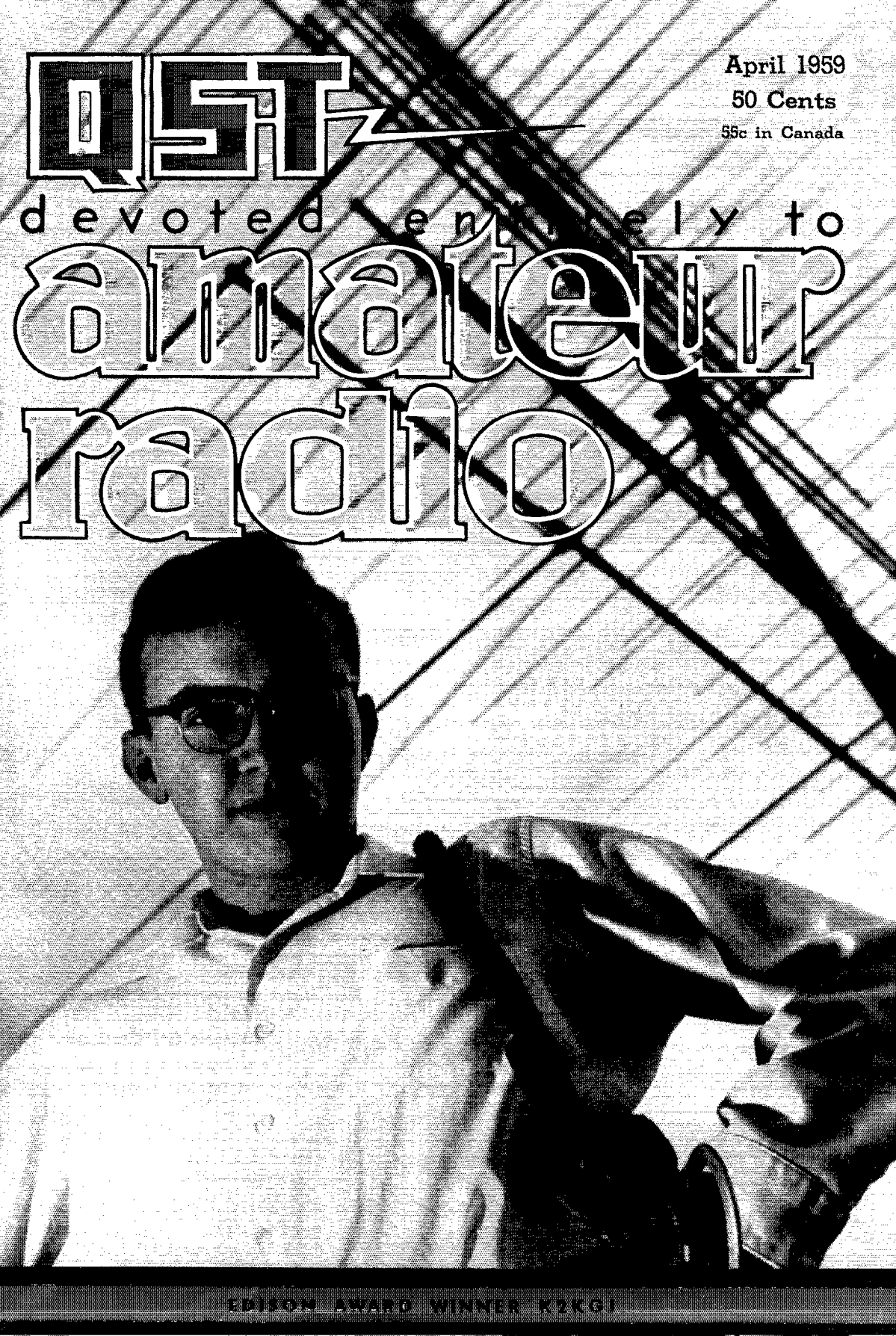
QST

devoted entirely to

amateur radio

April 1959
50 Cents
55c in Canada



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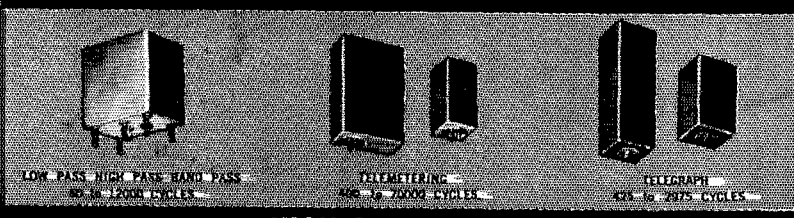
FOR YOUR APPLICATION FROM STOCK...

700 STOCK ITEMS to cover every electronic application.

300 HERMETIC ITEMS... proved to MIL-T-27A, eliminates test delays.

All with the UTC plus value... *HIGHEST RELIABILITY IN THE FIELD.*

FILTERS

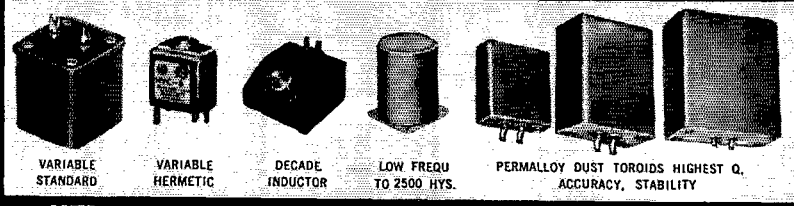


LOW PASS HIGH PASS BAND PASS 20 to 12000 CYCLES

TELEMETERING 400 to 70000 CYCLES

TELEGRAPH 425 to 2975 CYCLES

HIGH Q INDUCTORS



VARIABLE STANDARD

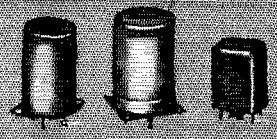
VARIABLE HERMETIC

DECADE INDUCTOR

LOW FREQU TO 2500 HYS.

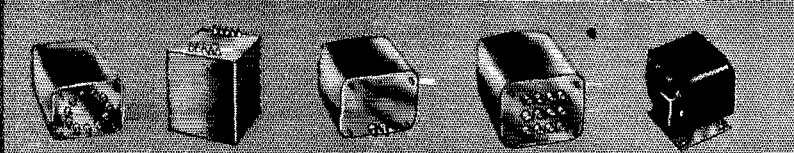
PERMALLOY DUST TOROIDS HIGHEST Q, ACCURACY, STABILITY

HERMETIC AUDIOS



FOR TUBE, TRANSISTOR, CHOPPER AND MATCHING SERVICE 8 to 12 DZ

HERMETIC POWER COMPONENTS *Military, Industrial*



POWER TO 1200 VCT

PLATE TO 5 KV CT

REACTORS TO 1.25A

FILAMENT TO 24 50A

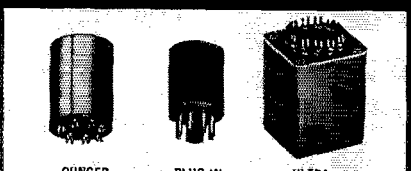
FILAMENT 400 CYCLE

TRANSISTOR AUDIO

MINIATURE HERMETIC HIGHEST POWER

SMALLEST SIZE

COMPACT WIDE RANGE

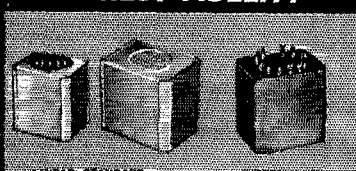


OUNCER

PLUG-IN

ULTRA COMPACT

HIGHEST FIDELITY

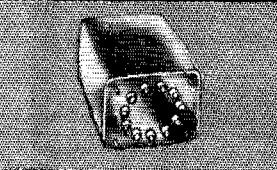


LINEAR STANDARD

BROADCAST AND HI-FI FAVORITES

HYPERMALLOY

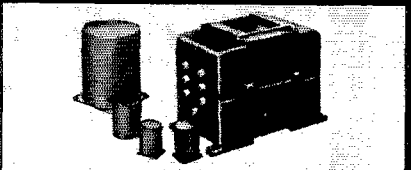
TRANSISTOR POWER



INVERTERS TO 550V 2A FROM BATTERY

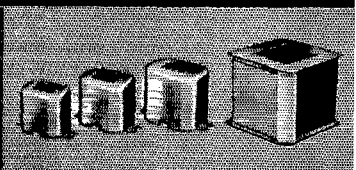
TRANSISTOR SUPPLY TO 50V 2.5A

COMMERCIAL GRADE



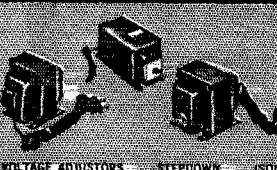
A COMPLETE LINE OF AUDIO AND POWER UNITS FOR COMMERCIAL EQUIPMENT.

AMATEUR SERIES



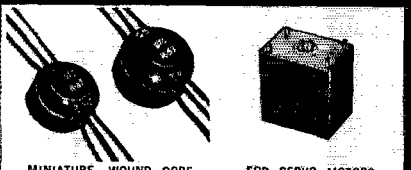
COMPLETE LINE OF AUDIO AND POWER FOR HAM, MARINE, ETC. COMMUNICATIONS

LINE ADAPTORS



VOLTAGE ADJUSTORS STEPDOWN ISOLATION UNITS TO 2500 W

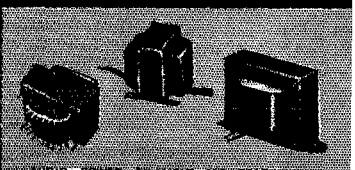
PULSE MAGN. AMPS.



MINIATURE, WOUND CORE, .05 TO 25 uSec

FOR SERVO MOTORS 2 TO 18 WATTS

REPLACEMENT TYPES



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UNITED TRANSFORMER CORPORATION

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transmitter

Exclusive HT-32A High Frequency Crystal Filter System a major, proven advance... cuts unwanted sideband at least 50 db.

Now proven superior—vastly superior to any other type filter—is Hallicrafters' exclusive 5.0 mc. quartz crystal filter system.

Result of a three-year research program, the system makes possible, for the first time, *high frequency filtering.* Result; unprecedented rejection of unwanted sideband—50 db. or more—and the *cleanest signal of all,* bar none.

This and another major technical advance—Hallicrafters' exclusive Bridged-Tee Modulator—make the HT-32A the most wanted SSB transmitter in history.

Certified for F.C.D.A. Matching Funds.

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Compare these features

- **5.0 mc. quartz crystal filter cuts unwanted sideband 50 db. or more.**
- **Bridged-Tee modulator; temperature stabilized and compensated.**
- **SSB, AM or CW output on 80, 40, 20, 15, 10 meter bands.**
- **High stability, gear driven V.F.O.**
- **144 watts peak power input.**
- **3rd and 5th order distortion products down 30 db. or more.**
- **Keying circuit for RTTY.**
- **PTT.**
- **VOX.**

Proof of the HT-32A's superiority is heard on ham bands night after night. Listen. You won't be satisfied with anything but the cleanest signal on the air.

Available with convenient terms from your Radio Parts Distributor.

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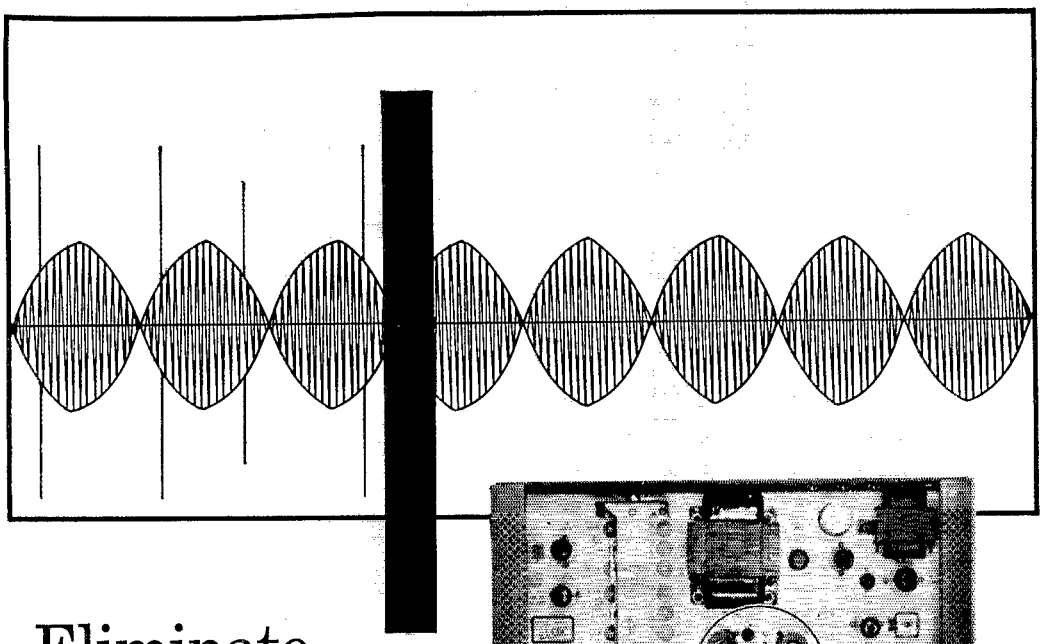

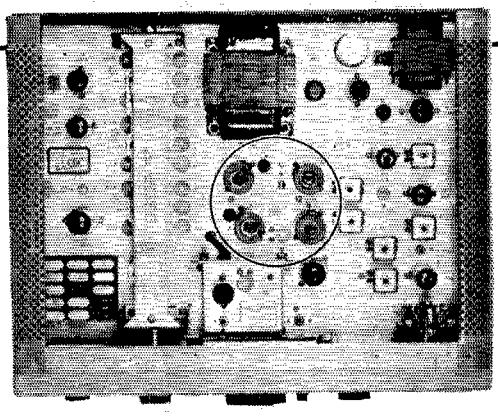

Eliminate Impulse Noise with

NEW COLLINS NOISE BLANKER

Enjoy interference-free phone or CW contacts with your late model Collins receiver, even when operating in areas with intense electrical noise. The new Collins 136 series Noise Blankers effectively eliminate impulse signals having a repetition rate of up to 10 kc, which includes ignition, electric motor, and appliance noises together with some types of corona and atmospheric discharges. The Noise Blanker is a compact unit for mounting within the amateur equipment, and has a front panel control.

Unlike simple audio clipping circuits or series type limiters, the Collins Noise Blanker accomplishes its noise silencing ahead of the selective sideband filters, making it ideal for SSB reception. Basically, it is a TRF receiver tuned to 40 mc. A received noise spike is amplified, detected, pulse shaped and used to trigger a gating circuit placed in the IF circuits of the amateur receiver. The noise pulse shuts off the receiver for the duration of the noise, usually from 10 to 40 microseconds.

Soon to be available from your distributor, the 136 series Noise Blanker may be quickly and easily installed in your Collins 75S-1, KWM-1 or 75A-4.

COLLINS

QST

APRIL 1959

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OFFICES

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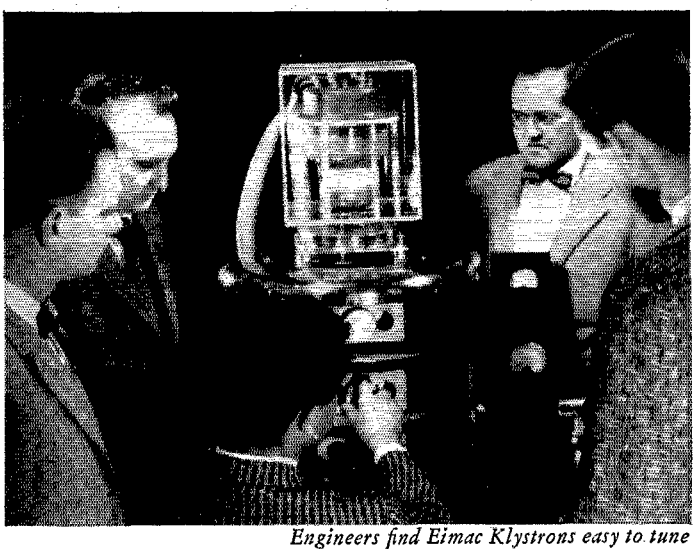
—CONTENTS—

What's New with the Electron...1959

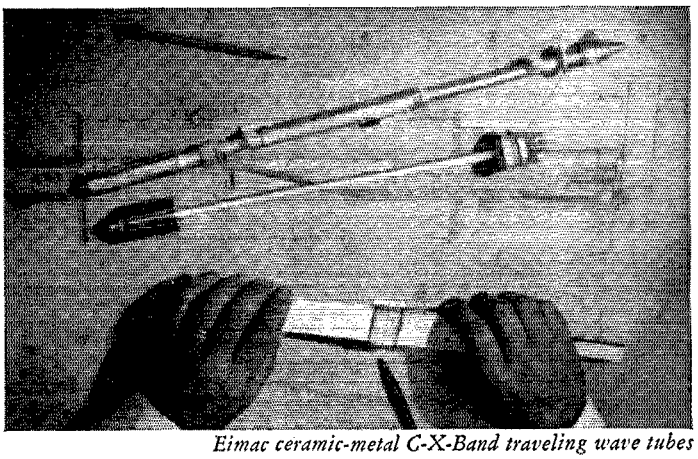
Visitors to the Eimac display at the 1959 Institute of Radio Engineers Show and Convention in New York City last month were able to demonstrate to themselves the simple, non-critical operation of economic Eimac external cavity klystrons by tuning an on-the-air klystron amplifier. Most participants found that the amplifier was as easy to tune as a ham transmitter. This demonstration, focal point of the Eimac display, consisted of an Eimac klystron amplifier operating at 800 megacycles with an output power of one kilowatt. The tube is typical of the broad line of ceramic-metal, external-cavity power amplifier klystrons manufactured by Eitel-McCullough, Inc. Eimac Klystrons have seen extensive service in such tropo-scatter systems as Dew Line, White Alice, and Texas Towers with exceptional reliability and performance.

Also of considerable interest was an animated display designed by Dr. Oskar Heil, head of Advanced Research at Eimac who invented the technique of velocity modulation in 1933. This display showed graphically the velocity modulation and bunching of a klystron electron beam as it passed through the interaction gaps of a klystron mock-up.

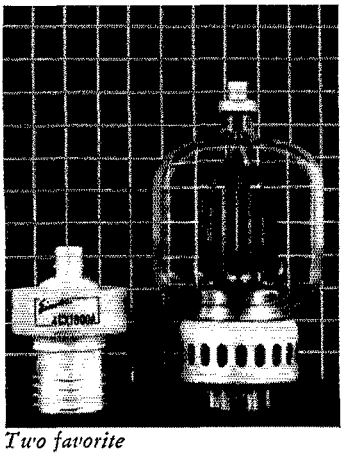
A wide selection of Eimac klystrons, reflex klystrons, traveling wave tubes and negative grid tubes were displayed. The Eimac line consists of over 100 commercial tube types. Of these, more than 40 now incorporate the advantages of Eimac ceramic-metal design which results in rugged, compact, high-performance tubes.



Engineers find Eimac Klystrons easy to tune



Eimac ceramic-metal C-X-Band traveling wave tubes



Two favorite Eimac 1000-watt tetrodes

Eimac's advanced work in the traveling wave tube field was shown by two new ceramic-metal TWT's designed for use under rugged environmental conditions. The air-cooled X686 is a light-weight tube for airborne use covering a frequency range of 4000 to 7000 megacycles with an output power of one watt and a gain of 50 db. The water-cooled X620 achieves a minimum cw output power of 100 watts in the 4000 to 7000 megacycle range.

Of particular interest to amateurs as well as commercial equipment designers were the ceramic-metal 4CX250B, 4CX300A and 4CX1000A tetrodes, all ideally suited for SSB use. Eimac's popular internal-anode glass tubes were also shown. Many of these tubes, developed by Eimac 20 years ago, still enjoy widespread use in commercial and amateur equipment of all types.

For detailed information on these latest Eimac developments write to our Amateur Service Department and request a copy of "What's New With The Electron . . . 1959."

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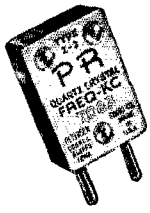
There's a PR for every Service!

AMATEUR



40, 80 and 160 Meters, PR Type Z-2

Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed; ±500 cycles.....**$2.95 Net**

20 Meters, PR Type Z-3

Third overtone oscillator. Low drift. High activity. Can be keyed in most circuits. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation; ±500 cycles.....**$3.95 Net**

24 to 27 Mc., PR Type Z-9A

Third overtone; multiplies into either 2-meter or 6-meter band; hermetically sealed; calibrated 24 to 27 mc., ±3 kc.; .050″ pins.

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50 to 54 Mc., PR Type Z-9A

Fifth overtone; for operating directly in 6-meter band: hermetically sealed; calibrated 50 to 54 mc., ±15 kc.; .050″ pins.

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SPECIAL TYPES

Commercial Crystals available from 100 Kc. to 70 Mc. Prices on request.

Type Z-1, AIRCRAFT

3023.5 Kc., .005%.....**$3.45 Net**

Type Z-1, MARS and CAP

Official assigned transmitter frequencies in the range.

Calibrated to .005%. 1600 to 10000 Kc. **$3.45 Net**

Type Z-6A FREQUENCY STANDARD

To determine band-edge. To keep the VFO and receiver properly calibrated.

100 Kc. . . . . **$6.95 Net**

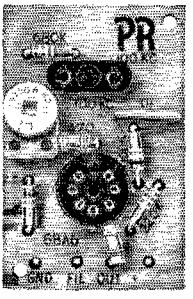
PR PRINTED OSCILLATOR KIT

Has many uses—

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
- As Foundation Circuit for Low Frequency SSB Crystals

Assembled in minutes. Kit contains everything but 6BA6 oscillator tube and crystal.

Each . . . . . **$4.50 Net**



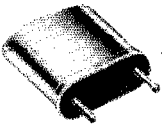
Type 2XP

Suitable for converters, experimental, etc. Same holder dimensions as Type Z-2.

1600 to 12000 Kc. (Fund.) ±5 Kc. . . . **$3.45 Net**

12001 to 25000 Kc. (3d Mode) ±10 Kc. . . . **$4.45 Net**

VHF Type Z-9R, Aircraft



For Lear, Narco and similar equipment operating in the 121 Mc. region, requiring crystals in 30 Mc. range.

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27.255 Mc., .005% . . . **$4.25 Net**

Type Z-1 TV Marker Crystals

Channels 2 through 13 . . . . . **$6.45 Net**

3100 Kc. . **$2.95 Net**

4100 Kc. . **$2.95 Net**

4.5 Mc. Intercarrier, .01% . . . **2.95 Net**

5.0 Mc. Sig. Generator, .01% **2.95 Net**

10.7 Mc. FM, IF, .01% . . . **2.95 Net**

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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*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members holding Canadian or FCC amateur license, General or Conditional Class or above. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. OES appointment is available to Novices and Technicians.

