new in Medford. EL has a new 20-meter beam. IKR gets on c.w. some now. KRD is working DX on c.w. RMQ has 813 on all bands. RLF and SZV have Communicators. PJ is experimenting with 10-meter antenna. K2ADA also is ZWQ. UIE is on 75 meters fixed and mobile. LBH is active on 75 meters. WLV has new transmitter on all bands. WGP and VVA now are in our Eastern Mass. Net and VVA is NCS on Wed. WGM and WTY put up a Lysco ground plane on 10 meters for UKO. UTH is on 75-meter 'phone. BB is active on 160-meter transatlantic tests. VTT has a 522. ORA has a new Viking II. The Waltham c.d. group helped out during the Barker Lumber Co. fire, with walkie-talkies, c.d. truck and c.d. headquarters station with JSM, QMN, NXY, KXP, 1HL, AQE, OGV, and JCI, all on 2 meters. NCO has a TBS-50 and NC-125 and is on 10 meters. BHD, Everett EC, reports on the recent "attack" on his city. Those active were TNI, PJ, HXY, TOD, YNF, RLF, KNA, YIC, VXE, YID, Tom Wilson, and Edward Easterman. The Winthrop Emergency Radio Net held a drill with SBT, BDU, CMW, MQB, NMX, UOC, VIS, DJ, OIR, HFJ, BB, and XYLs active. BSY gave a talk and demonstration on frequency measuring equipment. Hingham was the scene of a bad fire in Sector 5's monthly test, with the following stations on: VPR, AUU, WFQ, WB, MPT, TQQ, SSA, TYN, DW, CQN, FWS, ALP, KWD, QVN, YYZ, VAN, KTU, and EKG. Traffic: (Jan.) W1EMG 286, MME 148, UKO 143, LM 74, UTH 66, AVY 37, UE 32, LBH 21, EPE 18, BB 7, BY 6, CTR 3, WGP 3, MX 2, VMD 2, VVA 2, LLY 1, VTT 1. (Dec.) W1IBE 250, EPE 132, NUP 62, AOG 19, CTR 9.

WESTERN MASSACHUSETTS — SCM, Roger E. Corey, W1JYH — SEC: KUE. RM: BVR. PAM: RDR. WMN meets Mon. through Fri. on 3560 kc. at 7 P.M. and 8 P.M. New officers of the Hoosac Valley RC are MKD, pres.; WRF, vice-pres.; and JAH, secy.-treas. SPF is using a 29-ft. vertical with good results on 10-meter ground wave. UDK has licked his TVI with the v.h.f. low-pass filter per April '53 *QST*. OME and EHH operated in the CD Party on 160 meters. GUI has a new 6- and 10-meter mobile rig. YMM is active on 10-meter mobile also. VBT, VBS, GUI, and UDK took part in the Leominster c.d. drill. New officers of the Reg. 9 RC are ACP, pres.; STR, 1st vice-pres.; YXM, 2nd vice-pres.; OME, secy.-treas. TVJ built a monitone and keeps active on WMN and 1RN. MUN plans to keep at the top in the F.M.T. with a new 18 crystal standard, audio oscillator, and dual 'scope panel. New OPS, VBG, had a nice write-up in the local paper for his c.d. work. PIR is now in New Jersey. We welcome Westfield's newest, WN1BZA, to the section. BVR is a new Radio Officer for Westfield. VBG is a charter member of the Braille Net, which meets daily at noon on 3920 kc. WM c.w. men turned out in force for the CD Party with BKG, RAN, WDW, SRM, TVJ, JRA, WEF, YCG, RRX, RLQ, HRC, JAH, CJK, and JYH participating. CJK, LIB, and JYH also were on during the 'phone section. AEW, AZW, and BKG are new members of the A-1 Operator Club in Pittsfield. The PRC now holds its meetings at the Jewish Community Center. JRA used amateur radio in a public speaking class and put the professor on the air. COI added a card from M1B to his collection. UVI has a new Signal Sentry. BDV rebuilt to make use of a new mike which he received for Christmas. Traffic: (Jan.) W1UKR 66, BVR 48, TVJ 46, SRM 45, HRV 42, TAY 17, SPF 16, WDW 13, JYH 12, HRC 10, JRA 10, WCG 10, MNG 7, JAH 5, OBQ 1. (Dec.) K1WAV 205, W1TAY 28, LIB 27.

NEW HAMPSHIRE — SCM, Carroll A. Currier, W1GMH — SEC: BXU. RM: CRW. PAM: UNV. The Concord Brasspounders have elected FTJ, pres.; SSK, vice-pres.; HS, secy.-treas. FZ and GMH have received their WANE certificates. WUU is on the air with a new TBS-50 at his new QTH in Goffstown. UON is attending Theological School in Boston and is on the air week ends with a new 150-watt rig from his home QTH in Farm-

(Continued on page 94)

THE TREND IS TOWARD—VERTICALS

SOME AMAZING PERFORMANCE RECORDS are being logged by users of vertical radiators on 15, 20, 40, and even 75! Ground plane, drooping radial and coaxial verticals have some mighty desirable low angle propagation characteristics for DX and ground wave QSO's.

HARRISON HAS IT! COMPLETE LINE OF **PREMAX** ANTENNAS AND PARTS

LOADED WHIP ANTENNAS

Weatherproofed coil can be tapped for mutli-band operation. 2 ft. bottom section threaded 3/8-24. Top section 6 ft. long. Designed for mobile or fixed stations.

Premax BXS-14 (20 meter) $6.60
Premax BXS-38 (75 meter) $7.80
(Coils avail. for CAP, etc. frequencies)

INSULATED MOUNTING

Heavy duty ceramic cone. New locking device takes any 3/8"-24 threaded (or 1/4" plain) whip.

NA-1—$4.50 net

Some Suggestions:

Put up full (or loaded) quarter wave element on roof or chimney (or on pole or mast, with tubing running down to base). Use guy wires as GP or drooping radials. Feed with 50 or 72 ohm coax. Got a rotary? Ground rotator to tower (or by tubing down pule), add element atop rotator, and extend to resonate. (Beam acts as "top-hat" loading.) Shunt feed near base.

Or, use two elements as a center-fed dipole.

Telescope elements to QSY to higher band.

73. W2AVA

STAND OFF INSULATORS

Heavy duty. 3" dia. insulator. Aluminum castings. Height to center of clamp 4 3/4". Sizes for elements 3/4" to 1 1/2" OD.

Type 13SA $6.00 net
(Chrome plated brass—$12.00)

INSULATED MOUNTING CLAMP

Galvanized iron frame, porcelain split bushing. 2" height to center. For elements 5/8" to 1" OD.

Type 9C ..... $2.01 net
Similar, but with stamped steel frame.
Type 10C..... $1.50 net

INSULATOR BARGAIN

Heavy duty standoff. Brown glazed ceramic body 5 1/4" high. Oval base 2 1/4" x 4". Furnish your own hardware and save over half!

35c each. Six for $1.59

ALUMINUM TUBING

1 1/4" OD, 18 ga. wall 63ST8. 10 ft. lengths $2.95

LOW COST STEEL ANTENNAS

Low-cost, fully adjustable Telescoping Steel Antennas for marine, commercial, amateur and other installations are made of high-tensile, copper-nickel steel tubing, heavily cadmium-plated for corrosion resistance. Adjustable to any height by means of a positive contact locking device between sections.

No.	Descrip.	Extd.	Coll.	O. D.	Base I. D.	Wt. Lbs.	Price
112-M	2-Sec.	11'8"	6'0"	.656"	.556"	4	$4.68
318-M	3-Sec.	17'3"	6'2"	.875"	.775"	7	6.60
224-M	4-Sec.	22'9"	6'3"	1.063"	.963"	11	9.30
130-M	5-Sec.	28'3"	6'4"	1.250"	1.150"	15	12.00
136-M	6-Sec.	33'9"	6'5"	1.500"	1.400"	20	15.30

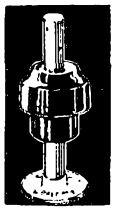
WEATHER-RESISTANT ALUMINUM ANTENNAS

Premax Vertical Aluminum Antennas have light weight, corrosion resistance and adequate strength to meet practically all needs for marine, commercial and mobile installations where convenience in erecting and dependable performance are essential. They are built up of specially drawn seamless, tempered aluminum tubing engineered to withstand wind velocities up to 60 miles per hour. A positive locking device is provided on each section.

No.	Descrip.	Extd.	Coll.	Base O. D.	Base I. D.	Wt. Lbs.	Price
AL-312	2-Sec.	12'4"	6'4"	.500"	.334"	1 1/2	$8.40
AL-518	3-Sec.	18'5"	6'4"	.750"	.584"	3	13.50
AL-324	4-Sec.	24'4"	6'4"	1.000"	.834"	5	19.50
AL-530	5-Sec.	30'0"	6'5"	1.250"	1.084"	7	28.50
AL-535	6-Sec.	35'8"	6'5"	1.500"	1.310"	12	37.50

HARRISON HAS IT! Everything for the radiation system — Aluminum grounding wire — Enafeled copperweld radial and guy wire — beams — rotators — etc.

INSULATED BASE MOUNTS



TYPE 2

Insulator 3 1/4" dia. Post sizes to fit antennas up to 25' long. (Extended beyond 18', bracing insulator or guys are needed.)

$7.80 net

Send for complete Premax catalogs.

TYPE 1

Heavy duty Lapp design, 10,000 lb compression insulator. Galvanized malleable iron. 10" high OA. For any of above antennas.

1 PG—$19.50 net
(Chrome plated brass—$33.00)
Also available with hinged post.

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JAMAICA BRANCH: Hillside Ave. at 145th St.

ington. UNV has a new jr. operator. FZ has just completed the installation of a Dial Telephone System in Alton. CDX made the front page of the *CD Bulletin*. RAR has retired from the telephone company and will be heard from at his QTH in Farmington. The PCARC is awarding stickers for WANE certificates for 62 and 67 counties. PZU was awarded a Commendation Ribbon during services at Grenier Air Force Base for meritorious service as maintenance officer with the 5th A.F. in Korea during 1952. QJX is rebuilding the rig. GMH is having fun on 20 meters while recuperating. CRW reports the following: SAL expects to be on 'phone soon. QJX, after several years of excellent help on NHN, has QRT for a few months. During 1953 NHN handled 1043 messages in 260 sessions. TBS is very busy and made BPL in January. BFT has a dandy antenna farm. HXE is on 2 meters from Salem. WBM is on 10-meter 'phone. Two stations from Portsmouth, POK and CDX, are both on NHN. COC is the outlet for Concord traffic. FZ is putting out a swell signal on 80 meters. Traffic: W1CRW 535, TBS 100, CDX 21, FZ 9.

RHODE ISLAND — SCM, Merrill D. Randall, W1JBB — SEC: MIJ. RM: BTV. RIN meets every evening Mon. through Fri. at 1900 on 3540 kc. RINN meets Mon. through Fri. at 1830 on 3743 kc. (see below). RI 'Phone meets every Sun. at 1100 on 1890 kc. RINN is a new Novice net set up by RIN to train Novices for net work. Everybody is welcome. Call BTV for details! RIN held its winter meeting at W1AQ's QTH on Jan. 22nd. Those present were BTV, BBN, AIT, CPV, YAO, YKQ, WN1ZPG, WN1ZPH, and WN1ZBZ. That outside QRM you heard Jan. 30th at approximately 2300 was WPX getting her first ZK3. Nice going, Evvie! New officers of NCRC are ULS, pres.; WFR, vice-pres.; TRX, secy.; ZJQ, corr. secy.; Russ Dayton, treas. Officers of PRA are SGA, pres.; KKR, vice-pres.; AEI, rec. secy.; TQW, corr. secy.; KKE, treas. It's a jr. operator at LCH's, weighing in at 7½ lbs. Portsmouth is the first Rhode Island town to apply for RACES authorization. BBN was congratulated by NZR, Rhode Island's R.O., for making this possible. C. W. Phonewell, PRA's technical editor, sure makes everything clear. Traffic: W1BBN 61, BTV 60, QR 54, TGD 42, CPV 34, W4CVO/1 30, W1IMY 24, AIT 9.

VERMONT — SCM, Robert L. Scott, W1RNA — PAM: RPR. RM: OAK. VTPN: 3860 kc., 0930 Sun. only. VTN: 3520 kc., 1700 Mon. through Fri. Vt. C.D. nets: 3993 kc. and 3501.5 kc., 0900 Sun., operating alternate fre-

(*Continued on page 96*)

SECOND VERMONT QSO PARTY

The Tri-County Amateur Radio Club of Brattleboro, Vermont, announces the 3rd Vermont QSO Party and invites all interested radio amateurs to participate. Here are the details:

(1) Time: 24 hour week-end period Saturday, April 24, 1954, 6 P.M., to Sunday, April 25, 1954, 6 P.M. EST.

(2) No time limit and no power restrictions.

(3) Scoring: *Vermont stations:* 1 point per contact and multiply total by the number of states, U. S. Possessions, Canadian provinces and foreign countries worked during contest period. *Outside stations:* 5 points for each Vermont station worked and multiply by the number of counties in Vermont worked during the contest period.

(4) A W-Vt. certificate award will be sent to any station working 13 of Vermont's 14 counties. A certificate will also be awarded to the highest scoring station in each state, U. S. Possession, Canadian province and foreign country, and to the highest scoring station in each Vermont county.

(5) The following frequencies are suggested to congregate *near:* 1810, 3520, 3740, 3860, 7050, 7250, 14,100, 14,250, 28,100, 28,800 kc.; 51, 145 and 221 Mc. Use more than one band if you wish, but remember that a station may be worked only once for credit.

(6) General Call: "CQ VT." Vermont c.w. stations should identify themselves by signing *de Vermont (call) K*. Phones say, "Vermont calling."

(7) Contact information required: Vermont stations send RST or RS and county. All others: RST or RS and state, possession, province or country.

(8) Logs and scores must be postmarked not later than May 25, 1954, and should be sent to Tri-County Amateur Radio Club, % Ray N. Flood, W1FPS, 2 Marlboro Ave., Brattleboro, Vt.

MORROW RECEIVERS

... HIGH IN DEMAND ... HIGH IN QUALITY LOOK TO MORROW FOR HIGH PERFORMANCE!

MORROW 5BRF Mobile Converter

MORROW FTR Mobile Receiver.

Skillful engineering, constant research and a sincere desire to give the Radio Amateur the most for his hard earned dollar have always been MORROW considerations when building radio equipment.

THE 5BRF SERIES CONVERTERS feature FULL DIAL (temperature compensated) band-spread on the 75, 40, 20, 15 and 10 meter bands, TEN HIGH-"Q" RF and MIXER COILS, FIVE adjustable OSC. COILS for precise tracking, TEN zero-temp CERAMIC TRIMMERS in the Mixer and Osc. circuits and RF ampl, Mixer and Osc. tuned by a 3 GANG CONDENSER. Added features include: IF AMP. with 4 tuned circuits, a 1525 Kc REJECTION TRAP to eliminate bdcst interference, ANTENNA TRIMMER, SINGLE SIDEBAND STABILITY and a built-in NOISE LIMITER. (Noise Limiter: model 5BR-1)

THE FTR fixed tuned receiver features: NARROW BAND-PASS 200 Kc IF Amp. (3.5 Kc at 6 Db down), SSB STABILITY with a Xtal controlled local Osc. and a series tuned BFO, NOISE BALANCED VARIABLE SQUELCH, hermetically sealed "S" METER, built-in FIELD STRENGTH METER and a receiver QUIETING (when transmitting) RELAY. All controls and "S" meter are located on front panel for maximum operating ease.

WHEN THESE TWO UNITS ARE COMBINED they become a beautifully matched pair . . . The first revolutionary mobile receiver with "big set" performance.

5BRF designed specifically for the new FTR $67.95
5BRLN to be used with broadcast receiver $69.95
5BR-1 same as LN with Noise Limiter $74.95

FTR RECEIVER and power supply (incl. Fed. Excise Tax) $128.40
All prices are Amateur Net

Available in either 6 or 12 V. models.

ENGINEERED FOR SUPERIOR RECEPTION

SEE YOUR DEALER FOR A DEMONSTRATION.

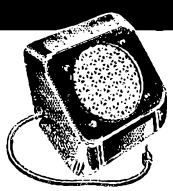
MORROW MOBILE ACCESSORIES

MORROW TOP HAT

High quality capacity hat for greater antenna efficiency. Tempered aluminum, buffed satin finish. Light weight and offers little wind resistance.

Amateur Net $2.50

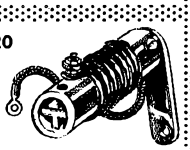
MORROW SH SPEAKER



Heavy duty 5" PM dynamic housed in cast aluminum case. Universal easy mounting bracket. Designed to compliment your 5 BRF-FTR installation.

Amateur Net $7.50

MORROW GC-10 OR GC-20 GENERATOR NOISE FILTERS

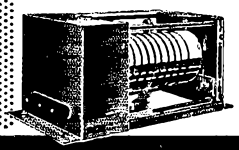


Tuned RF "hash" filter for 10 or 20 meter bands. Easy to install . simple to adjust.

Complete with instructions:

Amateur Net $3.75

MORROW MLV-50



Motor driven variable inductor for tuning mobile whip antenna to operating frequency by remote control from the driver's seat. Normally installed at whip base. For 75, 40, 20, 15 and 10 meter bands. Supplied with coax fitting, mounting, remote control switch and cable.

Amateur Net $24.95

BE MORE THAN SURE . . . BUY A MORROW!

MORROW
RADIO MANUFACTURING CO.
SALEM, ORE.

quencies each Sunday. GMN: 3860 kc., 1200 to 1300 Mon. through Fri. TLI is in the Fanny Allen Hospital after tangling with a car. Some of the BARC boys set up his transmitter and receiver so he has been quite active on 75 and also on 10 meters with a c.d. portable "Detroiter" furnished by RPR. AXN lost a mast in the wind and is operating on a temporary set-up on 75 and 160 meters. FPS reports that he is experimenting 100 per cent (on?) and still working on his rig when the spirit moves. Traffic: W1RNA 166, OAK 61, TEW 56, JLZ 44, AVP 34, PZX 33, IT 17, BJP 11, TAN 11, AXN 10, KJG 10, VZE 8, VVP 5.

NORTHWESTERN DIVISION

ALASKA — SCM, Dave A. Fulton, KL7AGU — YCV, ex-W4USA, and former MARS director, left for his home QTH in December. AFK, AWB, and AMS are the new president, vice-president, and secretary of the Anchorage Amateur Radio Club. AOW is on the air with a new TBS-50 while rebuilding the kw. AWB is looking for new countries on 3.5 Mc. 0500 to 0700 GMT daily, with a ground plane vertical and 1 kw. to p.p. 100THs. W8ESF/KL7, on Shemya in the Aleutians, now is KL7TY. AYQ, the club station on Adak, may be heard on all bands. CP and AOW are looking for stations interested in an 80-meter (c.w.) traffic net. AMZ, of s.s.b. fame, departs for a new assignment in Oklahoma soon. W1PIV/KL7 is a newcomer to the Anchorage Area. ATD is making plans for RTTY and would like to hear from other KL7s interested in giving it a try. Traffic: KL7AIR 2094, AWB 15.

IDAHO — SCM, Alan K. Ross, W7IWU — Coeur d'Alene: KOG was figuring on QRT, but broke down and bought an HT-20. BAA spends time watching TV. Lewiston: CYY moved to Lewiston from Clarkston. Local frequency is 29.6 Mc. and 3995 kc. Caldwell: EYR has debugged the rig for TVI so plans to be on more. Ririe: LQU is UPRR agent, having moved from Blackfoot last July. He has 300 watts on, and a good location. FIS writes a nice letter from Missoula. George, formerly from Coeur d'Alene, has a new home with an acre of land and is on the air with 100 watts. Boise: NVO is Official Experimental Station. CUG left Boise for the State of Oregon. SUZ has a new NC-88 receiver. SHN, the old man of the Mountain, is running KBOI-TV at 7000 feet. Write your director, Rex Roberts. The ARRL Board Meeting will be held in May. Traffic: (Jan.) W7RSP 30, NVO 12, NLJ 7, EYR 6. (Dec.) W7RSP 71.

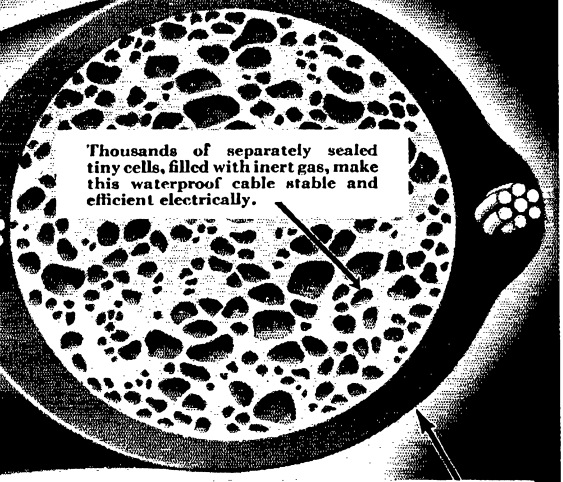
MONTANA — SCM, Edward G. Brown, W7KGJ — License plates for Montana hams is becoming more of a possibility each day, thanks to the efforts of those who have taken it upon themselves to do something about getting the plates for the hams in our State. QYB, ex-ØLDU, is back on the air with 250 watts to 812s. Ex-9WN, of 1915 days, has a new antenna up and plans to be getting back on the air soon. WN7TSM has moved from Big Timber to Lewistown. SMY has his rig fired up on 40 meters using an 813 and a 136-ft. end-fed antenna and is planning on a 40-meter 8JK soon. LBK participated in his first LO and CD Parties and says both activities are FB. CJB and FOM are on s.s.b. PDE is having some BCI troubles with his Viking II. MAK is conducting theory classes for beginners. Missoula mobiles are CJB, FOM, MAK, RHB, and NLE. LEG is home on leave from the Army. COH gave the Novice exam to a 12-year-old Scout. Thanks for all the nice news and traffic reports from the gang. Keep them coming. Traffic: W7CT 107, SFK 64, MM 43, TGU 30, TAT 23, COH 18, NPV 18, SVF 15, NCS 6, NZJ 6, MAK 2.

OREGON — SCM, John M. Carroll, W7BUS — Interested railroad hams have formed the Southern Pacific Amateur Radio Klub at Eugene, with PGB as secretary. USO received his official Net certificates for OSN. HDN is active on OEN. KTL now is using an HT-9 with TVI to lick. DOP, CN, FSY, LEX, MNS, QLC, and KTL, all of Albany, have their license plate calls. AJN needs outlets in major cities for OSN. AJN worked all districts in the CD Party on 40 meters with 85 watts. OSN reports a total of 214 sessions, 1608 attendance, 772 traffic for 11 months. TRH, RLG, NYQ, and RHJ registered with AREC. SCY sent his old AREC ticket in for endorsement. The Cascade Traffic Net handled 14 messages with 8 NCSs for the month with 358 total check-ins. Station activity report cards will be mailed on request from P.O. Box 706, Pendleton. WN7VGD has a Heathkit on c.w. Band conditions have prevented many nets from operating. TLB now is K6CYJ. TVW and FLS are on s.s.b. 160 meters. BDN is back on the air. The Hermiston Club is holding classes on s.s.b. NWE has a new mobile rig on two bands. BZS is disposing of all his war surplus gear. The Pendleton Club removed eleven 50-foot poles for the Club and its members from one of the streets in the city. Western Union gave them the poles for the removal. Traffic: W7HDN 61, AJN 32, PDR 18, QPS 12.

WASHINGTON — SCM, Laurence M. Sebring, W7CZY — SEC: QZF. RMs: FIX, OE. PAMs: EHH, PGY. JEF obtained a Johnson Viking II and put up a three-element 20-meter beam. He also has a folded dipole 40-meter antenna and is planning a doublet 80-meter antenna soon. WSN is becoming enthusiastic over 160 meters for "B" Net. 160 meters is better than 80 meters during skip conditions. OE

(Continued on page 98)

New UHF&VHF LEAD-IN



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ADVANTAGES:

1. Lowest losses at UHF and VHF frequencies.
2. Great abrasion resistance and mechanical strength.
3. No time-consuming end seal required; easy to install.
4. No internal moisture to cause signal loss.
5. No kinking when used with antenna rotors.
6. Resistant to snow, ice, rain, and wind.
7. Resistant to ultraviolet rays from the sun.
8. Uses Belden Weldohm conductor for long conductor life.
9. Can be clamped tightly in stand-off insulators without crushing. No special fittings required.
10. Conductor spacing is constant even when the lead-in is transposed.
11. No stripping problem for attaching the conductor.

...Cuts SIGNAL LOSS

This completely new 300-ohm line results from the development of a new cellular plastic core where each separate cell is filled with an inert gas to make an efficient cable with the lowest possible losses at both UHF and VHF frequencies. With this absolutely waterproof cable, no sealing of the ends is necessary. Celluline cable can be fixed in stand-off insulators without crushing. The thick outer wall of polyethylene serves to protect the cable from abrasion and sun damage.

By fusing *only* virgin polyethylene, the wall can be made smooth—absolutely free from rough spots—to prevent the adherence of dust and other impurities which would increase the losses.

The copper-covered steel strands, which make up the conductors, assure 49% greater resistance to breaking from flexing or stretching than any all-copper conductor.

8275 CELLULINE®
TRANSMISSION LINE

by **Belden**
WIREMAKER FOR INDUSTRY

is adding a new rig for exclusive use on 160 meters. UMK's big news is that he finally succeeded in WAS. EAU is using a new VFO patterned after 6OWR's. HRC is president of the new Puget Sound Amateur RTTY Assn. CO was snowbound in Eugene. JEF is retired from the Marines and spends his days handling overseas traffic. Lois, QYN, made her first BPL in January. Six amateur radio stations in the Twin Harbors Area were busy this last month handling messages while normal communications systems were shut off from the rest of the State, because of heavy snows breaking the lines. Traffic: W7JEF 2501, BA 1606, K7FAE 1077, W7PGY 937, QYN 539, FRU 252, KT 153, OE 142, BG 89, QOU 88, RXH 88, APS 87, FWD 75, UMK 55, FIX 51, EHH 48, AIB 38, EAU 37, HAK 36, ZU 35, RTQ 30, USO 22, AMC 17, BLX 13, SJL 12, EVW 8, GAT 1.