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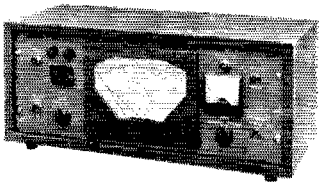
British Columbia	VE7JT	Peter M. McIntyre	981 West 26th Ave.	Vancouver, B. C
Yukon				
Manitoba	VE4IF	James A. Elliott	190 Oakdean Blvd.	St. James, Winnipeg 12
Saskatchewan	VE5LU	Lionel O'Byrne		Rowatt

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

THE "HARD-TO-GET" INSTALLATION

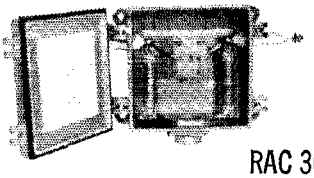
accessories

DIRECT FROM STOCK

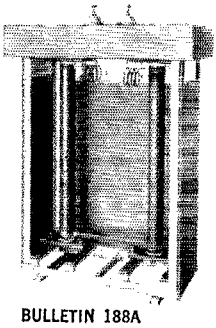


AN/URA-24

ATS BULLETIN 209



RAC 30
BULLETIN
112B



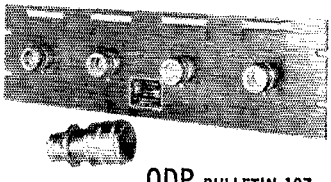
TER
5000 BULLETIN 188A
DA-201/U

- TRANSMITTING and RECEIVING ANTENNA COUPLERS
  REQUEST BULLETINS 178-180
- TRANSMITTING and RECEIVING TERMINATIONS
  REQUEST BULLETINS 162-164
- NON-REACTIVE DUMMY LOADS
  REQUEST BULLETIN 188
- TRANSMITTING and RECEIVING COAXIAL PATCH PANELS REQUEST BULLETINS 197-210
- ANTENNA MULTICOUPLERS REQUEST BULLETIN 203
- STANDING WAVE RATIO ANALIZER
  REQUEST BULLETIN 198
- WIDE RANGE ANTENNA TUNERS
  REQUEST BULLETINS 163-209
- VOICE FREQUENCY TELEGRAPH SYSTEMS
  REQUEST BULLETIN 167
- RG/17, 18, 35, 85, 164U COAXIAL CONNECTORS
  REQUEST BULLETINS 162, 164, 191, 197, 199
- QDL-QDS COAXIAL CONNECTORS
  REQUEST BULLETINS 162, 164, 191, 197, 199
- TRANSIT CASES • HYBRIDS and LIMITERS
- COMPLETE RADIO TELETYPE SYSTEMS

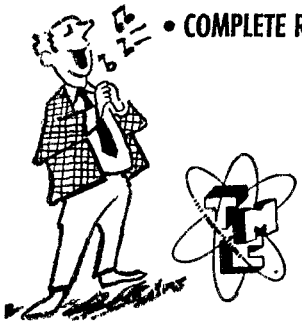
SSP-3 BULLETIN 210 SB-932/A

QDL
BULLETIN
191
UG/1165

QDS
BULLETIN
199



QDP BULLETIN 197



The TECHNICAL MATERIEL CORPORATION

IN CANADA
TMC Canada Ltd., Ottawa, Ontario

Main Office: MAMARONECK
NEW YORK

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.

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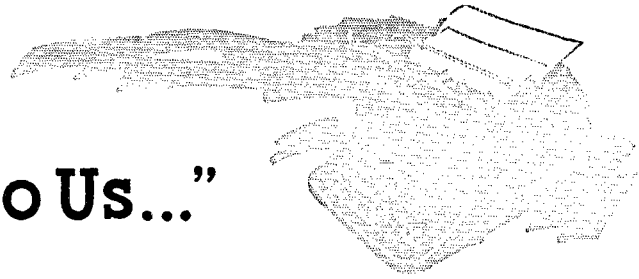


"It Seems to Us..."

RACES EXPANSION

Recently the Federal Communications Commission, at the instigation of the U. S. Civil Defense Amateur Radio Alliance, proposed to make certain additional frequencies within the amateur bands available for the use of the Radio Amateur Civil Emergency Service. Our subsequent correspondence from several amateurs indicates a misunderstanding of what is involved in this proposal, inasmuch as they protest "this invasion of amateur bands."

One of the fields of public service in which the amateur radio body takes particular pride is an ability to provide emergency communication. In the past, we have exercised this ability during peacetime through the medium of our own Amateur Radio Emergency Corps (AREC) with its nationwide organization and its amateur leaders: the Emergency Coordinators and the Section Emergency Coordinators. Through the experience accumulated while serving in numberless emergencies under the AREC banner, amateurs have developed skill in spontaneous communication organizing that cannot be matched in any other field.

But this is a peacetime service. It is only logical that in time of war, when our country is marshalling all its efforts, this skill should be put to good use in furnishing vital civil defense communications on the home front. Much of this ability was lost to the nation in World War II because there had been no advance planning. Belatedly, a War Emergency Radio Service was established, manned largely by amateurs, but not in name or import giving amateurs credit for their efforts. Had there been any direct enemy attack it would have been a case of too little, too late.

Seriously concerned with this problem, in the immediate postwar years the League discussed with federal agencies a plan for setting up a communications system *in advance* of any national emergency, so that amateurs enrolled in such a system would be ready to go at a moment's notice. The principal problem, aside from security clearance of each individual, was frequency space in which to operate since in time of war the military customarily takes immediate charge and occupancy of all peacetime amateur (and many other) frequencies. These lengthy negotiations resulted, in 1950, in the establishment of a Radio Amateur Civil Emergency Service. The outstanding achievement from the amateur standpoint was the concession, by our military people, to earmark certain portions of the amateur bands for amateur-controlled civil defense communications in the event of national emergency. In other words, the military agreed not to include these particular channels or bands in their service plans.

The current proposal (p. 63, February *QST*) is simply an expansion of the original principle of earmarking frequencies and small band segments for such use. Again, the military has agreed that it will not move its operation into these specified frequencies in time of national emergency, and that they may remain available for use by amateurs in manning and supervising civil defense communications. It is another step in furthering the ability of the amateur body to be of service to our country.

Unfortunately, a few amateurs who read the proposal and misinterpreted parts of it have since been dispersing misinformation on the air or through circular letters. Each amateur has a right to his individual opinion on the merits of RACES, of course, but that opinion should not be formed on the basis of inaccurate information.

One misstatement has been that the proposed new RACES segments will be withdrawn from general amateur operation. This is wholly untrue. No present amateur privileges will be affected.

Another misstatement is that any civil defense official would be able to order other amateur stations off the specified frequencies. This is also wholly untrue. No priority whatsoever will be granted RACES operations under the proposal, nor does such priority exist now. No RACES station nor civil defense official now has nor will he have any such authority. However we hope it goes without saying that common courtesy should prompt any amateur voluntarily to shift frequency if notified he is interfering with a RACES net operation in the same manner he should if he happens to intrude on a frequency being used by a regular amateur traffic or emergency network.

A third misstatement is that RACES is not an amateur service. Those who put forth this argument point out that certain non-amateurs may operate in the RACES service. This is true. When RACES was created it was felt by all parties concerned that there simply would not be a sufficient number of amateurs to handle the absolutely colossal task that would

(Continued on page 172)

Hamfest Calendar

Alabama — The annual family hamfest sponsored by the Birmingham ARC will be held at the State Fairgrounds on May 3. For further details contact Aubrey H. White, W4OLG, P.O. Box 603, Birmingham, Ala.

Illinois — The Western Illinois Radio Club of Quincy will hold a smorgasbord dinner on Saturday evening, May 9, at the Durst Restaurant Flamingo Room. This is an affair that serves the tri-state area of Missouri, Iowa, and Illinois. Entertainment, prizes, and a speaker. Further info available from William S. Starkey, Secretary, Western Illinois Radio Club, P.O. Box 283, Quincy.

Illinois — The Western Illinois Radio Club will hold a smorgasbord dinner on Saturday, May 9, in the Flamingo Room of the Durst Restaurant, Quincy. Entertainment and a speaker. For further information contact William S. Starkey, Secretary, Western Illinois Radio Club, Box 283, Quincy.

Louisiana — The annual Lake Charles fishfry and picnic will be held May 2 and 3 at the Ward Four park. Admission is $3.50, with special rates available for children.

Missouri — The annual WØ-DXCC dinner and meeting will be held in St. Louis on Saturday, April 25, at the Statler-Hilton hotel. The informal meeting begins at 1:00 P.M., and dinner will be served at 7:00 P.M. Tickets are available from Sam Halley, WØIJW, 5022 Queens Ave., St. Louis 15, for $6.00. Advance registration is requested. The meeting is open to all those interested in DX.

New Jersey — The 14th Annual Old Timer's Nite Roundup and Banquet, sponsored by the Delaware Valley Radio Association, will be held on Saturday evening, April 18, in the Grand Ballroom of the Hotel Stacy-Trent in downtown Trenton. As usual, it will be stag. A turkey dinner will be served *promptly* at 6:30 P.M. W2ZK will speak on his experiences in Antarctica. A silver cup will be awarded to that radio operator present who has the longest service in the wireless game. Tickets are by reservation only, and may be obtained by mailing $6.00 on or before April 13 to Ed. G. Raser, W2ZI, 19 Blackwood Drive, Trenton 8, N. J. Latecomers may be able to buy a ticket for $7.00 at the door. W2ZI's antique wireless gear will be on display.

New York — The Crystal Radio Club will hold its 28th anniversary dinner at the Wayside Inn, Route 9W, Stony Point, N. Y., on May 2 at 8:00 P.M. Tickets at $4.00 per person may be purchased by sending money order or check, payable to the Crystal Radio Club, to Tony Maiorano, W2EHZ, 14 Peck St., West Haverstraw.

Ohio — The Dayton Amateur Radio Association will sponsor its 9th annual Hamvention on Saturday, May 9, at the Dayton-Biltmore Hotel. The one-day program will feature speakers and demonstrations on many phases of ham radio. Forums will be held throughout the day on such subjects as DX, sideband, v.h.f., and so on. There will be a program for the XYLs. The Grand Banquet will get underway at 7:00 P.M. Saturday. Tickets ordered before May 5 are $5.50, including both registration and banquet. After May 5 the price will be $6.00. On Friday evening, May 8, there will be a sideband dinner and a v.h.f. dinner at the hotel. These tickets *must* be purchased in advance and are $4.00 each. Reservations, more information and an attractive brochure may be obtained by writing to DARA, Box 426, Dayton.

Oklahoma — The second annual hamfest sponsored by the Oil Capital Mobile Club will be held on May 3. For more info contact Marvyn W. Price, W5VDN, P.O. Box 5131, Tulsa.

Oklahoma — The Northfork ARC is holding its 7th annual hamfest at Quarts Mountain State Park near Altus on Saturday evening and Sunday, April 25 and 26. Pre-registration fees are $1.50 and may be sent to the Northfork Amateur Radio Club, P.O. Box 321, Carter, attention Pauline M. Cooksey, K5IZP.

Pennsylvania — The 14th annual banquet of the Lancaster Radio Transmitting Society will be held on Saturday, April 18, at the Arcadia Ballroom, 27 West Orange St., Lancaster. Festivities will commence at 6:30 P.M. Entertainment is planned for OMs, YLs, and XYLs. Advance registrations are required and may be obtained (price not given us — *Ed.*) by contacting Arthur C. Jacoby, W3OY, 136 Springhouse Rd., Lancaster. Phone EXpress 2-6093.

COMING A.R.R.L. CONVENTIONS

May 17—Mass. State, Swampscott
June 19–21 — ARRL National Convention, Galveston, Texas
July 1–5 — Pacific Division, San Jose, Calif.
July 24–26 — Southwestern Division, Pasadena, California
August 15–16 — Pacific Div., Honolulu
September 5–6 — N. E. Division, Hartford

OREGON STATE CONVENTION

Roseburg — May 2–3

The annual convention of the Oregon Amateur Radio Association will be held at the Hotel Umpqua, Roseburg, on May 2 and 3, 1959.

There will be commercial displays and demonstrations of ham gear by dealers and manufacturers. Other program highlights will be lectures and movies on various subjects of interest to hamdon, banquets for hams and XYLs and YLs, entertainment and music, a mobile hunt and tours to points of interest. Several fine speakers will be on hand, as well as the usual meetings of the OEN and MARS nets.

Pre-registration dates are March 1 to April 5. Tickets between these dates: Hams, $6.50; non-hams $3.50. After April 5: hams $7.50; non-hams, $4.00. Come to Roseburg, Oregon and have some fun. Order your pre-registration tickets and make your hotel and motel reservations early. Write Don L. Bell, W7SHA, Box 953, Roseburg, Oregon.

MICHIGAN STATE CONVENTION

Grand Rapids, April 18

The twelfth annual conclave of Michigan hams sponsored by the Grand Rapids Amateur Radio Association will be held at the Manger Rowe Hotel on April 18, preceded by an informal Friday evening get-together. All the program mainstays which have made this event a pleasant and rewarding one for hundreds of midwestern hams will again this year be much in evidence, including the famous "swap and shop" setup. Pre-registration is $1.50 ($1.75 at the door). Address the Grand Rapids Amateur Radio Association, Box 303, Grand Rapids, Michigan.

Strays

Hams within 200-megacycle propagation distance of Philadelphia are warned not to sleep late on Saturday morning, April 18 — for at 7.30 A.M. that date WCAU-TV's Channel 10 program, "The Big Blackboard," will present a one-hour feature on amateur radio. A number of amateur radio clubs in the Delaware Valley are banding together to assemble program material and take part in the presentation. Here's a fine public-relations opportunity — so get your friends and neighbors up early, too, to watch the show. Incidentally, check local program listings in advance for possible change of time.

This is not a constructional article of the usual sort, where every last component is readily available at the local radio store. In fact, you would probably find it impossible to duplicate this converter as it is shown here, since the tuning capacitor W6VX used is practically impossible to come by. But you can use some of the ideas presented here, if you want to get variable selectivity with fixed filters, a good noise figure and excellent image rejection.

A Selective 21-Mc. Converter

Variable Bandwidth with Fixed Filters

BY DAVID H. ATKINS,* W6VX

THERE are many "good old" receivers with adequate stability in their lower-frequency ranges which may be given the dual i.f. treatment by the addition of a converter. To achieve all the advantages now to be found in a first-class up-to-date receiver, however, is difficult. Such things as ideal a.v.c. and limiter circuits, one-finger movable bandpass tuning, and one-kilocycle tuning resolution, are a few of the things you may pay for in a modern receiver. Here is a way to acquire some of the most important features you can get nowadays without blowing the family reserves.

High Selectivity and Low Noise

It is not too difficult to lash up a crystal-controlled converter for the band or bands you need most. The outcome of this approach is good stability, thanks to the crystal. Usually another result is a much better signal-to-noise ratio.

If when warm the "good old" receiver stays put on its lower frequency bands, and has some bandspread (the more the better), you have the basis for further improvements.

The addition of a bandpass filter in the low i.f. of the receiver has been well covered; it pays off in reduced noise and the ability to copy weaker signals with locals just a few kc. away. To get this feature, use a mechanical, crystal or toroidal type filter between the mixer and first i.f. stage. Comparing the first two types, the mechanical filter will usually need an additional stage to make up for some insertion loss encountered in its use, while the loss with the crystal type will probably be only a matter of about 3 db. This is often made up for by peaking the trimmers on the i.f. transformers or at least turning up the r.f. or audio knobs a bit. The crystal type is well suited to the entire spectrum but works in the h.f. where the others drop off. The mechanical is available in the 455–250-kc. i.f. regions, and the toroidal is best suited to the lower frequencies around 50 kc.

A few of the other features not found in the older sets are the bridge-T filter or *Q*-multiplier rejection circuit, to cut the offending A-1, A-Ø type QRM, and the product detector, to reduce the distortion and cross-talk QRM. Maybe your set has a noise limiter that works, and a stable b.f.o. that covers about 4 kc. Very fine!

Some of these changes take money. Some take more time off the air than you can devote. You may be the earnest type about wanting to keep up with the art and down with the QRM, or you may be fortunate and have stowed the extra old dog on the shelf and been down to see your smiling dealer. If you are the former type, and care for a project that will give you the new deal in passband bliss without keeping the old receiver off the air, a converter will give you the low noise and selectivity without the large tab. Changes in the receiver itself may be added when the spirit moves.

A Solid Foundation

The 1936 HRO here (serial F-235) was a good old set. When 2.5-volt tubes got scarce, it didn't get traded in. When the 6-volt glass tubes got tired, it wasn't put out to pasture. It "worked," even on 30 Mc. In its original state the purest of "p.d.c." signals turned out to be thoroughly modulated on the higher frequencies unless p.d.c. was used on the heaters. As the commercial signals got more numerous, the image problem on the higher bands sounded worse than feeding time on a turkey farm. Changes were gradually made, such as using a 6BA7 mixer tube, 6BA6 h.f. oscillator, product detector, a.v.c. from a 6C4 cathode follower and diode hooked in before the detector to provide isolation from the b.f.o., and to top it off the noise was reduced by the addition of a quiet first r.f. stage. A 7F8 was used in this circuit until the advent of the 6BK7A. (Same circuit as shown in the r.f. stage of the converter described later.) Main results of all this were low noise with antenna disconnected and better image rejection. Three years ago a 3.1-kc. Collins mechanical filter was added to give still lower noise and good selectivity.

The New 3-Mc. Filter

Recently an h.f. crystal bandpass filter was announced by Blackhawk.[1] This unit at 3 Mc. has characteristics essentially the same as the mechanical type has at 455 kc., and is about the size of a sawed-off i.f. transformer, approximately 1½ inches cube. A quick check in an ARC-5 of the 2830-kc. i.f. variety was a revelation. The i.f.'s were moved up 170 kc. after tossing the input can to make room for the filter. Since the receiver was the R-27 type with double-tuned transformers, the five tuned circuits (including the

* 542 So. Irving Blvd., Los Angeles 5, Calif.

[1] Blackhawk Engineering Co., Janesville, Wisc. Other filters include an s.s.b filter for 5 Mc. to pass the upper sideband, and another on 9 Mc. of 4 kc. bandwidth for u.h.f. conversion applications.

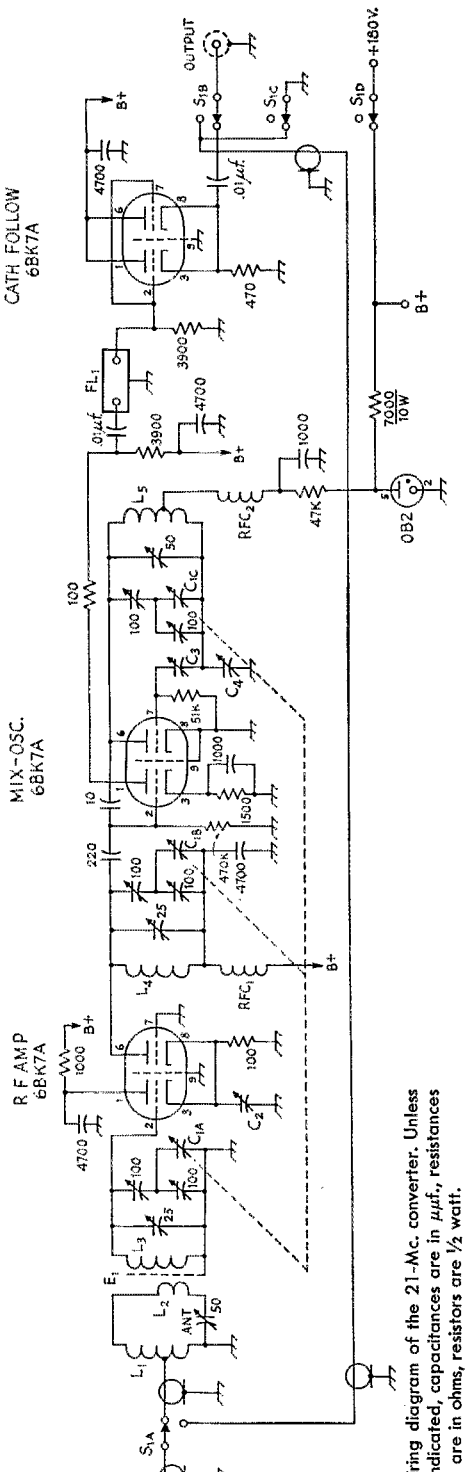


Fig. 1—Wiring diagram of the 21-Mc. converter. Unless otherwise indicated, capacitances are in $\mu\mu f.$, resistances are in ohms, resistors are ½ watt.

C_1—20-$\mu\mu f.$-per-section, insulated rotors, surplus. Three separate 20-$\mu\mu f.$ capacitors could be ganged (Hammarlund MC-20-S) but make sure they are free-turning.

C_2—5-50-$\mu\mu f.$ variable, if regeneration is desired. Should be eliminated if no regeneration desired.

C_3, C_4—4-30-$\mu\mu f.$ ceramic, adjustable, N500 coefficient (Erie TS2A).

E_1—Faraday shield. See Fig. 2.

FL_1—3-kc. bandpass filter at 3 Mc. (Blackhawk Engineering).

L_1—8 t. No. 18, ¾-inch diam., 8 t.p.i., tap at 2nd turn from grounded end (B & W 3010 Miniductor).

L_2—2 t. No. 20, ⅝-inch diam. (B & W 3007 Miniductor).

L_3, L_4—11 t. No. 20, ⅝-inch diam., 16 t.p.i. (B&W 3007).

L_5—9 turns No. 22 on ⅝-inch diam. ceramic form, tapped 1½ turns from grid end. Wound 20 t.p.i. with top turns pulled apart for adjustment. (Ceramic form from BC-455 oscillator coil).

RFC_1, RFC_2—65 t. No. 30 enam., close-wound on ¼-inch diam. phenolic rod, ¾-inch winding length.

S_1—4-pole 2-position rotary switch. S_{1A} and S_{1D} on one wafer; S_{1B} and S_{1C} on the other. Two wafers separated by shields and distance (Centralab PA-3 sections on PA-302 index assembly).

b.f.o.) were raised[2] to 3000 kc. For a 6-tube portable, this ARC-5 has the makings of an up-to-date receiver. The results on 40 are startling! The front end was changed to lower the noise and let the weak ones through, and coil sets were rebuilt to run on 14 Mc. and 21 Mc., too.