PACIFIC DIVISION

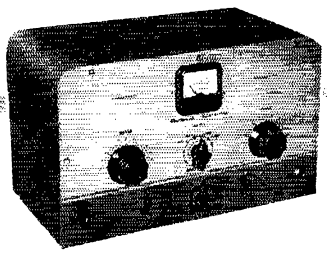
HAWAII — SCM, James E. Keefer, KH6KS — For the benefit of stations interested in handling traffic by teletype, KA8AB has advised that they are prepared to set up schedules on any frequency. Contact WØQDC, c/o 49th Comm. Sqdn., APO 919, Postmaster, San Francisco, Calif. KH6-ABQ has undergone a major operation and is now on a long, slow road to recovery. KH6ALM has been on a tour through Kwajalein, Guam, Iwo Jima, etc., on a picture-taking expedition for a newspaper syndicate. Those making BPL in January are KA7LJ, KA7RC, KA3AC, and KH6FAA. Traffic: (Jan.) KA7LJ 4402, KA3AC 1970, KA7RC 1034, KH6FAA 857, KH6AJF 322. (Dec.) KA8AB 1759.

NEVADA — SCM, Ray T. Warner, W7JU — SEC: HJ. ECs: KOA, LGS, NRU, NWU, OXX, TJY, VO, ZT. OPS: JUO. ORS: MVP, NOW. OBS: NOW. 1WPO worked WN7TGK, of Boulder City, for the first known Novice WAS. OYQ, of Reno, signed up with the AREC. NOW is our newly-appointed ORS and OBS. He is to be congratulated on making BPL this month. JU still is trying new antennas on 144 Mc. with hopes of working the West Coast. VDV, URA, VDC, UMN, NOW, 1SCH, and ØGRE are all on active duty at Stead AFB, near Reno, and can be heard operating the MARS station, K7FDB. VDC, ex-KL7AQH, is building new gear for future activity. UMN is Base MARS Director, Stead AFB. The Truckee Meadows Net operates on 7268 kc. This also is a mobile frequency with a receiver and transmitter on stand-by at the Reno Police station. JLV is working for the Nevada Highway Patrol radio section. MAH is with Reno Police radio. TXI now is mobile. Traffic: W7NOW 649.

SANTA CLARA VALLEY — SCM, Roy I. Couzin, W6LZL — New club officers took over in January and plans are already in the making for coming events. The success of these projects will be determined by the willingness of the whole club to get behind and push. HC reports the new 144-Mc. net in the Bay Area is making progress. YHM is keeping busy on the nets and reports his SX-25 gave up with a gasp while on PAN. FON still is keeping busy on MTN. AIT reports being NCS on BAN this month for the first time. UTV is keeping busy on the nets but slowed down on the traffic. WGO reports in with traffic and the dope about getting a group together on 144 Mc. one to five nights a week as they desire. The frequency probably will be 147 Mc.; also Santa Clara County now has available for c.d. a 250-watt rig to operate on the 1700-kc. band. K6BBD is working toward WAS on 7-Mc., Novices only, and has 38 states now. NTQ has slacked off these last few months because of the pressure of business. MMG reports new construction on the transmitter and an overhaul on the receiver. OTS is working on aeronautical mobile gear and hopes to get a plane soon. The PAARA has a new meeting place in the Menlo Park Civic Center. Election of officers was held and the new leaders for this year are IUV, pres.; KJI, vice-pres.; NMV, secy.; PBX, treas. New directors are LCN, YWD, and MZO. Traffic: W6HC 159, YHM 110, WGO 68, FON 57, AIT 35, UTV 14, MMG 7.

EAST BAY — SCM, Acting SCM, Guy Black, W6RLB — Asst. SCM: Harry T. Cameron, 6RVC. SEC: WGM. RMs: IPW, JOH. PAM: LL. ECs: AKB, CAN, CX, DNX, FLT, NNS, QDE, TCU. Seventy persons were present at the February meeting of the rejuvenated Oakland Radio Club, reports president FDJ. The ORC will hold regular meetings on he first Thurs. with programs at every meeting, and on the third Thurs. there will be a meeting of the teletype gang. The location is 906 Fallon Street, Oakland. ACN continues as secretary-treasurer. Dues are now $2.50 per year. It looks as if there will be a Pacific Division Convention in San Jose sometime in September under the sponsorship of the Santa Clara County Amateur Radio Assn. The North Bay Amateur Radio Assn. meets on the first Fri. of every month at the Vallejo Red Cross Bldg. Up in Napa the Silverado Trail Net meets Wed. on 145.8 Mc. SX is starting his 43rd year as a ham and says that he expects to be more active in about a year. The real old old-timers who recall the days when Pop was East Bay SCM will find him on 40- meter c.w. on Sun. mornings. Pop has agreed to act as OO and OBS. Other new appointments are K6DEG as ORS and the following new OES: WGM, OJJ, OHQ, UHM. LGW is running what amounts to a house-raising party while building his new QTH. Among those eating up his chow have been LIL, IHR, YHQ, OHR,

(*Continued on page 100*)



Heathkit AMATEUR TRANSMITTER KIT

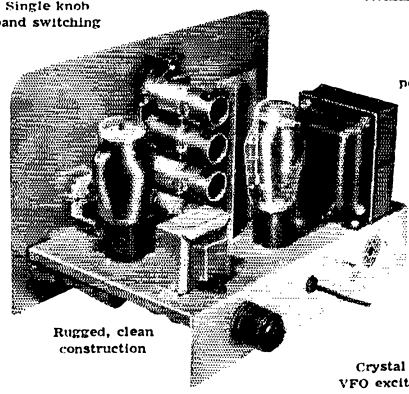
Range ..... 80-40-20-15-11-10 meters
6AG7 ..... Oscillator - Multiplier
6L6 ..... Amplifier - Doubler
5U4G ..... Rectifier
105-125 volts AC 50/60 cycles 100 watts
Size — 8½" high x 13⅛" wide x 7" deep

MODEL AT-1

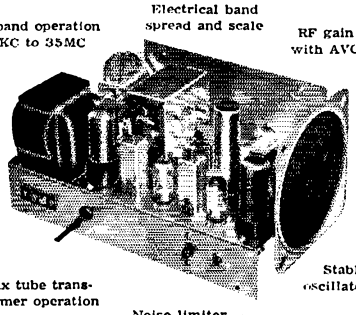
$29.50

SHIPPING WT. 16 LBS.

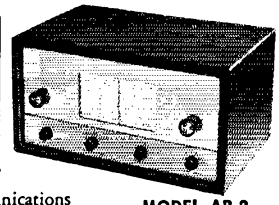
Here is the latest Heathkit addition to the Ham Radio field, the AT-1 Transmitter Kit incorporating many desirable design features at the lowest possible dollar-per-watts price. Panel mounted crystal socket, standby switch, key click filter, AC line filtering, good shielding, etc. VFO or crystal excitation-up to 35 watts input. Built-in power supply provides 425V @ 100MA. Amazingly low kit price includes all circuit components, tubes, cabinet, punched chassis and detailed construction manual. (Crystal not supplied.)



New HEATHKIT COMMUNICATIONS RECEIVER KIT



Range.....535KC to 35MC
12BE6.....Mixer oscillator
12BA6.....IF amplifier
12AV6....Detector - AVC - Audio
12BA6.....BFO oscillator
12A6.....Beam power output
5Y3GT.....Rectifier
105-125 volts AC 50/60 cycles 45 watts



A *new* Heathkit AR-2 Communications Receiver. The ideal companion piece for the AT-1 Transmitter. Electrical band spread scale for tuning and logging convenience. High gain miniature tubes and IF transformers for high sensitivity and good signal to noise ratio. Construct your own Communications Receiver at a very substantial saving. Supplied with all tubes, punched and formed sheet metal parts, speaker, circuit components, and detailed step-by-step construction manual.

MODEL AR-2

$25.50

SHIP. WT. 12 LBS.

CABINET

Proxylin impregnated fabric covered plywood cabinet. Ship. wt. 5 lbs. No. 91-10. **$4.50**

THE IMPROVED Heathkit GRID DIP METER KIT

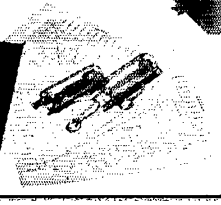
- **Pre-wound coil kit**
- **Range — 2MC to 250MC**
- **Meter sensitivity control**
- **Compact one hand operation**
- **Headphone monitoring jack**
- **Transformer operated**

The invaluable instrument for all Hams. Numerous applications such as pre-tuning, neutralization, locating parasitics, correcting TVI, etc. Receiver applications include measuring C, L, and Q of components, determining RF circuit resonant frequencies, etc. Thumbwheel drive for convenient one hand operation. All plug-in coils are wound and calibrated (rack included). Headphone panel jack further extends usefulness to operation as an oscillating detector.

MODEL GD-1A

$19.50

SHIP. WT. 4 LBS.



Two additional plug-in coils are available and provide continuous extension of low frequency coverage down to 355KC. Dial correlation curves included. Shipping Wt. 1 lb. Kit 341. **$3.00**

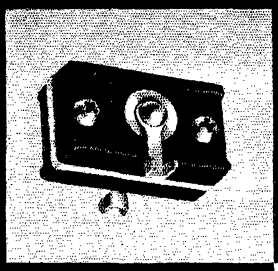
HEATH COMPANY
BENTON HARBOR 9, MICHIGAN

JYZ, RRH, RVC, K6DX, and K6AQ. The Mt. Diablo Club was almost raided by the Walnut Creek police during one of its meetings. Seems that most of the gang had turned in their old license plates and had not received the new ones. The gendarmes could not understand why so many cars were around with no plates on at all. Ex YCL is at Great Falls, Mont. Ex-VNH now is DL4GG. EDK and CCY were home on furlough recently. Note to DX men: The SCM frequently gets calls from people who want 'phone patches to servicemen overseas. If you are willing and able to handle some of these requests, will you please drop a line. EJA reports he is working nights and rebuilding. The times have been rough on BPC lately but he hopes to be more active again soon. K6BDF really gets out with his 6146 and is an FB traffic man, reports IPW. Traffic: W6IPW 142, JOH 131, HHX 36.

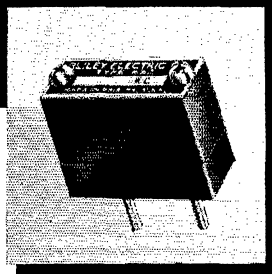
SAN FRANCISCO — SCM, Walter A. Buckley, W6GGC — EC: NL. The SFRC enjoyed TFZ as a guest speaker at its January meeting. The QRM Club of John O'Connell High School plans to join the SFRC. The 29ers recently held a transmitter hunt. SY and BIP were the first in; GGC was last. After the hunt a surprise birthday party was given FVE, who does a fine job as Net Control for the 29ers. The TARC held its annual dinner at Traders Inn in San Raphael Jan. 16th with a nice turnout. The SCRA reports no special news for January. The HAMS had the Larkspur boys over for a meeting and toured TV stations KPIX and KGO. Humboldt Radio Club: RIH has moved her. from the Sonoma Area. K6DGA, now working at the airport, is a newcomer to the district. K6CXB, formerly a WØ, now lives in Eureka. Ex-6KXH, now in Montana, and ex-6BME, in Oregon, both report in on the Tuesday night EC drills. The SFNSYC still is contemplating teletype. San Francisco hams recently were blamed for jamming up the police frequency. However, CBS and NBC radio stations made public statements that *licensed* hams were not to blame. JZ gave his opinion on CBS's Sunday Desk Program. AHH is the first known amateur in the San Francisco Area to receive a ham license plate. Bob left his field strength meter on top of the garbage can the night prior to the pick-up. He is willing to sell coils for same cheap to the finder of the meter. FSL bought a GO9 from IOC so will be heard on 75 meters soon. PHT takes Net Control one night each week for the Mission Trail Net and has a dandy receiving location high on one of San Francisco's many hills. Cyn wishes to thank all the hams for their help in trying to find her nine-year-old son. GCV is trying a compressor in speech amplifier for his 500-watt modulator. The two-meter net, formerly known as the Bay Area Net, has been reorganized as the San Francisco Section Net. Appropriate certificates have been issued. Sunday morning AREC calls roll at 10:30. Many newcomers are checking in. The local 29ers requested information on joining the c.d. on 10 meters. C.d. really is getting on the ball in San Francisco. LOZ now has his second 4-125A tube, thanks to Mrs. Reinartz, who pulled his winning number. Two local YLs recently organized a ladies' radio club. Fifteen enthusiastic women turned up for the first meeting. QMO and PNC worked hard and got good results. QMO is a new member on the Mission Trail Net. She came in with high score in the c.w. portion of the YLRL Anniversary Party, representing the sixth district. Jeri conducts code lessons twice a week for the ladies. Condolances to NIO on the death of his XYL. OZC and TTB can be heard daily on 21.400 Mc. discussing flying saucers. The boys from KL-, KH-, and VK-Land have joined with them on discussions. MXJ has a new homemade mobile rig which works perfectly on all bands. WQO now is on 40-meter 'phone. VPC moved to a new QTH in East Bay. BMY worked Minneapolis from San Francisco Bay Bridge on 75-meter mobile. 6TMF was the first General Class contact for 7TMF. Traffic: W6PHT 217, SWP 154, GGC 51, GCV 24, QMO 15, GQY 14, ATO 5.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — Well, fellows, before giving weight to rumors of splitting our section we should examine if it is a whim of a few or if we would gain anything. For a stronger section we need more members and activity as it is. We have a Director on the Pacific Coast who represents us at Board Meetings, *not* the SCM. With a larger membership we can make a much bigger representation than if we have just a few. GDO has moved to a new QTH. QDT has retired from the California Highway Patrol and is on a.s.b. ASI reports the new 75-meter vertical is superior to the horizontal job for DX. LLR is rebuilding. HTS and HSB are looking for a new QTH around Sacramento. RNR, ASI, and ZF were first in the Metropolitan Sacramento Area to sport new call licenses. VBI is working on all-band final. AD, an old-timer retired out of military service, now is on 75-meter mobile. GQS has 71/2-watt 75-meter mobile. TYC has fully recovered from his recent appendectomy and is active again. PHD has 20 watts on 75-meter 'phone. QAC now is on 144 Mc., 40-meter 'phone, and 80-meter c.w. APE is rebuilding the 20-, 40-, and 80-meter c.w. rig. VUU has been appointed chairman of the QSL card committee for MARS. MIW is active on 2 meters. CIS is building a new amplifier for his portable. PVI still is the old stand-by for 144-Mc. Sacramento Contest. The Shasta County Amateur Radio Club elected KTF, pres.; OJB, vice-pres.; K6AKF, secy.; UFR, treas.; ATQ, act. mgr. K6BDI has graduated from Novice

(*Continued on page 102*)



★ BLILEY TYPE CF6



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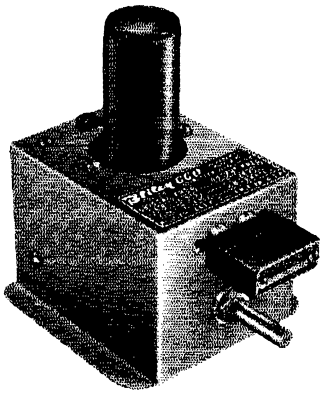
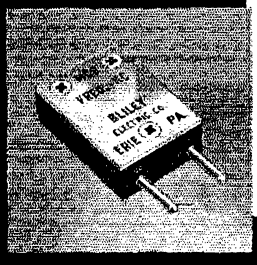
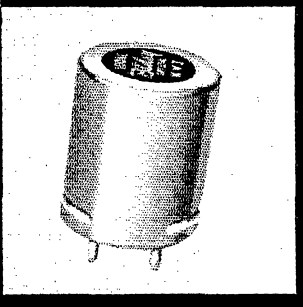


★ BLILEY TYPE CCO-2A



★ BLILEY TYPE MC9



★ BLILEY TYPE KV3

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to General Class. QJD has a jr. operator, which makes K6BMU a grandfather and JRY an uncle. CKV is attending P.T.&.T. Co. school in Sacramento. IEO's antenna came down during the recent snow storm, but it's up again now DDC has a very fine mobile on 75 meters running about 8 watts. JDN spent quite a bit of time in Trinity Center *trying to get the power lines up with a very small crew.* A meeting of the Mt. Shasta Amateur Radio Club was held Jan. 4th with 8 members present. Fellows, let's built up the section membership to one of which we can be proud. Traffic: W6IEO 146, REF 116, K6NAK 79, W6TYC 45.

SAN JOAQUIN VALLEY — SCM, Edward L. Bewley, W6GIW — SEC: KRO. RM: OPU. The Stockton Club held its annual dinner meeting on the 16th and enjoyed a talk given by ZL1GI, who enthusiastically described the hospitality of hams in the United States. Visitors were AL, TNW, FEA, WJF, SQR, AV, GIW, KU, ERE, KN6AYL, and KN6AYG. KN6BGM is now K6BGM, and has been helping her OM, ZRJ, build an 814 rig. New officers of the Merced Club are BUA, pres.; K6BGM, secy.; Ray and Thelma Edminson, vice-pres. and treas. RWU is back in Visalia and will be on the air soon. A new harmonic from VPV, a boy. The 2-meter transmitter at the Stockton c.d. headquarters has been kept active by RLG and also VKD, who used the station for Net Control on SJCEN for January. 2-meter activity is increasing with IER and his new modulator, ERE with a twin five antenna, and the recent addition to the v.h.f. ranks, KU. We have word that ex-FYM is returning to California. BNP is progressing satisfactorily after his operation. We hope to hear Bill on the air soon. ZNL has new 20-meter beam. EBL says his new HQ-140X is FB. Traffic: W6OPU 64, EBL 27, EXH 10, TXM 6, GIW 3.

ROANOKE DIVISION

SOUTH CAROLINA — SCM, T. Hunter Wood, W4ANK — The Columbia mobiles and other amateurs in the area took part in a night-long TV program conducted by WIS/TV to raise money for the "March of Dimes." Other amateurs within the range of WIS/TV assisted in passing messages with mobiles collecting pledges. The operation was a big success and amateurs participating deserve a "well done" for their worthwhile efforts. BZX reports a new antenna tuner that operates on two bands. MGJ is new on 75 meters from Greer with a Viking and Johnson VFO. The mobile roundup has been moved up from 1430 to 1330 in an attempt to avoid QRM. The mobile roundup meets on 3930 kc. with fixed stations invited to stand by on the frequency to relay transmissions from mobiles in the area. TTG reports collecting $177 in the WIS/TV "March of Dimes" program. A group in the Aiken Area are attempting to form an amateur club. Traffic: W4PFH 50, NJG 24, TTG 14, ZIZ 8, KED 5, TDJ 4, FM 1.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — PZT renewed OO and ORS appointments. GEP renewed ORS appointment. GBF and PQQ are now Assistant Directors and invite any suggestions to improve activity in this section. The Morgantown Amateur Radio Club was very successful in its recent activities in conjunction with a hobby show. GMD was in charge of the exhibit and had help from ELX, JAV, WN8PQV, FMU, and IXG. All will graduate from W. Va. University in E.E. and will go on active duty in the Signal Corps. The Bethany College Amateur Radio Club, PME, is registering its services in the AREC program. TCC, 4MCM, 3UAY, and KN2DPG are students, with UNS as faculty advisor. MMF now is General Class. The Princeton Club is doing a fine job in its ham training program. We are sorry to hear that ILK passed away. GQH is doing a lot of building. DMF has been on 75-meter s.s.b. NST is now General Class. The Weston Club had a ham dinner recently which was well attended. IXG is working on mobile rig. FUM is QRL with civil defense and the AREC program but managed to get in the recent CD and LO Parties. QHG participated in the CD Party. FUM completed new operating console and has a new HQ-140X. Glad to hear KWL on 75 meters. Traffic: (Jan.) W8AUJ 351, FMU 141, GEP 95, HZA 62, IXG 37, ETF 32, DFC 19, BNL 12, FUM 8, GBF 7, LBT 6. (Dec.) W8DFC 32.

ROCKY MOUNTAIN DIVISION

COMING — 2nd Annual Rocky Mountain Division QSO Party, May 8-9, 1954. Watch this space in May *QST* for details, rules and prizes.

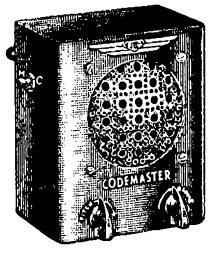
COLORADO — SCM, Karl Brueggeman, W0CDX — SEC: AEE. Only four report cards were received this month. EKQ reports that the Colorado Slow Speed Net is making very good progress but needs more members to handle the traffic. KQD has been appointed EC for Alamosa. KHQ worked KG4AE on 80 meters. IA, NCS for the Colorado MARS Net, announces that until further notice the

(*Continued on page 104*)

A Change ..for the better

Our CPO-128, CPO-130 and FCC-90 were the best on the market. This did not satisfy us. We're constantly striving for improvement

● CODE PRACTICE OSCILLATOR AND MONITOR CPO-128A



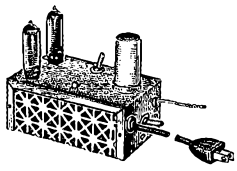
The new improved CPO-128A now utilizes 2 tubes—50C5 and 35W4. This means you actually get increased output from this really potent CW monitor which is ready to operate at all times.

THE BUD CODEMASTER is a real money saver. No longer do you have to consider your code practice oscillator useless after you have learned the code. A flip of the switch and you have a real good CW monitor. This is a really versatile instrument. It has a 4" built-in permanent magnetic dynamic speaker and will operate up to twenty earphones.

A volume control and pitch control permit adjustments to suit individual requirements. Any number of keys can be connected in parallel to the oscillator for group practice. This unit will operate on 110 volts A.C. or D.C. An external speaker may be plugged in without the use of an output transformer. All controls are placed on the front of the unit and all jacks are in the rear. The unit is 6½" high, 5½" wide and 3½" deep. It is finished in Grey Hammertone enamel with red lettering.

CPO-128A.....Amateur Net **$15.75**

Also available in earphone model **CPO-130A** at **$14.10**



FREQUENCY CALIBRATOR FCC-90A

The elimination of drift is a vital responsibility of every amateur operator. To comply with Federal Regulations some means of accurately checking transmitter frequency must be available at every "Ham" station. You can avoid a "pink ticket" for off-frequency operation by using the BUD self-powered frequency calibrator. The new, improved BUD FCC-90A also uses 2 tubes—50C5 and 35W4. It consists of a 100 kc crystal oscillator that is completely self-powered and will give 100 kc check points on all bands to 30 megacycles. This enables you to determine the exact edges of most ham bands.

No extra wiring is required to install this unit. Plug the FCC-90A into a 110 volt receptacle, connect the pick-up lead to the antenna binding post of the receiver and the unit is ready for operation. An ON-OFF switch and a STANDBY switch are provided.

FCC-90A.....Amateur Net **$17.25**

See these new BUD products at your distributor today!
Write for copy of New Bud Catalog No. 154

BUD — THE MARK OF PERFECTION

BUD RADIO, INC.

2118 East 55th Street **Dept. Q** **Cleveland 3, Ohio**

Net will meet at 2000 MST on 3289 kc. on Mon. and 2100 MST on 2220 kc. on Tue. with roll call on both A1 and A3. The Western Slope Radio Club will hold a hamfest in Grand Junction Sept. 5, 1954. The ARRL Board of Directors meeting is scheduled for Denver in May and a hamfest will be held on Sat., May 15th, after the meeting. Congratulations to QAZ on his appointment as OBS. HKE paid your SCM a call on his way to Alaska. He has been transferred there and hopes he will be assigned to one of the MARS stations as he was in Colorado Springs. The Rocky Mountain Division Convention will be held at Elkhorn Lodge on June 12th and 13th. It promises to be the best yet. Traffic: (Jan.) WØKHQ 813, RTA 159, EKQ 52. (Dec.) WØRTA 131.

UTAH — SCM, Floyd L. Hinshaw, W7UTM — RCP has found it necessary to resign as EC because of school work. He reports the USAC station, TMK, is active on 20 and 75 meters and occasionally on 40-meter c.w. The Ogden Radio Club dinner was very enjoyable with about 50 couples in attendance. An informative talk was given by Mr. Ray M. Clawson, Civil Defense Director for the area. Provo City has received its license and is conducting c.d. drills under the call KOAA/5. The Olympus Radio Club holds afternoon net and code practice on 3735 kc. to aid Novices. LQP still is waging the "battle of the sexes" — whether it's to be ham radio or his wife's socials! SP and NOE have recovered from the flu. Salt Lake City c.d. had a nice turnout of mobiles on a Sunday drill the last of January, but poor weather hampered the tests the balance of the month. Traffic: W7UTX 36, UTM 25.