What Happens

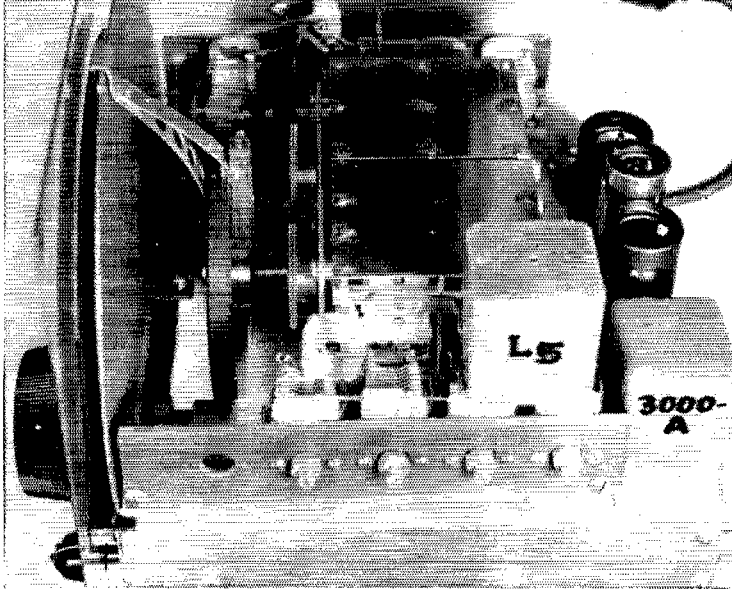
Well, the old HRO is still here, and it's getting late. Before going on to the converter with the bandpass filter in its output, the following comparison may help. There is a Czechoslovakian kw. located on 21,000 kc. (plus a few cycles, minus nothing). He is an old-timer on the band, and while his f.s.k. takes up some of it on good days, he is welcome as far as I am concerned. He marks the edge and tells me how things are over the North Atlantic path. With the HRO (modified) and the general-coverage coils, he puts in a strong Q5 signal on N6 days. At the same time, with the converter to be described, OLU is just 20 db. stronger, and the noise still does not show on the S gauge. In this case the only other change is that the HRO is looking at the 3-Mc. output of the converter.

The best one can do along selectivity lines to date is to place the sharp filter immediately following the first mixer. This produces a minimum of intermodulation products by providing a knothole as close to the antenna as possible.[3]

Wishing to get the utmost efficiency from the converter, a band was chosen (21 Mc.) and the only switch in the box is one which allows changing the antenna from the old receiver antenna coax input to run it into the converter input and through the receiver. The cabinet is of welded steel construction, and the chassis is bolted firmly to the bottom. Pressing on the sides will not disturb the oscillator frequency, and neither will raising the lid. If you feel brave and have what you think is a good band switch and a little

[2] 0.001-$\mu f.$ miniatures may be used to go in series with the fixed padders, or remove the 50-$\mu\mu f.$ tubular ceramics and replace with Centralab TCZ43 (NP0) tubulars, 2 per cent tolerance.

[3] Goodman, "What's Wrong With Our Present Receivers?," *QST*, Jan., 1957.



The 3-Mc. crystal filter, selective element in the converter, is in the box marked "3000-A." Can next to it (L_5) houses the oscillator inductance.

more room in the box, go ahead with making the thing band switching, but first go out and buy a hatful of the small temperature compensating capacitors from about 2 $\mu\mu$f. and — 1400 p.p.m./°C. on up to 150 $\mu\mu$f. by — 750 p.p.m./°C. temperature coefficient. Remember, this box uses an oscillator running on about 18 Mc., so you will have to conjure up all the v.f.o. techniques you can think of and stick with rigidity and avoid compression-type padders. Although be of stout heart! This first model stands a reasonable amount of table pounding as do some high-frequency receivers. It also uses no (intentional) temperature compensators except for the two shown in the local oscillator (see Fig. 1). The heaters do run continously, though, which saves the price of a warming rod. The single section of the second 6BK7A operating as local oscillator takes 1 ma. at 40 volts d.c. input. Control of the oscillator output is afforded by the capacitance divider C_3C_4. The oscillator slides smoothly into stable oscillation with the variation of these adjustable ceramics via holes in the rear of the chassis.

A Backbone

The three-gang variable capacitor C_1 is the result of much searching. Unfortunately, the brand is unknown and no ordinary vendor would be able to help much. This one came out of "overseas wrapping," all bright and clean, complete with heavy ceramic shafting and insulated rotor sections. This unit, besides being sturdily built, allows the ground returns to be routed back to the proper points and d.c. run through the tank circuits where desired. Torque required to turn the rotors is minimum, facilitating a good reduction drive and smooth band coverage. Try to find yours with nice clean precision-type ball bearings! Here's a tip: look at the General Radio catalog.

By checking your Type A Lightning Calculator you will quickly discover that the change in capacitance required to cover the chosen band will amount to as little as 2 $\mu\mu$f., depending on the total padding. Get the straight-line capacitance type, to give straight-line-frequency tuning with heavy padding.

Coils

While the adjustments on the tuned circuits seem unduly bountiful, this way of doing it will afford exact placement of the bandspread and afford an even kc. per division tuning rate of change, so that the scale may be uniform. About the inductances, use air where possible for the coil forms. This material will not do where mechanical stability counts, as in the oscillator. Miniductors were chosen for the antenna, r.f., and mixer circuits, but the oscillator coil is wound on a 6–9-Mc. ARC-5 receiver ceramic form. The ferrite slug was removed, since it wasn't known if this material was good at 21 Mc. If you have a Q meter, give the slug a try. Save the shield, too, and figure on anchoring it down tight with the coil in a location close to the tube and variable capacitors.

Where padders are used, they are the APC type. Hammarlund and Oak are two that make the kind with plated brass plates rather than the staked aluminum variety. Johnson and Hammarlund make some miniatures that are smaller still.

Shielding

The Faraday shield between the antenna and r.f. tuned circuits is cut from half a length of B & W No. 3016 Miniductor. Scrape with sandpaper a narrow strip on the wires between two of the insulating spacers, and solder a 4-inch length of clean No. 14 wire parallel to the spacers. Make sure all "turns" are soldered to the No. 14. Cut with tin snips and open out the coil at one side of the No. 14 wire. The ends of the No. 14 wire may be formed to take small screws with which to fasten the shorted end of the screen to the chassis, so that the shield lies vertically between the closely-coupled antenna and r.f. inductances. The

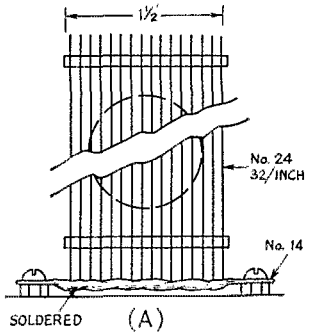


Fig. 2—A Faraday (anti-capacitance) shield is made by clipping a piece of 32 t.p.i. coil stock (B & W 3016 Miniductor) flattening it out, and soldering it to a length of No. 14 wire.

top end of the shield is left open and may be given a bead of Duco cement to keep the ends from shorting accidentally during handling.

Other shielding consists of using coaxial fittings for the incoming antenna and the use of coax at the switches, as indicated in Fig. 1. A metal partition serves as the important shield between the input and output of the 3000-A bandpass filter, to keep the filter-rejected portions of the mixer output from sneaking around to reappear in the 3-Mc. output to the receiver. To shield the receiver input from strong signals that may show up on or near 3 Mc., coax should be used between the output of the converter and the input to the receiver. No off-band uninvited signals have given trouble (nor have "birdies" been noted) with this converter and receiver combination.

Alignment, Out of the Cabinet

In tuning up, set the coil padders at about half capacitance, and the series padders near minimum. Set the main tuning gang about 10 degrees from minimum capacitance. Also set the capacitors shunting the ganged sections to equal settings so that the change rate will be equal in the three sections. The amount of shunt gang capacitance in these last three padders will depend on how you wish the kc. per degree of rotation to vary over the band. With none in the circuit, of course, the dial will be very crowded at the high-frequency end.

With a g.d.o. check for activity in the oscillator circuit. An alternative is to connect a voltmeter to show about 50 volts across the resistor leading to the r.f. choke and B+ connection on the oscillator coil. A finger placed on the grid terminal of the oscillator section will usually cause the oscillator to give up and the meter to show an increase. The capacitance divider (C_3C_4) on the grid end of the tank should be set at or near maximum (both units) as a starter. Then, with the padder across the coil, set the frequency to 3 Mc. below the high edge of the band (18.15 Mc.). With the main tuning control, tune to the low-frequency end of the scale, and check the new oscillator frequency. This may now be adjusted to its position 3 Mc. lower than the low end of the band, using the series padder and an alignment tool.

With a receiver running to check the frequency of the g.d.o., the other two circuits may be tuned and checked in a like manner. As usual, the procedure may have to be repeated twice or more to get the two ends of the band to fall within the chosen limits of maximum and minimum setting of the main tuning control, because the setting of the series padder affects to some extent the other edge of the band. Because the band is relatively narrow, no trouble will be experienced with tracking over the band.

Initially, a gain control was installed in the cathodes of the first 6BK7A, and a variable cathode follower cathode resistor was tried in the coupling stage to the output. However, both additions only tended to decrease the signal to the receiver. If less signal is needed, the usual gain control in the receiver will suffice. No a.v.c. is used in the r.f. stage, as it takes a very strong local signal to affect the linearity at this point, so the stage is better off running at maximum gain continuously.

Use Your Good New Receiver

You may have a bandpass filter in your existing receiver. If such is the case, you have an *added* advantage: that of being able not only to move over and minimize an interfering signal, but of narrowing the over-all passband with very little loss in intelligibility in the case of a.m. or s.s.b. signals, or further cutting the passband to any width desired! For c.w. reception this is a decided

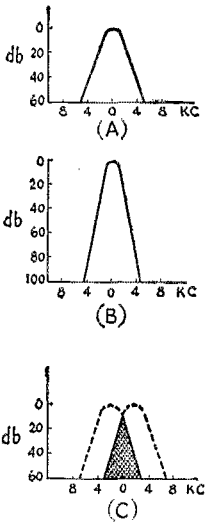
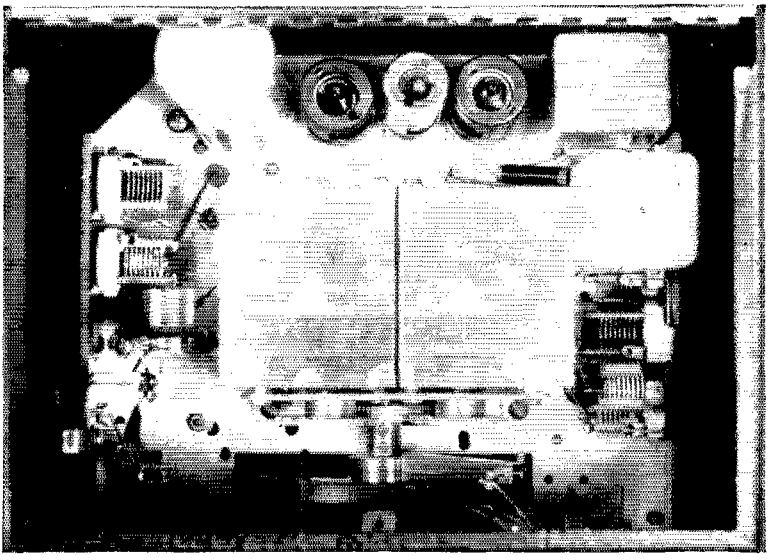


Fig. 3—By cascading two bandpass filters on widely different frequencies (e.g., 3 Mc. and 455 kc.), it is possible to vary the effective over-all bandwidth by tuning the oscillator that heterodynes to the lower frequency.
(A) Selectivity characteristic of a single filter.
(B) Resultant selectivity when two such filters are "in register."
(C) When the filters are "offset," the bandwidth is reduced. Cross-hatched portion shows effective selectivity of system.



The 21-Mc. converter of W6VX uses a home-made dial consisting of a ¼-inch shaft turning the 4-inch rubber-rimmed disc from a tape recorder. A Faraday shield is used between input coils at left.

help, since the passband may, by staggering the two center frequencies with respect to one another, be reduced to as few cycles as desired.

Bandspread and Bandpass

Familiarity with the magnitude and direction of the controls is a necessity, and this includes the b.f.o. Bandspread on the converter, receiver, and b.f.o. are a help. In that case, touching up any one of the three, which may have this feature, allows fine control of pitch, or beat note. When the two bandpass filters are in register — that is, centered on the signal — the ultimate in skirt steepness is achieved because the loss in db. is additive. For instance, if both filters are 6 db. down at 3 kc. bandwidth, and 60 db. at 10 kc., in theory the combined results are 12 db. and 120 db. for the respective bandwidths, when there is no leakage around the filters through lack of shielding. When the filters are staggered to reduce the bandwidth (Fig. 3), the skirt steepness of either predominates, and the former advantage (steeper skirts) is no longer in effect. Since the various knobs are not ganged, it is up to the individual to learn how to fly the combination. Doing it is much easier than talking about it!

More Bandspread

The HRO here (modified) has a spare set of coils covering 3.5 to 4 Mc. on bandspread setting. By resetting the padders (series) the low-frequency edge was lowered to put 3 Mc. at 18 on the dial. This gives a fine tuning control for moving the 3-Mc. center of the received signals at the rate of change of about 500 cycles per division on the HRO dial.

The spread of the converter dial is about 500 kc. Mechanical bandspread of the main shaft is 16 times via the tuning control, giving just over 60 kc. per tuning knob revolution. This is no great hardship with a smooth-operating (non-sticking) system. An added help on most receivers would be to have an auxiliary control on the h.f. oscillator with plus or minus about 2 kc. in 180 degrees for good measure.

Flying It

With the two-filter system, as the bandpass is narrowed by tuning the HRO off "3" Mc. a few hundred cycles in either direction, the b.f.o. may be adjusted a short way off the narrowed band the same as has been the practice for years using a "single signal" crystal filter. Once the selected width has been established, the b.f.o. and HRO tuning settings are hands off, and further tuning remains to be done with the converter alone. This is similar to the technique used with single-signal c.w. reception, and also to the present technique of tuning s.s.b., or A-1 on exalted carrier. If you are careful in tuning, it is possible to stack the two filters, and the old i.f. crystal, with an audio filter at the top. This really quiets the band down, but stand by when Zero-beat Algernon gets on frequency! QST

Strays

Want a free wall chart(22" × 28") of schematic symbols? Write to Electronic Instrument Co., Inc., Long Island City 1, New York.

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The longest QSO to end all long QSOs (we hope). KØMHC and KØJYL maintained continuous contact on 75 meter phone for 39 hours. They even recorded the marathon on tape!

—•••—

And if you think that's bad, listen to this. A mobile phone gathers no morse.

—•••—

K6BX, Box 385, Bonita, Calif., would like to hear from anyone who has modified a Viking Valiant for use with a B&W 51SB, and from anyone who has converted the 11-meter band to 6 meters on the Valiant.

The Audofil

Audio Selectivity for the Novice

BY LEWIS G. McCOY,* W1ICP

One of the less expensive ways to increase the selectivity of a receiver is to add a *Q* multiplier. However, if you are using a small receiver that has no b.f.o. but makes the i.f. stage oscillate when you switch to c.w. the *Q* multiplier does no good. The solution then is to add *audio* selectivity, and the unit described here will do a bang-up job in the application. With all new parts it will cost about 50 per cent more than an inexpensive *Q*-multiplier kit; with a little shrewd buying and bargaining you can do much better.

MANY newcomers start out in ham radio with what can be best classed as a "minimum" receiver. By minimum, we mean one that doesn't have features usually found in higher-priced models, particularly the ability to separate the signals in crowded bands. In some instances these poorer receivers could be improved by changing or adding circuitry. However, there seems to be an impression among many amateurs that only the chief engineer of a receiver factory is qualified to remove the bottom plate of a receiver. In fact, most hams break out in a cold sweat at the thought of using a soldering iron on their receivers.

We aren't going to ask you to dig into your receiver to improve the selectivity. Instead, you will be shown a fairly simple method of obtaining selectivity without doing any more to your set than exchanging plugs at the headphone jack. You will have to build the unit, but it is independent of the receiver.

What It Is and What It Will Do

The Audofil is essentially a filter network for audio frequencies and its circuit, Fig. 1, is similar to one originally described by W3FQB.[1] Audio from the receiver is fed into the filter, and any frequencies below 500 and above 900 cycles are attenuated. The filter output "peaks" at approximately 700 cycles. By restricting the audio-frequency range, a good deal of interference can be eliminated. We tried the filter in the crowded Novice 80-meter band, using a receiver with poor selectivity. Many signals that were masked by high-frequency notes became good copy when the filter was switched in.

In order for a filter to work properly it must be terminated in a load for which it is designed. This is accomplished in the Audofil by having the correct load at R_1 in the grid circuit of the second section of a 12AU7 twin triode. Output is taken from the plate circuit of the second section.

While we weren't looking for additional audio gain, it was noted that the unit did provide a slight amount. If your receiver is lacking in gain you may find that the Audofil will make up for this deficiency.

The Audofil could be powered by a voltage source giving approximately 125 volts d.c. at 25 ma. and 6.3 volts at 300 ma. However, we think it is a pain in the neck to try to find the voltages in your receiver or transmitter, so a simple power supply was built into the unit. The d.c. output voltage from the supply shown in Fig. 1 is approximately 125.

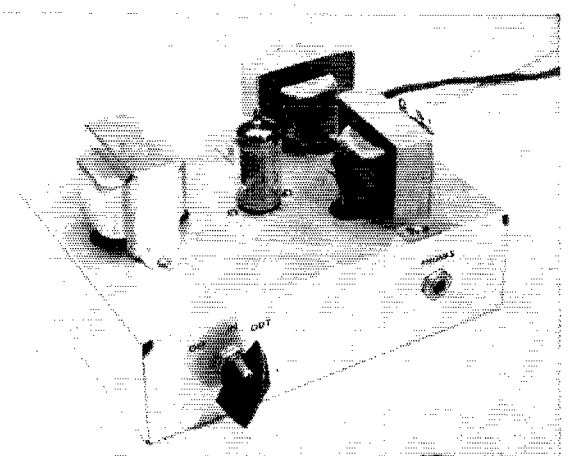
One thing more. The filter is designed for copying c.w., not phone. On phone its selectivity attenuates the "highs" and "lows" and you may not find it to your liking in voice work.

Construction Details

A 2 × 5 × 7-inch aluminum chassis was used for the unit shown in the photographs. However, any chassis large enough to accommodate the components can be used. When mounting L_1 and L_2 on the chassis, their cores should be set at

* Technical Assistant, *QST*.

[1] Montgomery, "A Low-Cost Audio Filter," *QST*, June, 1950.



The Audofil is a two-section selective audio amplifier designed to sharpen up a broad c.w. receiver or to use where a Q multiplier won't work. Complete with its own power supply, it requires no modification of the receiver. The two filter inductors at the right are output transformers with the cases removed; they are held in place by cardboard clamps.

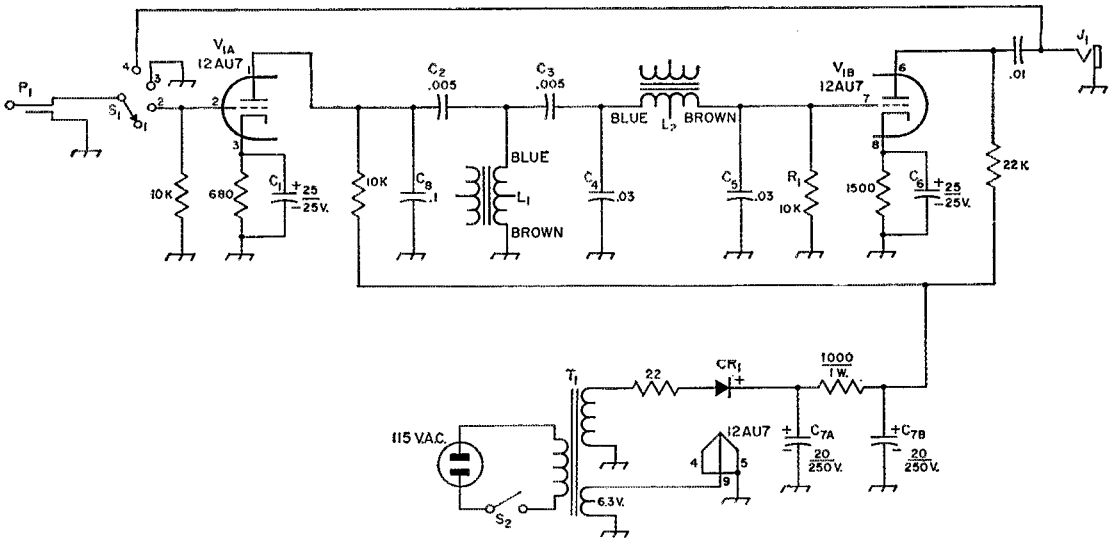


Fig. 1—Circuit diagram of the Audofil. Unless otherwise indicated, capacitances are in μf., resistances are in ohms, resistors are ½ watt.

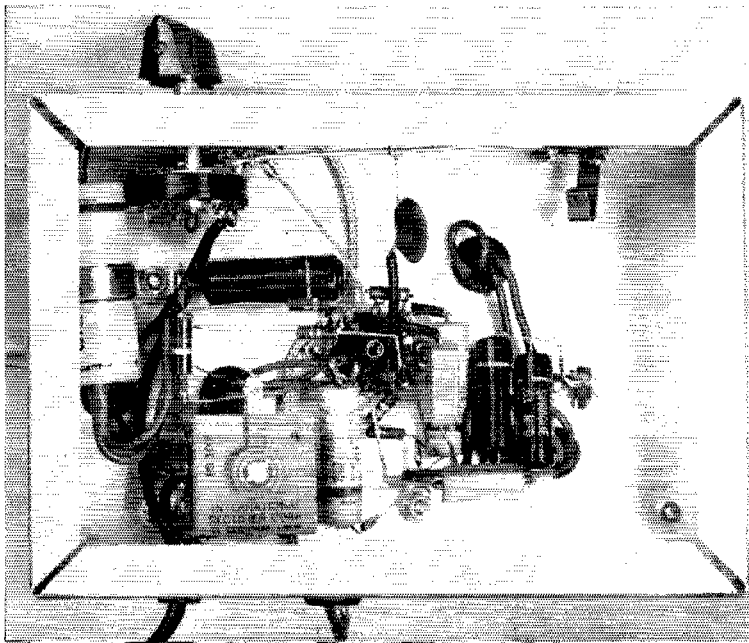
C_1, C_6—25-μf. 25-volt electrolytic.
C_2, C_3—0.005-μf. mica, 20 per cent tolerance.
C_4, C_5—0.03 μf. paper, 20 per cent tolerance (Mallory type GEM-413, or Sprague type 4TM-S3).
C_7—Dual 20-μf. 250-volt electrolytic.
C_8—0.1-μf. 400-volt paper (Mallory GEM-401 or Sprague 4TMP1).
CR_1—Selenium rectifier, 130 volts, 65 ma. (Federal type 1002A or 1386, or equivalent).
J_1—Open-circuit phone jack.
L_1, L_2—4.5 henrys (approximate) total primary winding of Triad S-53X universal output transformer. See text.
P_1—Headphone plug.
S_1—Single-pole, 4-position with a.c. line switch (S_2) attached (Centralab type 1465).
T_1—125 volts at 50 ma., 6.3 volts at 2 amp. (Stancor PA8421 or equivalent).

right angles to each other and on the side of the chassis away from the power transformer. This mounting minimizes chances of hum pickup.