WYOMING — SCM, Wallace J. Ritter, W7PKX — The Pony Express Net is operating three sessions a week now, with KFV as NCS on Tue. and Thurs. mornings. The "YO" C.W. Net is trying to get started again, but needs members. S.s.b. is going strong with KFV, NVX, LHW, and KUB on s.s.b. and MUG and TEL building. KFV is going mobile with 400-watt s.s.b. ØFYL and ØYZX are two new stations in Cheyenne. DI is operating on 75 meters now. BCL is rebuilding. ØMVB/7 is going mobile soon with 9 watts. HLA is fast becoming a traffic station QNI Farm Net, etc. DXV is QNI RN7 and TEN plus Montana Net, conditions permitting. HDS is starting the first Wyoming Novice Net. LLP is QSOing his home station from the East Coast on 15 meters. PAV and GRL are getting the Douglas Radio Club organized. PAV is rebuilding for higher power. The Casper Club participated in the ocal March of Dimes with mobile pickup of donations. The license plate petition still is in circulation. Volunteers are needed for OBS, ORS, and OO assignments. Traffic: W7PKX 80, DXV 72, KFV 14, PAV 13, HDS 8.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Joe A. Shannon, W4MI — SEC: ISD. RM: KIX. PAM (AENR): EBD. The Montgomery Club Auxiliary has stirred the Montgomery Club into reactivating. The Montgomery Club held a transmitter hunt Jan. 24th. The Huntsville Club holds a transmitter hunt each Sunday P.M. with lots of fun. Three clubs report new officers — Decatur: PKA, pres.; OGV, vice-pres.; DGN, secy.-treas. Montgomery: FMW, pres.; ATF, vice-pres.; AUP, secy.-treas. Tuscaloosa: MI, pres.; WBP, vice-pres.; HCV, secy.-treas. YZR has a new homespun 120-watt rig. YAI is active in the Dagwood and Hurricane Nets, AENP, and MARS. ARE has dropped the "N." VE3OJ is active in Montgomery, mobile. KNW is sporting a new 32V-3! Birmingham now has 28 mobiles in AENR, a gain of two in January. RNX, new Net Manager for AENP, meets TCPN and VPN. TXO reports working VE on 75 meters with only 15 watts input. New appointments: FIG as OES; ARE, TXK, and PWS as EC; DXB as OPS; RNX as OO. The number of reports received this month was very gratifying. We hope to see more as the months go along. EC and ORS reports are increasing. Thanks to all. Traffic: (Jan.) W4UHA 266, RLG 132, KIX 124, YAI 48, EJZ 21, RNX 21, DXB 18, TXO 18, WPC 17, PWS 16, TKL 12, KNW 8, AUP 6, VE3OJ/W4 5, W4OAO 2. (Dec.) W4ARE 2.

EASTERN FLORIDA — SCM, John W. Hollister jr., W4FWZ — Operation Okeechobee is the AREC drill being planned by our SEC, IM. QBR has an interesting way of originating traffic, about which you should contact him. BI is NCS MARS C.W. Net and invites all to help, as members are needed from all Florida points. PJU did a good job forcing the issue to get military official traffic off our bands. Deland: WS reports regular 145.9-Mc. skeds in a net. Holly Hill: New hams are FSS, 2QCO, WN4DKY. Jacksonville: DSX is ex-KZ5AC. Key West: IIL is an Elmac mobile. Work ten Key West stations and get a "Conch Net" certificate (QTH Box 210). Miami: LVV reports much TVI activity with good results. Club code classes are run by HGE, ILE, and IYT. NQN, on s.s.b., is DXing on 14 MC. ABU is linear with p.p. 304TLs. QLC uses a 32V-2. A 4-250A is used for AEK's all-band-switching final. St. Petersburg: SPARC officers are WMC, UUN, VOZ, WME, YU, and EYI. The *Spark Gap* is a club rag. WME handles the code classes. A total of 263 messages were sent from the Hobby Show, thanks to BIL, WPD, BAV, TDK, AVA (all XYLs), FPC, and TKE. Tampa: At the Club station,

(Continued on page 108)

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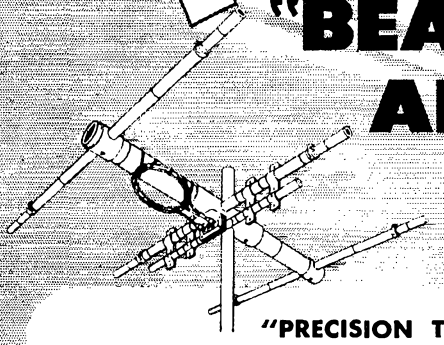

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5-El. 15-Meter array, wt. 74 lbs., 11.2 db gain, 26° beam-width, 28 db F/B, 24'6" x 3" boom.
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2-El. 20-Meter array, wt. 29 lbs., 5.6 db gain, 50° beam-width, 20 db F/B, 6'4" x 3" boom.
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4-El. 20-Meter array, wt. 65 lbs., 9.7 db. gain, 28° beam-width, 27 db F/B, 24' x 3" boom.
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DUG, all set to get out the fair traffic, were ALP, JFH, PDZ, GMJ, HAD, SLK, OVE, TOA, TYE, SSZ, PPL, and BIF. The traffic plan is working FB. Thanks to all. Traffic: (Jan.) W4PJU 1004, DVR 365, LDM/KZT 340, PZT 277, DRD 182, LMT 59, WS 54. LVV 40, VIE 31, IYT 26, KJ 20, FWZ 19, FKR 14, TJU 11, AYD 10, TWR 5. (Dec.) W4LMT 134.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/W4RE — Acting SEC: NN. CCY and PAA are working on the former's 20-meter beam. PQW is getting a new shack. VZB is gathering gear. YRF keeps the air hot. WN4BGG pounds brass late at night. ZPN made the trip to the R.I. and passed in FB style. PTK is getting the perfect mobile rig. UUF keeps pounding at 144 Mc. UYS has 144 Mc. walkie-talkie. VFJ is doing an FB job with the Pensacola High School Radio Club. MS has two image orthicons. LRC is returning from the Navy and will be active at Shalimar. WKQ has arrived in the section from Virginia. AXP is fighting c.w. TVI. PAA lost TVI when he removed the low-pass filter. 1REV/4 keeps his skeds in FB style. VR is pounding out on 7 Mc. DAO operates from the office, where he is DEF. RZV keeps 75-meter nets hot. SZH is victorious over TVI. NOX keeps the section represented with her traffic handling. ROM is heard keeping the Fish Net going. HJA is getting new mobile transmitter. BFD is trying 40 meters. YFF is working 20-meter 'phone. ART is working 144 Mc.

GEORGIA — SCM, James P. Born jr., W4ZD — SEC: NS. PAM: LXE. RM: MTS. Nets: GCEN, 3995 kc. at 1800 EST on Tue. and Thurs., 0830 EST on Sun.; ATLCW, 7150 kc. 2100 EST Sun. State mobile and c.d. frequencies: 3995 and 29,600 kc. KSZ keeps a regular sked with his sister, WN4AKZ, in Atlanta. ZSC has a new Heath AR-2 transmitter and a new all-band antenna. The Kennehoochee Amateur Radio Club of Marietta is conducting radio training classes for all types of amateur tickets. NT is chairman. YUM has a new Viking II and is active on all bands, c.w. and 'phone. GMP now is YU1GM and looking for Georgia contacts on 14 Mc. and 7-Mc. 'phone and c.w. AWO is active on 7-Mc. c.w. and 28-Mc. 'phone. ZUF and ZUE have joined all the c.w. and 'phone nets and are active on all bands handling traffic: EJC has moved to South Carolina. FBH is rebuilding his beam and installing new rotator. NS is building a new p.p. 813 final for 3.85 and 7 Mc. ZUF is building a 28-Mc. beam. The Amateur Radio Club of Savannah has formed a TVI committee which is very active at present, mostly on BCI. Emergency Coördinators are reminded of their responsibility to make a full and regular monthly report to the SEC. Members of any net in Georgia are eligible for membership in the Georgia Cracker Radio Club. Any net member interested, please contact the Club's secretary, MZO, 1084 Berkshire Road, N.E., Atlanta, Georgia. Traffic: K4WAR 1014, W4USA 783, ZD 97, IMQ 71, HYW 50, MTS 31. MA 27, MZO 26, YMV 19, ZSC 2.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: HZ. KG4AO is new OPS. KG4AU is QSL Manager for Cuba. CB is back on using TBS-50. DV received OTC certificate. DJ received A-1 Operator, PRARC WPR-N, and WPR-125 certificates. RD has Eldico TR-1 on all bands. MC has been appointed communications officer for c.d. control center. TP's XYL, YS, is active on 20- and 75-meter 'phone. TP is heard from mobile. WL uses a Lettine 240. MC and DL are on 75-meter mobile. RK received Sweden's WGSA certificate. OS is going mobile with TBS-50. WT, YO, and YS are new YL operators. The PRARC issued 84 WPR certificates during 1953. The Camaguey Radio Assn. in Cuba published the first issue of its new bulletin, *QSP*. KD worked VE1, W2, W3, W4, W9, EI9, G6, VP7, VP6 on 160 meters with 85 watts. DV will transmit Official Bulletins on 40 meters. TF received WPR-50 certificate. WU is heard on 75 meters. WN reports to the 3925-kc. Net using a Viking II, Viking VFO and Matchbox, and HQ-140X receiver. VH is building an 813 transmitter. QM is on 3925 kc. with a pair of 813s. RC built 400-watt final. PZ has new HRO-50T. Traffic: KP4DV 7, ES 2, DJ 1.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Howard C. Bellman, W6YVJ — SEC: QJW. RMs: BHG, GJP. PAM: PIB. During the recent illness of KYV, GJP tried in a commendable manner to step in Dave's shoes schedulewise. Of importance to all message-men is the quarterly traffic breakfast held under the chairmanship of CMN, at Cliftons'. Twenty-five were present, including QJW, the SEC, GJC for IAB, ELQ and IZG for the Hobo Net, BHG for the Los Angeles Section Net, ROP and others for MTN, our PAM for ALN, and others participating in Southern California nets as USY, MBW, GJP (RM), WPF, GYH (Coyote), FMG, JQB, ORS, CDK (holding his California plates in his hands), POP, QLM (Dorothy), BVD and the SCM, YVJ. Another meeting will be held in April with YVJ as chairman. All are invited. The purpose of the get-together is to air, and try to correct, inter-net workings. It was agreed that this also would be the place to present certificates and other awards to deserving people. NTN, Pasadena EC, reports into the local Civil Defense Net. AM's north-south rhombic is done after 9 years in the process. ISQ's jr. operator will curtail a little of his dad's air time. A new ORS is USY from LSN.

(Continued on page 108)

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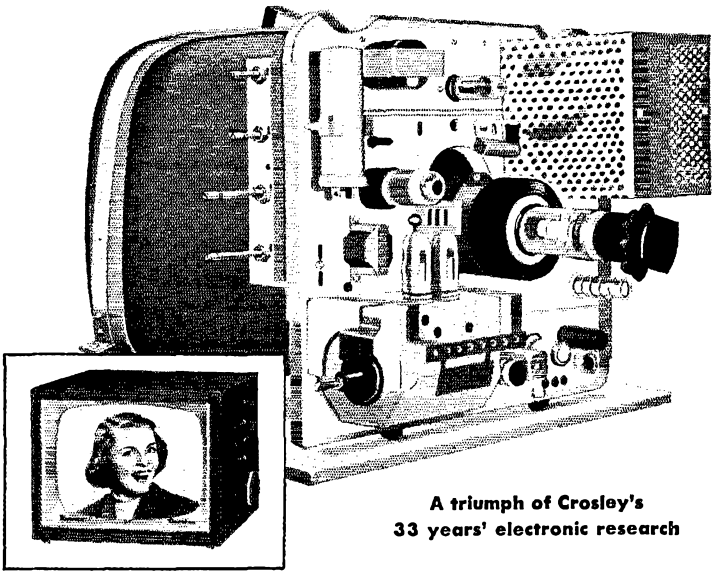

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BHG was pictured in the January 24th *LB Press Telegram* as the first in Long Beach to receive license plates. K6BAG, of Pacifico RC, will operate on Field Day from Mt. Pacifico. Watch it, Lockheed. LYG wants all traffic nets audible in the Southwest to move to 7205 kc. to leave the rest of 7 Mc. clear for 'phone ragchews. LVQ reports that the new president of the Whittier Radio 50 Club is FAI. YAS, the Frank Wiggins Amateur RC station, reports these hams as members: KPQ (station manager), K6ACK, K6AJQ, APM, CJC, KN6BEO, BWA, CJD, CJJ, DBT, DIM, K6CV, CVP, CYC, DFO, UHF, W6ORB, RXL (Tech.), SJI (Tech.), TTN, and UHB. The Club handles traffic with 750 watts and a 20-meter rotary on top of a 10-story building in downtown L.A. They operate from 8 A.M to 2 P.M. Mon. through Fri. K6CV is the trustee and is eager to become an ARRL affiliate. LVQ is new EC for Whittier Emergency Net. ZGC is replacing UQL for Temple City Dis.-C.D. Net and in the Los Angeles County Disaster-C.D. Hq., UQL will take over as EC. QLB is EC for Claremont City Dis.-C.D. In January the L.A. County Dis.-C.D. Authority was activated once for the Santa Anita Canyon Fire and twice for flood alert. Full AREC members now total more than 1000. Legion Net new officers are MSW, pres.; FEA, vice-pres.; BRY, secy.-treas.; and GRO, CNC, UGO, EJU, and PIB, area dir. Traffic (Jan.) W6GJP 699, HLZ 440, LYG 315, JQB 162, ISQ 123, BHG 116, EGW 58, MBA 49, UGA 35, NTN 25, TRF 22, USY 22, PZN 12, AM 8, HIF 8, HKD 8, KYV 5, MU 2. (Dec.) K6FCA 2426, W6YAS 191, UGA 92, FAI 10. (Nov.) W6FAI 4.

ARIZONA — SCM, Albert H. Steinbrecher, W7LVR — Asst. SCMs: Kenneth P. Cole, 7QZH; Dr. John A. Stewart, 7SX. SEC: OIF. PAM: KOY. The outstanding activity during January was the statewide demonstration of emergency communication and a simulated emergency put on by the entire Arizona Emergency Net before the combined Houses of the Arizona Legislature for the License Plate Bill. IRX as NCS and JYH as MC handled the situation magnificently. Another demonstration of emergency communication was effected by AH, QZH, and TNY before the Phoenix Realty Board Luncheon. SUI has been appointed OBS, ORS, and OPS and is in charge of the Arizona Novice Net (ANN), which meets Tue. and Thurs. at 6 P.M. on 3704 kc. PVC has a new Globe Scout. LAD is now 75-meter mobile. PUR has a new Viking. LJN moved to Tucson permanently. LOC has a new V-37 antenna. NJS, PKS, and PKU, all W9s (triplets, incidentally) have moved to Phoenix from Indiana. Interest in v.h.f. is spreading around the State with the following on 2 meters: FGG, KFS, LEE, LJN, LSK, LVR, MIV, NVN, PKM, QNO, SUI, TAF, UPF, and VFT. How about a 2- and/or 6-meter net for experimental purposes at present? If interested, contact KFS or LVR. Traffic: W7QFQ 221, KOY 130, LVR 38, LAD 36.

SAN DIEGO — SCM, Don Stansifer, W6LRU — Asst. SCMs: Thomas Wells, 6EWU; Shelley Trotter, 6BAM; Dick Huddleston, 6DLN. SEC: VFT. ECs: KUU, FJH, QJH, HRI, DEY, K6DY, W6WYA. PAM: JPM. Orange County reports 30 to 50 check-ins each Thurs. night on the emergency nets, 3995 and 29,360 kc., both at 7:30 P.M. KN6CSM is the 11-year-old daughter of MRP. There is much activity in Orange County on 420 Mc. QJH, in his first CD Party, worked 35 sections on 75-meter 'phone. IRS is building mobile gear. DLN still is waiting for DX to return to 10 and 20 meters. LVN has a new vertical ground plane on 40 meters. K6DY is the new EC for San Diego City and soon will be a civilian. 6WYA is the new EC for 10 meters in San Diego. CRT now is ORS. Equipment has been installed in the Red Cross Headquarters in San Diego in the AREC room. Dana Junior High, in San Diego, has two licensed Novices, with four awaiting calls. NYB has moved to Redondo Beach. IQL now is mobile from the Imperial Valley. KJB has a new home and FB ham shack. The Brawley Radio Club, in cooperation with the March of Dimes, used a central fixed station and six mobiles to collect over $800 for the drive in a two-hour period. Those participating were UGM, UTM, IQL, RQI, KN6RUK, and K6APV. K6DKF is the club call of the Orange County Radio Club. CGQ finally has enough cards to send in for his DXCC. K6DZ is the call of the station at San Diego State College with a fine all-band set-up. ZWK is handling much 'phone patch traffic with the Far East. AWZ is back on the air on 75-meter 'phone. Traffic: W6IAB 3210, ELQ 962, QJH 610, IZG 387, BKZ 66, IRS 6.

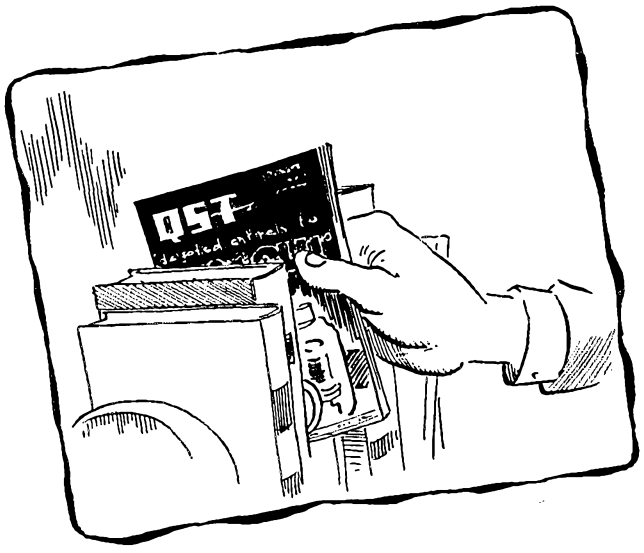
SANTA BARBARA — SCM, Vincent J. Haggerty, W6IOX — With 25 watts K6AUZ worked 39 sections in the January CD Party, operating on 3.5, 7, and 14 Mc. for 10 hours. IHD, LKF, and YCF meet daily on the Tri-County Net (3820 kc.) at noon; more stations, especially from Ventura County are invited to join them. LKF worked 9 sections in the CD Party. K6NBI reports from Santa Maria and still tops our traffic group. Who will be first to surpass Mack's traffic total? OXJ reports QRL from Templeton because of school activities; Louis will turn that Viking loose when summer vacation arrives. FYW reports BRY and YCZ got bitten by the RTTY bug. Traffic: K6NBI 38, AUZ 12, W6YCF 8, FYW 4.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, T. Bruce Craig, W5JQD

(Continued on page 110)

QST is 1ST



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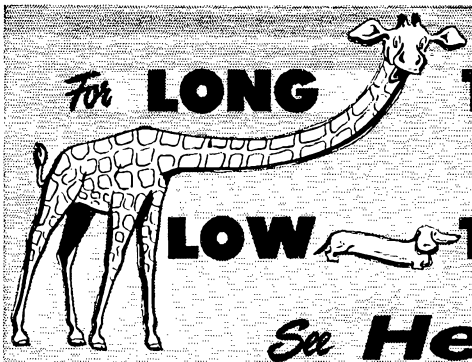
— SEC: RRM. PAM: IWQ. RMs: PCN, QHI. Our section was honored by the special posthumous award of the General Electric's Edison Radio Amateur Award to OKM of Waco. Amarillo hams received good publicity in a story appearing in their local newspaper. NFO rated a front-page picture in Brownfield's newspaper because of his automobile license plates. VIM reports on his antenna experiments. BSX, in Burleson, received his General Class ticket. SPN and his wife, UPY, are at Smyer now. TGW is reporting into the NWTEN from Littlefield. UXQ has gone to Memphis, Tenn., Hospital as a resident physician for 2 years. GBN has a new shack. YJB is building a 300-watt rig using 813s. AJ and HBD have new cars. IMQ is mobile now. RXI is new EC at Bonham. Dallas Amateur Radio Club officers for 1954 are VIM, pres.; SBG, vice-pres.; PED, secy.-treas. FTZ is reported as a Silent Key. The South Plains Amateur Radio Club, Inc., at Lubbock is announcing a combination swapfest and hamfest to coincide with the annual Texas Technological College Electrical Engineering Show, Apr. 24-25. NIC is conducting an on-the-air code class on 11 meters for South Plains hams and prospects. JQD has a new address, Route 6 (77th St. and Tahoka Rd.), Lubbock, Tex. Traffic: (Jan.) K5FFB 294, W5TFB 199, PAK 127, UFP 111, KPB 76, UBW 75, CF 42, PCN 42, GER 24. (Dec.) W5KPB 110.

OKLAHOMA — SCM, Jesse M. Langford, W5GVV — Asst. SCM: Ewing Canady, 5GIQ. SEC: CKQ. RM: MQI. PAMs: SVR, ROZ. The Annual Dinner of the Lawton-Fort Sill Amateur Radio Club was held Feb. 14th and every moment was enjoyed by the 120 who attended. WTA has a new 813 rig and a vertical antenna and is looking for traffic on 40 meters. LX is running a half gallon to a vertical antenna. VAX is operating 40 meters part of the time with lots of luck. UEK is attending a CAA conference in KL7-Land. HXT is now in the boat business. The ACARC had a barbecue dinner. TKS is operating mobile. VBG is trying to keep house, take care of a job, and still have time for a little hamming. GWD/5 now is on the air with a pair of 813s. YNA has a new c.w. transmitter. RST has a new mobile transmitter. HGC is back on the air. The Lawton-Fort Sill Club is making plans for handling traffic for the annual Easter Pageant and will need the assistance of all. This will be the last report from GVV as SCM and it has been a pleasure to serve the Oklahoma section for the last two years. Your reports will go to your new SCM, RST, and he will need your reports and information regarding station activities promptly the first of each month. Traffic: W5MRK 86, ROZ 63, SWJ 54, MQI 52, WSQ 52, LX 44, KY 40, MFX 36, SVR 30, GVS 29, ADC 25, GVV 24, VEP 24, RST 20, PML 18, VAX 18, YQO 17, OQD 12, EHC 10, FEC 8, TKS 7, ITF 6, VBG 3, WTA 2.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — The Harlingen Air Force Base ARC has appointed 4TRY/5 as Emergency Coördinator and your SCM has appointed him EC for the Harlingen Area. He is setting up a 2-meter emergency net. Some of the hams at the Base are 1PLQ, 5CMM, 5BYI, 6CCD, 6IZT, and 5CPF. Members of the Club are conducting code and theory classes. FGC is back on the air with a pair of 812s modulated by p.p. 809s. CE is active on 75-meter mobile and has a new vertical. ADZ is working lots of good DX and finishing a deluxe ham shack complete with knotty pine, tile bath and kitchen — and even a place for his rigs. UUK now is WCZ, CAA. He has 55 confirmed countries and a new 61-ft. vertical on 40 meters. His father passed his Novice Class exam. The Brazoria Amateur RC and Rio Grande ARC recently became affiliated with ARRL. Buddy Jarvais has a new ham shack and an FB mobile rig. Call letter license plates have been issued to 138 hams in Houston, thanks to the fellows in Austin who started the ball moving and the rest who lent to the campaign. WRW is racking up DX with a ZL. WPL added a VP2, HR1, ZL2, TI2, PY6, and VP6. Revere Smith recently worked CN8 and is the first teen-age ham in Port Arthur to get WAS. BCE is burning up 75 meters with a new DI04 mike. OZY is selling some of his gear. Larry Hearne is building a screen modulator described in Sept. '53 *QST*. DWL is on 40 meters with 19 watts. 5LYB is on 75 meters. The boys at Port Neches High School are organizing a new club. The Houston Dragnet 75-meter Mobile Net meets each A.M. between 7:15 and 8:00. Look for ETA, OBA, AIR, ZVM, ADZ, IX, FKO, URU, VCA, and many others on 3855 kc. FJF and VWF are usually on at about 8:30. LSE has a new receiving antenna and h.p. 'phone rig. SDA is transferring his mobile to a new car. FEK and ULN are doing a nice job as Asst. SECs. Traffic: W5MN 1437, SDA 128, FJF 61.

NEW MEXICO — SCM, G. Merton Sayre, W5ZU — SEC: MYI. PAM: BIW. V.H.F. PAM: FPB. RM: NKG. FPB is the new V.H.F. PAM for New Mexico. Give him dope on v.h.f. activity to report to the SCM. The Amateur Radio Caravan Club of New Mexico has passed out beautiful membership certificates. Albuquerque members have furnished communications at stock car races and some twenty members are now deputy sheriffs. Caravan Club members in Southern New Mexico assisted in Ruidoso Races Feb. 21st. SQI visited BIW and DRA; YPC and ZVU visited MOX, RTS, and HJF. SQI reports 183 QSOs in the SS. SUY has 14 members in his Novice class. FPB completed APS-13 conversion. Mort made 207 contracts with 26 sta-

(Continued on page 112)



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tions on 144 Mc. in 1953, and made 22 points in the January V.H.F. SS. PRE has 522 on from Sandia Crest. KWP has a new 120-watt rig. FAG made 20 points in the V.H.F. SS with two QSOs also on 430 Mc. RFF has completed the mobile rig on 144 Mc. The suggested state-wide frequency is 146.790 Mc., to give Novices a chance to work out. The Roswell RACES net assisted in local telethon with 7 mobiles. The PVARC had an FB January meeting at Hobbs. AWR, BZA, and BZB dropped the "N." WIY, ZU, MCL, and SOV are active now on 144 Mc. FEF made BPL again. Traffic: W5FEF 614, BIW 74, HJF 55, JZT 23, RFK 19, ZU 19, QKJ 16, TBP 13, YPC 11, YFN 10, NUN 7, WBC 7, ZUV 6, OME 5, SQI 5, WIY 2, BZA 1.

CANADIAN DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. EC: EK. RM: OM. VO6U tells us of emergency traffic on 3780 kc., the Labrador Net — air drops, air evacuation, medical advice, etc. Most of this is by battery-powered stations or dynamotor and it would help lots if the VE1s, 2s, 3s, and VO boys would please QSY or QRT when these QRP VO6 boys are handling this very urgent traffic. Their frequency usually is 3780 kc. VO2G, formerly VE2ALW and VE3ACQ, now is at Gander doing a bit of DX on 7 Mc. with an 813 in his final. VO2AW is Gander's first mobile ham station. VO1A uses the T2FD, 1H has a home-built superhet. 1R is back on 3.8 Mc. with the new antenna. 1AB has a new jr. operator. 1AE is ex-2R. 1AD has a new VFO. 1AG is portable at Gander. 1AI is on 14-Mc. c.w. 1RG is working QRO final. 2B also is working on a new final. VE1s follow: DW, AAW, OC, and FQ are active with the Maritime Net. DB has been dividing time between 7, 14, and 21 Mc. in search of elusive DX. VB is a new man on 14- and 3.7 Mc. 'phone. WX, formerly 3CAA, is on 3.7-Mc. 'phone. Well, gang, this marks the last of what is probably the longest series of section reports in unbroken sequence by any one SCM. To the fellows who through the years helped to keep our section "on the map," by their coöperation and faithful reporting, my sincere thanks. Please give my successor your continued support. Traffic: VO6U 531, VE1AAW 174, VE1OC 67, VO1T 54, VE1ZM 44, W4WOU/VO1 30, VO2L 12, VO2B 9, VE1DB 6, VO1D 6.

ONTARIO — SCM, G. Eric Farquhar, VE3IA — About fifty members of the v.h.f. fraternity attended a fine get-together at Oakville, with ANU presiding. W2ORI journeyed from Lockport, N. Y., and delivered a highly interesting talk on v.h.f. antennas which he has built and tested over the years. DIR and AIB won the 2- and 6-meter trophies, respectively. BDE is using a pair of 810s on 75-meter 'phone. BJV, editor of Nortown's splendid sheet, is rebuilding between setting up type. AWQ, in Chatham, now is Class

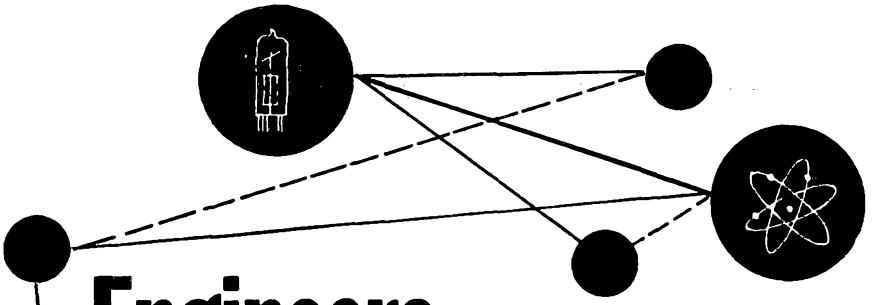
(*Continued on page 114*)

FOURTH ANNUAL ONTARIO SECTION QSO CONTEST

A QSO contest between Ontario section amateurs, sponsored by the Ontario 'Phone club, will be held on two consecutive Sundays, April 25th and May 2nd, 1954, from 10 A.M. to 10 P.M. EST each period.

The purpose of the contest is to enable c.w. and 'phone operators to become more familiar with both types of operating. Two awards and two consolation prizes will be made. The c.w. award will be known as the "Sparton Radio Trophy" and the 'phone award is designated as the "Columbia Record Trophy." Both trophies, kindly donated by Sparton of Canada, will be suitably engraved with the winner's call and the year of presentation. Permanent possession of these trophies will be given to the station winning them on three occasions. After the winners have been selected, the remaining contestants who have submitted logs shall be eligible for the consolation prizes. Following are the rules: Frequencies from 3500 kc. to 3725 kc. for c.w. operation, 3500 kc. to 3800 kc. for c.w.-to-'phone, 3725 kc. to 3800 kc. for 'phone-to-'phone, 3765 kc. is allotted to mobile 'phone. No multipliers will be used. Two points will be counted for c.w.-to-'phone, and one point for c.w.-to-c.w. and 'phone-to-'phone contacts, provided the contacts are made in the portion of the band designated. Exchanges will be: contact number, station call, RST report, time, city, or town QTH. Any station may operate 'phone or c.w., provided his operation takes place in the proper portion of the band. Stations may be worked only once regardless of type of emission. One contestant cannot win both trophies. "CQ VE3 Contest" will be the general call. The contest committee will judge the affair, and their decision will be final.

Contest logs are to be sent to T. W. Clemence, 2278 King Street East, Hamilton, Ontario, and must be postmarked prior to midnight May 16, 1954.



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A. Reorganization of the Welland Amateur Radio Club is reported. Meetings are being held in quarters provided by AHT. DDQ has completely recovered from an ankle injury. An SWL from Germany and an active ham from Winnipeg, VE4MP, were visitors at a recent HARC meeting. SP gave a talk at the same meeting. KM and CJM spoke on Emergency Corps operation at a meeting of the Kitchener-Waterloo Radio Club, held at Civil Defense Headquarters. To AJR goes our congrats on a splendid article contributed by her in the January bulletin of the Ontario Section Net. We welcome to this section Stefan P. Proskalier, who wants to hear from any ex-PAØ hams now residing in Ontario. He formerly operated under the calls of PAØOA and CN2AN. His present address is 4 Cedar Ave., Toronto 8. Since several Ontario municipalities will reach their Centennials this year it seems to us a splendid opportunity to demonstrate amateur radio. Information from such locations, giving particulars pertaining to ham radio participation in these celebrations would be appreciated. From reports received from an Official Observer indications are that several new VFOs are on the bands and operated by either thoughtless or inexperienced hands. 20-meter c.w. adherents are invited to be on the look-out for ex-VE3RE, who has gone to Ethiopia where he expects to be located for a year. He hopes to work under call of ET1RE. Traffic: VE3ATR 189, BUR 145, AJR 114, GI 53, EAM 32, NO 32, AUU 24, DQX 15, AOE 12, EAB 10, VZ 2.

QUEBEC — SCM, Gordon A. Lynn, VE2GL — The MARC elected XZ, pres.; TA, vice-pres.; HY treas. CA, still working the Far North, reports traffic is off somewhat. BK has completed 4 walkie-talkies (2 for himself), XZ has Viking II and 75A-2, BR also has a Viking II. AQT is heard on 75-meter 'phone. UN has reactivated the McGill University Radio Club and is heard on at times. XJ, the son of KJ and a newcomer, is heard on 80-meter c.w. Sun. afternoons skedding ATX, ALA, ADU, and APU. KJ skeds EC at 1 P.M. daily on 80-meter c.w. for traffic for Montreal. XV is active from his new QTH in Champlain. EC reports that occasionally JA, AKG, XO, and APE are heard on 75-meter 'phone. HV is mentor of the Utility Company's employees emergency net and is on 75-meter 'phone week ends with KY, XW, NW, ANB, EK, NV, WK, and AAH. NV, at Sorel, has 19 set with emergency supply. WK is operating 160- and 75-meter c.w. and 'phone. NW, at Rapid Blanc, puts in a terrific signal to Montreal but is building a new transmitter. VE3DPR/VE2 is moving to G-Land and taking his rig with him. WW claims an imposing score in the BERU Contest in which WA, NI, and OL also were active with good results. DR visited AAH in Quebec City. PQN continues to operate despite poor conditions and some traffic is moving. XX now appears to operate from the mobile rig rather than the home rig. Traffic: VE2DR 173, CA 73, EC 58, LM 27, ATQ 10, GL 9, GK 6.

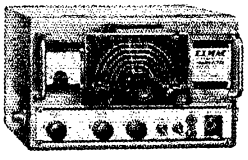
ALBERTA — SCM, Sydney T. Jones, VE6MJ — The local gang in Edmonton have been given the once over by the D.O.T. officials and all seem to be clear for another year. An enjoyable social was held Jan. 23rd by NARC and was very well attended. We are pleased to report that HM is active again after a nasty fall which necessitated several weeks in bed. LQ is new Official Observer. The University station, RR, is active on all bands under the watchful eyes of PA and CP. XY is leaving the West, we understand, and moving to Eastern Canada. FB has rebuilt the VFO. EP reports some headway with his frequency meter. YE now has VFO and can be heard on 3.8-Mc. 'phone. WF has moved to Rocky Mountain house. IE has recovered from a nasty accident and is active on mobile. FH and CA were Edmonton visitors and took in the NARC party. XG says he will send code practice to any of the gang who want it. Speed? Harry says the sky is the limit. WC says conditions are poor on c.w. traffic nets. Come on, gang, how about some help in the way of reports for this column? Send your news to your SCM each month. Your help will be appreciated. Traffic: VE6HM 57, WC 30, OD 15, MJ 5.

MANITOBA — SCM, Leonard E. Cuff, VE4LC — HL has been very busy since getting his rig set up at the new QTH. Besides being RM and OPS he reports to TEN, MPN, MCN, and OPN. Our congratulations to JW and his XYL on the arrival of a new jr. operator. XO finally has his balloon vertical up and working with very gratifying results. AJ is reported to be devoting all his spare time to TV. FF and SC are president and secretary, respectively, of the Flin Flon Club for 1954. OB may be heard on 75 meters with an ether-busting 813 final. JF has a new Viking. EQ is busy with a new rig using 813 final. EO may be heard on 20 and 15 meters when conditions are right. AX is reported to be moving to Toronto. YZ has been having trouble with his mobile rig, but reports everything is working fine now. SR has been making changes in his mobile rig and can now operate it either mobile or fixed station. The automobile license plate committee of the ARLM still is working hard on the project but reports progress is slow. The new Manitoba C.W. Net and the Noon Hour 'Phone Net are in full swing. The QSL Manager reports that there are hundreds of QSLs unclaimed in the bureau files. Traffic: VE4HL 30, KA 4.

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — It is with deep regret that we record the passing of GI and RP. Steve will long be remembered by many for his

(Continued on page 116)

You Will Never Be Fooled With a Walter Ashe "SURPRISE" Trade-In



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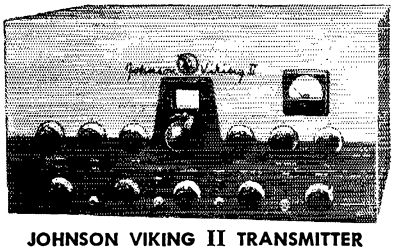

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work in the formation of SARL. He was an enthusiastic worker for ARRL and civil defense. RP spent many years operating, made a host of friends, and was a good community worker. The Saskatoon Club held its annual party with WC, MQ, DN and XYL, VB and XYL, and two hams-to-be, Ben and Evelyn Petersen, from out of town attending. BV and CJ were overheard on 75 meters trying to outdo each other's fish tales. RO has moved to Saskatoon, as has 4HR. BF, a strict c.w. man, has weakened and is heard on 'phone with 807s and an FB signal. JO is building his mobile to include 21 Mc. DC has moved to Ontario. Ex-KQ visited the Saskatoon hams on a trip West. JK was heard operating mobile from his car which was stuck in a snowbank at 48 below zero. AJ has worked a number of ZLs on 80-meter c.w. QZ has been transferred to Churchill and will give the VE4s good competition in contests. MO rebuilt his exciter and mobile. Traffic: VE5HR 7, MO 2.

Strays

W2HNH hears that several local technicians are hard at work developing simple electronic speed-trap detectors. Evidently all's fair in love and electronics.

VFO

(Continued from page 26)

the VFO to the image-frequency tuning range. If you are converting a crystal-controlled rig, a simple check on the frequency is to see if the amplifier tuning for what you think is 3750 kc. from the VFO is the same as it was when you were using a crystal at or near 3750 kc. In other words, your amplifier stage should tune with the same condenser setting for 3750 kc., regardless of the type of oscillator. Any noticeable deviation from this should lead you to suspect that you have adjusted the VFO into the image-frequency range. The better the preselection of the receiver, the less likelihood there is for any error. To be on the safe side, however, make your initial frequency checks with little or no antenna connected to the receiver — a few inches of wire is the most that would be required.

It wasn't mentioned earlier, but there are two definite advantages in using the small trimmer-type capacitors for C_1 and C_2. The first is their low cost, about one dollar each, and the second is the excellent tuning rate of the VFO. You'll soon discover that the quickest method of setting the VFO to a desired frequency is to tune C_1 to where you hear your signal and then trim it up with C_2. The bandspread condenser, C_2, has a slow tuning rate and it is a simple matter to set your signal exactly where you want it.

If for some reason the VFO doesn't work, carefully check the wiring to be sure that you didn't make a mistake. The turns on L_1 are very close together, so be sure that one isn't connected to an adjacent turn, either by being bent or by an accidental blob of solder.

Now that you have a VFO, there are certain rules of good conduct to be followed. Don't be a VFO swisher! One sure method of losing friends and alienating amateurs is to "swish" up and down the bands with your transmitter on. It is very simple to add a switch to the transmitter that will disable the amplifier tube and cut off the rig's output. Such an installation is shown at Fig. 3A [p. 118]. The use of this system will also make it easier to set your VFO, since the signal

(Continued on page 118)

will not be as loud in your receiver as it is with the amplifier running.

Last but not least is the consideration of key clicks. It was found that the transmitter as

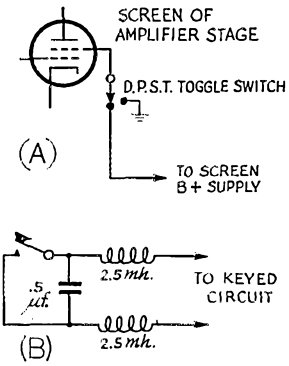

Fig. 3— (A) Switching circuit for grounding amplifier stage screen. (B) Key-click filter circuit.

modified here had undesired clicks. These were eliminated by the use of the key-click filter shown at Fig. 3B. If you happen to be using shielded wire for your key leads, only one r.f. choke is needed (in the inner-conductor lead) instead of two. After the installation of the filter, it was found that the keying was quite satisfactory.

Being "rock-bound" has its advantages, and so does VFO operation. The smart ham makes provision for both.

AB$_1$ Linear

(Continued from page 31)

Fig. 1 shows that each 1625 screen has its own by-pass condenser which, so far as the operating frequency is concerned, simply means that the entire screen circuit is by-passed with a capacitance four times as large since the impedance of the connecting leads is very small. The separate condensers were used in anticipation of a possible need for installing decoupling circuits in case of parasitic oscillations involving the screen circuits. Since the small coils in the plate leads settled the parasitic question very nicely, no such decoupling was needed. The separate condensers may be useful, however, for good suppression of v.h.f. harmonics.

Although the usual constructional practice of shielded wiring with disk by-passes was followed as a matter of course, the amplifier was not shielded for TVI. Shielding is not necessary for 75 meters, but is likely to be required for 14-Mc. — and perhaps 7-Mc. — operation in localities where a harmonic falls directly in a channel having a weak TV signal. Class AB$_1$ operation does help — it is only necessary to look at the TV screen while the driving voltage is nudged into the grid-current region to see that — but it is not a complete panacea for the tough cases. Should shielding be needed, it should not be much of a constructional problem to add it around the r.f. section, both top and bottom.

(Continued on page 120)

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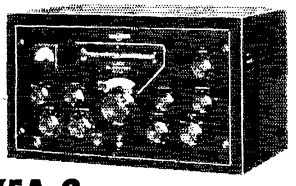

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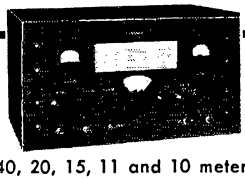
8R-1 CRYSTAL CALIBRATOR
148C-1 NBFM ADAPTOR

Available as 75A-2 and 75A-3 accessories. Plug into completely wired sockets on top of chassis. Both units controlled by switches on receiver front panel.

8R-1 Plug-in Crystal Calibrator.....$25
148C-1 Plug-in NBFM Adaptor.....$20



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A receiver-sized, high-performance rig built to Collins standards in every detail. Rated at 150 watts input CW, 120 watts phone, gang-tuned, with bandswitching to cover 80, 40, 20, 15, 11 and 10 meter bands. Excellent audio gives extraordinarily good readability. Stable VFO, completely enclosed R-F section and thorough filtering and shielding provide the maximum protection against TVI.

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The amplifier should be neutralized by the usual method of adjusting for minimum r.f. in the plate circuit with r.f. voltage on the grids but with plate and screen voltages off. A sensitive indicator such as a crystal detector and low-range milliammeter should be used; they may be connected to the r.f. output terminals for convenience. C_3 and C_4 are adjusted by bending the metal tabs from which they are constructed, to vary the spacing. This should be done with an insulating tool; one can easily be devised in such a way as to permit getting at the plates in the particular layout used.

TVI Checking

(*Continued from page 36*)

vivid way of getting the point across than a written report. The object of such tests is to provide information for the manufacturer for his guidance in future design work, so the data obtained are for this information alone.

An adequate check of a TV receiver may require several days' work. To give enough information to be useful, a check has to be made of at least several frequencies in each amateur band from 3.5 through 144 Mc., and preferably on all TV channels at each frequency. It takes time to change TV channels and amateur frequency, and simple multiplication will give some idea of the magnitude of the job. Whenever interference is encountered it has to be analyzed and the cause determined, and in view of the great variety of ways in which interference can occur this may be a time-consuming process. Frequently, conditions that are peculiar to some localities — such as the beat between f.m. and TV stations that occurs with some frequency combinations — have to be simulated because they do not happen to exist in West Hartford. And in cases where the interference could be either an actual harmonic or receiver overloading, an effort has to be made to separate the two effects.

This is frequently difficult to do, even though the transmitters have been carefully checked and found to be free from harmonic radiation. 38 La Salle Road has from the beginning been a prolific source of "external rectification" — harmonics generated in poor contacts between conductors in the building. The building has been throughly probed several times to discover the sources, with the principal result that they appear to be in inaccessible places such as masonry walls containing structural members or concealed wiring. When the effects are present, as they usually are at some ham band-TV channel combination or another, they have to be circumvented somehow so that the truth about the receiver performance will be uncovered.

Two transmitting set-ups are used, one for 80 through 10 meters, the other for 6 and 2. Now that u.h.f. TV is spreading, we shall have to add 220- and 420-Mc. transmitters to the collection — another item on the agenda. There seems to be

(*Continued on page 122*)

no prospect of looking at the set-up and saying, "This is it from now on in"!

Most of the transmitting units have been described in *QST* during the past few years, and many of them appear in current *Handbooks*. The low-frequency rig uses the 6AG7-6AG7-6146 transmitter to drive the pi-network 4-250A amplifier; both these units are in the *Handbook*. The power input on the 4-250A can be run up to a kilowatt if necessary, although most testing is done at around 600 watts since that has been found to be sufficient for the purpose. The v.h.f. gear varies according to the particular type of test under way, and includes the 2-meter push-pull 6146 exciter described in November, 1952, *QST*, the 50-Mc. 2E26 exciter, and the 4-65A, 4-125A and 4-250A amplifiers described in recent *Handbooks*. The outputs of the v.h.f. transmitters are fed to 6- and 2-meter beams on the roof of the building through coax. An 80-foot center-fed antenna, with tuned feeders, is usually used for the low-frequency transmitter together with coax-coupled antenna tuners, although other antennas have been used at times, particularly on 10 meters.

While it doesn't take long to describe, the set-up is the product of several years of evolution, at stages discouraging, frequently exasperating, and sometimes rewarding. Very often the agenda acquires new items at a faster rate than the old ones are crossed off, so there is no present prospect that we will be able to write "finis" on it in the foreseeable future! — *G. G.*

Improved 'Phone Reception

(Continued from page 37)

however, a good example of a "blind spot" in our philosophy. Statistically, it can be shown that, while it is fairly common to find two 'phone signals on or near the same *frequency*, it is rare indeed to find them with exactly the same *signal strength*. But with this fact staring him in the face, every engineer and amateur has been trying to separate the signals by some *frequency*-discriminating means! Obviously, all that is needed is a device that separates them according to their *strengths* (amplitudes). Such a device is an amplitude-discriminator, and might be nothing more or less than a pair of limiters back-to-back, one limiter setting the upper threshold level and the other setting the lower threshold level.

Tuning with such a receiver is a revelation. The operator uses a fairly "broad" receiver (frequencywise) for rapid tuning, and then sets the limiter levels at a convenient value. A DX man would set it for weak signals just above the noise level, while a rag-chewer might set it at a higher level. Tuning across the band reveals only the signals falling within the amplitude limits set by the limiter levels. For general operation, the limiter levels can be made wider apart than normal — if QRM is encountered on a particular signal, the limit levels are closed in until only the desired signal is heard. In this respect the limit-

(Continued on page 124)

levels control is similar to the old-fashioned crystal filter, but it lacks all of the touchiness and can be made purely logarithmic.

Sensitivity

In a previous paragraph, it was mentioned that code enjoys a 15-db. advantage over 'phone. There are two operations necessary to eliminate this disadvantage. The first has been hinted at in the literature but has never been used, for some reason that escapes the writer. Several experimenters have made use of "selectable-sideband" reception to improve the selectivity of a receiver, but its real *forte* is the improvement of sensitivity. Visualize a selectable-sideband receiver that is receiving, say, the upper sideband of a given signal. The other (lower) sideband has been eliminated by high-*Q* selectivity. But if the lower sideband were to be accepted instead of rejected, and made to appear at the detector *on the same side as the upper sideband*, it would be equivalent to a 6-db. gain at the detector. This is the principle of "superimposed-sideband reception," and the techniques are obvious to anyone familiar with selectable-sideband practice. The sidebands could be superimposed at the transmitter, of course, but then the receiver wouldn't have the 6-db. gain. Doing it all in the receiver is more economical. *In hoc veritas.*

This is only part of the story. For years receiver designers have been handicapping themselves by making their receivers "voltage sensitive," or with an output proportional to the input-signal voltage. Thus if the signal drops to half its value (half its voltage), the output signal decreases by 6 db. But suppose we make the receiver *power* sensitive. Now when the input signal is halved, the output signal is only reduced by 3 db., a gain of 3 db. over the voltage-sensitive case.[4]

Thus by the simple expedient of making the receiver power-sensitive, another 3 db. is gained over conventional reception. This, added to the 6 db. gained by superimposed-sideband reception, gives a 9-db. improvement in 'phone reception, without adding any complexity to the operation of the receiver. While it is true that a receiver built like this is a little harder to service, this is no problem if the receiver is built well enough to require no servicing during its normal life.

Having gained back 9 db. of the 15, one is left with only 6 db. Anywhere from 2 to 6 of this can be obtained by using a suitable preamplifier (sometimes called "preselector").

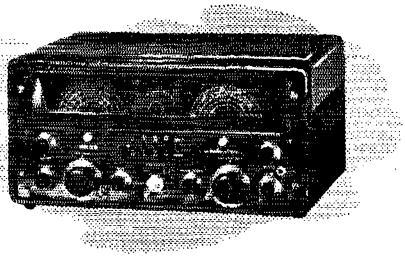
Three-Dimensional Reception

One further improvement is readily available. Any reader must be aware of the great progress that has been made in the television and home-phonograph field through the use of several loudspeakers to give "stereophonic" sound. This same principle can be applied to the reception of amateur 'phone signals. By the use of two or

(Continued on page 126)

[4] For nonmathematical readers, a voltage ratio of ½ is —6 db., and a power ratio of ½ is —3 db. See page 537, *The Radio Amateur's Handbook*, 31st edition. — Ed.

at NEWARK



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10 For.....4.00

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A503. G.E. Filter Choke. Open type. 2¼ Henry, 200 ohms DC resistance. 9" wire leads. 3⅛" mtg. ctrs. Shipping weight, 2 lbs. **NET.....1.19**

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A506. 10 ohm, 25 watt.
A507. 15 ohm, 25 watt.
A508. 50 ohm, 25 watt.
A509. 125 ohm, 25 watt.
A510. 250 ohm, 25 watt.
NET EACH 98c

A511. 4 ohm, 50 watt.
A512. 6 ohm, 50 watt.
A513. 80 ohm, 50 watt.
A514. 125 ohm, 50 watt.
A515. 225 ohm, 50 watt.
A516. 300 ohm, 50 watt.
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more loudspeakers, this same stereophonic (or "3-D") effect can be obtained, and to the same degree. This gives more "body" to the signal and makes for "solid" copy. Its worth should be obvious.

Summary

There is absolutely no reason why amateurs should struggle along with primitive receiving techniques when all could be enjoying the benefits of the few simple improvements outlined above. It is suggested that every reader lose no time in demanding of the manufacturers, and of his ARRL director, that these receivers be made available. If the manufacturers won't build receivers like we want them, boycott the manufacturers and let's build them ourselves!

21-Mc. Beam

(*Continued from page 41*)

also to provide a means for balancing the beam at its center of gravity. If necessary, the center ¾-inch sections can now be bent up, to counteract any sagging.

Matching

A wire gamma match using No. 12 TW [3] house wiring is fastened to the radiator with an iron (not brass) nut and screw and given a coating of rust preventive.[4] The coax feed line may be hung over the radiator clamp by using a soldering lug attached to the outer conductor.

Not shown in Fig. 1 is the mica condenser in the wire of the gamma match that was used to tune out residual reactance and minimize the s.w.r. Its value was determined by inserting a small 100-$\mu\mu$f. variable and adjusting it for minimum s.w.r. In this particular case the s.w.r. went down to a minimum of 1.1 when the condenser was half meshed, so the variable was replaced by a 50-$\mu\mu$f. mica condenser and the mounting screws given a coating of rust preventive. A Cornell-Dubilier No. 9 condenser was used, which is rated at 1200 volts d.c. and is ample for a kilowatt of power.

A point mentioned recently in *QST* well illustrates the difficulty experienced by the author in trying to bring down the s.w.r. on previous installations.[5] That is, be sure that the r.f. source used with the s.w.r. bridge is harmonic free.

Installation

Initial adjustment completed, the beam should be unfastened from the rotor, and the mast mounted on the roof. If you have decided to use a ten-foot mast section, the whole beam, mast, rotator and all, can be taken up to the roof in one

(*Continued on page 128*)

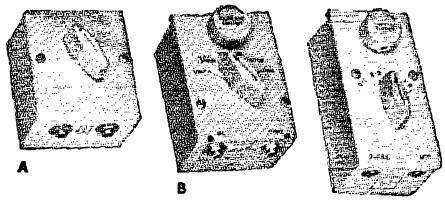
[3] Designation for a standard type of moisture-resistant thermoplastic-covered wire. Your electrical-supply house will know about it. — Ed.

[4] Debatable point. Some prefer to take their chances with brass. The important point is a protective coating. See Woodward, "Your Beam — Will It Stay Up?" *QST*, Oct., 1949. — Ed.

[5] Tech Topics, "Note on S.W.R. Measurement," *QST*, May, 1952.