An inductance of approximately 4.5 henrys is required at L_1 and L_2, and it was found that the primary winding of a Triad S-53X audio output transformer had this value. (The primary center tap and the secondary were not used.) In order to increase the Qs of the chokes their iron mounting frames were removed. These frames are easy to remove by first bending back the small tabs and then slipping the frames off the cores. Cardboard strips were made to replace the frames, to provide a nonmetallic clamp for the cores.

Standard terminal tie points were used for mounting components under the chassis. Layout of the parts is not critical, and no difference

(*Continued on page 158*)



Underneath the chassis the power-supply components are grouped in one corner (lower lefthand in this view). The shielded wire runs to the input plug, P_1.

C.W. Monitor for the Mobile

(*And Home Station, Too*)

We've known a microphone manufacturer or two who operated mobile c.w. by choice, and there have been others from time to time. But this article is by one who was forced to it by the simple desire to make a contact now and then through the evening QRM.

BY HERMAN LUKOFF,* W3HTF

SHOULD you read this article? Perhaps this little test will help you decide: You have just spent all day on the road and you finally pull into a motel for the evening at least 50 miles away from any large city. Which of the following statements is true?

1) You can go to a local drive-in and enjoy the show.

2) You can read a good book.

3) You can have lots of good QSOs with your mobile rig.

If you have checked No. 3 you had better read on, brother, because you aren't going to do it — that is, unless you know how. It's a known fact that unless you were lucky in hitting a short skip opening, the 10-meter band will be deader than a doornail and the lower-frequency phone bands will be impossible with QRM from high-power home stations. Nature is so perverse that when you finally have time to settle down to an evening's enjoyment of ham radio there isn't a QSO to be had. Perhaps you had counted on keeping in touch with some of your buddies back in the home town while you were on the road. Too bad; you won't get them on the crowded bands.

The answer, gentlemen, is c.w. — ugh! yes, c.w. (This is where I lose half of the readers.) I have found a whole new world of possibilities with the use of mobile c.w. It's no trick at all to keep skeds with the XYL back at home or to scare up some new countries on 20. There is no limit to the number of contacts you can make without worrying about being blasted out of the picture. I have all 49 states worked and confirmed from my mobile, along with 35 countries, and only Asia needed for WAC. In any event, it is either c.w. or solutions 1 and 2. You do have that much choice.

In the course of my mobile c.w. operations with either the XYL driving the car or myself at the wheel of the parked car, I soon found that operating the key was much more difficult than at the home station. The key clicks get lost in the high ambient noise from the engine and, to further confuse the issue, the dynamotor whine changes frequency several seconds behind the key closing. It rapidly became apparent that a keying monitor was essential unless I didn't mind sounding like a "lid." (After all, I could blame it on the excusable conditions.) I chose the former solution.

Keying monitors are of two types — those actuated by the r.f. output and those operated directly by the key. The r.f.-actuated variety have the advantage of providing proof of r.f. output but have the disadvantage of requiring coupling to the r.f. output. In a completely shielded transmitter driving a coax line this may present a problem. Some r.f. voltage could be taken from the final tank or output circuit but its amplitude will change drastically from 10 to 80 meters because of the large differences in mobile antenna impedances at these frequencies. Manual adjustment or attenuation would be required to prevent the r.f. from overloading the keying monitor and possibly blowing it up if it were transistor operated.

With these thoughts in mind, I settled on the key-operated type. It was also to be transistorized to conserve space and d.c. power. W1ICP in September 1957 *QST*[1] described a keying monitor using a neon-bulb oscillator that was both simple and inexpensive. The only objection I have to it is that it generates just enough audio power to drive headphones. The circuit shown in Fig. 1 is an adaptation of the idea with improvements for mobile use.

V_2, V_3 and R_1 form a voltage-regulator circuit that supplies +120 volts to the neon-bulb oscillator, V_1. Voltage regulation is very essential for mobile operation, otherwise variations in dynamotor voltage caused by motor acceleration, load varying because of antenna swaying, and similar changes, will cause large audio-frequency changes and erratic operation. With the voltage regulator there is no change in audio tone under any conditions. V_1, R_2, R_3 and C_1 form the neon-bulb relaxation oscillator, with C_1 performing the dual function of coupling capacitor and timing capacitor for the oscillator. Q_1, the transistor amplifier, acts as a Class B amplifier because there is no path for quiescent base current. With no signal input the collector current is very small, being just the leakage current of the transistor. When the key is closed V_1 fires and C_1 discharges through the base resistance of Q_1,

* 909 Glenview St., Philadelphia 11, Pa.

[1] McCoy, "A $1.69 Keying Monitor," *QST*, Sept., 1957.

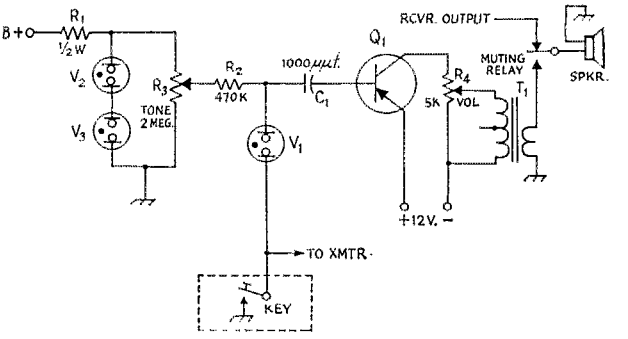


Fig. 1—Circuit of the c.w. monitor. Either terminal of the 12-volt battery may be grounded, depending on the grounding system used in the car.
C_1—0.001-μf. paper, ceramic, or mica.
Q_1—See text
R_1—Dependent on supply voltage; see text.
R_2—0.47 megohm, ½ watt.
R_3—2-megohm control.
R_4—5000-ohm control.
T_1—Transistor output transformer, 500 to 3.2 ohms (Lafayette TR95).
V_1, V_2, V_3—NE-2 neon bulb.

which now becomes a low impedance of approximately 1000 ohms. The pulse of base current produces a corresponding but much larger pulse of collector current. C_1 continues to discharge into the base resistance until the voltage on the neon bulb drops so low that it extinguishes. The voltage on the plate of the neon bulb then rises as C_1 charges up to the point where V_1 will break down and fire again, thus repeating the cycle. The familiar sawtooth voltage is observed at the terminal of the neon bulb but it is not used directly. Fig. 2 shows actual waveforms measured from ground to the upper electrode of V_1 and between ground and the base of Q_1, the negative terminal of the 12-volt battery being grounded.

Fig. 2—Voltage waveforms across neon bulb and at base of transistor amplifier.

A volume control, R_4, is provided so that the monitor will not be too great an attraction for dogs, woodpeckers and the FBI. Audio output is more than is actually required and does need attenuation, depending on ambient background noise conditions. The audio output is switched to the receiver speaker by a pole of the muting relay. Muting the receiver by opening the speaker lead is more satisfactory for c.w. use than opening the receiver power-supply lead, because the high-frequency oscillator continues dissipating the same power and therefore the frequency drift is minimized between transmissions. For those not inclined to change their muting methods, a small 2½-inch p.m. speaker is recommended for permanent connection to the monitor output. The output transformer is a miniature transistor type available from Lafayette Radio in New York City for less than one dollar. The center tap on the primary is not used. Neon bulbs are of the NE-2 pigtail-lead type.

Just about any transistor will work in this circuit so long as the collector breakdown voltage is greater than 12 volts. Typical usable units are the 2N256 and the 2N301 of the power variety, and the CK760 and 2N107 of the 50–100-milliwatt range. Lower voltage units such as CK722 can be used if the supply voltage is reduced from 12 to 6 volts and a decrease in audio output is tolerable. Six volts can be taken from the junction of two 220-ohm ½-watt resistors connected between 12 volts and ground.

Q_1 must be a p-n-p type transistor. An n-p-n unit cannot be substituted by reversing power-supply polarity, because the input pulse is unidirectional in the negative direction and would drive an n-p-n unit farther into cutoff.

The dissipation in the transistor is very low because of the normally biased-off condition when the key is up and the low duty-cycle pulse input when the key is down.

The components are all small enough to be incorporated in nearly any existing rig, but the monitor can be built as an independent auxiliary if desired. The number of interconnections is very small. B+ may be anything in the range of 200 to 600 volts and can be taken from either the transmitter or receiver power supply. R_1 should be 820K if B+ is between 400 and 600 volts and 470K if B+ is between 200 and 400 volts.

To place the monitor into operation, first close the key and then turn R_3 until a tone is heard. R_3 may be used to adjust for the most pleasing tone. R_3 is also used to turn the monitor off, during phone operation. Simply turn the control to the end of its rotation in the direction that lowers the pitch of the audio note. V_1 will extinguish completely.

If the tone jumps occasionally, change V_1. Some neon bulbs are subject to instability. This phenomenon is caused by the ionization path wandering around between the two electrodes and sometimes may be visually detected as well.

The monitor may be used for home-station operation as is. The 12 volts or less may be taken from batteries, a voltage step-down network, or from a cathode-bias resistor.

Perhaps it won't be too long before the expression "U R first mobile worked on c.w. OM" becomes less frequently heard on the amateur bands. QST

Coaxial Cable Attenuation

Some of the Whys and Wherefores

BY MICHAEL FERBER,* W1GKX

That there are power losses in coaxial cable is well known, but just how those losses are distributed among the various parts of the cable is not-so-common knowledge. The variability of some of the factors is probably even less well known.

COAXIAL cable attenuation can be attributed to two factors: basic losses in the cable components themselves, and the additional losses resulting from operating with an excessive standing-wave ratio. The ideal coaxial cable would consist of two highly polished, silver-plated copper tubes placed concentrically, using dry air as a dielectric material, with no variation in concentricity of the tubes. Such cable construction is obviously rather difficult to attain, and indeed can only be approximated in rigid applications.

For flexible applications, a precisely constructed cable utilizing a low-loss plastic material for a dielectric and braided copper wire for the outer conductor is the only satisfactory answer, and so most of our well-known coaxial cables are of this type.

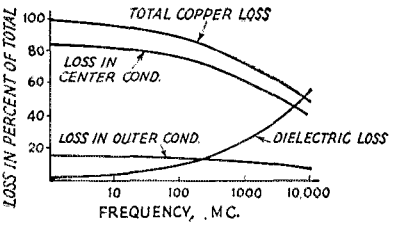


Fig. 1—Relative cable component losses *vs.* frequency.

Examination of Fig. 1 reveals that at 100 Mc. 80 per cent of the attenuation of a solid-dielectric cable using a low-loss dielectric such as polyethylene is due to copper loss in the center conductor. The remaining loss — approximately 20 per cent of the total attenuation — is divided between dielectric losses and copper losses in the outer conductor. As is obvious, at this and lower frequencies the center conductor more directly affects attenuation than any other cable component, and the design of low-attenuation coaxial cables revolves about this fact. Skin effect is no less evident in coax than in other h.f. or v.h.f. circuitry, and the surface of the center conductor should have as low r.f. resistance as possible.

* % Times Wire & Cable Co., 358 Hall Ave., Wallingford, Conn.

Type RG-11/U, for instance, uses a stranded tinned copper center conductor. RG-11/U was designed for short runs or for inter-set coupling where ease of soldering was a prime factor. For transmission-line use, the 6.7 times greater resistivity of tin over bare copper results in greater attenuation, together with the use of a stranded instead of a solid center conductor. This attenuation increase (1.3 times) is a result of the spiralling effect of the r.f. current along the center conductor, coupled with the higher resistivity of the center conductor because of contact resistance between individual strands. JEL-104 is equivalent in every dimension to RG-11/U, but utilizes a solid copper-weld conductor.[1] Fig. 2 shows that the attenuation of JEL-104 is 16 per cent less than that of RG-11/U.

However, the *size* of the center conductor affects attenuation even more than the above factors. Compare the attenuation of RG-59/U and JEL-104 (Fig. 2), the former having a No. 22 center conductor and the latter having a No. 17 center conductor; the only factor here that has any significant effect on attenuation is the size of the center conductor. Obviously, if the size of the center conductor can be increased the attenuation will be decreased. Cable impedance, however, is dependent upon the ratio between the diameters of the inner and outer conductors, together with the dielectric constant of the dielectric material. The formula for determining the characteristic impedance of a coaxial cable is as follows:

$$Z_0 = \frac{138}{\sqrt{k}} \log_{10} (D/d)$$

where: Z_0 = characteristic impedance
k = dielectric constant
D = diameter of dielectric (i.d. of outer conductor)
d = diameter of inner conductor.

Therefore, assuming the usual solid polyethylene as the dielectric material ($k = 2.3$), it is obvious that the size of the center conductor cannot be increased without changing the diameter ratio and consequently the impedance of the cable. If an increase in the over-all diameter of the cable can be tolerated, the size of the conductor can be increased, thus allowing an increase in d without changing the diameter ratio and impedance. Such an approach results, naturally, in logarithmically increased bulk and weight.

[1] The JEL and JT type designations are those of the Times Wire and Cable Co., and indicate sweep-tested cables using solid and cellular polyethylene dielectric, respectively. These cable types are available through Times distributors in various parts of the country. Information concerning distribution can be obtained from the company at its home-office address, 358 Hall Ave., Wallingford, Conn. — *Ed.*

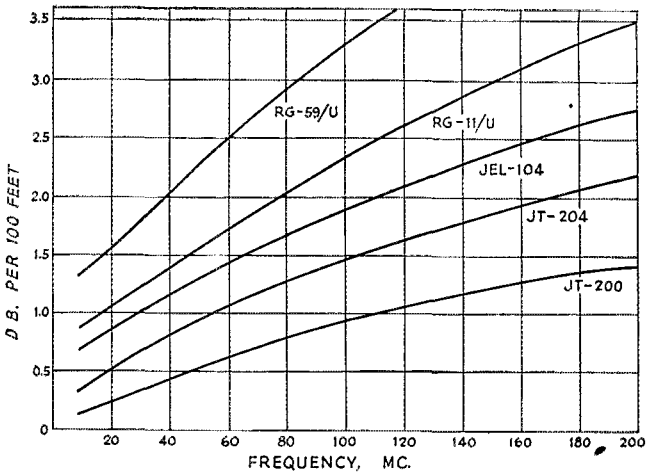


Fig. 2—Attenuation *vs.* frequency in several types of "75-ohm" cables. This graph gives comparison of cellular polyethylene (JT) and solid polyethylene (RG, JEL) dielectric coaxial cables.

Reducing the Dielectric Constant

A much better method is to decrease the dielectric constant of the dielectric material, thus allowing an increase in the size of the center conductor without necessitating a corresponding increase in the diameter of the outer conductor. Air has a dielectric constant of 1.0, and rigid cables using a center conductor supported by beads of insulating material to achieve a low dielectric constant have been used for purposes of low attenuation for years. Such constructions, however, are very expensive, besides requiring rigid support and the complicated plumbing necessary to insure pressurization to prevent moisture condensation.

Results similar to those obtained by the use of a gas-filled line can be attained with all the advantages of flexibility and lack of maintenance of the solid-dielectric cable by the use of cellular polyethylene as a dielectric material. Formed by means of a foaming agent intimately dispersed in the polyethylene granules before melting and extrusion, this material consists of a compact unicellular combination of polyethylene and air, each isolated air cell only a thousandth of an inch in diameter. The ratio of polyethylene to air is approximately one to one, with a resulting dielectric constant of 1.5.

Type JT-204 cable is equivalent to RG-11/U in all dimensions except conductor o.d., but utilizes a cellular polyethylene dielectric material permitting an impedance of 75 ohms with a No. 14 A.W.G. solid copper center conductor. RG-11/U has a 7/26 A.W.G. stranded (approximately equivalent to No. 18) tinned copper center conductor, and at 100 Mc. exhibits an attenuation of 2.25 db. per 100 feet. The attenuation of JT-204 at 100 Mc. is 1.5 db. per 100 feet, a decrease in attenuation of approximately 40 per cent as a result of the larger solid bare copper conductor. Times Wire & Cable type JT-200 is a 75-ohm cellular polyethylene dielectric cable with a jacket o.d. of 0.675 inch and a No. 10 A.W.G. solid copper conductor. As a result of the large conductor, JT-200 exhibits an attenuation of only 0.92 db. per 100 feet at 100 Mc.

Other benefits result from the use of cellular polyethyene — the weight of the cable is greatly decreased, and the tensile strength of the cable is increased (because of the larger center conductor).

Effect of Impedance Variations

Coaxial cable attenuation is also a function of v.s.w.r. in the cable itself. Cable with a certain nominal characteristic impedance does not exhibit the same impedance over the entire spectrum. Any eccentricity with respect to the location of the center conductor in the dielectric material results in a change in the effective diameter ratio and a consequent change in impedance. Cable core is manufactured by pulling the center conductor through the cross-head die of a thermoplastic extruder, which extrudes a continuous coating of dielectric material around the conductor. The polyethylene-covered conductor is then passed through a temperature-controlled water bath to cool the hot plastic material properly.

If eccentricity is combined with periodic variations in dielectric o.d. because of "surging" of the extrudate, discontinuities develop at frequencies at which the surges are one-quarter wavelength apart. These periodic resonances result in impedance variations of much greater magnitude than the variations resulting from eccentricity alone, and are coincident with sharp increases in attenuation at the resonant frequency. This phenomenon is present in all conventionally extruded cable. The degree of periodicity depends on manufacturing techniques.

It is possible to measure these impedance discontinuities with suitable equipment. Two techniques are used for production testing at Times Wire, one measuring frequency *vs.* impedance, and the other measuring frequency *vs.* attenuation. The first technique utilizes motor-driven variable-frequency oscillators, covering the range 0.5–250 Mc., mechanically coupled with a strip recorder. The output signal from the oscillator is fed to a voltage-divider network, the output of which changes as a function of the impedance of the network (cable sample) connected to it. The recorder is calibrated by establishing limits

with known impedances. An a.g.c. feedback circuit is incorporated to insure a constant output voltage. Impedance variations appear as "grass" on the graph, with variations caused by periodic discontinuities appearing as high-amplitude spikes. The frequency at which an impedance discontinuity appears is immediately identifiable by reference to the frequency-calibrated base line of the recording. Although the theoretical impedance variation of RG cables in the 75-ohm class is ±10 per cent, most standard RG cables so measured vary ±5 to 10 ohms over the entire frequency range, with occasional periodic variations of 15–20 ohms or more, as shown in Fig. 3A.

Attenuation *vs.* frequency is measured by means of a visual display. The signal from a sweep generator covering the range 0.5–250 Mc. is fed into one end of the cable under test. The output signal is amplified by a flat broad-band band-pass amplifier, rectified, and fed into the vertical plates of an oscilloscope through a calibrated attenuator. The sweep signal is displayed on the scope face as in Fig. 4 (50–250 Mc. is the swing of the sweep generator in this case). The over-all attenuation characteristic, on a comparative basis, of the cable is now visible, and amounts to a total attenuation increase at the high end of the band of approximately 30 db. (cable sample consists of 1500 feet of RG-11/U). Attenuation suck-outs resulting from periodicity in the cable are evident at 75 and 175 Mc. The amplitude of the suck-out is determined with the calibrated attenuator, and the frequency is determined by means of a marker generator coupled to the broad-band amplifier. Suck-outs of 3 to 8 db. are quite common in standard RG cable, and 60-db. suck-outs have been observed in 30 db. of cable. In long runs, suck-outs can be disastrous if they occur at a critical frequency. By means of very close control of extrusion processes, coupled with 100 per cent sweep inspection of each reel of cable, the JT and JEL series cables are held to impedance variations of ±3 ohms (Fig. 3B) and are flat within 0.5 db. in 30 db. of cable.

Resonant periodicity only becomes a problem above approximately 40 Mc., but impedance variations resulting from conductor eccentricity exist throughout the spectrum. As frequency increases, the v.s.w.r. of the cable limits its usefulness in application. As can be seen from Fig. 1, the dielectric material and braid become increasingly important above 150 Mc. The percentage of dielectric loss increases as a result of the increased power factor of dielectric materials at high frequencies. Resonant periodicity becomes more pronounced, but is relatively stable with physical movement of the cable in comparison with capacitance changes (with coincident impedance changes) resulting from flexure of the braid when operating at ultrahigh frequencies. As frequency increases to 5–10 KMc., relatively minor flexure of the cable results in large-order variations in attenuation. At 10 KMc. 70 db. of cable may only be fifty feet in length, and variations of 10 or 12 db. can result from flexure.

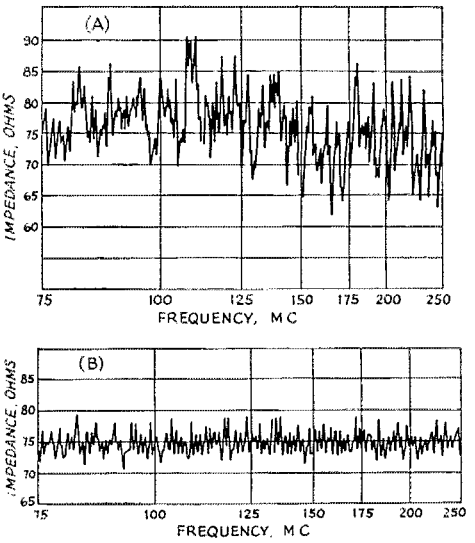


Fig. 3 (A)—Variation of impedance with frequency in a length of standard RG-11/U cable. Note the high amplitude of variations, the impedance swinging ±10 ohms or more.

(B)—Variations in pre-swept cables such as JT-204 are held within close limits.

These variations are primarily a result of the manner in which r.f. current flows along the inside of the braid. As frequency increases, the current tends to zigzag along individual wires, rather than follow the spiral of the braid. Because shield braid is made of many strands of wire in a basket-weave pattern, contact resistance at each cross-over point contributes to the r.f. resistance of the outer conductor, and the greater the number of strands the greater the contact resistance. However, by suitable choice of braid angle (that angle the strands make with the longitudinal axis of the cable) and coverage, an increased number of strands can result in increased braid pressure and consequent decreased contact resistance at cross-over points. The net result is that although contact resistance is theoretically increased by the additional strands, the actual contact resistance is decreased to a much greater degree by the greater braid pressure, the net result being a decrease in attenuation. The greater braid pressure also results in a more stable braid, with less change in attenuation with flexure. The application of a suitable tight jacket will also stabilize the braid configuration.

It is important to note at this time that losses resulting from excessive v.s.w.r. in coaxial cables are actually very small in comparison with the attenuation resulting from direct component losses. Excessive v.s.w.r. should primarily cause concern for the dielectric strength of the cable, since the maximum voltage in the line increases with the v.s.w.r. A glance at the attenuation *vs.* v.s.w.r. curves in the *Handbook* shows that v.s.w.r. must reach values in the order of 3:1 or 5:1 before appreciable attenuation is apparent. Any additional attenuation resulting from v.s.w.r. is a

function of the component attenuation already existing in the cable.

Jacket Material

One more factor results in coaxial cable attenuation — contamination of the dielectric material by plasticizers used in the vinyl jacket. Most flexible coaxial cables use polyvinylchloride (vinyl) as a jacket over the braid to protect the cable from moisture, sunlight, and abrasion. Vinyl in its natural state is a very stiff material, which resists any flexing. In order to make vinyl pliable, or plastic, certain plasticizers are added to the vinyl compound. In the case of JAN cables such as RG-8/U, RG-11/U, RG-58/U, and RG-59/U, a non-resinous plasticizer is used. Upon exposure to the elements, particularly summer temperatures, the plasticizer leaches out of the vinyl and migrates into the polyethylene dielectric, contaminating it to the point where the dielectric constant and power factor are raised. As a result, the v.s.w.r. of the cable is increased, as is the attenuation. As a secondary result of the migration of the plasticizer out of the jacket, the vinyl becomes brittle and loses its pliability, with consequent cracks and breaks. The life of cables jacketed with contaminating types of vinyl is between three to seven years before contamination increases to the point where attenuation is extraordinary. The degree of contamination increases exponentially beyond this point, rising to very high values. One to two db. per hundred feet in RG-11/U at 30 Mc. is a common attenuation increase after contamination has begun.

The above cable types and other RG cables using contaminating type jackets have been largely supplanted by cables electrically and dimensionally identical, but with non-contaminating type jackets. Cable types like RG-8A/U, RG-11A/U, RG-58B/U and RG-59A/U, for instance, utilize resinous plasticizers and offer life

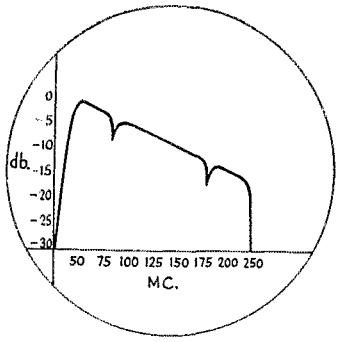


Fig. 4—Resonant periodicity in cable results in additional attenuation at frequencies at which a quarter wavelength of the cable is resonant. This effect can be observed visually by means of the sweeping technique described in the text.

expectancies in excess of fifteen years. The price differential between cables using the two types of jackets is approximately one dollar per hundred feet.

High-molecular-weight carbon-black-loaded polyethylene [2] jackets such as Xelon contain no plasticizers of any nature, and offer life expectancies in excess of 25 years, in addition to being ten times less permeable to moisture than polyvinylchloride. For this reason, polyethylene jackets (which, incidentally, are usually specified for submarine cables) permit direct burial of coaxial cable.

I would like to thank Larry DeGeorge, W1ISV, for his invaluable assistance in preparing this paper, and also the Engineering Department of the Times Wire and Cable Company for the preparation of the graphs and charts used as illustrations. QST

[2] Not to be confused with dielectric polyethylene which does not stand up well as jacket material in outdoor service. — *Editor.*

Strays

Here are the April schedules for the various MARS technical nets.

First Army MARS

(Wednesday evenings 2100 EST, 4030 kc., upper sideband)

April 1 — Variable Reactance (Parametric) Amplifiers.
April 8 — Electro-mechanical Filters.
April 15 — Phosphors and Electro-luminescence.
April 22 — Atlas-Score Communications System.
April 29 — Interchanging Scientific Information by Multilateral Radio Communication.

AF-MARS Eastern

(Sundays 1400 EST, 7540, 3295 kc.)

April 5 — Comparison of Analog and Digital Computers.
April 12 — Characteristics of Transistorized Digital Computers.
April 19 — Installation and Maintenance of Radioteletype.
April 26 — Physiological and Psychological Effects of Air Ionization.

AF-MARS Western

(Sundays 1400 PST, 7832.5, 3295, 143,460 kc.)

April 5 — Automatic Multipurpose Electronic Checkout System for Military Weapons Systems or Industrial Systems.
April 12 — CompressorAmplifiers,Transistorized Telephone Repeater Amplifiers and 24-Volt Power Supplies for the Air Force "Quick Fit" Program.
April 19 — Silicon Rectifiers.
April 26 — Equipment Utilization and Conversion Information.

An Inside Picture of Directional Wattmeters

What They Do—How They Do It

BY WARREN B. BRUENE,* WØTTK

INSTRUMENTS for measuring the standing-wave ratio and r.f. power in coaxial transmission lines are becoming increasingly popular. They are not only very useful but are becoming almost a necessity in setting up a modern amateur station. It is the writer's purpose to discuss the differences between some of these devices and to give a clear picture of how they work.

The basic principle of directional coupler operation is common to all of them so it will be discussed first. This will make it easier to understand the differences between the various types.

Standing Waves

Fig. 1 shows the voltage and current that can be measured at various points along a transmission line that is not terminated in its characteristic impedance. These are called standing waves because they have a fixed position for any given load impedance. The wave shape is not a sine wave and is not to be confused with the shape of an r.f. cycle. The voltage plotted in Fig. 1 can be measured using an r.f. voltmeter, and the current can be measured by cutting the line at various points and inserting an r.f. ammeter. The readings are the r.m.s. value of the sine-wave r.f. voltage or current existing at each point.

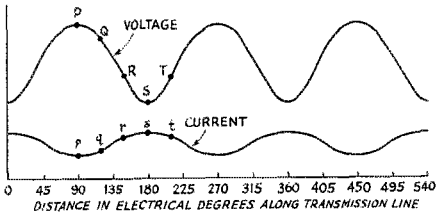


Fig. 1—Voltage and current standing waves as a function of distance toward the load along a lossless transmission line.

* Technical Consultant, Collins Radio Co., Cedar Rapids, Iowa.

We wouldn't attempt to guess the numerical value of the ratio

Hams who use s.w.r. bridges and don't know how they work

Hams who use s.w.r. bridges and do know why they work

but it must be pretty high. If you want to move from the numerator to the denominator of the expression above, here's the article to help you do it.

Forward and Reflected Components

Textbooks tell us that the voltage on a line can be considered to have two components: a forward component, E_F (sometimes called the incident component), and a reflected component, E_R. As shown in Fig. 2, the phasor sum of E_F and E_R represents the actual r.m.s. voltage, E, at any point along the line. When the two components are in phase a voltage maximum occurs and when they are out of phase a voltage minimum occurs. The same is true of current.

An important thing to note is that at any point along the line the reflected components of voltage and current are exactly 180 degrees out phase. This agrees with the well-known fact that a voltage maximum occurs at a current minimum, and vice versa.

Forward and Reflected Power

The forward power in the transmission line is

$$P_F = \frac{E_F^2}{Z_o} = I_F^2 Z_o \qquad (1)$$

where Z_o is the line impedance.

The reflected power is

$$P_R = \frac{E_R^2}{Z_o} = I_R^2 Z_o \qquad (2)$$

The actual power, P, delivered to the load is the forward power less the reflected power

$$P = P_F - P_R \qquad (3)$$

This is all fine and dandy, but we need some way of measuring the forward and reflected components of voltage and current to make much practical use of it. This is what a directional coupler does.

How the Directional Coupler Works

The directional coupler can sense either the forward or reflected component by taking advantage of the fact that the reflected components of voltage and current are 180 degrees out of phase while the forward components are in phase. A small voltage derived from the current in the line is added to a sample of the voltage across the line. If these two samples have the right amplitude relationship, the two reflected components cancel. The sum then represents only the forward component. By reversing the phase of the current sample 180 degrees, the forward components cancel and the result is the sum of only the reflected components.

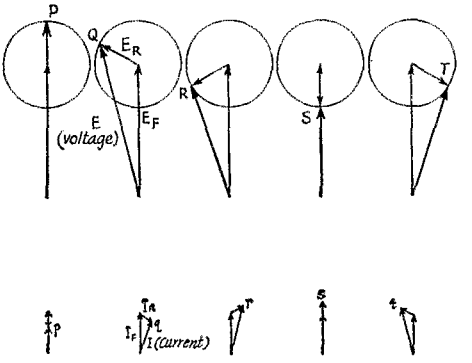


Fig. 2—(A) Phasor diagrams of forward and reflected components of voltage of several points along the transmission line. (B) Phase relationships between forward and reflected components of current at points corresponding to those in A. The letter designations are the same as in Fig. 1.

Fig. 3 shows a "Micromatch" type directional coupler. A small resistance, r, is placed in series with the line. The line current, I, flowing through r develops a voltage e_r which is directly proportional to the line current. The + and − signs indicate the voltage polarity at a given instant. At the same instant a voltage e_v of the indicated polarity is developed across the capacitive voltage divider. Point C is common to the two voltages so their sum appears between points A and B. A diode detector can be used to rectify this voltage and feed it to a meter through a pair of r.f. chokes to indicate the forward component.

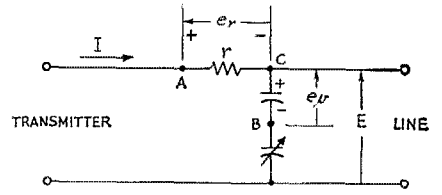


Fig. 3—The basic "Micromatch" circuit. With proper circuit constants, the voltage between A and B is zero for the reflected wave, hence any voltage that appears between these two points is caused by the forward wave.

By reversing the transmitter and antenna connections, the current will flow through the resistor in the opposite direction. This reverses its + and − signs and the voltage across the detector is the difference between the two voltages, so the meter will indicate the reflected component. This is illustrated by the phasor diagrams of Fig. 4.

As mentioned previously, the amplitude of e_v must be adjusted so that its reflected component is equal and opposite to the reflected component of e_r. When this condition exists the forward components are also equal in magnitude but are in phase. To achieve this balance the variable capacitor in the voltage divider is adjusted so the reflected-power meter reading is zero when the line is terminated in its characteristic impedance. A good dummy load with zero reflection coefficient is used for this adjustment.

The voltage at the diode detector is derived half from the current, I, and half from the voltage, E. It doesn't matter what you call it, so we'll just call it a voltage proportional to the forward or reflected component. As stated previously, the power varies as the square of either voltage or current. It follows, then, that power also varies as the square of the forward and reflected components detected by the directional coupler. The meter scale can be calibrated to

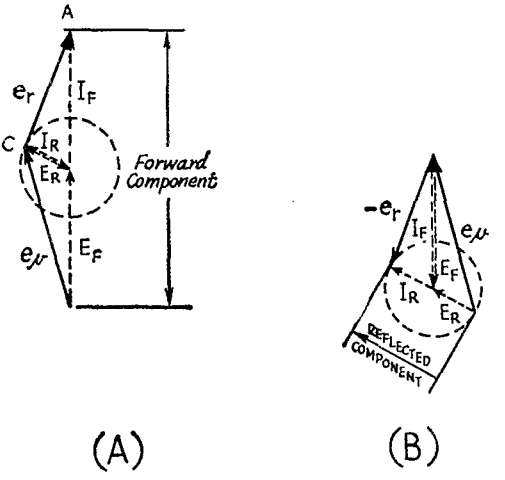


Fig. 4—Phasor diagrams showing current-voltage relationships existing when the Micromatch circuit of Fig. 3 is connected in the line at point Q, Fig. 1. (A) Connected to read forward component; (B) connected to read reflected component.

read power directly. If the voltmeter is linear its scale calibration will follow a square law as shown in Fig. 5. One-quarter power is at half scale and one-sixteenth power is at one-fourth scale. In other words, the meter scale is made to do the squaring required by equation (1).

A very useful property of this device is that it

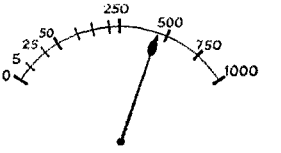


Fig. 5—Square-law scale for a directional wattmeter. For any full-scale power calibration, calibration points for a linearly-calibrated scale (such as is on a d.c. milliammeter) can be found from $S\sqrt{x/W}$, where S is the maximum value of the linear scale, x is the value of power to be calibrated, and W is the maximum power (full scale value coinciding with S).

gives the same meter readings no matter where it is located in the standing wave. This is because the forward and reflected components as shown in Figs. 2 and 4 have the same magnitude at every point along the line, when line loss is ignored.

Standing-Wave Ratio

A convenient and common method of defining how well the load is matched to a transmission line is to express it by the standing-wave ratio. The following equation,

$$S.W.R. = \frac{1 + \sqrt{\frac{P_R}{P_F}}}{1 - \sqrt{\frac{P_R}{P_F}}}, \qquad (4)$$

can be used to calculate s.w.r. from forward and reflected power measurements. A new chart, Fig. 6, was devised by the writer to eliminate all of

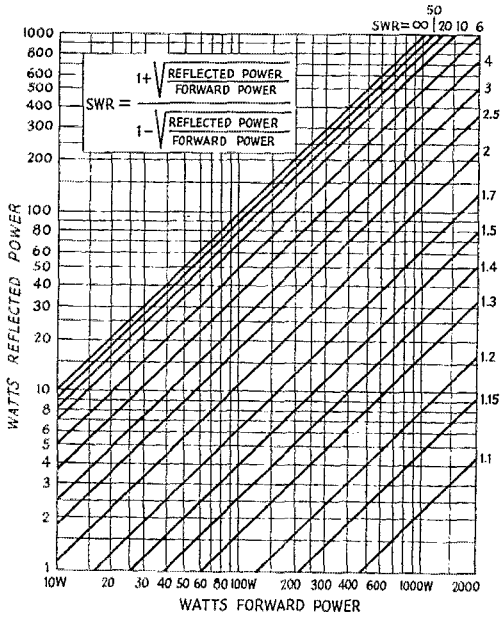


Fig. 6—Standing-wave ratio chart for use with directional wattmeters.

this calculating, however. To use it, just find the point where the ordinate and abscissa representing the measured values of reflected and forward power intersect, and read the s.w.r. by interpolating as necessary between the diagonal s.w.r. lines. For example, with 250 watts forward power and 10 watts reflected power, the s.w.r. is 1.5 to 1.

S.W.R. Meters

An examination of equation (4) shows that only the *ratio* of forward to reflected power need be known to establish the s.w.r. In other words, the actual power in watts is unimportant.

An s.w.r. meter, like the directional wattmeter, has a directional coupler for sensing the forward and reflected components. A meter sensitivity control is provided so that when sensing forward

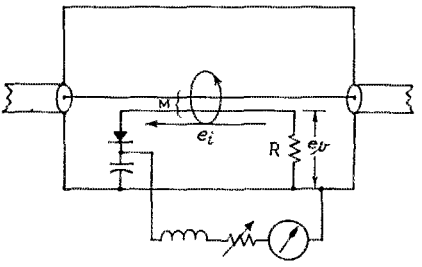


Fig. 7—Basic "Monimatch" circuit.

power the meter can be set for a full-scale reading. The meter scale can be calibrated to show s.w.r. directly when switched to sense the reflected component. The scale calibration can be theoretically obtained from equations (1), (2) and (4). In practice it may be modified some because the r.f. diode detectors are not perfectly linear, especially at low signal levels.

An important feature of s.w.r. meters is that it is possible to use a simple and inexpensive coupler, since ability to read actual watts accurately is not required. The Monimatch[1] is a typical example. As shown in Fig. 7, a pickup wire placed parallel to the inner conductor samples the line current by inductive coupling. The voltage e_i induced in the pickup wire is determined by spacing, length, line current and frequency. The mechanical dimensions determine the mutual inductance, M. The induced voltage due to line current is

$$e_i = -j\omega I M = -j2\pi f I M \qquad (5)$$

where f is frequency in c.p.s. This shows that the higher the frequency, the larger the induced voltage.

The sample of voltage is picked up by capacitive coupling from the inner conductor to the pickup wire. A current due to this capacitance flows through R and develops a voltage across it; this voltage also increases with frequency because the reactance of the coupling capacitance goes down with frequency. That is.

$$e_v = \frac{E}{X_C} R = \frac{ER}{\frac{1}{-j\,2\pi fC}} = j2\pi fERC \qquad (6)$$

when X_C is much larger than R. Since the current and voltage pickups both increase with frequency, their ratio will stay the same. The variation in pickup just means that the sensitivity goes down at lower frequencies. This is why the minimum power required to get a full-scale reading is greater on the low-frequency bands.

The j term means that the pickup voltages are 90 degrees out of phase with the line voltage and current. This does not matter, because both voltage and current pickup voltages are shifted in phase. The value of R must be kept very small in comparison with the capacitive coupling react-

[1] Measurements chapter, *ARRL Handbook;* also *QST*, October 1956 and February 1957.

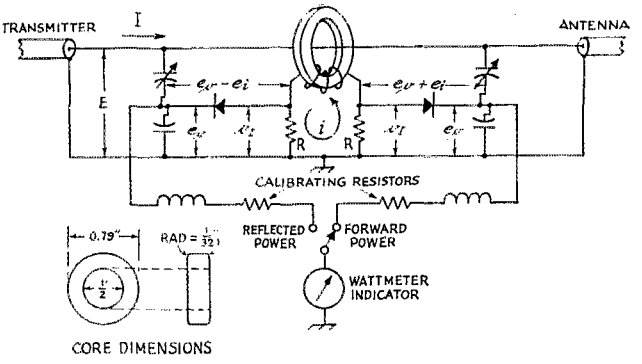


Fig. 8—Directional wattmeter circuit using inductive current sampling. The toroid coil is 60 turns of No. 30 enameled wire wound on a carbonyl E core of the dimensions given. The cores used in the Collins 302C are made by Radio Cores, Inc., 9540 S. Tulley Ave., Oak Lawn, Ill., part No. 57–1541.

ance, X_C, or a phase error will exist in the amount of $\tan^{-1}\frac{R}{X_C}$. However, the resistance R must not be too small either, because the voltage developed across it depends upon its resistance. Phase error can be caused in the current pickup if the inductance of the pickup wire is appreciable compared with the effective series resistance in the loop. R contributes some of this, but most of the effective series r.f. resistance is attributable to the diode detector and its load circuit. Proper choice of physical dimensions and component values will permit good operation over all h.f. amateur bands. Of course, the voltage and current pickups must be equal, and they are normally balanced by bending the pickup wire to change its relationship to the center conductor.[2]

Usually, two identical elements are employed, connected in reverse so one senses the forward component and the other the reflected component. To use it, you switch to the forward-power pickup and set the meter sensitivity control to get a full-scale reading, which also is at infinite (∞) s.w.r. Then switch to reflected pickup and the s.w.r. is read directly. To minimize error, both sides should be identical, of course. Actually, a principal cause of error probably is the nonlinearity of the diodes. This would show up as a different s.w.r. reading when measuring with low power than when measuring with high power.

In addition to simplicity and low cost, the s.w.r. meter is almost burnout proof and can be calibrated for direct s.w.r. readings.

Directional Wattmeter

These instruments are designed to indicate r.f. watts flowing in the transmission line. The s.w.r. coupler just discussed could use a meter calibrated directly in watts, but for a given setting of the sensitivity control the calibration would be good for only one frequency. A preferable coupler circuit is one that is independent of frequency over the desired range. One such type is the "Micromatch" coupler shown in Fig. 3. Another type of coupler is shown in Fig. 8. It has the advantages of eliminating the resistor in series with the line and the attendant heat generated, and it also gets the detector circuit off the "hot" center conductor which greatly simplifies the r.f. choke problem.

The voltage sample is independent of frequency because it is taken through just a capacitive voltage divider. The current is sampled by inductive coupling to a toroid coil. The line current induces a voltage in the coil and as a result current flows through the coil and its series resistor. The value of resistance is kept small compared with the coil reactance so it has little effect on coil current. The coil current then is determined by the induced voltage and coil reactance:

$$i = \frac{e_i}{X_L} \qquad (7)$$

The voltage drop across the resistor, R, is iR. Putting all this into one equation for the voltage sample of line current,

$$e_i = iR = \frac{e_i}{X_L} R = \frac{-j\omega I M R}{j\omega L} = -I\frac{M}{L}R \qquad (8)$$

The effect of frequency cancels out because the coil reactance goes up with frequency at the same rate as the induced voltage goes up. Thus the current in the coil is independent of frequency.

One interesting thing that surprises many people at first is that the voltage across the resistor increases when you take off coil turns. The reason is that the reactance varies as the square of the number of turns but the induced voltage in the coil only varies directly with the number of turns. Another point of interest is that the voltage induced in the coil actually does not appear between any two points, providing the circuit isn't opened. The theoretical induced voltage may be 100 volts yet the highest voltage in actual existence is across the series resistor and may be only 1 volt or so.

The useful frequency range is limited at the low-frequency end when the coil reactance becomes so low that the series resistor causes a noticeable phase error. Low values of resistance — 10 to 50 ohms — are therefore used. The high-

[2] The value of R also may be varied to bring about the null reading in the detector circuit, since a change in R changes the capacitively-coupled voltage, e_v, across it (and thus the voltage applied to the detector) without affecting the voltage induced through the mutual inductance. This method generally is more "sensitive" — i.e., leads to more pronounced changes in the capacitive/inductive voltage ratio — than changing the position of the coupling wire. — *Ed.*

frequency end is limited by the series self-resonance of the coil. Another limitation is the effect of lead inductance of the resistors *R* which must be kept to an absolute minimum. Proper design for a given frequency range calls for proper choice of coil material, physical size and number of turns.

The meter scale for the directional wattmeter can be calibrated to take into account any diode nonlinearity. Separate scales are generally necessary for different power ranges.

Directional wattmeters have the unique ability to indicate the actual watts of power in a transmission line even in the presence of standing waves. The value of measuring actual transmitter r.f. output needs no elaboration. The s.w.r. on the line can also be determined with the aid of Fig. 6.

Monitoring S.S.B. Power Level

Directional wattmeters are calibrated with an unmodulated radio frequency. A speech signal or a two-frequency test signal may not give the readings expected unless their peculiarities are understood. The r.f. detectors in directional wattmeters are simple amplitude detectors. This amplitude has to be squared to convert to a power indication.

The average level of speech is quite low as compared with its peaks, and it is generally accepted that the average level is 18 db. below peak. Speech processing or a good a.l.c. circuit will increase the average level substantially, but because of the nature of speech waveforms and meter response time the meter doesn't kick up as one would like. Ideally, the meter should show actual peak output power. This could be accomplished by replacing the conventional microammeter indicator with a peak-reading instrument. One make of coupler (Collins 302C series) made a substantial improvement by adding a capacitor in the r.f. detector output circuit to make it more of a peak-reading device.[3] It isn't perfect, but this simple addition increases the peak wattmeter reading on s.s.b. voice by about four times. This gives the operator a much better indication of his signal level although it still only kicks up to around 65 per cent of the actual peaks. The meter reads about 77 per cent of actual peak power with a two-tone test signal. The added capacitor has no effect on the single-tone power readings, of course.

[3] The capacitor must be connected to the detector side of the calibrating resistors. A 4- to 8-μf. 6-volt electrolytic is suitable.

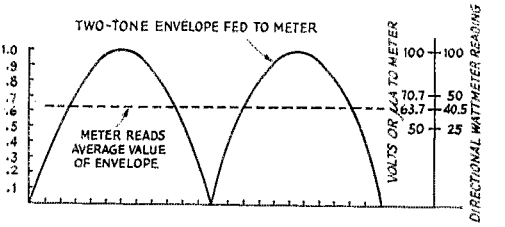


Fig. 9—Relationship between power indicated by an r.f. wattmeter and the actual power in a two-tone test signal, using a directional wattmeter without peaking capacitor.