LOOK STEINBERGS LOOK

JACK BOXES



(A) BC-345. 3½" x 3½" x 1⅞" aluminum, 2 standard open-circuit jacks, 3-position switch, 6-contact banana plugs and jacks.
(B) BC-1366. 4¼" x 3" x 2¼" aluminum, 1 standard open-circuit jack, 1 3-circuit mike jack, 150,000 ohm volume control, 5-position switch, 11-contact banana plugs and jacks.
(C) BC-213. 5¼" x 2¾" x 2⅛" aluminum, 1 standard open-circuit jack, 1 3-circuit mike jack, 150,000 ohm volume control, 4-position switch, 8-contact banana plugs and jacks.

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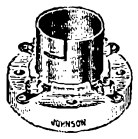
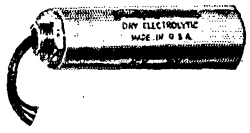


TUBE SOCKETS

For 4-prong tubes 866, 809, 811, 100th etc. Heavy phosphor bronze side wiping contacts, metal shell, white porcelain base. Regular list $1.50, while they last ..... **45¢**



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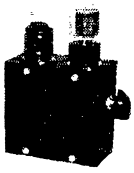

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piece. Otherwise, mount the bottom section of the mast first with the rotator in place. Fasten the beam to the rotor while standing on a ladder and push up on the telescoping mast.

If there is a choice of different locations for the beam, choose one that makes the beam hang over the whole roof, and also one away from trees and other objects that would distort the wind stream. In other words, put it in the clear.

Results

A half year of operation with this beam shows no "bugs" except for the speed of the rotator, which is about ¾ r.p.m. and a bit too slow when trying to peak up on a signal.

S-40 Modification

(*Continued from page 45*)

Alignment

The i.f. amplifier was aligned by plugging a Channel 347 crystal into the b.f.o. and peaking the i.f. transformers at this frequency. If other crystals were used in the filter, requiring that the i.f. amplifier be shifted in frequency, the b.f.o. could still be used as a signal generator for aligning the i.f. by feeding some of its output to Pin 8 of V_2. Just bringing the lead near the stator of the tuning condenser C_{7B} will suffice in most cases. (The high-frequency oscillator can be turned off during this procedure by shorting C_{7C}.) Then peak all of the i.f. transformer trimmers for maximum closing of the tuning eye.

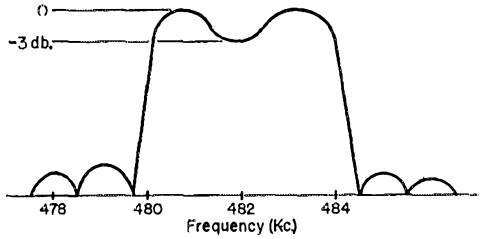

Fig. 6 — The crystal filter shows the bandpass characteristic so desirable in a.m. or s.s.b. reception.

A rough check of the crystal-filter performance was obtained by using a BC-221 and a v.t.v.m., with the result that is plotted in Fig. 6.

Performance

In actual s.s.b. operation with the CAA net, I find that the r.f. gain control is run about one-quarter open for s.s.b. signals and about one-half open for a.m. signals. I have owned or operated many of the higher-priced communications receivers, but the "S-40-S.S.B." outperforms them all in my estimation. Try these changes — you'll be glad you did.

Strays

W1FWH found W2GAN, age 86, still going strong on c.w. W2GAN got his license in 1933 as a young squirt of 66.

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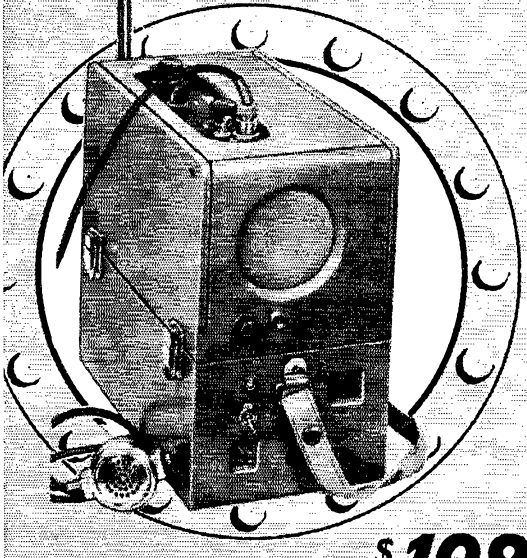

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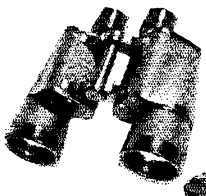
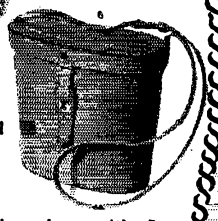
7 x 50 PRISM BINOCULARS

WITH ACHROMATIC COATED OPTICS!

$29.95* With case

*20% F.E.T.





LIST $89.95

- 7X MAGNIFICATION
- 50MM LENSES
- INDIV. FOCUSING
- PIGSKIN CASE
- WEATHERPROOF

Fabulous prism binoculars with 7-power magnification. If made in this country they'd cost far over $100. Each huge objective is approximately 2" wide; hard-coated for anti-reflection, maximum light transmission and contrast. Wide 376 ft. field at 1000 yards! Individual eyepiece focusing. Main parts sealed airtight for weatherproof reliability of the optical system. Die-cast aluminum, covered black. 7" x 7". Includes plush-lined pigskin case with separate leather straps for case and binoculars. An outstanding value for yachtsmen, sportsmen, coaches, travelers, engineers, explorers, bird-watchers, marksmen. Ship. wt. 3 lbs.

Order No. R-5172.

RADIO SHACK CORPORATION

167 Washington St., Boston 8, Mass.

V.H.F. SS

(Continued from page 62)

W2YHP.....60- 10- 3-B
K2CMV.....40- 10- 2-B
W2NDC/2....30- 15- 1-B
W2PIB.....30- 15- 1-B
K2CQY.....18- 5- 2-B
W2RDK.....16- 8- 1-B
W2ZWB.....14- 7- 1-B
K2CFB.....14- 7- 1-B
W2MUM.....12- 6- 1-B
W2KQL/M....4- 2- 1-B
W2OMH.....4- 2- 1-B
W2QBR/M.....4- 2- 1-B
W2JRL/M.....2- 1- 1-B
W2JCI (W2s JCI KQL K2GDJ) 720- 60- 6-B
KN2EWA (W2GDW KN2EWA).320- 40- 4-B

Northern New Jersey

W2RGV....3408-213- 8-AB
W2FBZ.....2926-209- 7- ABCD
W2COT.....2592-216- 6-AB
K2BC.....1872-156- 6-B
K2CMB.....1740-145- 6-B
KN2EIZ....1652-119- 7-B
W2WKL....1488-124- 6-B
W2DZA.....1092- 91- 6-AB
W2HCD.....960- 96- 5-AB
W2OKO.....930- 93- 5-B
W2ZDR.....800- 80- 5-B
W2PEV.....740- 74- 5-AB
W2IDZ.....588- 42- 7-AB
W2IBM.....560- 70- 4-B
W2IMI.....528- 66- 4-B
W2QCY/2....500- 50- 5-AB
K2CBB.....412- 52- 4-AB
W2EWL.....392- 49- 4-B
W2IMG.....372- 62- 3-B
W2RQI.....320- 40- 4-B
W2SEW/2....284- 36- 4-B
W2NYB.....280- 35- 4-AB
W2FPM.....276- 46- 3-B
W2SYR.....252- 21- 6-A
W2GDN.....240- 30- 4-B
W2WCM.....208- 26- 4-AB
K2CSM.....188- 47- 2-B
W2ESW.....160- 40- 2-B
W2WV.....144- 24- 3-B
W2ZPD.....112- 28- 2-B
K2BI.....102- 26- 2-B
W2HWC.....100- 25- 2-B
W2BQK.....84- 14- 3-BD
W2AXC.....80- 20- 2-BC
W2SIV.....80- 20- 2-B
W2WCL.....72- 18- 2-B
W2SCV.....60- 15- 2-AB
W2HZF.....44- 11- 2-B
K2BLI.....26- 13- 1-A
W2YTI.....20- 10- 1-AB
W2GJE.....16- 8- 1-B
W2YTH.....14- 7- 1-AB
K2BO.....14- 7- 1-B
W2ZKE.....12- 6- 1-A

MIDWEST DIVISION

Iowa

WØEMS.....54- 9- 3-B

Kansas

WØMOX.....12- 6- 1-B

Missouri

WØIHD.....72- 12- 3-B

NEW ENGLAND DIVISION

Connecticut

W1HDQ[2]....3156-132-12- ABCD
W1DBM....2988-166- 9-AB
W1PHR.....1550- 78-10-B
W1VLH/1...1296- 72- 9-AB
W1QMR....1008- 63- 8-B
W1RVZ.....882- 63- 7-B
W1SPX.....650- 66- 5-ABD
WN1YDM*..590- 59- 5-B
W1AJO.....520- 52- 5-B
W1HDF.....470- 47- 5- ABCD
W1ODW.....470- 47- 5-B
W1WHO.....440- 45- 5-B
W1URC.....430- 43- 5-B
W1VLK.....416- 52- 4-AB
W1RMU.....408- 51- 4-B
W1ZDP[2].....318- 53- 3-B
WN1YOB....270- 45- 3-B
W1MRR.....264- 33- 4-B
WN1YUX....222- 37- 3-B
W1AW[2,3]....204- 51- 2-AB
W1HXD.....196- 49- 2-B
WN1ZEF....174- 29- 3-B
W1TXI.....152- 38- 2-BD
W1RFJ.....144- 24- 3-B
W1WEA.....140- 35- 2-B
W1KHM.....128- 32- 2-B
W1MFT.....126- 21- 3-B
W1PRT.....100- 25- 2-B
W1SRB.....92- 23- 2-B
W1UYP.....88- 22- 2-B
W1WOQ.....80- 20- 2-B
W1OLG.....68- 17- 2-B
W1VSI.....56- 14- 2-B
WN1ZFK.....56- 14- 2-B
W1HYF.....52- 13- 2-B
WN1ZFL.....36- 9- 2-B
W1BDI[2].....24- 6- 2-B
W1GVK.....16- 8- 1-B
W1SLI/M.....16- 4- 2-A
W1JW..... 2- 1- 1-B

Maine

W1TAM.....96- 12- 4-AB

Eastern Massachusetts

W2BVU/1...1500-125- 6-AB
W1ELP.....1302- 93- 7-AB
W1QMN....1300-130- 5-AB
W1PLX.....1260- 90- 7-B
WN1YQI/W1YQI* 1140-114- 5-BC
W1AQE....1000-100- 5-AB
W1BJN.....888-111- 4-ABC
W1JSM.....856-107- 4-B
WN1ZEN....560- 70- 4-B
W1JLI.....522- 87- 3-B
W1AAR.....450- 45- 5-B
W1TQF.....426- 71- 3-B
W1PYM.....420- 70- 3-B
WN1YVB....384- 64- 3-B
W1JNX.....324- 81- 2-B
W1LHV.....300- 50- 3-B
W1QQW.....210- 35- 3-B
W1LUW.....188- 47- 2-B
W1OMI.....184- 46- 2-B
W1IHL.....160- 40- 2-B
W1JYC.....102- 17- 3-A
W1YGS.....100- 25- 2-B
W1LMU.....88- 22- 2-AB
W1RUU.....56- 14- 2-AB
W1SIX.....52- 13- 2-B
W1CTR.....46- 23- 1-B
W1OGV.....44- 22- 1-B
W1ROC.....44- 22- 1-B
W1ALP.....40- 20- 1-B
W1VXW.....40- 20- 1-B
W1AGN.....36- 18- 1-B
W1VIS.....36- 18- 1-B
W1PBM.....22- 11- 1-B
W1OTH.....19- 10- 1-B
W1PEX.....6- 3- 1-B

(Continued on page 138)

W1IAP/1 (W1s AGN IAP) 600-100- 3-B
W1MHL (W1s LUW TVK) 64- 32- 1-B

Western Massachusetts

W1RFU . . . 3952-153-13-ABD
W1VNH 1566- 87- 9-AB
W1OBQ 714- 51- 7-B
W1SXJ/1[4] . . . 623- 45- 7-B
W1NLE 495- 50- 5-B
W1NY 320- 40- 4-AB
W1CJK 228- 38- 3-B
W1LPC 204- 34- 3-B
W1ESA 132- 33- 2-B
W1MNG 108- 27- 2-AB
W1LPF 96- 12- 4-A
W1SWJ 84- 21- 2-B
W1VBG 56- 14- 2-B
W1PHU 40- 10- 2-B
W1RRX 36- 9- 2-B

New Hampshire

W1FZ 8- 4- 1-AB

Rhode Island

W1KCS 680- 68- 5-AB
W1GBQ 426- 71- 3-B
W1SGA 240- 30- 4-AB
W1SFD 180- 45- 2-B
W1AEI 120- 30- 2-B
W1AOP 116- 29- 2-B
W1KKR 112- 28- 2-B
WN1ZPG 100- 25- 2-B
W1BTV 72- 23- 2-B
W1VAY 68- 17- 2-B
W1LPO 64- 16- 2-B
WN1YNE 60- 16- 2-B
W1VDI 54- 7- 2-B

Vermont

W1MMN 90- 9- 5-B

NORTHWESTERN DIVISION

Oregon

W7OKV/7 . . . 120- 20- 3-AB
W7NGW 76- 19- 2-AB
W7TUV 72- 18- 2-B
W7BTF 64- 16- 2-B
WN7UNT/7 . . . 60- 10- 3-B
W7HBH 56- 14- 2-B
W7NNR 44- 11- 2-B

Washington

W7JHX 240- 40- 3-B
W7PXB 148- 37- 2-B
W7SFO 128- 32- 2-B
W7SRL 74- 37- 1-B
WN7UFE 70- 35- 1-B
W7QKE/M . . . 64- 16- 2-B
W7PAE 48- 24- 1-B
W7KO 46- 23- 1-AB
W7MPD 46- 23- 1-B
W7IEE 44- 22- 1-AB
WN7URH 43- 22- 1-B
W7CCB 36- 18- 1-B
W7PZT 32- 16- 1-B
W7AXS 28- 14- 1-AB
W7BB (W7s AXS IEE QKE) 78- 39- 1-AB

PACIFIC DIVISION

Santa Clara Valley

W6CGA 1265-127- 5-B
W6TFZ 1250-127- 5-B
W6YEQ 1185-119- 5-BD
W6ITF 1040-104- 5-B
W6EXX 980- 98- 5-B
W6EDC 870- 87- 5-B
KN6CLM/6 . . 480- 60- 4-B
W6ZBS 280- 35- 4-AB
W6YIF 160- 20- 4-B
W6ZTJ 96- 12- 4-B
W6WMM 76- 13- 3-B

East Bay

W6JHV 768- 96- 4-B
KN6AYC 486- 81- 3-B
W6UPD 200- 20- 5-B
W5YLN/6 (W5YLN W9CBT) 198- 33- 3-B

San Francisco

W6AJF 930- 93- 5-ABCD
W6BAZ 405- 41- 5-B
W6OST (W6OST KN6AES) 42- 7- 3-B

Sacramento Valley

W6LSB/6 . . . . 610- 61- 5-AB
W6PIV 180- 48- 5-B
W6MIW 208- 26- 4-B

San Joaquin Valley

W6GQZ 300- 30- 5-B
KN6AYL 120- 15- 4-B

ROANOKE DIVISION

Virginia

W4JCJ 728- 46- 8-B
W4UMF 420- 42- 5-ABC
W4UBY 240- 30- 4-B
W4DWU 102- 17- 3-B

West Virginia

W3PZK/8 . . . . 120- 22- 3-B

SOUTHEASTERN DIVISION

Georgia

WN4ZGV 6- 3- 1-B

SOUTHWESTERN DIVISION

Los Angeles

W6GQX 780-130- 3-B
W6MMU 282- 47- 3-B
W6NJU/6 . . . . 276- 69- 2-B
KN6BAY/M . 238- 69- 2-B
W6HJK 128- 32- 2-B
W6IHK 120- 30- 2-B
W6MVK 40- 20- 1-B
W6AEA 32- 16- 1-B
W6TKA 25- 13- 1-B
W6BWG 23- 12- 1-B
W6MYG 8- 2- 2-B

Arizona

W7LEE 24- 4- 3-B

WEST GULF DIVISION

Northern Texas

W5MJD 22- 6- 2-AB
W5SFW 8- 4- 1-AB

Southern Texas

W5YCK 62- 31- 1-B
WN5ZUY 48- 24- 1-B
W5OUG 36- 18- 1-B

New Mexico

W5FPB 22- 11- 1-B
W5UEO 18- 9- 1-B
W5VWU/5 . . . . 16- 8- 1-B
W5YPP 14- 7- 1-B
W5CA 2- 1- 1-B

CANADIAN DIVISION

Ontario

VE3DIR 800- 80- 5-B
VE3AIB 770- 77- 5-AB

(Continued on page 134)

Lafayette for

Greatest Tape Buy Ever!

1200 FT. REEL
Genuine Plastic Base
RECORDING TAPE

$1.89 per roll plus postage

C.O.D.'s accepted

LAFAYETTE made a terrific deal with one of the leading manufacturers of recording tape to supply us with their regular tape which sells for almost twice our price. WE GUARANTEE ABSOLUTE SATISFACTION OR YOUR MONEY BACK. The finest, professional-quality recording tape obtainable. Highest performance for thousands of playings. Red Oxide Base in a smooth, uniform coating; greater signal strength; with maximum fidelity; uniform frequency response from 40-15,000 cps at 7½" per second; and freedom from background noise and distortion. Each reel is individually boxed.

FREE! Lafayette's new bargain packed catalog. Write today!

Include postage with your order.

TELEPHONE INTERCOM

• *Self Contained Battery* • *Buzzer Signal*
• *Ideal For TV Installers* • *Operates Up To 2 Miles*

You can now have a complete 2-station telephone type intercom system at an amazingly low cost. Simply lift the receiver from its hanger and press the button to signal the other party. It operates on self-contained #1 flashlight cell for as much as a mile. You may use Mallory 4 volt Mercury cell for longer distances. Batteries are easily replaceable. The Alnico 5 magnet gives loud and clear reproduction. Molded high impact case resists breaking. Installation is extremely simple and consists of merely attaching the clips provided to the ends of the wire. Ideal not only for ordinary intercom use as a telephone set, but perfect for TV installers where the antenna lead can be used as the connecting wire. Complete set consists of 2 phones, hangers for mounting on wall, batteries and 50 feet of 2-conductor wire.

Stock #ML-39, Complete Set.....NET 5.98

ROTO AUTOMATIC HACKSAW

Fits any ¼" Electric Drill. Cuts any wood, metal or plastic up to ¾". There are no gears or bearings to wear out! Saw blade is only exposed moving part. Folds to 1"x1½"x4"—fits any tool box. Uses standard hacksaw blades. Handle covers and protects saw blade when not in use. Shpg. wt. 1 lb.

HD-60.....NET 3.72

WESTERN ELECTRIC HEARING AID

Reg. price ~~$185.80~~ *Our price* **$14.95**

Brand new, in original Western Electric's jeweler's case. Supplied with receiver, receiver cord, battery cord and plug (less batteries). Money back guarantee. Act now while they last! Uses Burgess XX30E and 8R batteries at $1.55 per set.

NOW! PHILCO BOOSTER

MODEL TB-3 In original factory sealed cartons. Money back guarantee!

~~$39.50~~ *list*
$12.50 *ea.*
$11.50 *ea. in lots of 3*
Shp. Wgt. 5 lbs. ea.

The Philco Television Booster Model TB-3 is a high quality, push-pull, wide-band radio-frequency amplifier designed to amplify r-f signals in the television bands. This unit employs two 6J6 tubes as r-f amplifiers, uses a selenium rectifier in a self contained power supply. Channels 2 through 13.

Talk about tuners!
THE STANDARD CASCADE TUNER TOPS 'EM ALL!

$14.95 *ea.*
$14.25 *ea. in lots of 3*

BRAND NEW! GUARANTEED!

The No. 1 Tuner in the trade. Lafayette is out front with this red-hot STANDARD COIL CASCADE TUNER deal. Lafayette made a buy—we paid cash—and you get the saving! Regular dealer price $24.50. Servicemen, now is the time to stock up and save! *Size: 4⅝" x 3¼" x 6¼" supplied with 6J6 and 6BQ7. Stock No. TL-11. Shpg. wt. 4 lbs.*

Top Quality CRYSTAL MIKE

$5.75

• —52 db output level
• Range 30 - 10,000 cps
• 10 ft. cable and connector
• Handle and interlocking base

A really fine microphone by a manufacturer known the world over. Use for amateur broadcasting, public address and home recording. Can be used with floor stand. Shpg. wt. 2½ lbs.

PA-21.....5.75

SELENIUM RECTIFIER

Stock No.	Mil	Each	Lots of 10 Each
RE-12	65 MA	.57	.55
RE-14	75 MA	.67	.64
RE-10	100 MA	.80	.75
RE-15	150 MA	.92	.85
RE-16	200 MA	1.19	1.08
RE-11	250 MA	1.29	1.19
RE-17	300 MA	1.39	1.29
RE-18	350 MA	1.57	1.50
RE-13	400 MA	1.75	1.68
RE-19	450 MA	1.77	1.70

Most popular sizes for radio and TV. Famous brand. All fresh, new stock. Input voltage 130 volts. You can't go wrong at these prices.

Dept. VC

Lafayette Radio

FAMOUS IN RADIO FOR 32 YEARS

NEW YORK, N. Y.	100 Sixth Ave.
BRONX, N. Y.	542 E. Fordham Rd.
NEWARK, N. J.	24 Central Ave.
PLAINFIELD, N. J.	139 West 2nd St.
BOSTON, MASS.	110 Federal St.

VE3BOW	280	35	4-B
VE3BMB	210	35	3-B
VE3DNX	192	32	3-B
VE3AET	160	40	2-AB
VE3DHG	152	38	2-AB
VE3DNP	144	36	2-A
VE3DOJ	120	30	2-A
VE3ANY	88	22	2-A
VE3BYY	68	17	2-A
VE3ADD	62	16	2-A
VE3DMQ	48	12	2-B
VE3BRH	44	22	1-A
VE3UT	44	11	2-B
VE3BPD	38	20	1-A
VE3DSL	38	10	2-B
VE3DQW	32	16	1-A
VE3KM	18	9	1-A
VE3DGF	8	4	1-A
British Columbia			
VE7FJ	69	12	3-B

[1] More than 1 operator; not eligible for award.
[2] Hq. Staff; not eligible for award.
[3] W1QIS, opr.
[4] W1UBD, opr.

Logs for checking purposes were also received from W1s KOK KPN MGP/M UOC YSO W2s GWT RNO K2CCM W7JU VE3DPG. Many thanks!

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K, and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner. For a list of overseas bureaus see p. 66, Dec., 1953, *QST*.

W1, K1 — J. R. Baker, jr., W1JOJ, Box 232, Ipswich, Mass.
W2, K2 — H. W. Yahnel, W2SN, Lake Ave., Helmetta, N. J.
W3, K3 — Jesse Bieberman, W3KT, Box 34, Philadelphia 5, Penna.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Oren B. Gambill, W5WI, 2514 N. Garrison, Tulsa 6, Okla.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
W7, K7 — Mary Ann Tatro, W7FWR, 513 N. Central, Olympia, Wash.
W8, K8 — Walter E. Musgrave, W8NGW, 1294 E. 188th St., Cleveland 10, Ohio.
W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wis.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — Austin A. W. Smith, VE2UW, 6164 Jeanne Mance, Montreal 8, Que.
VE3 — W. Bert Knowles, VE3QB, Lanark, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 329 15th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO — Ernest Ash, VO1A, P.O. Box 8, St. John's, Newfoundland.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — Box 73, Douglas, Alaska.
KZ5 — Gilbert C. Foster, KZ5GF, Box 407, Balboa, Canal Zone.

YL News & Views

(*Continued from page 51*)

YL-DXCC Notes

Thanks to W1WPO of the ARRL DXCC desk for the following additions and corrections to the YL DXCC list which appeared in February.

New members: W5UCQ 105 (c.w./'phone), CO2BK 104 ('phone).

Corrected totals: W1MCW 204, W6UHA 194, G3ACC 116.

Keeping Up With the Girls

W2EEO, Madeline, and other YLRL District Chairmen are pleased to note the number of W YLs who enclose extra dollars with their dues to cover memberships in the YLRL for those foreign YLs who cannot send money out of their respective countries. . . . W1FTJ, Dot, added another No. 1 certificate to her impressive collection when she received the first WANE (Worked All New England counties) certificate issued. . . . And OM W2QHH, who also has quite a collection of certificates, suggests that a YL Century Certificate with endorsements might be referred to as YLCC/150 or YLCC/200. YLCC Custodian, W7GLK, thinks Howy's idea FB and recommends its usage for clarity. Send QSLs to Dot's new address — Route 1, Box 347, Ashland, Oregon. . . . K2CFF, Joyce, reports that she and W2s KAE and KEB, Lynne and Georgie, are active every Monday night in the Nassau County civil defense drill. . . . W7RHM, Lana, is C.D. Amateur Communications Coördinator in Grays Harbor, Wash. . . . The new call of ex-W5RZJ is WØSCF. Louisa is operating portable from Phoenix, Ariz. . . . W6PCN, Peggy, and W6QMO, Jeri, are organizing the first YLRL unit in San Francisco. . . . W1VOS, Marje, of Plainville, Conn., writes that she would be glad to make a sked with any station wishing to contact a Conn. YL. . . . W1YGX (ex-W3QZY), Eva, is now on the air from Springfield, Mass. . . . W1UKR, Eunice, made BPL in December for the first time (even though her harmonics are only one and two years old). W2KEB, Georgie, made BPL for the same month, too. . . . W5TTU, Pat, is NCS of "The Knights and Ladies of the Round Table" net (daily at 8:30 A.M. CST, 3885 kc.). . . . New officers of the L.I. unit of the YLRL are W2KDP, Dot, Pres. (reëlected); W2KAE, Lynne, V.-P.; K2CFF, Joyce, Sec.-Treas.; W2BXT, Marie, and W2SUR, Esther, Board Members. W2SUR and W2JZX are delegates to the Federation of L.I. Clubs — W2MWY, Evelyn; W2SYE, Helen; and KN2EBU, Min, are new members of the unit. . . . For the third year W2JZX, Vi, has accepted the job of organizing amateurs to assist in the annual All Women's Transcontinental Air Race. . . . One of Massachusetts' most active YLs, W1TUD, Alice, recently had her *eighth* child. . . . WN9YXK again won the Novice trophy in the second "Inter-LARK Contest." (Rita had high Novice score in the first contest last November, too.) W9YBC, Gloria, won the General Class trophy. . . . W1UZR, Rita, makes and puts up her own antennas. She recommends it for weight control! . . . W8ATB, Esther, is recovering from shock and injuries received when she simultaneously took hold of a water faucet and a sump pump shorted to the 117-volt line. . . . ZS1MU, Pat, regrets to report the passing of ZS6BD, Edie, XYL of ZS6AK in Pretoria.