An instrument without these peaking capacitors should theoretically indicate 40.5 per cent of the actual peak power of a two-frequency signal. Why 40.5 per cent instead of 50 per cent? Let's take a look at Fig. 9. The rectified envelope of a two-frequency signal is the shape of half sine waves. The r.m.s. amplitude is 0.707 of the peak. When squared this gives 50 per cent, which is the actual average power output as a percentage of peak power. However, conventional meters show the average value instead of the r.m.s. value. The average value of half sine wave is $\frac{2}{\pi}$ or 0.637. Squaring this gives 0.405 or 40.5 per cent. Errors can easily creep in because of distortion, unequal tone amplitudes, and detector nonlinearity. The meter scale squares the total error, also, so power readings up to 10 per cent high are common.

A nice project for the ambitious gadget builder is a peak-reading amplifier for connecting between the coupler and the indicator to show actual peak power. Collins couplers are well suited for this because the indicators have 1000 ohms resistance and all calibration is done in the coupler. A peak-stretching amplifier with exactly 1000 ohms input resistance and unity peak gain will do the job. It may be best to disconnect the 4-μf. electrolytic capacitor in this case. Other instruments can also be used by designing the proper input impedance, output impedance and gain characteristics into the amplifier for the particular instrument involved. QST

Strays

Allied Radio of Chicago reports a record enrollment in its Novice code and theory course. 110 students registered for the 14-week winter session, which meets Monday nights in Allied's cafeteria. There is no charge for the course, which is conducted by W9WOV and W9BHD. Allied provides tapes and records, while theory is taught using ARRL's *License Manual* as a guide.

QST for

Turnstile for Two

A Horizontally Polarized Omnidirectional Mobile Antenna

BY E. LAIRD CAMPBELL,* W1CUT

"Hey Mister! Do you have TV in your car?" This is the question usually asked when a bystander sees the turnstile antenna shown in the photograph. The antenna is not designed for TV reception, of course, but does perform as a nondirectional two-meter horizontally polarized antenna.

In mobile service, a horizontally polarized antenna has a considerable advantage over a vertical whip,[1] although the vertical is easier to mount. This advantage is especially marked when working with a horizontally polarized station over a line-of-sight circuit — and most fixed stations on two meters are horizontally polarized. Horizontal polarization helps reduce pickup of ignition noise from other cars — and from one's own car, too — since this type of noise tends to be vertically polarized.

A mobile antenna should have omnidirectional characteristics since its position will be constantly changing with respect to the station being worked. The turnstile has this feature.

What Is a Turnstile?

A turnstile is simply two ½-wave dipoles crossed at right angles to each other, with the two fed equal currents in 90 degree phase relationship. The resulting radiation pattern is practically a circle. Fig. 1 shows the pattern of a turnstile compared with that of a simple half-wave dipole. When the turnstile is mounted on a car the pattern will be modified somewhat but will remain generally omnidirectional.

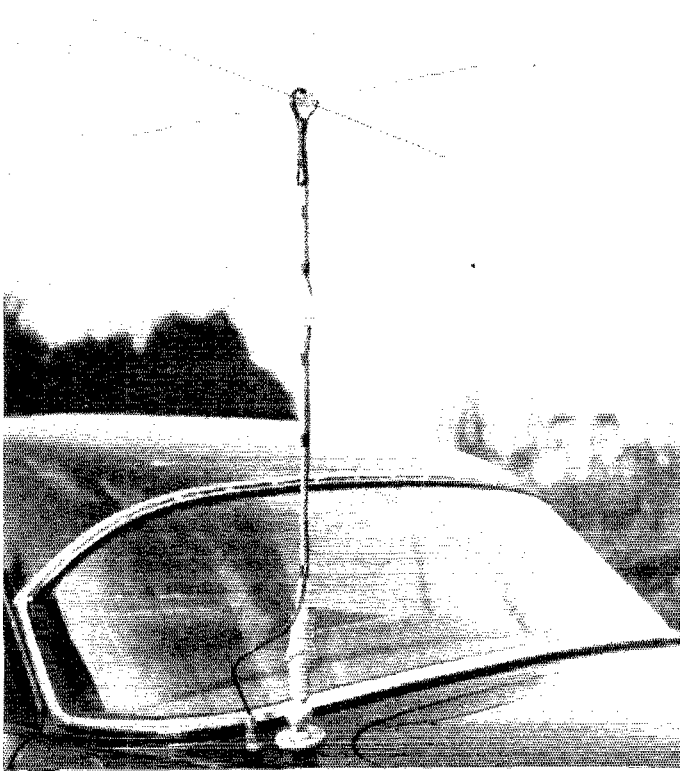
A quarter-wave line section between the two dipoles is used for providing the 90-degree phase shift, as shown in Fig. 2. Since each dipole has an impedance of about 70 ohms, the quarter-wave section must have a characteristic impedance of the same value if the currents in both elements are to be equal. This results in a feed-point impedance of about 35 ohms.

Feeding the Turnstile

It is desirable to transform the 35-ohm antenna impedance to a value that can be matched by available types of transmission line. For 73-ohm line, this transformation can be done easily with a quarter-wave impedance transformer or "Q" section. The required characteristic impedance of a matching section can be calculated from the formula:

$$Z = \sqrt{Z_1 Z_0}$$

where Z_1 is the turnstile feed impedance and



The turnstile mounted on the car body near the trunk lid. Electrical connections are made by means of a coaxial feed-through connector adjacent to the base mount.

* Technical Assistant, *QST*.

[1] Tilton, "Polarization Effects in V.H.F. Mobile," *QST*, Dec., 1956, p. 11.

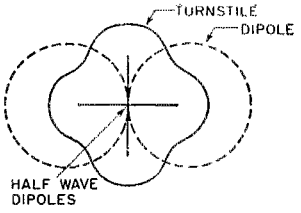


Fig. 1—Pattern of turnstile antenna (solid line) and simple dipole (dotted line).

Z_0 is the characteristic impedance of the transmission line. Substituting 35 ohms for Z_1 and 73 ohms for Z_0 (RG-59/U feed line) the required characteristic impedance of the "Q" section is very close to 50 ohms. Thus RG-58A/U cable can be used for the impedance transformer. A "70-ohm" line of any length can be used to feed the antenna through the "Q" section. Fig. 2 shows the electrical connections.

To calculate the physical length of the quarter-wave sections the following formula is used:

$$\text{Length (inches)} = \frac{2950}{f} v$$

where f is the frequency in megacycles and V is the velocity factor of the transmission line. The velocity factor of both RG-59/U and RG-58A/U is 0.66, so a quarter-wave section for 145 Mc. will have a length of 13½ inches. Lengths for other frequencies may be found by substitution in the formula.

Mechanical Details

Fig. 3 shows the mechanical details of the turnstile. The antenna may be considered to be made up of three major parts — the base, the supporting mast and the top section. The latter includes the supporting hub and the elements.

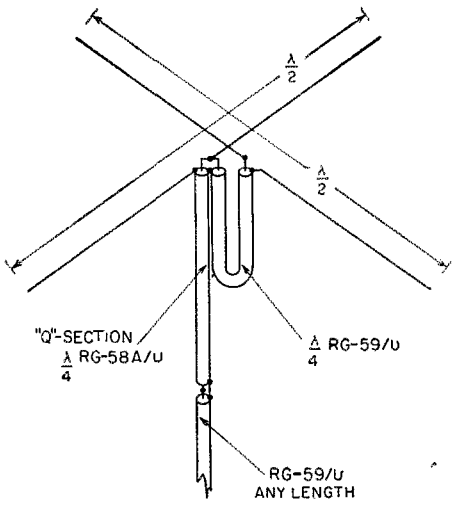


Fig. 2—Electrical connections of the turnstile. The length of each dipole is calculated by the usual formula: Length in inches = 5540/freq. (Mc.). For 145 Mc. the dipoles are 38¼ inches long. The phasing and Q sections are each 13½ inches for the same frequency.

The supporting hub is a short cylinder cut from plastic rod. Polystyrene rod is available from most mail-order houses, but any type of low-loss plastic or bakelite may be used. The hub should be at least 1 inch in diameter and about 1 inch thick. A ¼-inch hole is drilled through the center to fit over the ¼-inch supporting mast. Five other holes are drilled as shown in Fig. 3 with a No. 36 drill, and then tapped for 6-32 threads.

The dipole elements are ⅛-inch aluminum rods; these can be welding rods, usually obtainable in small quantities from local welding shops or suppliers. The antenna shown in the photograph uses ⅛-inch rods of 2024-T4 (24S-T4) aluminum, which were obtained from a local metal supplier. This type of rod is springy and hard enough to take a 6-32 thread.

Assembly of the turnstile involves the attachment of the elements to the hub along with the solder lugs, nuts and lock washers, as shown in Fig. 3. The rods should not penetrate the hub far enough to make contact with the mast. The assembly is slid over the mast and secured by tightening the 6-32 set screw. Then the electrical connections shown in Fig. 2 should be made. The junction between the 50-ohm "Q" section and 70-ohm feed line can be made conveniently by using the small BNC coaxial connectors. A type UG-89/U connector is used for the "Q" section and a type UG-260/U connector for the feed-line end.

A standard mounting collet, Ward type 89-358, is used for the turnstile base. The collet comes with a ¼-inch hole in one end and a ⅜ SAE stud on the other. The ⅜-inch thread is standard for mating with mobile spring-base mounts. The collet has set screws for anchoring a ¼-inch rod in the hole. Other types of collets, with different hole sizes, are available. If one having the desired hole size is not obtainable the hole may be shimmed or enlarged to fit the diameter of the supporting mast.

Rod or tubing ¼ inch in diameter is strong enough to support the turnstile if it is mounted on the rear deck of the car as shown in the photograph. If bumper mounting is used, requiring a longer mast, a larger diameter should be used. Of course this means a larger hole will be needed in the collet and element hub.

A coax feed-through connector (Amphenol 83-1F) can be mounted beside the base mount to feed the transmission line through the car body, or the line can be routed under the car or through the trunk lid crack to the transmitter. The quarter-wave sections and feed line can be taped to the mast with Scotch electrical tape.

Experience has shown that it is best to mount the antenna on the driver's side of the car. This will reduce the chance of hitting low-hanging tree branches. A height of about 6½ feet above ground is recommended. This is low enough to pass safely under most trees, underpasses, and toll gates but high enough to avoid knocking off a traffic policeman's hat!

Turnstile Operation

Mobile operation with a turnstile antenna will be a pleasant experience for those who have been restricted to vertical polarization. Signals from other horizontally polarized stations will have less fading and flutter than before. Noise, the real demon of mobile operation, will be reduced to the extent that some of those weak ones can be copied. Practical tests have shown that the turnstile gives better over-all performance in mobile use than the horizontal halo antenna.

Turnstiles are not restricted to mobile operation. They make good omnidirectional fixed-station antennas, either singly or stacked at ½ wavelength intervals. An installation of this type will make an excellent base-station antenna for civil defense groups.

Turnstiles can be constructed for other bands by substituting the appropriate frequencies in the formula for the quarter-wave line sections given earlier in the article. The regular formula for half-wave dipole length should be used for each turnstile element. However, horizontal antennas become impractical for mobile use on the lower frequencies because of their size.

One can judge for himself as to the ruggedness of the antenna. The one shown in the photo has had two years of mobile operation. QST

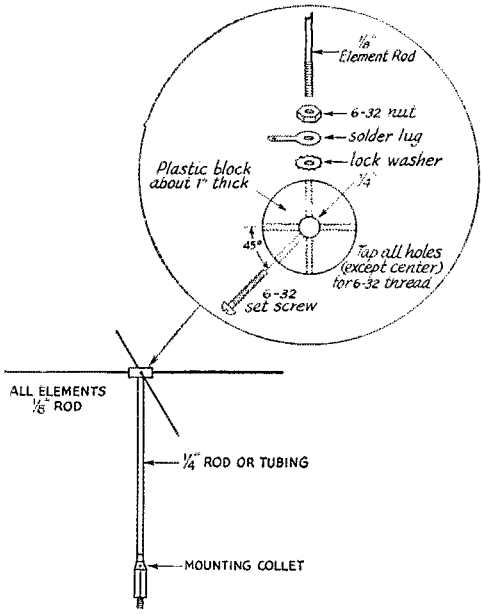


Fig. 3— Mechanical data for the turnstile antenna.

Strays

We've let you off easy on these "coincidence" strays lately, eh? Well, here's another one. W2BOT and W9CAS QSOed on February 7, 1928, and again on February 7, 1959 — 31 years almost right to the minute, and purely by chance.

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W7AFL and W7CIO both live in Seattle.

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K2VSO has his call letters on his Pennsylvania license plates. He's in the Air Force, has always kept his home plates on his car, and says he was not questioned by the Pennsylvanian authorities when he applied. [See "Correspondence From the Members" this month (p. 162) for another example of this. — *Ed.*]

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KN8LRD (YL, age 16) is disrupting the on-the-air activities of KN8LET and K8IKM (OMs, age 15).

Oregon hams are inviting fellow hams around the world to come to the Oregon Centennial celebration, which is being highlighted by the Oregon Centennial Exposition and International Trade Fair June 10 through September 17. Using special QSL cards provided by the Centennial Commission, with postage paid by the amateurs, some 15,000 of the invitations will go out during the next few months. Here W7QFY (left) discusses the scheme with W7FY. W7QFY and W7EFJ sold the idea to the Centennial people on the basis that hams could reach more places in the world faster than any other group. W7FY is the oldest of Oregon's 1800 hams, having been active for over 50 years.

Converting the Viking Ranger for 50-Mc. Operation

Swap 11 for 6, Retaining All Ranger Operating Features

BY STU ROCKAFELLOW, W8NJH*

CONVERSION of the Viking Ranger for 6-meter operation is about a 5-hour job, but if you are interested in the band the time is well spent. Following the process outlined here results in 6-meter output with the bandswitch in the 11-meter position. In view of the recent loss of the 11-meter band, this is a highly desirable exchange. V.f.o. operation is retained, and the final stage of the Ranger operates straight through on 50 Mc., with efficiency nearly comparable to that obtained on lower frequencies.

Many conversions of bandswitching commercial gear achieve 6-meter performance of a sort by running the final stage as a doubler. This was tried with the Ranger, but the efficiency was very low. The plate of the 6146 ran a dull red with only 40 watts input, and the output was less than 10 watts. Changing to straight-through operation made it possible to run 60 watts input without plate color, and the indicated output was nearly 40 watts.

The v.f.o. is padded so that it tunes from 6250 kc. up on the 11-meter range. This is quadrupled to 25 Mc., and then doubled to 50 Mc. in an added stage, to drive the final amplifier. The output stage is neutralized by the link method. Addition of a simple low-pass filter helps to prevent spurious radiations and TVI. The conversion process and the low-pass filter have no effect on the operation of the Ranger on lower frequencies.

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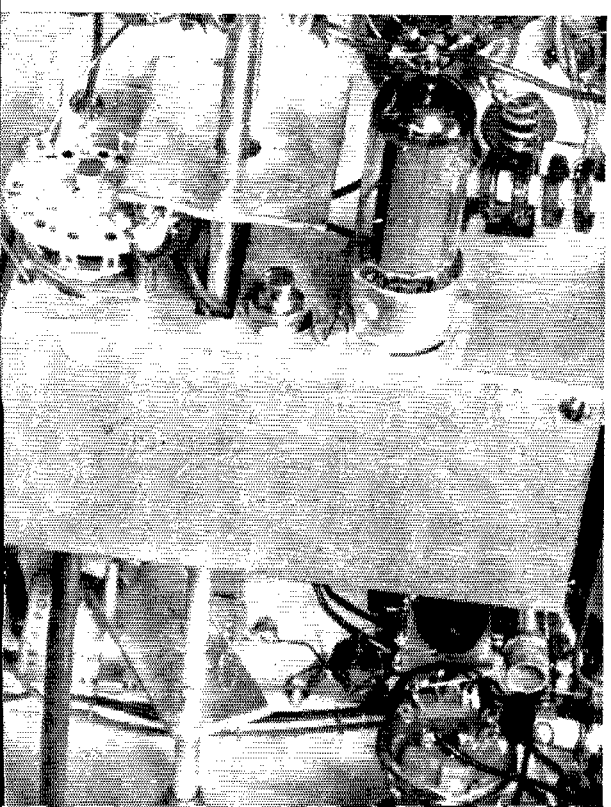


Bottom view of the converted Ranger, showing the extra doubler stage mounted in place.

V.F.O. Conversion

The tuning range of the v.f.o. with the bandswitch in the 11-meter position starts at 6750 kc. This can be dropped to about 6500 kc. with the trimmer included in the original circuit. We want it to go down to about 6200 kc., so extra capacitance is added across the tuned circuit.

Remove the side cover from the v.f.o. enclosure by first removing the two holding nuts at the bottom of the chassis. Then remove the two rectifiers and the two 6CL6 tubes from their sockets to give more working room. Connect a 20-μf. capacitor (preferably silver-mica) from Terminal 11 on the switch on the bottom of the v.f.o. case to ground. This is the second terminal to the left of the support post of the switch. Lead lengths here are not critical, because of the low frequency involved.

With the added capacitor in place, set the bandswitch to the 11-meter position and the v.f.o. dial to the low end of the range. Put tubes back in their sockets, set the operation switch on the "tune" position and turn on the power. Adjust the trimmer C_4 until the signal is heard at 6250 kc. If you do not have a receiver capable of tuning to 6250 kc., run a wire from the antenna connection of your 50-Mc. receiver to a point close to the buffer coil under the shield in the center of the chassis. This will give an indication on 50 Mc., even though a frequency multiplication of 8 times is involved. The left end of the dial now represents 50 Mc., and the v.f.o. will cover 50 to 52 Mc. Replace the v.f.o. cover with whatever screws you have not lost by this time.

With the drive control set at about 9 o'clock, adjust the buffer tuning capacitor for maximum output on 25 Mc. (This can be read as maximum output on 50 Mc. on your receiver, as before.) The capacitor will be near maximum setting when the circuit is tuned to 25 Mc.

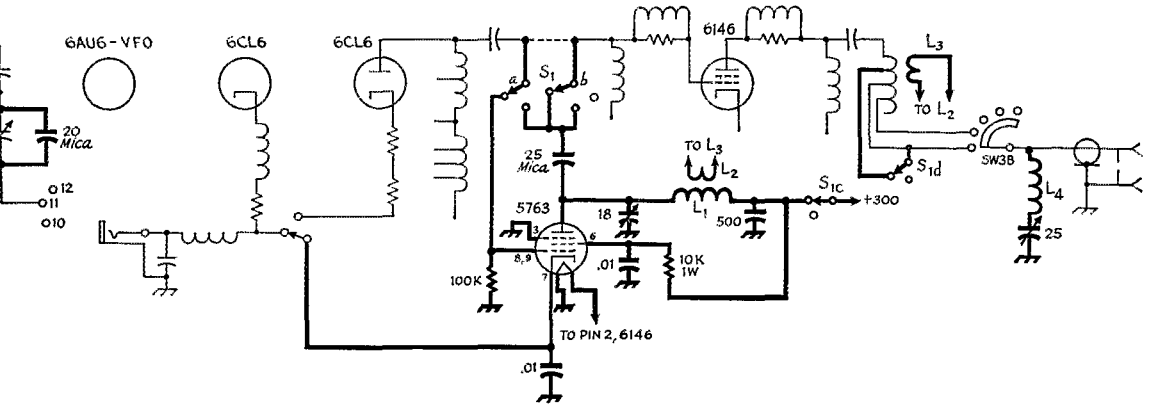


Fig. 1—Diagram showing changes made in the Ranger for 50-Mc. operation. Light lines are those of the original Ranger circuit. The 5763 doubler is an additional stage, cut in for operation on 50 Mc. only. Capacitor values above 500 are in μf.; 500 and .01 are disk ceramic.
L_1—9 turns No. 16, ¼-inch diam. Space turns 1 wire diam.
L_2—2 turns insulated hookup wire, ¼-inch diam., inserted between turn at bottom of L_1. See text for information on L_2, L_3, and connecting twisted-wire link.
L_4—6 turns No. 14, ½-inch diam. Space turns wire diam.
$S_{1\,a,b,c,d}$—Wafer switch, 4-pole 2-position.

Adding the Doubler Stage

Remove the shield covering the buffer coil and switch assembly. This will serve as the chassis for the extra doubler stage. Holes to be drilled are shown in Fig. 2. Looking at the shield as it appears in the drawing, the hole at the right is for the switch. The shaft protrudes into the shield, and it is driven through an extension shaft that runs out to the front panel. The knob for this switch is between and just below the bandswitch and the auxiliary coupling control, and is the only addition that shows externally. The hole adjacent to the narrow slot in the shield is for the miniature variable capacitor that will tune the doubler plate circuit. The largest hole is for the tube socket. The socket, capacitor and all extra parts except the switch are inside the shield.

The circuit of the doubler stage and the changes in the Ranger circuitry are shown in Fig. 1. The original Ranger wiring is shown in light lines, the doubler and changes in heavy lines. Wire the doubler stage completely, except for the switching connections for the final tank. Leave the heater, cathode and B-plus wires about a foot long. Make the input and output wires (to arms of $S1_a$ and $S1_b$ in Fig. 1) about 5 to 6 inches long. Solder all wires into the circuit as shown, with the shield hanging loose, but grounded, for tests. Parts designations in the text are those used in the Johnson Ranger manual.

The B-plus wire is connected to the red 300-volt wire going to the buffer switch. The heater wire is soldered to Pin 2 on the 6146 socket. The cathode wire should go to a point which is grounded by the "operate" switch. It may be tied in with the cathode of the crystal oscillator or buffer. Pick the connection that is not grounded in the standby position. Changes made in the Ranger for timed keying may put one or the other of these cathodes at ground potential. Be sure to make this connection to the switch side of the resistor.

Unsolder the mica capacitor, C_{22}, connecting the buffer plate coil to the 6146 grid, lifting it at the r.f. choke end. As shown in the schematic diagram, this capacitor is then wired to couple into the doubler grid circuit, when the auxiliary switch is in the 50-Mc. position. The other section of this switch also couples the doubler output to the 6146 grid, in the same position. To check the wiring before applying power, turn the switch to the 6-meter position and read resistance across the doubler tuning capacitor. It should show high. Check continuity from the doubler cathode to ground. This should be open in the standby position of the operate switch, and closed when this switch is set for voice operation.