—•••—

W9SEZ, Eleanor Engebretsen of Chicago, is the YLRL Chairman of the ninth YLRL district and Sec.-Treas. of the Chicago Chapter of the YLRL. She compliments the YLs in her area for their coöperation in forwarding news for *Harmonics*. The XYL of W9KRK and the mother of two junior operators, Eleanor operates from 2 through 160 meters, 'phone and c.w.; and she particularly enjoys working 75 and 160 mobile.

How's DX?

(*Continued from page 67*)

Hereabouts — W4GVU, ex-TA3GVU, visited W6ZZ while passing through W6 on his way to the Orient. Col. Fred has collected enough additional call signs to take over a page in the *Call Book*. W6ZZ and W4GVU are old M.I.T. classmates — the reunion must have been a lulu . . . . . Flowers to W5s KUC and UCQ for their past sterling performance as editorial staff of the West Gulf DX Club *DX Bulletin*. Regrettably, press of other duties necesitated their discontinuing the effort. DX sharpshooter W5FXN took over the reins and has the situation well in hand . . . . . K2CPR (ex-W3BXE), busily sewing up a BERU sheepskin on 7 Mc., invites mail from those still needing FP8AA QSLs . . . . . Officers of the Frankford Radio Club for 1954, all capable DXers, are K2CPR, pres.; W3LVF, v.p.; W3EQA, treas.; and W3EVW, sec. Come to think of it, who in that outfit *isn't* an able DX chaser? . . . . . W9FKC, with W9s FID GRV and ABA assisting, is the elected organizer for the 1954 W9-DXCC meeting tentatively scheduled around September. W9s NN PGW and KA seem to have started something by so successfully arranging the 1953 affair . . . . . KL7AOC added KAØ and KM6 to his collection of Alaskan mobile-style DX . . . . . That psycho hereabouts who is playing around on 40 and 20 with phony call signs will see a couple of air-insulated ears if he dares look into a mirror . . . . . Two new 750-watt rigs have been rattling plenty of headphones with KG4AO's c.w. on 40 and 80 . . . . . W6ATO is to be commended for efforts to obtain ARRL DX Test participation on the parts of numerous South Americans . . . . . We regretfully report the passing of W4DYM, long-time DXer who held Century Club membership for both 'phone and c.w.-'phone . . . . . W4GXB, sensing signs of DX renaissance at W4MR, needs help in pinning down QSLs from FK8AI, 1952; VQ3JTW, '50; VR1G, '51; VS1s BJ and DZ, '50; ZD7A, '52; and ZK2AA, '52 . . . . . According to OX3BD, via VO6U, U. S. personnel in Greenland now are off the air. We trust that this is only temporary. Danes are the sole OX actives now radiating . . . . . W6LRU assures us that San Diego is well represented DXwise by the solid signals of W6s CAE CGQ SHY YDK and ZWK.

One-Package Station

(*Continued from page 16*)

built in because of the additional size and weight which would be necessary. Besides this, there are advantages in a separate supply which may be mounted close to the battery to minimize the voltage drop in the connecting wires. To use the unit with external power, a second cord is made up with the connections shown on the diagram. The power switch then has no effect.

Since this unit was constructed, it has seen considerable service at W1VLH, both as a mobile rig and to keep the home station on the air during a rebuilding of the regular transmitter. We've had a lot of fun with it, and whether you use it to try out v.h.f. or as a handy "second car" we think you'll have the same.

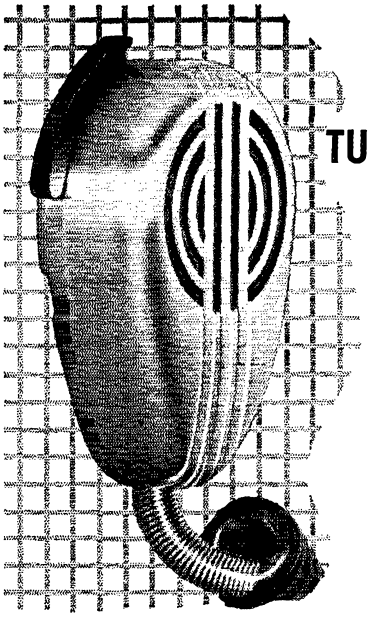
Hints & Kinks

(*Continued from page 49*)

809 gave more than enough drive to the 8005 amplifier running with 200 watts input at 1.8 Mc. High-*C* was used in the plate tank of the 809 to minimize 3.6-Mc. output.

There is nothing mysterious about this method of operation. The Signal Shifter uses a 6V6GT oscillator-doubler followed by an 807 doubler.

(*Continued on page 140*)



This new Turner Mike has everything you need for mobile amateur operations

TURNER 90 CARBON MOBILE MICROPHONE

● **superior voice reproduction**—Frequency response is 200 to 4000 cps; output level, —42 db; 200 ohms nominal DC resistance. Maximum response to voice with minimum distortion.

● **convenient operation**—It's designed to fit your hand comfortably. Furnished with DPST push-to-talk switch, normally open, one pole in microphone circuit and one pole in external relay circuit—4-conductor unshielded Koiled Kord (11″ retracted—5′ extended). Also available with push-to-talk on-off switch only and 2-conductor unshielded Koiled Kord. Furnished with hook for hanging and bracket for wall or dashboard mounting.

● **long life, lasting beauty**—solidly built and permanently plated for years of satisfactory use.

● **value**—superior performance, convenient operation, long life—all these advantages at this popular price.

Standard Model SR-90R with 4-conductor unshielded Koiled Kord
List Price $26.50

Model S-90R with 2-conductor unshielded Koiled Kord
List Price $26.50

The TURNER Company 917 17th Street, N. E., Cedar Rapids, Iowa

In Canada: Canadian Marconi Co., Toronto, Ont. & Branches

Export: Ad. Auriema, Inc., 89 Broad Street, New York 4, N. Y.

TURNER

Variable Inductance Coils

- High quality mica-filled form
- Two extra tiepoint terminals

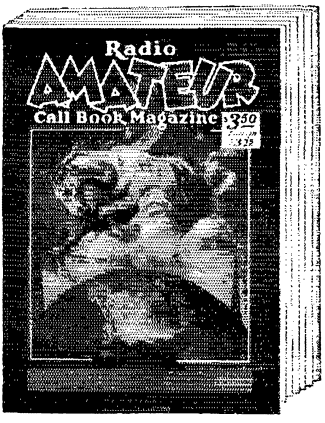
PART NO.	NOMINAL INDUCTANCE RANGE (MICROHENRIES)
120-A	2-3
120-B	3-5
120-C	5-9
120-D	9-18
120-E	18-36
120-F	36-64
120-G	64-105
120-H	105-200
120-I	200-500
120-J	500-1000
120-K	1000-2000

95¢ each

F-120 low-loss, mica-filled coil forms, each with metal bushing, nut, lockwasher and four terminals. All metal parts plated. Use for circuits to over 100 mc. 65c each.

No C.O.D. Minimum order three coils or forms plus 25c postage.

NORTH HILLS ELECTRIC CO., INC.
246-32 54th Avenue,
Douglaston 62, N. Y.



KNOWN THE WORLD OVER

as the "CALL BOOK"

● Each issue lists over 174,000 licensed radio amateurs. Published quarterly: Mar., June, Sept. and Dec.

● Single copies in the United States and possessions, $3.50. Annual subscription $12.00. Two copies a year, as selected, $3.25 each.

● Single copies in Canada and all foreign countries, $3.75. Annual Subscription $13.00.

● Foreign section, sold by mail only $1.50 each.

Complete edition on sale at your favorite parts distributor or direct from:

RADIO AMATEUR CALL BOOK, *Inc.*
610 South Dearborn Street Chicago 5, Ill., U.S.A.

In this case, use is made of the fact that most single-ended doubler stages do deliver appreciable output at the fundamental frequency. Furthermore, the 807 output stage has a low-*C* plate circuit and uses fairly tight output coupling. This combination closely coupled to the high-*C* input tank of the 809 results in adequate excitation for the tube at 1.8 Mc.

There has been found no tendency toward instability with this arrangement. Keying is excellent and the note is T9x with negligible drift. The output frequency of the exciter is exactly one-half of the normal output frequency for any setting of the Shifter dial. — *Brice Anderson, W9PNE*

HOMEMADE HOLDER FOR SURPLUS RADAR CRYSTALS

UNDOUBTEDLY, there are many surplus crystals similar to the Type 1N21 that are not now at work only because of the lack of a suitable holder. Unfortunately, a crystal of this type is usually severely damaged by an attempt to solder pigtail leads in place. More fortunate is the fact that a suitable inexpensive holder can be fabricated in a few minutes' time.

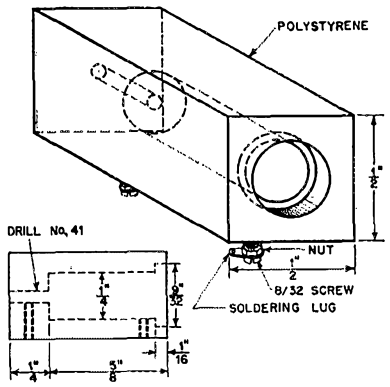


Fig. 2 — KN2EBW's homemade crystal holder.

Fig. 2 shows how a short length of polystyrene rod can be drilled out to accommodate one of these crystals. The rod may be either round or square. Holes *A*, *B*, and *C* are made with No. 41, ¼- and 9/32-inch drills, respectively. The two 8-32 machine screws which make contact with the terminals of the crystal are self-tapped into No. 29 drill holes. Soldering lugs are clamped to the machine screws with hex nuts to provide terminals for leads to the holder.

— *Rudy T. Bruno, KN2EBW*

[EDITOR'S NOTE: A combination of one National No. 8 grid cap and one Millen No. 36012 connector (for 829 plate caps), each equipped with heavy wire leads, may also be used as a support or holder for the radar-type crystals. Be sure the leads are heavy enough to provide rigid support and solder them to the clips before the latter are slipped over the contacts of the crystal. Usually, it is necessary to ream the hole (the one which ordinarily slides over the 829 plate cap) of the Millen clip a bit before it will fit the small end of the crystal. Needless to say, this method of mounting is not nearly as sturdy or as professional in appearance as the one suggested by KN2EBW.]

M. A. R. S.

MARS Prefix List

The handling of personal messages for servicemen at overseas or isolated locations accounts for most of the traffic passed over MARS. Wherever possible, such traffic is kept in MARS channels until delivered. In some cases, however, local delivery within a state is effected by refiling on amateur circuits (see MARS refile procedure, *QST*, June, 1953). For information of all amateur stations a list of MARS call prefixes follows:

Country or Area	*Amateur*	*MARS-AF*	*MARS-Army*
Alaska	KL7	AK1	AL7
Aleutians	KL7	AK2	AL7
Argentina	LU	AH4	AC1
Austria	OE13	AJ7	AE6
Azores	CS3	AJØ	AEØ
Bermuda	VP9	AH2	AC9
Bolivia	CP	AH3	AC1
Brazil	PY	AH3	AC1
British Isles	G	AJ1	——
Canada	VE	AK4	——
Canal Zone	KZ5	AH6	AC5
Chile	CE	AH4	AC1
Colombia	HK	AH5	AC1
Costa Rica	TI	AH5	AC2
Cuba	CM, CO	AH2	ACØ
Dominican Rep.	HI	AH2	AC3
East Africa area	——	AJ4	AE4
Ecuador	HK	AH5	AC1
Formosa	——	AI4	AB1
France	F	AJ2	AE7
Germany (U. S. zone)	DL	AJ3	AE1
Gilbert Islands	VR1	AI6	AB5
Greece	SV	AJ6	AE2
Guatemala	YS	AH5	AC2
Haiti	HH	AH2	AC6
Hawaiian Islands	KH6	AG1	AB6
Honduras	HR	AH5	AC2
Ice Island	——	AK3	——
Iceland	TF	AJØ	AEØ
Iran	——	AJ4	AE3
Ireland	EI	AJ1	——
Italy	I	AJ7	AE8
Jamaica	VP5	AH2	——
Japan	JA	AI1	AD1
Johnston Island	KJ6	AG2	AB6
Korea	——	AI1	AD4
Kwajalein	——	AG2	AB6
Marianas Islands	KG6	AI5	AB5
Marshall Islands	KX6	AI5	AB5
Midway Islands	KM6	AG3	AB6
Morocco	CN8	AJ5	AEØ
Newfoundland & Labrador	VO	AJ9	AEØ
Nicaragua	YN	AH5	AC2
Norway	LA	AJ8	AE9
Okinawa	KR6	AI2	AD2
Paraguay	ZP	AH3	AC1
Peru	OA	AH4	AC1
Philippine Islands	DU	AI4	AD3
Puerto Rico & Virgin Islands	KP4, KV4	AH2	AC4
Salvador	YS	AH5	AC2
Spain	EA	AJ2	AE7
Sweden	SM	AJ8	AE9
Turkey	TA	AJ6	AE3
United States	W & K	AF	A & AA
Uruguay	CX	AH3	AC1
Venezuela	YV	AH5	AC1
West Africa area	——	AJ5	AEØ

U. S. N. R.

Something new has been added to the Women Marine barracks at Fleet Marine Force, Atlantic headquarters, in Norfolk, Va. Housed with the Lady Marines is an amateur radio station, recently authorized as a recreational activity.

The new station, K4MC, provides: operating facilities for personnel who possess amateur radio operator's licenses; assistance to personnel who desire to obtain Federal Communications Commission licenses; equipment for the transmission of messages throughout continental United States; and radio hobby shop facilities for personnel who desire to work on privately owned radio equipment. For the first Marine to receive the Novice FCC license there is a new transmitter waiting to be assembled.

Woman Marine Private First Class May Blankenship of the Force Information Section at Fleet Marine Force, Atlantic headquarters, pauses for a few minutes from her instructions in obtaining a Novice license to talk to her parents in Huntington, W. Va.

Lt. Col. Elbert S. Maloney, jr., officer in charge of the station, pointed out that initial operation to date will enable four persons to send messages at the same time. The scope of operation is expected to increase within the near future.

Hooper Trophy

Approximately 125 Naval Reserve electronics divisions will compete for a trophy to be awarded for excellence in electronics training during the fiscal year 1954, the Department of the Navy has announced. This will be the first time in which electronics units will be placed in the national competition as a separate class.

Amateur radio will have a direct bearing on the outcome of the competition since Naval Reserve electronics divisions supplement the training of operators through participation in amateur radio activities.

The trophy was named in honor of Rear Adm. S. C. Hooper, USN (ret.), in recognition of his outstanding efforts to encourage and promote electronics in the Navy. It was Rear Adm. Hooper who promoted direct two-way communication with the fleet on its Australian cruise in 1925 in coöperation with amateurs all over the world. The success of this demonstration "sold" high-frequency radio communication (up to 18,000 kc.) to the Navy.

The Hooper trophy will be similar in size and appearance to that of the Vice Adm. J. J. Manning trophy, which is awarded to the outstanding Sea-Bee unit.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 25th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League take the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested signature and address be printed plainly. Typewritten copy preferred.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns, the publishers of QST *are unable to vouch for their integrity or for the grade or character of the products or services advertised.*

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

SUBSCRIPTIONS. Radio publications. Latest Call Books, $3.50. Mrs. Earl Mead, Huntley, Montana.

QSL's-SWL's Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

WANTED: Cash or trade, fixed frequency receivers 28–42 Mc. W9YIY, Troy, Ill.

QSLS, SWLS. High quality. Reasonable prices. Free samples. Write to Bob Teachout, W1FSV, Box Q124, Rutland, Vermont.

WANTED: All types of aircraft radios, receivers and transmitters. Absolutely top prices. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

QSLS-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSL samples. Dime, refunded. Roy Gale, W1BD, Waterford, Conn.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSL's, SWL's. Fair prices for excellent quality cards. Eleven styles for you to choose from. Samples, 10¢ Almar Printing Service, 602 Barker Bldg., Omaha, Nebraska.

QSLS. Custom-made or stock! State which. Samples, 10¢. C. Fritz, 1213 Briargate, Joliet, Illinois.

ATTENTION Bargain hunters! Dozens of real trade-in values including Collins, Vikings, Nationals, Hallicrafters, Elmac, Gonset, RME, Morrow, Harvey-Wells. Write for free bargain bulletin. Complete stocks, all leading brands. We trade and sell on time. Burghardt Radio Supply, Watertown, South Dakota.

DELUXE QSLS. Petty, W2HAZ, 17 Southard, Trenton, N. J. Samples 10¢.

QSLS-SWLS, samples, 10¢. Malgo Press, 1937 Glendale Avenue, Toledo 14, Ohio.

DON'T Fail! Check yourself with a time-tested Surecheck Test. Novice, $1.50; General, $1.75; Amateur Extra, $2. Amateur Radio Supply, 1013 Seventh Avenue, Worthington, Minn.

CALL Letters: 25 cents a set. Dress up your rig, car, etc. For samples, write to Robert Connick, Nickcon, P.O. Box 272, Cincinnati 1, Ohio.

WANTED: Bargains in transmitters, receivers, laboratory and test equipment, power supplies, miscellaneous gear and parts. What have you? Please state price desired. Harold Schonwald, W5ZZ, 718 N. Broadway, Oklahoma City, Okla.

QSLS. Taprint, 205 South, Union, Miss.

MICHIGAN Hams! Amateur supplies. Store hours 0800 to 1800 Monday through Saturday. Purchase Radio Supply, 605 Church St., Ann Arbor, Michigan. Phones 8696 and 8262. Roy J. Purchase, W8RP-Leroy Reichenberger, W8LJD-Edmund E. Gunther, Jr., W8HMW.

QSLS! We've printed a million for hams all over the world. Samples 10¢, refunded. VYS Print, 1704 Hale, Ft. Wayne, Ind.

WANTED: Early wireless gear, books, magazines and catalogs before 1925. W6GH, 1010 Monte Drive, Santa Barbara, Calif.

VAN SICKLE is the place to buy new or used equipment. Johnson-Viking, Eldico and Sonar Wired or Kits in stock. Big Trades. Easy Terms. W9KJF, 1320 Calhoun St., Ft. Wayne, Ind.

QSLS? QSLS? One-day service! Finest super-gloss! Largest variety QSL samples 20¢ (refunded). Sakkers, W8DED, Holland, Michigan.

TELEVISION set suitable for monitor cheap. Want Multiphase or Eldico SSB Exciter. W4API, 1420 South Randolph, Arlington, Va.

QSL-SWL cards. Sensational offer, Bristol stock 500 1 color $3.95, 2 color $4.95, 3 color $5.95. Super gloss $1.25 extra. Rainbow cards. Samples. QSL press box 71, Passaic, N. J.

SSB FT-241-A crystals. Excellent quality for all SSB circuits $1.00 each, postpaid; "perfectionist" quality now $2.50 each. No additional cost for matched sets: six (QST 11/50 p13), eight (QST 8/51 p53), eight (CQ 4/53 p23). All crystals guaranteed individually activity-tested, calibrated, and marked exact true frequency in cycles. Inquiries invited; include stamp for dope sheets. Orco Products, Box 51, Downey, Calif.

NOVICE crystals — 80, 40, and 15 meter — $2.75. 2 meter, $3.50. New, plated, and hermetically sealed. ½ in. pin spacing. Within 3 KC of requested frequency on fundamental. McNay Crystal Labs., W8ELR, 644 Probasco St., Cincinnati 20, Ohio.

ELMAC A-54 transmitter, $110.00; Gonset Commander, mobile trans. and VFO, $90.00; Gonset Super Six mobile converter, $38.00. Gonset 262KC Q5er, $20.00. R. Van, 412 Humboldt St., Rochester 10, N. Y.

WANTED: Any complete and perfect, or complete and excellent membership copies of *QST* published in period 1919 to 1925, inclusive. These contain Operating or Traffic Department Reports. Also want Special League Bulletin published May, 1919, entitled "Getting Together Again," sometimes called "Midget Issue of *QST*." Sumner B. Young, WØCO, R.R. 3, Box 94, Wayzata, Minn.

NEED: R5A/ARN-7 Bendix compass receiver and BC788 altimeter; BC-348 Receiver and parts; Advise at once price, condition. Also buyer of all surplus aircraft electronics. Writes James S. Spivey, Inc., 1406 G St., N.W., Washington 5, D. C.

FOR Sale: brand new Collins 75-A2 never used, $375.00 50 amp. Delco generator, brand new regulator, low speed cut in. $25.00. W9LQI, Ashton, Ill.

POSTCARD brings you free information on our new Amateur Desk Signs and money-saving club purchase plan. Hawkins Distributing Co., Paquatuck Terr., East Moriches, N. Y.

WANTED: AN/ART-13 transmitter and/or parts. Robert Wegelin, 410 Cedar Street, NW, Washington, D. C.

QSLS-SWLS. Bartinoski, W1YHD, Box 617, Houlton, Maine.

QSLS. High quality, samples 10¢. Dorsch, W4DDF, Jocelyn Hollow Rd., Nashville, Tenn.

QSLS. Samples free. Albertson, W4HUD, Box 322, High Point, N. C.

CODE slow? Try new method. Free particulars. Donald H. Rogers, Fanwood, N. J.

NEED: *BC-348* and *BC-342 radio receivers.* C. Hoffman, 1406 G St., N.W., Washington, D. C.

ANTENNAS. Specializing exclusively in amateur antennas. Greene dipoles and 20-meter Panther beams. Send for flier. Antenna, Inc., Wakefield, R. I.

ELECTRONIC Technicians. For permanent positions with Sandia Corporation. Armed Forces acquired radar or electronic experience desirable: trade school certificate with minimum five years experience. Versatility, capability and willingness to work most essential. Sandia Corporation, a subsidiary of the Western Electric Company, operates the Laboratory under contract with the Atomic Energy Commission in Albuquerque, New Mexico. Excellent working conditions and liberal employee benefits including paid vacations, sickness benefits, group life insurance and a contributory retirement plan. No housing shortage in the Albuquerque area. For further information write to Section (2), General Employment Division, Sandia Corporation, Sandia Base, Albuquerque, New Mexico.

WANT: AN/ARC-1's, AN/ARC-3's, BC-610E's and components. Write to B. Spivey, 7013 Rolling Road. Chevy Chase, Md.

JUST out! 1954 Edition World Radio Handbook — only complete survey international broadcasting. $1.50. DX'ers — Ham's interpreter, words and phrases in seven languages — $1.00. World Radio, 47 Mounthaven Drive, Livingston, N. J.

DX LOG of awards, the information you have been looking for. Contains the official rules for more than 30 awards with check lists to record your progress. DXCC covers nine pages alone. Only one non-DX award, WAS, which has space for five bands. Contains also postal data, countries cross-index, list of banned countries and other valuable information. The prepaid price to any country is only one dollar, U. S. funds. By air mail to U. S. and possessions $1.25. Send check or cash now to: E. C. Frierson, W4RKJ, Hobby Publishing Co., Easley, S. C.

WANTED: IRE and *QST*, 1925 through 1933; BSTJ up through 1946. April 1948, April 1951; RCA Review June 1947. George Maki, W6BE, 1417 Pacific, Santa Barbara, Calif.

SURPLUS specials! RG-8/U Cable 100 ft. $5.95. 250 ft. $13.25, 500 ft. $25.00. Coaxial Connectors — PL-259 5 for $2.25, SO-239 5 for $2.00. New tubes — 807 — $1.65, 811A — $4.25, 812A—$3.50, 813 — $10.50, 866A — $1.48, 304TH — $3.75, 872A — $3.95, 24G — $1.85. Postage extra. Request free bulletin and visit our new store for thousands of bargains. Want to buy or swap: Selsyns, Synchros, Servo Motors, Amplidynes, RTA-1B Aircraft Radio. Lectronic Research, 719 Arch St., Philadelphia 6, Pa.

QSLS. Something different! Send $3.00 for 100 and be surprised. 24-hour service. Satisfaction guaranteed or send 10¢ for samples. Constantine, Bladensburg, Maryland.

CORRECTION! RK4D32 tube, brand new, $17.50 postpaid. W5AXI.

BALLARD Constant "Watered" Ground gives constant loading all seasons. Most satisfactory when radials are impossible. Improves all station operation. 48" long, ¾" heavily galvanized, after drilling, holes 1 ½" apart, cast pointer for easy driving, filled crushed stone, brass hose connector, and cap for driving. $5.00 express prepaid U. S. A. W5CLH B and B Specialty Company, 1718 Hawthorne, Houston, Texas. Patent Pending.

SELL — Tubes, new, never used: two 4D32 & sockets; two 809; two 807; two 804; two HY69; two 2E25; one RK60; one RK34; two Taylor TB35. Surplus, new, never used: four 814; one 1624; two 802. Triplett 3 ½" round meters, new: one 0-10 vac; two 300ma.; one 200ma.; three 100ma. Three PR Z-2 160m xtals: — 1982.5/1987.7/1992.5 kc. At 25% off net prices. WØREG, Carl Fastje, Denison, Iowa.