Three different types of tubes have been tried in the doubler, the 6CL6, 12BY7 and 5763. Except for the different socket connections re-

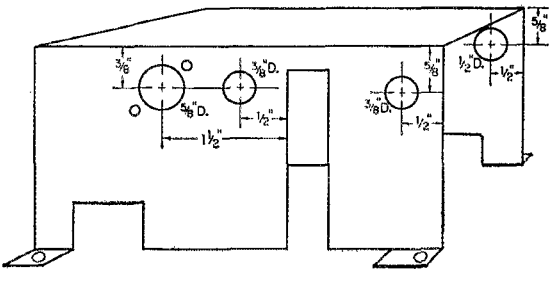
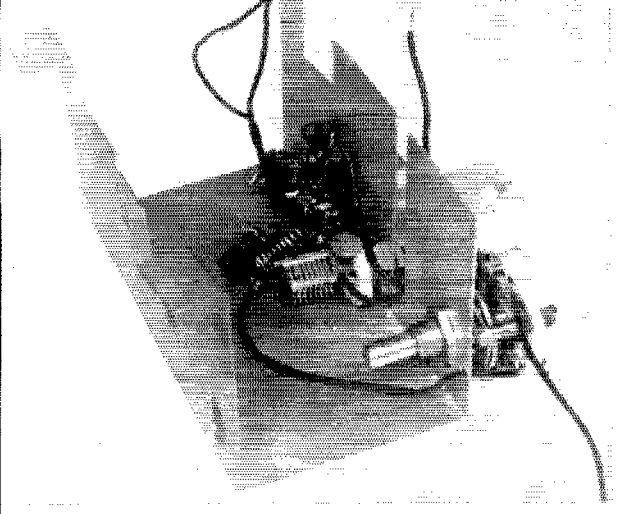


Fig. 2—Layout of holes to be drilled in the buffer shield assembly to be used for mounting the extra doubler stage.



Interior of the buffer shield, showing parts mounted for the doubler stage. Twisted wires at the top of the picture are for the link and coupling loop to the final grid circuit.

quired, there was little difference between them. The tuning capacitor in the doubler is a miniature, Johnson 160-110, this smallest type being preferred because of the limited space available.

Testing the Doubler

With the temporary connections having been made and the wiring checked, turn on the power, with the operation switch in the tune position. Turn the drive control to about 10 o'clock, and tune the doubler capacitor for maximum drive to the final. This should be at least 2 ma., and it may go as high as 2½ ma. It should now be possible to vary the drive from zero to over 2 ma. with the "drive" control, but there will be little increase in grid current beyond about 12 o'clock on the control.

Some extra grid current may be obtained by adjustment of the coil L_5 in the Ranger. This is a slug-tuned coil in the 6CL6 plate circuit. Some compromise adjustment may be necessary to get adequate drive on 50 Mc. and all lower bands, but even a small adjustment may help out on 50 Mc.

When these checks are complete, unsolder the temporary connections. Take about three feet of insulated hookup wire, and at the center form a 2-turn loop around a pencil. Fasten this loop within the doubler plate coil, at the B-plus end, with household cement. Twist the remaining wire together. This will be the link to the final plate circuit, for neutralization.

Fasten the extension shaft for the switch assembly in place, and drill a hole in the Ranger front panel to pass this shaft. Remove all temporary connections and install the shield and doubler in place. It may be necessary to bend the buffer coil downward in order to make room for the added parts. Make sure that all parts are clear. With the shield fastened and permanent connections made, adjust the doubler tuning for maximum grid current in the middle of the portion of the band you intend to use most often. With a 2½-ma. maximum drive the current should hold up to at least 2 ma. over any 400-kc. section of the band. At least 1.5 ma. is necessary for good phone operation.

Converting the Amplifier

Using one of the remaining switch sections in the final amplifier switch, SW_{3B}, connect a solid wire from one terminal to any one of the wires running to the final plate coil, L_{11}. All the tap leads are connected together when the bandswitch is in the 11-meter position, so connection to any wire is permissible. From the other switch terminal run a solid insulated wire up through one of the available holes to the final plate coil, connecting it one turn from the end. Now cut out the last turn in back and substitute a 2-turn ½-inch diameter coil. Be sure that this is wound in the same direction as the large coil.

Connect a 50-watt light bulb to the Ranger output and tune the final for maximum output at 50 Mc. The plate tuning capacitor should be as near minimum capacitance as possible, and still tune. The auxiliary coupling is on position 7 and the coupling capacitor in the pi network will be at about 2 o'clock, or closed about one-fourth of the way. Check again to be sure that the final plate circuit actually tunes through resonance.

Final Adjustments

With the final stage tuned to 50 Mc., turn the operate switch to "tune." With an indicating wavemeter or grid-dip meter coupled to the final plate coil, tune the plate circuit and the meter control for maximum indication. (Even without power on the final plate there will be some indication of 50-Mc. output.) Note the reading. Now with the two-wire neutralizing link from the doubler plate coil, make a 2½- turn ½-inch loop for coupling to the final plate coil. Adjust its position with respect to the plate coil for minimum feed-through indication on the meter. If the meter indication will not drop, turn the coil around and try again. The purpose of this link is, of course, to feed back energy out of phase with that fed through the tube, to neutralize the effect of the latter. The adjustment should be made carefully for lowest feed-through, and then the loop should be fastened in place so that its position with respect to the plate coil will not change thereafter.

The trap assembly connected across the coaxial output need be used only if TVI problems arise in the operation of the converted rig on 50 Mc. When tuning the transmitter up the capacitor in the series trap should be left wide open. Once the transmitter is operating satisfactorily on 50 Mc. the capacitor in the trap circuit should be turned slowly toward maximum, noting the 50-Mc. output and the degree of TVI. If the interference is in Channel 2 (and it is caused by oscillator harmonics in the channel) it will be necessary to tune the trap down to a point where the output of the transmitter just begins to drop. Reduction of the output by 10 per cent or so will have a negligible effect at

(*Continued on page 156*)

Diode Time-Sequence Keying for the DX-100

BY PHILLIP J. REICH,* W2HUG

THE Heath DX-100 is probably the most popular ham transmitter in its power class. However, its c.w. performance is outclassed by other transmitters using time-sequence keying, which minimizes key clicks and v.f.o. chirp. A simple, new keying circuit was developed for the writer's DX-100 which gives excellent performance equal to that of older time-sequence circuits but uses no tubes and fewer components.[1] The cost of the parts runs to about $4. The circuit can be used in other transmitters with possible minor changes in component values.

The advantages of time-sequence keying (also called "differential" keying) are well known, and this type of keying is pretty much standard in the more polished amateur transmitter designs, both home-built and factory-made. It is particularly desirable for chirp-free break-in c.w. operation. In t.s.k. (time-sequence keying) one or more amplifier stages are keyed normally, with proper shaping circuits to give click-free output. The time-sequence circuits provide for turning on the oscillator quickly, before the keyed amplifier(s) can conduct, and for turning off the oscillator after the keyed amplifier(s) no longer conducts. As a result, the output signal is similar to one from a transmitter with a continuously-running oscillator and one or more keyed amplifier stages, and if there is sufficient isolation between oscillator and keyed stage there will be no chirp. The oscillator is turned off long enough between dots and dashes, however, for the operator to hear a breaking signal.

Bear in mind that while t.s.k. can suppress oscillator chirp in the first and last few milliseconds of each character, it cannot eliminate chirps that occur in between. Hence, the v.f.o. must be pretty clean to start with. Also, if later stages in the transmitter have parasitics, use fixed bias beyond cut-off, or are badly regenerative, key clicks may be again introduced.

The diode circuit for obtaining t.s.k. uses grid-block keying which is modified by resistance-capacitance time constants to obtain the required turn-on and turn-off sequence. Fig. 1 shows a simplified schematic of the keying circuit with typical component values. While the key is up, cut-off bias is applied to the grids of both the oscillator and amplifier stages, keeping

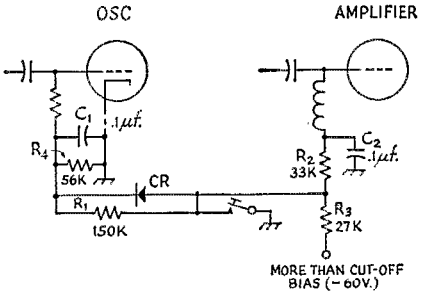


Fig. 1—Basic diode time-sequence keying circuit. The amplifier is grid-block keyed in the normal manner, with the shaping determined by C_2, R_2 and R_3. R_2 is the normal grid leak. The oscillator is turned on fast by discharging C_1 through CR, but C_1 charges slowly through R_1.

the transmitter turned off. Depressing the key removes the bias, and both oscillator and amplifier stages will operate.

When the key is depressed, the bias voltage stored in the 0.1-μf. C_1 is discharged relatively instantly through the diode. This turns on the oscillator rapidly. The bias voltage stored in C_2 must discharge through R_2 and it will take 3 milliseconds for the bias to drop from −60 volts to about −20 volts and maybe a few milliseconds more to attain full r.f. output from the amplifier.

When the key is opened, C_1 will charge up relatively slowly to cut-off bias through R_1, because the diode CR is nonconducting for this direction of current flow. Resistor R_4 forms a voltage divider to apply only a portion of the total bias supply voltage to the v.f.o. grid. This allows the oscillator to continue running for perhaps 20 milliseconds after the key is opened. The $(R_2 + R_3)$ C_2 time constant allows the bias to rise and cut off the amplifier in a few milliseconds. Resistor R_3 prevents drawing excessive current from the bias supply when the key is down but increasing its value also softens the "break" characteristic of the keying.

Some words about the diode are in order. While it could be a vacuum tube diode, a semiconductor (crystal) diode is preferable, since it eliminates the need for a filament supply and a tube socket, and it should never wear out. The best semiconductor type here is a silicon junction diode because it has much higher leakage (back) resistance than germanium diodes. The leakage resistance is important in this application because it shunts resistor R_1, and if too low it will cause changes in timing. Also, the silicon device withstands high temperature much better, including the heat of soldering in place. The peak inverse voltage rating of the diode must be

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[1] The circuit is similar to one described by Hayes, W5QNZ, in the July, 1955, *QST*. Mr. Reich was unaware of the Hayes article and arrived at a similar circuit independently. However, the Reich circuit uses different time constants that provide differential keying instead of the "automatic turner-onner" action of the Hayes circuit. — *Ed.*

greater than the bias supply voltage; a 200-volt peak inverse rated diode is safe enough. The d.c. through the diode is below one milliampere and is not important because most diodes have far greater current ratings. The type 1N538 was selected as being quite suitable electrically and also because it is produced by a number of manufacturers, making it readily available. The 1N538 is of the "top-hat" type of construction — the "top hat," or case end, is the cathode which connects to C_1 in the circuit. Correct diode polarity must be observed or else the oscillator sequence will be reversed, giving slow starting, fast stopping and intensified chirps and clicks.

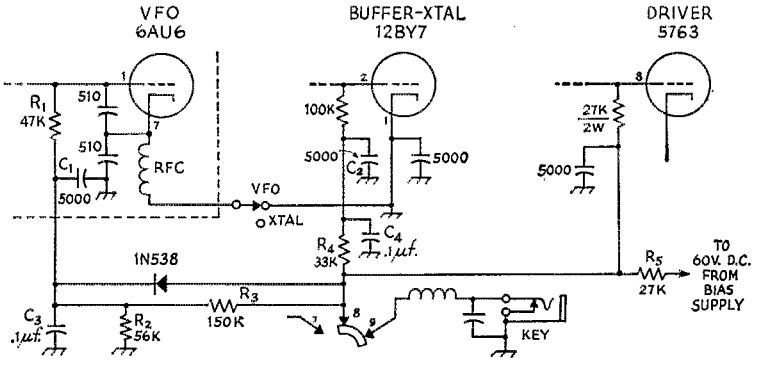

Fig. 2—Diode time-sequence keying as applied to the DX-100. The 1N538 diode, C_1, C_2, C_3, C_4, R_1, R_2, R_3, R_4 and R_5 are new. 0.1-μf. capacitors are 400-volt paper; 5000-μμf. capacitors are ceramic. Resistors are ½ watt.

Into the DX-100

Now for the incorporation of this circuit into the DX-100. The schematic diagram, Fig. 2, shows the keying circuit and those portions of the DX-100 that require changes. It should take no more than four hours to change over a DX-100 providing you are a reasonably fast worker. Except for inside the v.f.o. compartment, the changes are in noncritical portions of the circuit which are not particularly sensitive to lead lengths or stray capacity, etc. The following instructions for step-by-step modification procedure presume that your DX-100 has the original oscillator cathode keying circuit and naturally can't be followed to the letter if the DX-100 has some circuit changes already.

After removing the DX-100 from its cabinet, the side cover of the v.f.o. compartment must be taken off. An offset screwdriver will be helpful in removing some of the hard-to-reach screws. Then locate the 2200-ohm and 22,000-ohm v.f.o. grid resistors which must be removed. These resistors are quite difficult to reach with a soldering iron but if you have long-nosed pliers with a cutter at the tip you can easily clip out these resistors. Another way is to break each resistor at the center by crushing it with pliers and then bending the remaining pieces back and forth until the leads break off from fatigue. Be careful not to disturb other wiring and components in the v.f.o. circuit, to minimize changes in frequency calibration. In any case, the calibration will change a few kilocycles and should later be corrected by going through the v.f.o. alignment procedure described in the DX-100 manual.

Now fasten a terminal (tie) strip having one insulated lug and one ground lug to the main chassis top deck, using a convenient screw near the rear of the v.f.o. compartment. Find the lug on the v.f.o. bandswitch that connects to the 6AU6 control grid (Pin 1); this is switch lug No. 12 in Pictorial No. 1 of the DX-100 construction manual. Place the new 47,000-ohm grid resistor, R_1 in Fig. 2, from switch lug No. 12 to the insulated terminal strip lug. Put a 0.005-μf. ceramic disk bypass, C_1, between the insulated and the ground lugs of the terminal strip. Crimp a wire to the insulated lug and route it against the main chassis away from any frequency-determining components to go through the grommet hole at the front of the v.f.o. compartment. Let about 8 inches of wire protrude through the grommet. This wire should come into the underside of the main chassis just behind the bandswitch knob. Solder the connections.

The next step is to unsolder the grounded end of the 100K grid resistor of the 12BY7 buffer. Mount another terminal strip having one insulated and one ground lug to a convenient screw at the shield wall alongside the 12BY7 socket. Now terminate the 100K grid resistor on the insulated lug and mount a 0.005-μf. ceramic disk bypass, C_2, between the lugs of this strip. Run a wire from the insulated lug along the shield wall to the area where the wire from the v.f.o. is dangling and allow an extra 6 inches before cutting off.

Now find the green wire that runs from the bias supply bleeder to the 5763 stage grid resistor (27K). Cut this wire off at the bias bleeder end which is at lug 3 of terminal strip EE (Pictorial 5 of the DX-100 manual). Run this green wire to the same area where the other wires end.

Solder a new wire to lug 1 of terminal strip DD (Pictorial 5). This is the bias supply output voltage point. Run this wire to where the other wires end.

Locate lug No. 8 of the phone-c.w. switch (see Pictorial 6) and unsolder the blue wire which is the cathode lead of the 6AU6 and 12BY7 stages. Add a ground lug under a nearby screw and solder the blue lead to ground. Now solder a new wire to lug 8 of the phone-c.w. switch and route it to where the other wires are dangling.

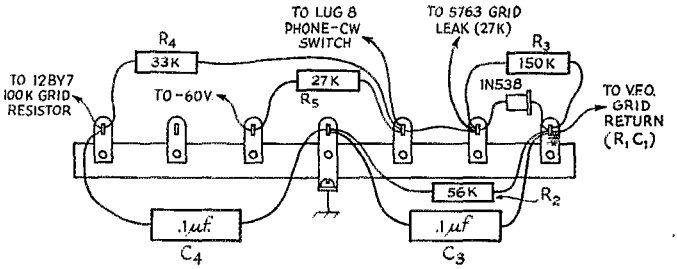

Fig. 3—Sketch of terminal strip added to DX-100. Component designations refer to Fig. 2.

Mount the rest of the components on a terminal strip as shown in Fig. 3. If you can't get this exact style of terminal strip, use another since the layout is not critical. Do not solder yet. Slip the strip into place against the underside of the chassis close to the front panel and between the bandswitch and crystal-v.f.o. switch shafts (shafts J and K, Pictorial 7). Fasten it to the screw that holds the v.f.o. front wall. Now connect the 5 wires to the appropriate lugs, as shown in Fig. 3.

This completes the job, but before you put the DX-100 back in its cabinet, make a careful check of the wiring against Fig. 2. Also, inspect for loose screws, poor solder joints and shorts, and shake out any stray pieces of wire or solder. Take it from the voice of experience; this can save you lots of headaches later.

The reason for grid-block keying the 5763 stage may be of interest to the technically minded. The 5763 stage was first included in the time-sequence keying circuit by returning its grid resistor to the same point as the 12BY7 stage. This resulted in considerable loss of r.f. drive to the final so instead the 5763 grid was changed to the connection shown. This gives a good keying characteristic and has the further advantage of giving more r.f. drive by eliminating the fixed bias on the 5763 stage.

This circuit, as applied to the DX-100, appears to be relatively noncritical of tube variations and component tolerances, and the use of an adjustable control was not deemed necessary. If it is desired to use this circuit in a different type of transmitter, it might be desirable to make R_4 (Fig. 1) a 100,000-ohm variable resistor. It should be adjusted with the oscillator alone being keyed (other stages disabled by removing tubes). Set the resistor to give a slight barely-noticeable elongation to the keyed characters. If you hear a chirp in this test at the start or end of each character, don't let it worry you; the later stages will not pass the chirp, provided the v.f.o. is otherwise clean.

Before ending, a few notes on DX-100 v.f.o. keying chirp may be helpful. In the original circuit the oscillator was prone to chirp if the key-contact resistance varied. Hard tungsten contacts were bad, and so were dirty key contacts. The new circuit is quite free from this effect. Also, the use of a rather low resistance (2200 ohms) for the high-band grid leak in the v.f.o. was found undesirable. The original DX-100 keys much better when this grid leak is changed to 47,000 ohms. Finally, replacing the 6AU6 v.f.o. tube may help appreciably, as the 6AU6 seems to develop a chirp after considerable service. QST

Strays

W3AXT, of DXerama fame, now has available a Build-A-Ward QSL Album, to be used in preserving those QSLs which you are collecting for some particular award. Gummed labels which are supplied with the album enable you to identify which of the awards the album is being used for.

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About that February cover, W6ZOL wonders if the cigarette and smoke indicate that the receiver contains a thinking man's filter.

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If you are strictly a short-wave listener, not a licensed amateur, you will be interested in the "Monitoring Station Registry Bureau" being set up by Tom Kneitel at *Popular Electronics*, 1 Park Ave., New York 16, N. Y. Send him your name, address, list of receiving equipment, and a dime. He will issue a certificate of registration.

Want a free circular slide rule? If you are an engineer or executive and can request it on your business letterhead, write to General Industrial Co., 5738 N. Elston Ave., Chicago 30, Ill. If you don't qualify as a "wheel" of some sort, this 4-inch paper slide rule will set you back half a buck.

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The Land God Gave to Cain, a novel by Hammond Innes (Alfred Knopf, $3.95) is the exciting story of a rescue in the wilds of Labrador, a rescue that came about because of the receipt of a wireless message by a ham in England. It is a story of courage and determination, and it's the sort of yarn that you'll find hard to lay aside until you finish the last page. Fortunately for the piece of mind of those hams who will read it, the ham radio angles ring fairly true. If you like adventure and an element of mystery, read it!

The Groundpole Antenna

Low-Impedance Feed on All Bands

BY R. W. JOHNSON,* W6MUR

In a previous article,[1] the author described a vertical antenna using inexpensive, strong, aluminum irrigation tubing as a vertical antenna. Reports have been received from many amateurs who have tried this antenna and found it very satisfactory. The present article describes a combination vertical and horizontal antenna, again using aluminum irrigation tubing for the vertical elements.

The new antenna has been termed the "groundpole" for reasons that will become obvious. Basically, the antenna involves a means of feeding an array of vertical radiators without requiring that they be insulated from ground. This feature simplifies the construction problem since the elements can simply set in post holes. The groundpole antenna has the following general advantages:

1) It provides multiband operation, with "current" feed on the fundamental and all harmonics. Input impedance is not highly frequency sensitive.

2) Permits use of open-wire feeders or ribbon line which is less expensive than coaxial cable, although coaxial-line feed can be used if desired.

3) Requires a minimum of guy wires; in fact, it can be built without any.

4) Requires a minimum amount of real estate; it can be erected on the average city lot.

5) It is inexpensive and simple to construct.

One configuration of the groundpole is shown in Fig. 1. Two vertical radiators, each one-quarter wave long, are grounded and connected together by a wire at the top. Separation between them is one-half wavelength. If both vertical elements and the horizontal element were of the same diameter, equal currents would flow, and the radiation pattern would be roughly omnidirectional in azimuth, representing a combination of the horizontal broadside figure eight and the vertical end-fire figure eight. On the second harmonic, the horizontal portion becomes a full-wave antenna with a cosine current distribution, which has a pattern similar to the ordinary full-wave antenna, a clover leaf. The two vertical radiators on the second harmonic also have a clover-leaf pattern, with the maxima about 20 degrees away from the maxima of the horizontal section. The combined pattern is thus a rather broad clover leaf, with nulls normal to and coincident with the plane of the elements.

Because of the fact that the horizontal antenna is *not* the same diameter as the vertical elements, however, the current does not divide equally, but rather divides according to the ratio of the characteristic impedance of each section, in a manner somewhat analogous to a folded dipole. In a practical case, the current amplitude in the horizontal section is only from one half to two thirds of the current in the vertical section. Thus the radiation pattern of the vertical elements predominates, and the Type I groundpole shown in Fig. 2 has a directional characteristic tending to be more end-fire than broadside at the fundamental.

It will be noted from Fig. 1 that the antenna is current-fed on the fundamental, as well as on the second (and all higher) harmonics. This is because the feed point is located an integral number of half wavelengths away from a current maximum (the grounded end). Thus the antenna has one important feature: its input impedance

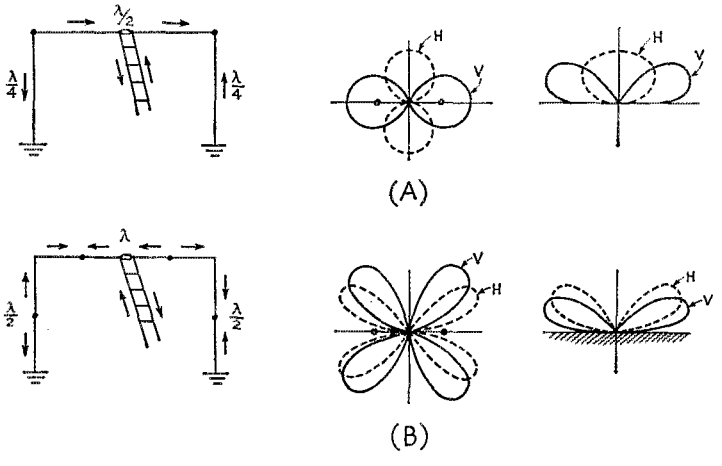


Fig. 1—Sketch of the Type I groundpole antenna showing current flow and approximate horizontal and vertical patterns (A) at the fundamental and (B) the second harmonic.

* 9372 Hillview Road, Anaheim, Calif.