USED and new ham receivers and transmitters, bought and sold. Best prices. Olson, Box 4, Kearney, Nebr.

TELETYPE Model 12, complete with cover, keyboard and table, operates on 110 AC with custom-built receiving converter (twin Selecto-o-Ject circuit), $189.00, plus crating. Premax six section 42' vertical with base insulator and loading coil for 75 meters, $39.00. Originally $96.00. W1PST.

IF I wanted anything in the electronics field I'd try Uncle Dave, W2APF, first, at Fort Orange Radio Distributing Company, Albany, N. Y.

POSITION offered: Man with knowledge of publishing, advertising and printing business. Must be familiar with ham talk. Licensed amateur is preferred. Give full details of experience, education, etc. Location East Coast. Some travelling necessary. New division of established company. Confidential. P. O. Box 155, University Branch, Miami 46, Florida.

POWER mobile boys! Leece-Neville generator, almost new, little used, in excellent condition; large 80 ampere output with two voltage regulators, one completely filtered at factory, complete with rectifier, belt and instructions. First $90 takes it. F.o.b. Atlantic City, New Jersey, 2427 Boardwalk, W2ZLD, Irv Fishelberg.

WANTED: Will buy or swap for BC-746 tuning units for channels 2, 3, or 65. Also have 5 in. RCA 'scope for sale or for swap. J. Lattig, W9QJR, Freebury, Ill.

JOHNSON Viking II, Viking VFO, Turner crystal mike, all new, and McElroy Speed Bug. All for $330.00. D. Westfall, 9227 Crenshaw, Inglewood, Calif.

UNUSED, factory wired, complete, de-TVI'd, phone-CW transmitter, $139.00 Chris Lane, North St., Harrison, N. Y. K2DQH, Rye 7-0114.

QSLS. Amateur radio's favorite QSL printer. Samples catalog, 25¢ refunded. Stronberg, P. O. Box 151, Highland Sta., Springfield, Mass.

FOR Sale: BC-348 receiver, extra audio stage, S-meter and noise limiter, balanced ant. input and ant. trimmer. In new condx: $65.00. W. A. Duke, P. O. Box 464, Springfield, Tenn.

FOR Sale: Lettine Model 240 Transmitter. Like new, five months old. Perfect operating condition. Coils for the 80 meters only. Partially TVI'd. $68.00 to first person. S. Dallas, 233 West Broad St., Tamaqua, Pa. W3RZV.

REAL bargains: New and reconditioned Collins, Hallicrafters, National, Hammarlund, Johnson, Elmac, Gonset, Morrow, Babcock, RME, Millen, Lysco, Meissner, others. Reconditioned S38, $29.00; S40A, $69.00; S40B, $79.00; S76, $129.00; SX71, $169.00; SX28A, $159.00; SX42, $179.00; NC125, $129.00; NC173, $149.00; NC183, $199.00; NC183D, $299.00; HRO50T1, $299.00; HRO60, $399.00; VHF152A, $39.00; HF-10-20, $39.00; TBS50D, $99.00; Meissner, EX, $59.00; HQ129X, 75A1, 75A2, 32V1, 32V2, Viking I, Viking II, many others. Shipped on trial. Easy terms. Write for free list and details. Satisfaction guaranteed. Henry Radio, Butler, Mo.

FREQUENCY Meter model LM-14, precise, perfect condition, 250 to 20,000 kC. Complete with 115 VAC supply, cables, calibration book, cover, instructions. Best cash offer. W4YDT, Box 225, Elizabeth City, N. C.

WE are now in our new ultra modern building with fresh stocks to serve you. Bargains: Extra Special: Gonset 10-11 converter, $19.95; DM-36-10 meter converter, $19.50; VHF-152, $49.00; HT-10-20, $59.00; S-40A, $75.00; RME-45, $99.00; RME 2-11, $99.50; HRO Senior, $99.00; SX-43, $129.00; S-76, $149.00; SX-71, $169.00; SX-42, $189.00; HRO-50, $275.00; 75A1, $275.00; 90800 exciter, $22.50; HT-17, $32.50; EX Shifter, $69.00; Globe Trotter or Globe Scout, $69.50; TBS-50D, $99.00; HT-9, $199.00; Globe King, $295.00. We need used receivers: We give highest allowances for S-20R; S-40A, B; NC-57; NC-100; NC-125; SX-24; SX-25; HQ129X, and similar receivers. Free trial. Terms financed by Leo, WØGFQ. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

WANTED: ART-13, DY-17, CU-25, BC-348-R, BC-312, BC-342, 32V, 75A, 310 exciter, ARC-1, RTA-1B, APQ-13, Teletype, any type keyboard perforator. Will take any electronic equipment in trade for new Johnson Viking, Hammarlund, Elmac, Harvey Wells, National, Gonset, Hallicrafters, etc., Alltronics, Box 19, Boston 1, Mass. Richmond 2-0048, 2-0916.

GONSET Commander with VFO, $95.00, Babcock mobile, 65.00; BC221AK, $120.00. BC654A, $32.00. BC459 40 meter Command transmitter, including tubes and meter, $17.50. Two Japanese transceivers, both, $15.00. Gonset 3-30 converter, $30.00. Gonset noise clipper, $4.50. All in very good condition. WØWQE, 4466 Bedford, Omaha, Nebr.

50 WATT phone-cw rig for 75, 80, or 40 meters. 1625 final and 1625 plate modulator. Complete with tubes, power supply, coils and crystal for one band. Less mike and key, $59.00, F.o.b. Donald Vaughan W4MTY, 26 Peachtree Hills Ave., Northeast Atlanta, Georgia.

FOR Sale: Johnson Viking I, TVI suppressed & Grip-to-talk fone, $179.00; Simpson 0–10v dc 3" mtr, $6.50; UTC 20h @ 400 ma. choke, $8.50 (both in orig. cartons, never used); 15,000 volt gas tube trans. $3.75; 28" & 19¼" standard blk Par-Met enclosed cabinet racks, $17.50 & $14.50; 100 mmfd Johnson variables, .35" spaced, $8.95; .25" spaced, $6.95; RK-4D32 new, $16.50. Jordan D. Lewis, 867 Bluff, Glencoe, Ill. W9QZA.

FOR Sale: Wilcox-Gay tape recorder, $60.00; transmitter power supply, 650 volts, $25.00; AVT-112A transmitter, $15.00; VFO with power supply, $25.00; Zeiss Super Ikomat camera, f2.8, $65.00; want Gonset Super-six. Jack Levy, 2180 Airways Blvd., Memphis, Tenn.

HQ129X with matching speaker, $140.00; S40B used few hours only and like new, $99.00; RK28As real tubes at $4.00 — all F.o.b., WØBNF, Box 105, Kearney, Nebr.

MEISSNER EX Shifter, new condition, $50.00, or will swap for BC-312 or BC-342 in same condition, or what have you? R. Lewis W1AEX, 253 High St., Newburyport, Mass.

NOVICES: 35W, 6L6, transmitter, $20.00. In fair condition. W9ALO, Larry Rose, Mounds, Ill.

75 WATTS to a pair of 1625's on 80 and 40 cw. Complete with power supply, tubes, coils and crystal for one band. $49.00. F.o.b. Atlanta. E. B. Lindsey, W4BIW, 751 San Antonio Drive, N. E., Atlanta, Ga.

WANTED: Used Collins 75A receiver. State date of purchase, serial number, condition of set and price; if repairs are needed make allowance. D. H. Uhrbrock, Sr., W5GYP, 200 N. 4th, Edinburg, Texas.

QSLS! Two colors, $2.00 hundred. Samples for stamp. Rosedale Press, Box 164, Asher Station, Little Rock, Ark.

LEAVING amateur radio. Selling all equipment and parts. Write for list to: W. K. Atcheson, VE3AUJ, 511 Peel Street, Woodstock, Ont., Canada.

WESTON Laboratories, Inc., of Littleton, Mass., will purchase, for cash, your BC-221 Frequency meter or any of the following: TS-173, TS-174, TS-186, TS-323, TS-13, TS-35, TS-34, APR-4 receivers or tuning units. Write, giving full details.

FREE! Reflectorized aluminum call sign through special plan. Whitley, W2LPG.

RABIN motor-converter 110VDC to 110VAC, 2.27 amps. $19.00, F.o.b. 2 BW 2A turret, $2.25 each. Perfect condition. Louis Waldorf, Eastsound, Wash.

ELMAC A-54H; Elmac PSA-500 A.C. supply; Harvey-Wells APS-50 A.C. Supply; non-surplus 6 volt Carter Gen-E-Motor; coax antenna coupler with r.f. meter, B&W coils; Hallicrafters S-29, and A.C. supply with 450 VDC, 210 VDC output. Best offer. Box 828, Anderson, Indiana.

FOR Sale to highest bid, Instructograph with separate oscillator, key, instruction book, ten tapes, Hallicrafters S-40B, RME DB-22A Preselector, Frequency Calibrator FCC90, 24-Hour Electric Clock free. All perfect condition. Rafael Pelegri, 4305 Broadway, New York 33, N. Y.

HAMS! Want to bid for Government surplus radio equipment? For details send $1.00 to Surplux, Box 213, East Hartford, Conn.

MOBILEERS! Improve your selectivity. State model of auto radio. $15.95. Green Electronics, 8-03 149 St., Whitestone, L. I., N. Y.

CLEANING House — transmitters, high and low transformers chokes, tubes, coils, power supplies, mikes, etc. Terrific bargains. Send for complete list. Al Booth, W1TUX, South St., Coventry, Conn.

WANTED: 2-meter transmitter, complete; also VFO. J. C. Cunningham, W4CKN, 2274 Hickory Rd., Chamblee, Ga.

PERFORATED Sheet Aluminum 18 gauge with 1/16" holes. Easily worked with hand tools or cut to your pattern. Perfect for shielding. One dollar per square foot. Minimum order four feet. Write for bulletin. Nortmann-Duffke Company, 2740 S. 32nd Street, Milwaukee 46, Wisconsin.

FOR Sale: Meissner EX signal shifter, $30.00; Lysco 600 VFO de-TVI'd, $100.00; McMurdo-Silver 40 w. all band tuner, $20.00. All in A-1 condx. W6SRF, 3519 Andy St., Bellflower, Calif.

SELLING out: Viking I, $210.00; S-76, $135.00; both used very little and are in very gud condx; pair 813's, brand new, surplus, $14.00; brand new 3-4 Mc. Command xmitter, $15.00; Eico VTVM, $25.00. Used 522 xmitter, unconverted wid pair 832-A's, $15.00. W1TTC, 85 Main, Millers Falls, Mass.

FOR Sale: Harvey-Wells TBS-50 with APS-50 a.c. power supply, $100.00; Lysco Model 381 mobile VFO, $12.00; Bud frequency calibrator, Model FCC-90, $10.00. J. Taylor, W2OZH, Stanwood Road, Mt. Kisco, N. Y.

NATIONAL HRO-7 with speaker, power supply and coils, $195.00. Also 142 crystals, 4280–8300 kc., $35.00 or $225.00 for everything. R. Slezak, 1019 Paloma Road, Monterey, Calif.

5527 IKE tube. Voltages never applied, $32.50 or Hi-fi components (turntables, etc.). K. F. Clark, W9DYI, 550 Peachtree, Cocoa, Fla.

HALLICRAFTERS S-76 with R-46 speaker, like new, with original box and manual, $135.00. Phone EV-1-2280. Kenneth Huge, 1643 Warrensville Center Road, South Euclid 21, Ohio.

USED equipment: 1500 volt 500 mil power supply, breadboard construction with rugged high quality components, $30.00. Bud 30" desk rack, $4.00; Drake TV30020HW low pass filter, $4.50. Bruteforce line filter, $4.50. W8WWU, 505 N. Gay, Mt. Vernon, Ohio.

FOR Sale, New PE-103, cables, original carton 38. — NC-100-ASD, matching speaker, book, $87. Beautiful, compact, VFO rig. Phone — CW, 80 thru 10, 6146 final, complete shielding, 2 power supplies, must be seen, $130. VFO with 2 buffer-doublers regulated supply, $25. TTY rectifier, 130V 200 ma. 12. — all F.o.b. N. Y. Peter Rosenbaum, W2GAW, 29–23 212th Street, Bayside, L. I., N. Y.

FOR Sale: BC654A with spare tubes, T-17 mike, PE103A inc. cables, Master Mobile whip & 75 meter coil; all new condition, $75.00 for lot. Also BC348Q and four BC375 tuning units; make offer. W1QKE, 109 Glenwood, Lowell, Mass.

FOR Sale — Two BC 222 Walkie Talkies — $25.00 each. M. N. Reed, W8JEV, 387 Clink Blvd., Crestline, Ohio.

SELL Eldico TR75TV in good condition with 80 meter coils. W4UGV, Box 127, Boaz, Ala.

ICONOSCOPE-type 1850A, good condition, 1200 hrs. use. Removed from service in accordance with station replacement policy. Will sell or trade for best offer. Ham gear preferred. John Morris, WN8PML, 2377 Madison Road, Cincinnati 8, Ohio.

SALE: NC-88 Rcvr $115. SW-54 Rcvr $52.50. Both guaranteed new condition. Lysco 600 Transmaster, excellent $89.00. Cleaning house, free list. W6ODD, P. O. Box 776, Camarillo, Calif.

FOR Sale: General Electric type YRS-1 single sideband selector. Best offer over $50.00. Also Hallicrafters SX-71 receiver, $150.00. F.o.b. Colma, San Francisco. W6FIF, Colma, San Francisco 25, Calif.

SELL Globe Champion; modified Eldico xmitter, Howard 436 receiver. B. J. Parisi, Onset, Mass.

20 AMP. Variac, $25.00; Bogen 25 watt amp., $20.00; Ferris model 10B microvolter, $25.00; converted BC522 with power supply, $45.00, or make me an offer. W3IDR, Dick Keast, 145 Rambling Way, Springfield, Penna.

SALE: Johnson Viking II, new July 1953, VFO, low pass filter, Hallicrafters SX-71 and speaker; DB22A pre-selector; JT-30 mike, Balun coils mounted 3 relays, 40 and 80 meter dipoles; 1000 ft. new copperweld #14, other wire. New cost about $800.00. How much am I offered? C. J. Mahowald, WØNGO, Parshall, North Dakota.

MOBILEERS! Extra Motorola xmitter T-69-20A and power supply cables, complete with instructions,, $35.00; two heavy duty Navy xfrmrs, deliver 2400 volts, series at 300 Ma. Circuits, $25.00; Heath 57 sig. generator, $15.00. Need: Precision or comparable sig. generator, Mims 10–20 beam antenna complete. W. K. Gardner, WØFGZ, 5333 Waterman Ave., St. Louis, Mo.

FOR Sale: Brand new Gonset Super-six with Gonset noise-limiter and mounting bracket and cables with Jones plugs, complete, $40.00; also 6V coax antenna relay, $5.00; new dynamotor 6V input, 425 volts, DC at 275 Ma. output, $15.00. Priced to sell. Demobilizing. L. Groff, 5700 Ellsworth Ave., Pittsburgh 32, Penna. First check takes all or part.

SELL converted Meissner 150-B 300 watt, ten thru eighty meters, AM/FM 'phone CW xmitter. New modulation xformer, xtal mike, etc. With Model EX Signal Shifter, all coils, tubes and spare 813,811 complete, F.o.b. Cambridge $195.00. Charles Walcott, W1SYV, 81 Sparks St., Cambridge, Mass.

ONE 20 Meter K W. Final. Has two Eimac 250, TH's Plate & Grid Meters. All Components the best. No power Supply. $50.00. One 20 meter, 811 Buffer Stage complete, In cabinet with plate & grid Meters and 1000 Volt power supply separate $30.00. Two 90 foot lengths of RG 8U coaxial cable used two weeks $5.00 per length. Two 20 Meter Beam Elements, $10.00. W5BG 522 Cumberland St., Dallas, Texas. J. H. Robinson.

SELL Collins 32V3 Xmtr. Like New, 35C-2 TVI Filter, Spare New 4D32 Tube, 2 B&W Balun Coils with Ant. Relay. Complete for $698.00. F.o.b. Tacoma. W7JGN. 1524 Fawcett Ave., Tacoma, Wash.

10A Multiphase Exciter, 3997.5 kc. crystal, rack panel, 80 meter coils. Purchased Aug. 1953. Operated less than ten hours. Make offer. W9IAD, 606 Dixon Ave., Rock Falls, Ill.

WANTED: Collins KW or KW1 in gud working condx for cash, or trade for part payment 20 meter KW rig using all standard components and standard relay rack. S. Popp, W9JFX.

SELL: New PE-103 dynamotor without base. W5NVO, 718 Keeler, Bartlesville, Okla.

SELL or swap: cleaning house. Have BC-453 (Q-5'er), BC696, BC454, SCR522, BC625 (2 meter rcvr), transmitting and receiving tubes, transformers, etc. Want "Match Box;" tape recorder. Send for list. Paul Atwell, W8JVJ, 535 Capistrano, Toledo 12, Ohio.

WANTED: Two 6 Volt dynamotors, 500 volt @ 250 ma., all band mobile whip, 2 mobile transmitters, 10,20,75. Bossey, W2KLS, E. Setauket, N. Y.

SELL: QSTs April 1922 through December 1945 (Oct. 1922 missing). Twelve copies between Oct. 1920 and April 1922 thrown in free. Walter Lindgren, W2AJR, Box 1158, Easthampton, N. Y.

For Sale: Collins 32V1, in excellent condx. AC line filtered and r.f. section shielded. 4032 in final, used less than 2 hours. Best offer over $325 f.o.b. Bayside, L. I., N. Y. R. J. Straub, W2PBG, 42-35 205th St., Bayside 61, L. I., N. Y.

VIKING II guaranteed A-1 condition, $250.00. Oliver Nash, Star Route, Sanford, Mich.

JANETTE converter CB12, 115 VDC to 110V 60 cycle AC .450 KVA, $35.00. W8IWG, 1541 Belvidere, Detroit 14, Mich.

HRO60, less speaker, A, B, C, D, E, F coils, crystal calibrator Select-O-Ject; Excellent. F.o.b. $500.00. R. E. Ridenour, 839 Wildwood Parkway, Baltimore 29, Md.

FOR Sale: SX-28 receiver, $95. Pick-up only. Also 100 wa. second AC flash outfit, complete $25.00. D. Birnbaum, W1IKW.

SELL: 75A2 gud condx, $350; ATR inverter, 6 volts input, 110 volts outp., 75 watts, $10.00. WØBSG, New Sharon, Iowa.

FOR Sale: Collins 310B1 complete with all coils and tubes, $200.00. F.o.b. Dallas, Texas. Reason for sale: Santa bought a 32V3. George C. Becker, W5EVI, 2223 Bennett, Dallas, Texas.

XYL objects. Like new SX71 $150.00, SX28 $125.00, BC211 with calibration book and power supply, $95.00; BC474A, $50; BC696, $20.00. Power supply 1500 volt 1 amp. $85.00. M. Welch, 2640-50th S. W. Seattle 6, Washington.

QST — Will sell Bound Volumes 15 (1931) through 28 (1944) at good price per volume, substantial reduction for all 14. Also have October 1916 and December 1916 issues in excellent condition. Will trade either for any one of following copies: January 1916 through July 1916; will trade both for one December 1916 copy. L. A. Morrow, W1VG, 99 Bentwood Rd., West Hartford 7, Conn.

SELL or Swap: Triband Gonset, new $30, PE-103, $15. Riders 1 thru 16 plus 19, any reasonable offer. Hickock Traceometer, as new, $80. S-10-A Waterman scope, $12.50 PE-104-A power unit, $5, Supreme 543-S multimeter, $5. Will take LM frequency meter and/or NC-57 in trade on above. Arthur Fisher W7UFP, 1122 Bradley Street, Laramie, Wyoming.

NC183D w/apkr, $295. HQ129X, $169. Cash for yours. Electronic Labs, 2444 "D," Lincoln, Nebr.

QSLS! No six-color rainbows or artistic masterpieces. Just good clean designs at lower prices. Ham's "Super-Speed Specials." Samples 10¢. Robinson W9AVH Dept-N, 12811 Sacramento, Blue Island, Ill.

QSLS 125 $2.00. Postpaid. Garra Lehighton, Pa.

FOR Sale: Millen 90810 xmitter, with 720 volt, 300 mil. pwr supp; also Lysco 400 modulator in a Bud CR 1743, deluxe cabinet, also 2-meter beam. A real buy! First $200 check takes it. Nick Quackenbush, WN3YEJ, 39 Butler, Kingston, Pa.

SELL: 80 meter, VFO, BC457-A with power supply, antenna, lead in, $30.00 express collect. W8PBT, 3304 Lenox Drive, Dayton 9, Ohio.

LAMPKIN 105-A freq meter $170, 205 FM mod meter $190, Hallic. S-81 FM recr $25 all excellent condition, 6-12 volt to 500 volt 160 mil cont duty Pincor Dynamotor, 6-battery Tungar charger, isolation xfmr, other marine mobile gear reasonable. Retired from business. W2FRQ 44 Sintsink Drive, East, Port Washington, N. Y.

TERRIFIC Buy — Complete compact station: HQ129X, matching spkr, 125 watt de-TVIed phone-cw xmitter, electronically regulated P.S., V.F.O., in 21x16x15 Deluxe Cabinet, low pass filter, Electro-voice mike, chrome desk stand; all for $250 *cash*. Also other equipment for sale: Mobile, meters, xmitters, condensers, tubes. Send stamp for list. John Busharis, W2MJQ, 80-105 Tryon Place, Jamaica 32, New York.

PHONE/CW transmitter, 6146's PP, 807 modulators VFO-$150.00; New Lysco 600 $100.00, Wilcox Gay tape recorder $75.00, Five 1200' rolls magnetic tape used once $1.50 each. W4KSZ 1209 Owaley Ave., Columbus, Georgia.

FOR Sale, SW-54 Receiver, six months old, not used, price $38. M. Hart, Box 15, Wayne, N. J.

PROP Pitch Motor $15, Alliance HIR Tenna Rotor with compass point control $19. W8MFB, 514 Sanborn, Port Huron, Mich.

TVI-PROOF 250-watt transmitter for sale, plus VFO. Complete, $350. Complete description in June 1952 and July 1953 Radio News. Also have most QST's since 1934. W8MQU, 3806 LeErda, Flint, Mich.

SELL or Swap: 15 8020's; brand new Western Electric 725A 3-cm. magnetron. Need modulator, power supply parts. Bill Kellogg, W8IIG, 2682 Ashley, Cleveland 22, Ohio.

SELL: T19/ARC5 like new $15.00, T20/ARC5 new $7.50, BC-458 new $7.50, black BC-459 new $15.00, BC-454 used $6.50; eight new 2-18mc 500W coils BC-610 $12.00 set; TU-6-B, TU-8-B, TU-10-B new $3.00 each; 211s, 826s 40¢; 815s $1.75; 832s, 3AP1 $3.25; 1625s, 1626s, 1629s 30¢. WØJV, 316 Lee, Iowa City, Iowa.

WANTED: Power amplifier plate tuning capacitor for BC-610-E, designated as C12. Give price and condition. J. D. Whitaker, W4UAT, 827 Church St., Marietta, Ga.

RME-50 Receiver. One year old, like new condition. $140.00. W4TJQ, 905 East Second Place, Panama City, Florida.

FOR Sale or Trade: Excellent condition S-40B; 750-0-750 v.a.c. @ 400 ma. plate transformer; GE FM tuner; 200' of 300 ohm twin lead; JTCL 75 watt, 5-band turret; Time meter; T-125 tube and BC-458-A xmtr. converted for 40 mtrs. W4AAL.

WANTED: Instruction manual for BC-906-C Frequency Meter. W5BSX, Box 8, Burleson, Texas.

SELL: Nearly 30 years QST magazines good condition, make offer. M. Eidson W5AMK, Temple, Texas.

FOR Sale: Collins 32V1 transmitter, $350; National 183 receiver with matching speaker, $225.00; both units together: $525.00; magnetic wire recorder and PA system, $50; Shure model 51 multi-impedance "Sonodyne" mike, $15; used NRI advanced TV course with kit, $60; original cost $180; will trade recorder or NRI course for portable typewriter of equal value. All other items cash. Joseph Devoe, W2ZLN, 134-14 Franklin Ave., Flushing, L. I., N. Y.

VS Baby mobile antenna. Standard chrome car whip center loaded with Hi Q, plug-in coils; available 75 through 10 meters. Cowl or fender mounting hardware. See Ham-Ad in March QST. Antenna and one coil, $12.95. Specify band. Modify your own auto antenna. Kit includes one assembled coil and set of matched ferrules for ant., $3.75. Other coils, $2.75. Now available Hi Q coil for standard broadcast reception. Fits baby antenna. Big gain on broadcast. $3.75. Complete antenna, $13.95, kit, $4.75. Bill Davis, W6VS, 225 Cambridge Ave., Berkeley 8, Calif.

WANTED: B&W "Band Hoppers" radio handbook, late edition. Ed Tischler, 56 Carey Ave., Wilkes-Barre, Pa.

FOR Sale: National NC-183 receiver and matching speaker, with NBFM, built in, in excellent condx. Best offer over $150.00. J. R. Driver, W4ZRS, 6419 Fitzhugh Ave., Richmond, Va.

FOR Sale: Model 12 teletype complete with table, AC power unit, keyboard and spare parts, together with Hammarlund Super Pro (SC799 needs alignment) and tape transmitter, $200.00; Sonar mobile MR-3 receiver, never used, $60.00; VHF 522 transmitter only, perfect, with xtals, $30.00; RME VHF 152-A converter, new condx, $50.00; Mobile Master whip with shield and two coils with mount, new condx, $20.00; 5-el. beam, Elincor, 2-meter, new, $5.00; DuMont 5-in. model 274 'scope (new condx), $75.00. William Grella, W1DKR, RFD 1, Greene, R. I.

WANT PE110; sell RCA ACT 20 xmitter, 160-10 meters, 50 watt xtal controlled, needs adjusting, $40.00; home-made 10-meter 'phone VFO, 20-watt, $15.00. Novice 80 and 40 cw transmitter, 20 watts, $20.00. T. Unnold, W1UNW.

QSLS! SWLS! Free samples. See our 3-D card — nothing like it, ever. Also other latest, striking designs. Acme Printers, 707 W. 8th, Los Angeles 17, Calif.

WANTED to Buy: Hallicrafters S-36 or any other 143 Mc. Receiver in good condition. Write E. Sadler, Keystone Electronics, 114 Manhattan St., Stamford, Conn.

SELL: New BC 221Q complete (cal. book, xtal, case), $87.00. New SCR 522, $35.00. New PE 94, $4.00. SX-17 plus Browning Preselector, good condx, $45.00. New 1-95 field strength meter cal. 100-155 mcs, $18.00. New BC 906 Freq meter 14-22.5 mcs, $28.00. New Delco 12v 50 amp generator, $15.00. New Navy Model JQ Portable Sound Receiving Eqpt (Brush) to 20,000 cps, 3 units in hvy oak cabinet (lab quality), $40.00. Shipping charges collect. Want late model HRO. S. Tucker, W2HLT, 51-10 Little Neck Pkwy, Little Neck 62, N. Y.

LETTINE 40 watt, Millen exciter, Millen 500 watt, TA-12D Hendix, Meisner ECO, BC654, PE-103, SX-28A, Motorola P-69-18, DB-22A, Panadaptor. Bc-221, code oscillator, instructograph. Make offer, all letters answered. W2PVI.

FOR Sale: Collins 75A2 with NBFM adaptor, crystal calibrator, speaker, like new: $370.00. W5QMI, Freund, 1028 Arawe Circle, Irving, Texas.

SELL: BC610 with speech ampli. and accessories: $500.00. W6MSD, 6002 Harmon Ave., Oakland, Calif.

WANTED: Millen #90810 transmitter with instructions and coils for 2 meters, but without tubes or xtals. Will pay $40.00. D. Crews, W5TMN, 1002 N. Hester, Stillwater, Okla.

SELL: Complete kilowatt cw transmitter: $350.00. W4LFD Guler, 119 Vidal Blvd., Decatur, Ga.

QSLS: "America's First Choice!" Samples 10¢. Tooker Press, Lakehurst, N. J.

SELL: Late model S-40B, in excellent condx, $90.00; W2LDM, Iria Dr., White Plains, N. Y.

TRADE or sell: 100 watt bandswitching rig, 6AG7 with V.R. Clapp VFO, doublers, and 829B. Also two 4 μfd-5000 w.v. filter condensers. W4BOA, Pemberton, Rte. 1, Kevil, Ky.

SALE: KW Antenna Tuner, $45.00; Balun Coils, $8.00; Compact Mobile Rig, $24.00; TBS-50, $55.00; TBS Pwr Supply, $25.00; VHF-152, $45.00; HR-10-20, $60.00; 20 watt Speech Amp., $24.00; 300 watt Modulator UTC, $65.00; Modulator Pwr Supply, $45.00; Elenco SS-75, $145.00; Browning Freq meter, $18.00; Meissner Signal Shifter, $48.00; Vibroplex Bug, $5.00; Astatic JT-30 Mike, $5.00; Electro-Voice 950 Mike, $12.00; HRO Pwr Supply, $12.00; SSSC Rig complete 807's final, $75.00; 10 watt Speech Amp., $18.00; Finished Xtal blanks 5.2 to 8.3 Mc. 10 for $1.00. All works perfect. WØQFZ, 2318 Second Ave., Council Bluffs, Iowa.

NECKTIES. Your handle and call handpainted in contrasting colors on Rayon Satin, $3.25; Nylon Acetate, $3.75; Pure Silk, $4.75. Red, Maroon, Brown, Gray, Yellow, Green, Black, and Royal, Powder or Navy Blue. No. C.O.D.'s. Prepaid. W3RRF, Henry Schanding, Harrington, Delaware.

VIKING II kits (new) for $220.00 and nominal trade-in. Telcoa Amateur Radio Equipment Exchange, Azurelee Dome, Malibu, California. Globe 6-2611.

QSLS — Quality with economy. Samples 10¢. W4AYV, Hobby, Print, N. Stinnette, jr., Umatilla, Florida.

MOBILE B.f.o. Frequency spotting, c.w., SSB works through converter. Easily installed either for mobile or fixed station. Price $9.95. Dealer inquiries invited. Richard Products, P.O. Box 5, Elmwood Station, Providence, R. I.

COLLINS 32V-3 for best offer above $595.00. Collins 75A-3 Receiver, Speaker, JKC and 6KC Filters, Xtal Calibrator, $485.00. New SCR578 Gibson Girl Transmitter Complete, $25.00. New Command Navy Receiver 1.5–3 MC with Dynamotor, $25.00. New T-126 ARC5 Transmitter for 2 meters, $29.50; BC-222 Walkie-Talkie 28–38 MC and 38–52 MC, BC-322 for 52–65 MC, 2 Handsets, 2 new batteries, other extras, $35.00. BC-645 Transmitter-Receiver for 450 MC. Brand New, $25.00. Oser, W1RMS, 198 Euclid Avenue, Waterbury, Conn.

FOR Sale — Cleaning house, all equipment — new or like new. NC 183 B and speaker with new SOJ 3, $250.00. Harvey-Wells TBS 50 d with New Harvey-Wells VFO, Drake Low-Pass Filter Xmtr wired with 6 volt mobile relay, $150.00. APS power supply, $25.00. DPS Dynamotor power supply, $75.00. New Harvey-Wells remote control unit, $15.00. 1 Shure 505 C Mike, $10.00. Master mobile mount antenna with 75 and 40 meter coils, $15.00. Lysco antenna coupler, $10.00. Eldico all wave antenna tuner with coils for 10, 20, 40, 80, $35.00. Like new 5 BR Morrow Converter, $60.00. New Johnson Viking II factory wired with tubes; new wired VFO, new low pass filter; new Johnson Match Box; new Johnson SW Bridge 250-24, $400.00. Michael J. Anuta, 960 First Street, Menominee, Michigan, W8HKY.

UNLIKE most hams, am not wealthy. Need BC-221. Please advise condx. and minimum price first letter. W3PXN/9, 1900 Indianapolis Blvd., Apartment 507, Whiting, Indiana.

TWO element 20 meter beam, mast, guy wires, feed line, prop pitch motor $30.00. Bass reflex speaker cabinet and speaker, $20.00 F.o.b. WØNEX 2020 Pammel Court, Ames, Iowa.

COMPLETE KW Station-10-75 m, 3000 v, 1000 ma variac controlled supply, phone-cw, rack and panels with 7 meters, low pass filter, antenna coupler, scope modulation indicator and VFO, HQ-129X with xtal calibrator. All in perfect condition for $585.00. F.o.b. Oak Ridge, Tenn. Will crate free. Picture and circuit on request. Sell xmtr separately. Make offer. W4JUX, 102 Norton Road.

SELL: Partially completed 813 fone/cw rig modeled from July 1951 QST. 1000 watt coils (80, 20, 10) and condenser in final. All parts necessary to complete 350 watt rig, $115.00. Jim Watkins, W4IZV, 2692 Adrian St., Napa, California.

SELL: Power transformer, 2600-0-2600, 400 ma. CCS, $30.00. UTC S41 1200 VCT & filament, 2 at $8.00 each. Gonset Triband with clamp & clipper, $30.00. Master Mount 75 with heavy bumper mount, $8.00 (new). 85 kc IFs from BC 453, 3 for $8.00. Many small items. F.o.b. WØICY, Hoffman, Minnesota.

WANTED: B&W Band Hoppers radio handbook, late edition. Put your c.w. rig on 'phone; Sonar XE10, $12.50. Supreme model 385 tubetester, Analyzer, $45.00; Gernsback Vol. 1 to 5, Riders 7, 9, 11, 12, 13, 14; $49.00; A Battery eliminator $6.00; Rola speakers, 8 in., $2.00. Ed Tischler, 56 Carey Ave., Wilkes-Barre, Penna.

FOR Sale: National NC-125 brand new, $100.00; Millen exciter and push-pull, 400w amplifier with pwr supp. complete, $50.00; Precision ES-500 oscilloscope, $100.00; Eico 425K oscilloscope, $20.00; Hallicrafters S-51 receiver, $15.00; Motorola 7" TV, $10.00; Electronic Model 100 VTM, $15.00; W3FWQ, Joe Luskin, 10 Salem Ct., Pikesville, Md.

KILOWATT transmitter, new. 80 to 10 meters. $600.00. Write: The Shurecraft Co., 5944 Lake Murray Blvd., La Mesa, California.

WANTED: Collins 32V1 or 32V2. Cash for the best deal. Write W8PVZ, Steve Horvath, 203 17th St., NW, Barberton, Ohio.

SALE: Elmac A54H, never used, $100; Meissner EX shifter, $50.00; VHF 152A, $50.00; complete 400 watt PP-8005 xmitter in 6 ft. Bud deluxe cabinet, $200.00; New Delco alternator complete, $100.00; F.o.b. Dallas, W5DLC, 6339 Lavendale, C. Sanford, Dallas, Texas.

TRADE: ½" drill, ac/dc, Milwaukee model S412 in original carton for new or used all-band receiver. Larry Bargebuhr, 58 Marble Hill Ave., New York City 63.

FOR Sale: Complete 1 Kw xmitter, built to commercial standards, in closed rack. Remote Collins 310B-1 drives pp 813s; coils for 80, 20 and 10; D-104 mike, self-contained speech amplifier and self-contained pp 805s modulator. Best cash offer as unit. S. Taggart, W9DGM, 1636 S. Biltmore St., Indianapolis, Ind.

WANTED: SX-71, HQ-129X, S-40, etc., ART-13, TCS, BC-348, Farr Electronics, Box 273, Lexington 73, Mass.

FEDERAL FT-102, new; RCA ET-8023-DI, new; similar to the Federal; BC-610 modulation decks, new; BC-614-B speech amplifier, used; BC-654-A transmitter and receiver, used; to highest bidder for any single unit. W5FM, R. L. Morgan, 229 Kenwood Ave., Baton Rouge, La.

HALLICRAFTERS S-36 (similar S-27) VHF receiver and speaker. 28 to 145 mc, am-fm-cw. Excellent condition. Best offer over $100.00, F.o.b. W4TYR, 2500 Saint Andrews Lane, Charlotte, N. C.

SELL/swap Bendix TA12C BC458, TS10 TS16 VHF test equipment, RME-70 and Howard Receivers, Ship/shore Radiotelephone, TV Booster, PE103, Handle Talkies, Motorola Mobile FM, Electric Drill, Bench Saw, New tubes 250TH, 211, RK25, 810. Any reasonable offers. Wanted: Gonset Communicator, Tri-band and 3-30 converter, VHF-152, BC312, BC342, Lysco VFO, Wireless Intercom, ART-13. Highley, 82 Main St., Mattawan, N. J.

FOR Sale: One power supply kit, 2500 volts at 750 Ma., ICAS, $85.00 Bill Parker, New Haven, West Virginia.

FOR Sale: complete mobile rig. TBS50C; Electro-Voice mike; Westinghouse generator; coax relay; MC53 converter; MC55 converter; Master Mobile coax mount and whip; etc., also BC221 frequency meter; Pentron 9T3C tape recorder. Best cash and carry offer. W3IEJ, 901 Perklomen, Lansdale, Penna.

COLLINS 32V1, $325.00; Collins 75A1 with matching speaker, $235.00; Scott Marine SLRM, 550 Kc., 30 Mc., $50.00; all in excellent condx. Vanbrunt, W3TUZ, 11900 Ivanhoe St., Wheaton, Md.

S-40, Perfect: $65.00; BC-459, $15.00; BC-654 receiver minus case, $10.00; Drake, F-150, low-pass filter, new, $5.00; W1KJO, 29 Pine St., Bedford, Mass.

XYL sez no. Must sell HT18, VFO, HT20 transmitter, less than 10 hours in use; SX42 receiver, R46 speaker. J. M. Cotten, Weatherford, Texas.

WANTED: Pentron Model 748 wire recorder radio phonograph, in gud condx. Also beam rotator. WØVQC, Virgil, South Dakota.

SELL for best cash offer: Viking II, in excellent condx. Write Capt. Eugene Atkins, 111A Wherry Housing, Ft. Campbell, Kentucky.

TUNING shafts for ARC5, 274N, ARN7, ARB, RU16, $2.00; MC211A, 35¢; MC136, $2.50; 274N racks and mountings, $1.00; BC348 potentiometers, $2.00. All new. L.I. Radio, Box 474, Montrose, Pa.

FOR Sale: HRO Type 25 cycle pwr. supply, $6.00; Triplett 50 ma. 2" round, $2.50; Westinghouse 50 ma 3" square, $3.00; Simpson 15 ma 3" round, $2.50; API 500 ma 2" square, $1.00; carton of 4 Gammatron 304-L (same as 304-TL), $20.00. W8NKK, 1240 Bedford, Grosse Pointe 30, Mich.

HAVE plate transformer 1750-900-0-900-1750 @ 600 MA dc. Will sell or trade for similar transformer with 230v primary. W2JFM.

SELL: Elmac A54H transmitter with 40 meters and Morrow 3BR converter, both like new $145.00. VHF152A like new, $50.00. W4TVN, 1487 Ponce de Leon Ave., N.E., Atlanta, Georgia.

FOR sale — S-76 receiver with R-46 speaker. Excellent condition, $140.00. T. E. Belling, W9AEI/2, 261–45 Langston Ave., Glen Oaks, L. I., N. Y.

HALLICRAFTERS S-37 UHF AM/FM 125–210 mcs, $119.95; S-76 less speaker, $149.95; Hammarlund Comet-Pro, $39.95; Mallard 20 meter converter, $19.95; National 1–10, $19.95; HFS, $110.00; NC-81X, $49.95; NC-100X with speaker, $79.95; RCA ARC-175, $75.00; RME-70 with speaker, $89.95; Sonar MR-3, $39.95; Deltronic CD-144, $134.95; Harvey-Wells TBS-50D, $99.95; Millen 90810 with tubes and coils for 2–6–10, $95.00; Sonar CFC, $39.95; many other used, re-conditioned items available; write for latest list to W1BFT, Evans Radio, Concord, N. H.

FOR Sale: 1953 Mdo. Masco Recorder with built-in Radio, dual speed, dual track, sacrifice for $90.00. W9LQI, Ashton, Ill.

SELL NC-125 with speaker. $125.00 for best offer. Excellent condition. Flather, Abbot Street, Andover, Mass.

VIKING II for sale, also Viking VFO, Johnson low-pass filter. Transmitter wired for push-to-talk operation and includes a Shure dispatcher mike, antenna coupler also included. All goes for $325.00. W. S. Thomas, 5018 Castle Road, La Canada, Calif. (K6CBJ).

MORROW 3-band converter 10–20–75 meters. Two months old, guaranteed perfect. $40.00 prepaid. Money order to Robert Lorenz, W7GXJ, 2695 Lorian Lane, Salem, Ore.

ELDICO low-pass filter, $7.50; line filter, $7.50; Shure 505, $12.00; Floor stand, $4.00; New T-17, $5.00; PE-103 with base and cables, $25.00; Triplett 3256, $12.50; 6 VDC coax relay, $4.00; Triplett 3" sq. 500 microamp meter, $3.00; Fred S. Eggert, 11833 Wisconsin, Detroit 4, Michigan.

WILL sell: Morrow 3BR for $45.00 postpaid. W4SDM, Haas, 49 Grandview Ave., Ft. Thomas, Kentucky.

TELETYPE: Model 12 with sync motor, table, cover, keyboard receiving and transmitting distributor, $100.00 F.o.b. Tape printer Model 21A, $25.00; PE-103 generators for mobile, $18.00. W6DOU, Lemon, 1558 "B" Street, Hayward, Calif.

TRANSMITTER cabinet, wooden, 42" x 41" x 21", beautiful finish; sell or swap for mobile gear. Ross, Jr., K2GDO, 37 Ridge Place, Neptune City, N. J.

SELL: Complete station: S40B, $75.00; 55w, c.w. xmittr, $50.00; both in gud condx. Both $115.00. Trade: Mossberg 46Mb repeating 22 cal., gud condx, for Johnson VFO. Eric Steinberg, K2CJC, 6244 Cromwell Crescent, Rego Park 74, N. Y.

FOR Sale or trade for Viking; complete mobile installation; Elmac A-54H, Shure dynamic mike, remote antenna tuner, Master Mobile center-load antenna; Gonset tri-band converter with clipper. PE-103 dynamotor. Used about 5 hours. Everything guaranteed, in original cartons. Will pay difference on late Viking II with VFO. Wallen, WØKMW, Mansfield, Mo.

SELL: Boehme automatic, perforated tape, keyer for Morse code, $95.00. Boehme Ink Recorder, $125.00. #21A midget teletype tape printer, $45.00. #12 Page printer with keyboard, $150.00., 7-B Tape Transmitter, $25.00. AR-88-D Receiver, $325.00. #241 Dumont Scope, $245.00. APR-5A, $145.00. APA-10, $125.00. SCR-511 Horsie Talkies, $25.00. NC-125, $145.00. Want Collins 310, 32V, 75A, Tech Mannuals, Supply catalogs, test equipment. Will trade. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 8, Mass. Richmond 2-0916.

75 FOOT Heavy Duty Tower in fifteen foot sections. Complete, F.o.b. $160.00 or swap on receiver, Panadaptor or gear. WØFIR.

SELL: NC183D with speaker, $295.00; Elmac Port. Trans. Model A54H with matching AC power supply PSA 500, $140.00; P.P.813 Amp. with tubes and meters, $35.00. All equipment practically brand new and in perfect cond. Shelly Meyerson, W2SIQ, 3831 Cannon Place, Bronx 63, N. Y. Kingsbridge 3-0926.

PREMIER Model 70-A Tapesonic Tape Recorder, 3-speed, 9-tube amplifier, takes 10½" reels, has 3 motors, $350.00; General Industries R130L Disc Recorder-Record Changer, portable case, $35.00; Masco 25-watt Phono-top PA Amplifier, $50.00; Sun CR-10 Triode 10-watt Amplifier, $45.00; Collins FM-11 FM-Tuner, $40.00; Teletone AM-FM 8-tube Table Radio, $30.00; Speco 3-Mike Mixer, $8.50; Astatic JT-30 Microphone, $7.50; Turner BX Desk Microphone, $5.00; York Tenor Saxophone, case, $65.00; Garrard RC-60 Record Changer, GE Variable-Reluctance Pickup Cartridge, $15.00; Intertalk Telephones Set, $10.00; Columbia Microgroove Phonograph, $10.00. All excellent, priced F.o.b. V. R. Hein, 418 Gregory, Rockford, Illinois.

SELL: Lysco Grid Dipper, $20.00; Bliley CCO, Crystal oscillator for 10, 6 and 2 meters, less tube and crystal, $5.00; Gonset 6-meter converter, $20.00. Louis Lechenger, W5IHL, 1520 Milford, Houston, Texas.

COLLINS: 32V3 transmitter, $600.00; 75A2 receiver with xtal calibrator, $350.00. This equipment is in first-class condition. Clarence Leverington, 5076 Arlington Ave., St. Louis 20, Mo.

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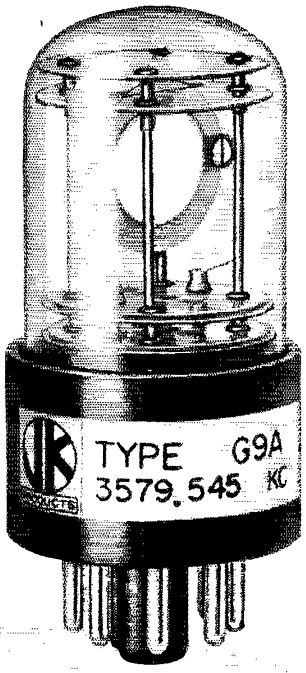
Speeding Electronic Progress through CRYSTAL RESEARCH

The new JK-G9A extends the advantages of glass enclosed crystals to the medium-frequency range between 1200 kc and 5000 kc, providing a superior crystal for many applications in VHF and UHF equipment, frequency standards and monitors, and other precise requirements. The crystal operates in a vacuum, free of contamination and protected from its environment. The unit has excellent mechanical ruggedness. The crystal plate is custom designed for each application and is capable of performance far beyond previously available types. The unit may be designed for maximum stability over a wide temperature range, or temperature controlled in the JKO7E oven. Approximate height, above chassis, 2.375". Maximum dia. of octal base, 1.260". Consult us on specific applications.



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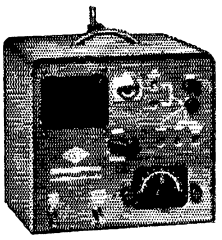

Gonset Communicator II

Complete 2-meter station for fixed or portable operation—in a single portable case. Transmitter: AM phone; 5-7 watts output; crystal or carbon mike; uses 8 mc crystals. Receiver: tunes 144-148.3 mc; cascade RF stage; 3 IF stages; noise limiter; adjustable squelch; headphone jack; PM speaker. Measures 10¼ x 9¼ x 7". Complete with tubes and 19" whip antenna (less mike and crystal). Built-in power supply for 115 volts, 50-60 cycle AC or 6 volts DC. Shpg. wt., 24 lbs.

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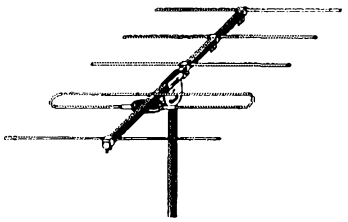

Elincor 2-Meter Beam Kit

MODEL 200-EA. 5 elements—folded-dipole; 3 directors; 1 reflector. 52 ohms.

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Master Mobile Coax Antenna

MODEL 114. 2-meter mobile. With 10 feet of 52-ohm coax. Less mount, below.

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Knight Push-Button Tape Recorder

The top recorder value! Five push-buttons select all operating functions. Takes up to 7" reels. Two-speed (3.75 and 7.5 ips) dual-track recording mechanism. Records from mike, radio, tuner or phono. Built-in quality amplifier and speaker. Handsome two-tone portable case, 14 x 12 x 7". Complete with mike, take-up reel and 600-ft. roll of tape. Shpg. wt., 29 lbs.

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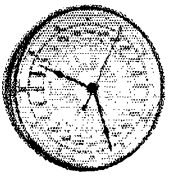

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Direct-reading, electric operation. 10" dial calibrated from 0001-2400 (GMT); sweep-second hand; inner dial shows time in all world zones. For 110-120 v., 60 cy. AC. Shpg. wt., 3 lbs.

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The invaluable "2nd Op"; handy chart gives: call letter prefixes; great circle beam headings; time, date at DX location; DX zones; postage rates; country QSO and QSL records; world QSL Bureaus. Covers every country. 10½" diameter.

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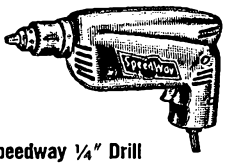
97 SX 527. S-38C.. 49.95	**98 SX 731. NC-88. 119.95**



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A real buy. Self-aligning ball thrust bearing, oilless. Powerful AC-DC high torque motor. ¼" geared chuck with key. Free running speed 2400 rpm; load speed 1500 rpm. Easy to handle; well-balanced. For use with carbon or high speed steel bits. 6 foot cord. U. L. Approved. Overall length, 9". For 115 v. AC-DC. Shpg. wt., 4 lbs.

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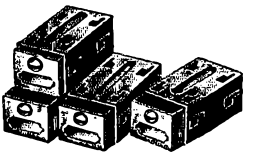

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12 for.....**$4.12**

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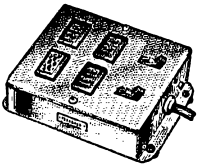

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Provides 3 extra convenience outlets; two are controlled by toggle switch, others stay hot. Red signal light stays on when equipment is plugged in. AC-DC switches rated at 10 amps, 125 v. 6-ft. cord and plug. Metal case, 4½x-5¼x1⅝". U. L. Approved.

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Rugged tool with 2 blades: combination screwdriver-cutter-stripper-scraper; spear-shaped ⅝" knife blade. Brass locking bar prevents accidental blade closing. Each steel blade 2½" long; plastic handle.

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Minimizes shock hazard from tools used on electrical equipment. Red liquid plastic hardens into tough insulating coating for tool handles. Dielectric strength, 1500 v. per mil. Just dip tool handle into liquid and let dry. Resists acid, alkalis, water, etc.

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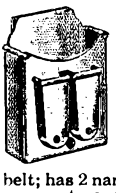

"Tux Tool" Holster

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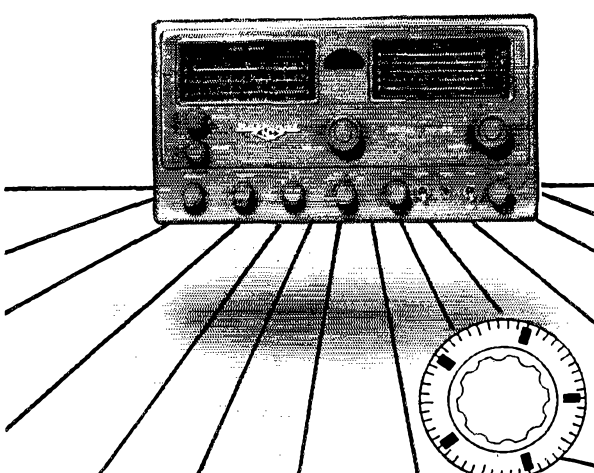

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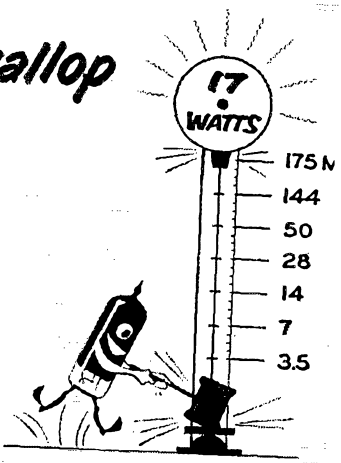

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