[1] Johnson, "Mail-Order Antenna," *CQ*, Nov., 1953, p. 38.

In the orthodox form of resonant antenna system, a voltage maximum exists at the end of the antenna. For some selected frequency, a low-impedance feed point will be found at a quarter wave, or any odd multiple of a quarter wave from the "far" end. However, for all harmonics the impedance at those points will be high. In the system described, the situation is reversed. The "far" end of the antenna is grounded. Then a low-impedance feed point for harmonics as well as the fundamental will be found at a point a half wave, or any multiple of a half wave at the fundamental, from the "far" end. With the system shown, various pattern configurations are possible, and basic elements can be combined in an array.

is moderately low and not highly sensitive to frequency.

Fig. 2 shows another configuration, called the Type II groundpole. In this case, the horizontal section is a half-wave transmission line, and radiation from the horizontal portion is cancelled completely, leaving only the two vertical radiators, which are now in phase rather than 180 degrees out of phase. On the fundamental, the antenna is now a broadside array, with pattern maxima normal to the plane of the array. On the second harmonic, we now have two half-wave verticals in phase and a full wave apart, which gives essentially an end-fire pattern with a pair of minor lobes broadside. The feed-point impedance again, as in the Type I case, is moderate and not sharply dependent on frequency, being at a current maxima on the fundamental and all harmonics.

A third configuration is shown in Fig. 3. The Type III groundpole has half-wavelength vertical elements, spaced one-half wavelength on the fundamental. In this case, the vertical currents come out in phase, and the pattern from the two vertical elements reinforces the pattern of the horizontal element to give a strongly broadside array. In this case, too, the horizontal section is higher above ground than for the Type I, so its vertical pattern has a lower angle of radiation, and reinforces the vertical pattern of the vertical radiators. This antenna is particularly useful for DX work in the preferred direction, broadside to the array. At the second harmonic, a current feed point also exists, and the vertical elements now become generally end-fire, with the horizontal pattern being a clover leaf.

In Fig. 4A is shown another method of feeding the Type I antenna. In this case, a quarter-wave inverting section is used at one end of the horizontal section. The vertical radiators are now in phase, and so the antenna becomes more broadside than end-fire (remembering that the current in the horizontal section is substantially less than that in the vertical sections). Fig. 4B shows the quarter-wave inverting section combined with the vertical element.

Many other configurations of the groundpole are apparent. For example, the vertical sections can be made $\frac{3}{8}$ wavelength long and the horizontal section $\frac{1}{4}$ wavelength long, with the feed point in the center of the horizontal section. Since the feed point is one-half wavelength away from the grounded end, we again have a current-feed situation on the fundamental and all harmonics.

Coaxial Feed

Coaxial feed can be used if desired, either by insulating one of the masts (a difficult mechanical problem) or by tapping up one of the masts in the fashion discussed in the author's previous article.[1] This type of feed is essentially the "gamma" match applied to the vertical radiator. Unless a special multiband network is used, neither of these feed methods will produce unity s.w.r. on the coaxial cable on more than one band except by accident, and it is recommended that balanced feed be used with the groundpole antenna if harmonic operation is desired.

Polarization

The polarization of radiation from the ground-

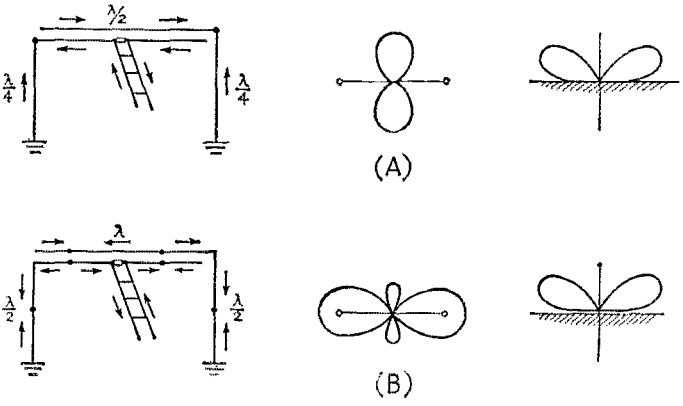


Fig. 2—The Type II groundpole antenna with approximate directive patterns (A) at the fundamental and (B) second harmonic.

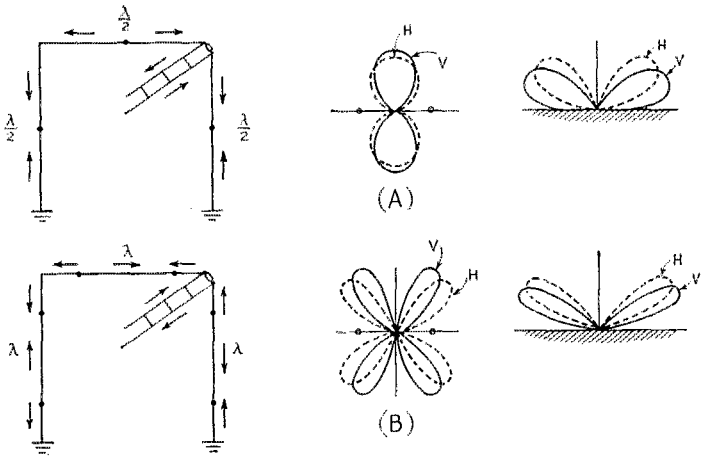


Fig. 3—Approximate directive patterns for the Type III groundpole antenna at fundamental (A) and second harmonic (B).

pole antenna is variable with the type of antenna and with the point in space. There is a region where the polarization is linear, and a much larger region where it is elliptical. With ionospheric propagation, the actual polarization is of little consequence.

Groundpole Arrays

In Fig. 5 is shown a three-bay broadside bidirectional array of groundpole antennas. Each bay has a strong broadside pattern at working elevation angles, and since each bay is fed out of phase from its neighbor but is spaced from it by one-half wavelength, the broadside patterns are reinforced. One can expect appreciable gain from this combination, yet the three-bay array for 14 Mc. will take up a plot of ground only 33 by 66 feet. Because the vertical metal poles, if made of 3-inch or 4-inch irrigation tubing, are self-supporting and require no guy wires, even for heavy winds, when set in solid ground a few feet, they can be lined up along the edges of a city lot with the horizontal wires spanning the lot between them. The 33-foot height and pole separation is sufficient to clear most houses or garages that may be underneath, and is within most zoning ordinances.

Fig. 6 is a two-bay driven array of groundpoles, with separation of 0.25 wavelength between bays. This gives a unidirectional radiation pattern, switchable by reversing connections on the interconnecting feed section.

Fig. 7 shows a fixed parasitic array of groundpoles, using one bay as a reflector. Another bay could be added as a director if desired. Dimensioning should be such that both the vertical and horizontal portions of the reflector are made about 5 per cent longer, and the dimensions of the director (if used) about 5 per cent shorter, than the corresponding sections of the driven groundpole. Purists may argue the point, but practically this rule-of-thumb has worked out very satisfactorily in a good many beams.

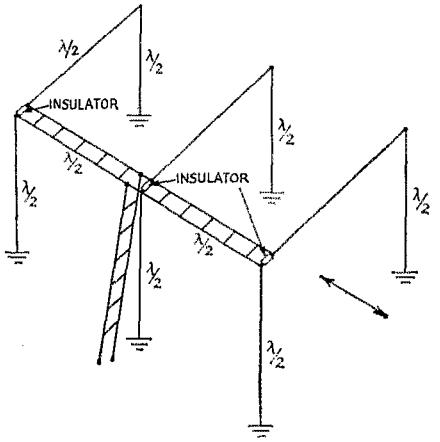


Fig. 5—Type III groundpoles in a bidirectional array. Horizontal and vertical sections are broken by insulators across the line as shown. (Feeders are actually connected across the center insulator.)

Physical Factors

If aluminum irrigation tubing is used as suggested, it will be found that the extreme lightness of a 30-foot length (23 lbs. for 4-inch diameter)

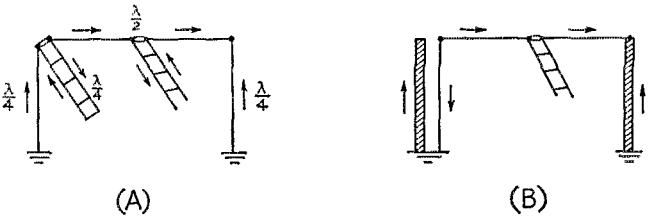


Fig. 4—If a phase-inverting section is inserted in a Type I groundpole as shown at (A), the pattern becomes more broadside than end-fire. In (B) one of the metal masts is used as part of the inverting section.

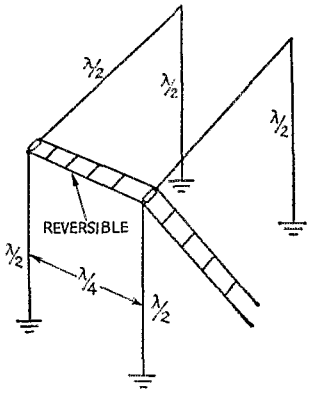


Fig. 6—A pair of Type III groundpoles in a unidirectional array. The pattern can be reversed by transposing the line section between the two bays.

is such that each pole may be easily erected by one person. The author has merely set the poles in the ground in a post hole a few feet deep, and one such untreated pole was in Pasadena soil for over three years with negligible corrosion evident when the pole was taken down. In highly acid or alkaline soils, it might be desirable to use some neutralizer in the post hole, and also to treat the underground portion of the tubing to retard corrosion but still permit good r.f. conductivity.

Since the horizontal antenna is electrically connected to each pole in many types of the antenna shown, the usual rope-and-pulley arrangement cannot be used. The horizontal wire can be attached to each pole and the post holes measured in advance as to their distance apart. It will be found that the second pole can be erected with only minor difficulty, with the horizontal wire attached. Because of the tubing flexibility, it will not be possible to pull the horizontal section extremely taut unless the poles are guyed at the top in line with the horizontal wire. If guying is used, it should be remembered that the top of the pole is a voltage maximum in many cases, so that either nonconducting guys (plastic rope) or insulators must be used. Another method of connecting the horizontal section is to use a good brass pulley of fairly large diameter, with flexible (standard) antenna wire pulled through it. A pulley type should be chosen that will provide good r.f. conductivity, since appreciable r.f. current must flow through it. This pulley may give trouble later on from corrosion or oxidation, producing a rectifier action that may increase TVI, so it should be used with care; a firm connection is preferable, soldered with aluminum solder.

The author has used guyed 4-inch aluminum irrigation tubing at heights up to 70 feet above the ground with good success. In this case, splices are made using standard-size (thick wall) dural pipe having a 4-inch o.d., turned down to fit the i.d. of the irrigation tubing. Each splice section is 18 inches long, and is fastened by two rows of No. 10 sheet-metal screws spaced about 1 inch apart, and running around the circumference on each section (a total of four rows of screws). About 40 feet of such a mast can be boomed without fear of buckling, so that the mast can be picked up about 30 feet from the bottom by a block and tackle rigged over a gin pole in the rear. A pole of this length requires guying. Thus a Type I groundpole for frequencies as low as 3.5 Mc. is a physical possibility, though it must be admitted that an array of the Type III groundpoles for 14 Mc. is much more attractive from a structural standpoint.

The fact that standard irrigation tubing has a maximum length of 30 feet per piece is of no serious consequence. Allowing for three feet in the ground, each vertical radiator will be 27 feet high if a 30-foot length is used. About 10 to 12 feet can be added to the horizontal section (and hence the vertical-element spacing) to make up for the shortage, and the pattern will not be seriously affected. Alternatively, a section can be spliced to the top of each vertical pole to make the correct length, or small loading coils can be added.

The groundpole antenna is no different than any other vertical insofar as the requirement for grounding is concerned. A good radial system should be used at the base of each vertical, but if room for this is lacking, just a single wire connected between the bases of the verticals will improve matters considerably over no connection. Also, as with any other antenna system, all radiating elements, in this case especially the vertical elements, should be as much in the clear as possible, away from surrounding obstructions.

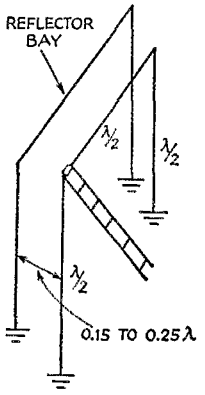


Fig. 7—A groundpole-type parasitic array.

Results

A groundpole antenna of the general configuration of the Type I has been constructed and tested with excellent results. In this case, the author was blessed with two existing tapered steel light standards, supporting an array of floodlights for a large back yard, which poles fortuitously happened to be spaced about 74 feet and were 27 feet long. A No. 12 plated copper wire was connected between the tops of these two poles, fed in the center with 500-ohm open-

(Continued on page 166)

• Recent Equipment—

The National NC-303 Receiver

PRESUMABLY the designation "NC-303" for National's new receiver is intended to suggest that this is the NC-300 three years later. If so, it is an excellent choice, because the NC-303 is the NC-300 brought up to date. For example, the 300 used a crystal filter at 2.215 Mc. to furnish some skirt selectivity and a rejection notch. Crystal-filter rejection notches are limited in their usefulness, in that they can appear on one side or the other of the passband but not in the center. A better device for furnishing a rejection notch is a *Q* multiplier; the NC-303 eliminates the 2.215-Mc. crystal filter of the 300 and replaces it with a *Q* multiplier at 80 kc. (the second i.f.) where it can really go to work on an interfering carrier. The NC-300 had no noise limiter that would work with the b.f.o. on; a diode clipper is included in the NC-303. The a.v.c. in the 303 features a fast attack and slow decay, in keeping with s.s.b. requirements.

Referring to the block diagram in Fig. 1, the NC-303 is a double-conversion ham-bands-only superheterodyne. The first i.f. is 2.215 Mc., and the coupling between the 6BA7 mixer and the 6BE6 converter consists of four tuned circuits. The 6BE6 converter is now crystal-controlled; it was self-controlled in the 300.

Selectivity really takes over in the 80-kc. second i.f. amplifier, where the *Q* multiplier provides a rejection slot and a 5-position selectivity switch provides four degrees of selectivity. (If you are wondering why five positions for four conditions, just be patient; we'll get there eventually.) A choice of detectors is provided, a diode for a.m. and a 6BE6 conversion detector for heterodyne reception of c.w. and s.s.b. The a.m. detector has an automatic noise limiter associated with it, and the d.c. component from the a.m. detector is used for a.v.c. on a.m. and s.s.b. On s.s.b. a 1-μf. capacitor is connected from the a.v.c. bus to ground and charged through a 1N1692 diode, to give a fast-attack slow-decay a.v.c. circuit. A simplified diagram is shown in Fig. 2.

Meanwhile, back at the block diagram (Fig. 1), there is a noise limiter in the output of the conversion detector. This is the twin-diode type of limiter, with a panel control that sets the limiting level. A switch at the counterclockwise end of this same control cuts the a.m. automatic noise limiter in or out. A mode switch on the panel, marked AM, SSB, CW and ACC, switches the detectors, limiters, and a.v.c. The major difference between the SSB and CW settings is that the former has the fast-attack a.v.c. connected and the latter has the a.v.c. cut out; the S meter is inoperative in the c.w. setting.

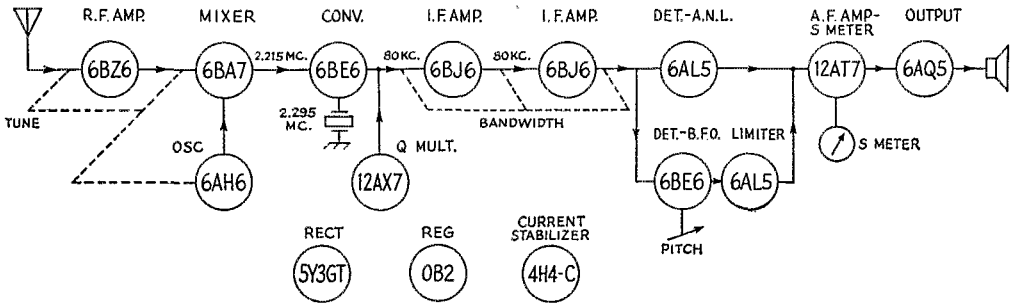


Fig. 1—Block diagram of the NC-303 receiver.

The audio amplifier uses a 12AT7 triode and a 6AQ5 output stage. A four-position tone control allows the operator to select an audio characteristic most suitable for the job at hand; the four positions allow for normal, high-frequency emphasis, low-frequency emphasis and peak (reduced highs and lows).

The power supply section uses a 4H4-C current stabilizer in series with the heater of the 6AH6 high-frequency oscillator, and regulated +105 from the 0B2 is used on the 6AH6 plate and screen, the screen of the 6BE6 converter and the plate of the S-meter amplifier.

Selectivity

Earlier it was mentioned that the selectivity switch had more positions than bandwidths, and now is as good a time as any to clarify the point. The four available (−6 db.) bandwidths are 0.4, 2.0, 3.5 and 8 kc. All but the 2.0-kc. bandwidths center on the 80-kc. i.f. The 2.0-kc. bandwidth is obtained at either of two switch positions marked SB 1 and SB 2; these pass bands occur just above and just below 80 kc. Their usefulness is that by setting the b.f.o. on 80 kc. (pointer straight up) and switching between the two positions you

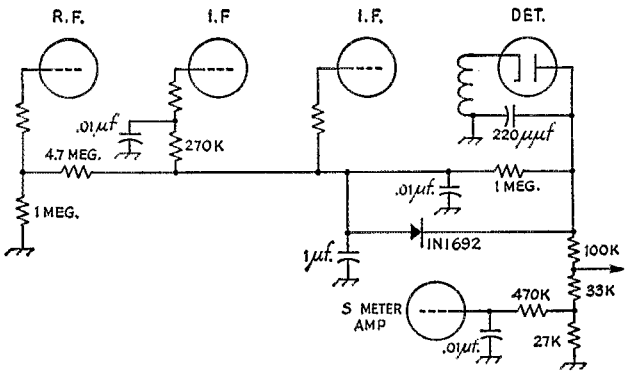


Fig. 2—Simplified diagram of the a.v.c. circuit used for s.s.b. reception. A fast-attack characteristic is obtained by the fast charge through the 1N1692 diode. The S meter, working from the signal and not the a.v.c. voltage, decays faster than the a.v.c.

have a selectable sideband system. And of course it does away with that old wondering of where to set the b.f.o. for sideband reception. The several bandwidths and tuning conditions are obtained by switching in various capacitors and resistors.

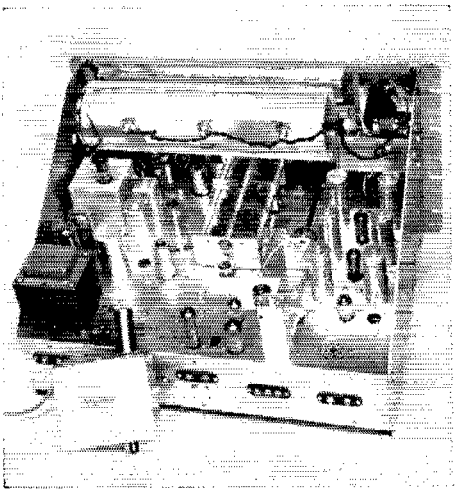
Physical

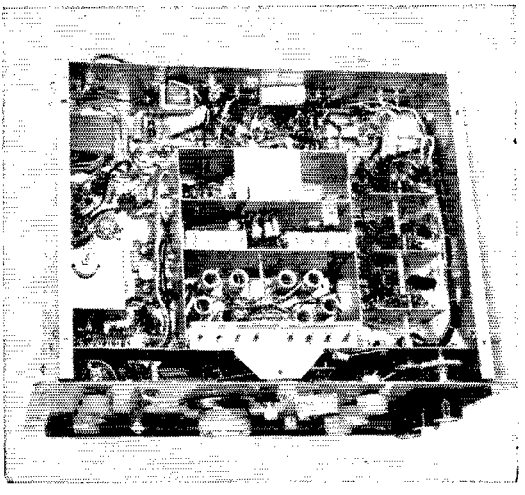
In appearance the 303 is quite similar to the 300, although it has been jazzed up a bit through the use of black and light gray coloring. The same smooth-running tuning knob and slide-rule dial is used, but a logging scale has been included on the knob, and a rubber rim drive is provided to give the necessary slow tuning for s.s.b. on 28 Mc. and higher. Speaking of the higher frequencies, the NC-303, like the 300, has three extra dial ranges for the 6-, 2- and 1¼-meter bands. In these ranges the receiver actually tunes 30 to 35 Mc., and of course crystal-controlled converters are to be used ahead of it. Like the earlier receiver, the dial can be "spun" to get you from one end of the band to the other in a hurry.

One criticism of the 300 was that you needed another receiver to copy WWV, but that has been corrected in the optional XCU-303 crystal calibrator unit. This is a 6AK6 100-kc. crystal oscillator, together with a 12AT7 mixer-oscillator, that plugs into a socket provided for it. By switching the NC-303 to the 7-Mc. range and the calibrate switch to WWV, the 10-Mc. WWV signal can be copied at 7070 on the tuning dial. After checking the 100-kc. oscillator against WWV, any slight discrepancy in dial calibration can be corrected by the front panel correction knob.

In the 300 there were two possible combinations of r.f. gain control. A switch on the audio gain control permitted running the r.f. stage wide open at all times or else putting it on the manual control along with the two i.f. stages. Apparently this led only to confusion on the part of most consumers, because this feature has been omitted from the NC-303 and the manual control handles the r.f. and i.f. stages at all times.

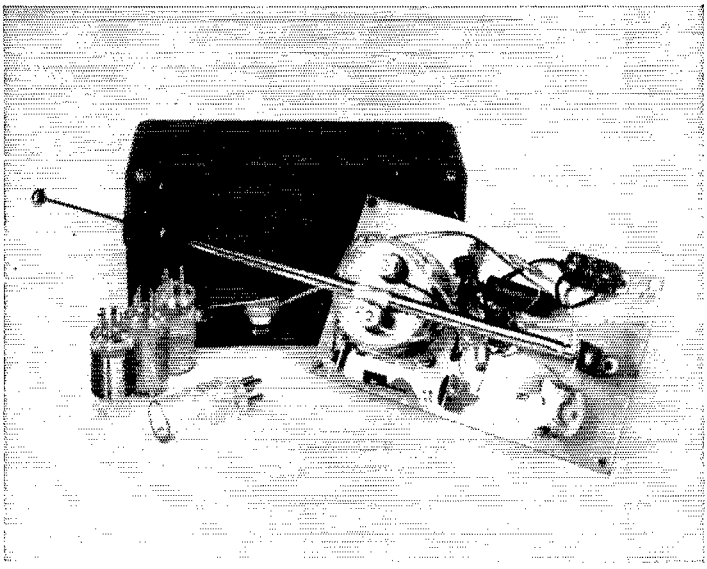
The 28-page instruction book is quite complete, and we were glad to see the thorough instructions for using the muting arrangements possible with the 303, and for connecting the receiver into the station. — *B. G.*





Left: The NC-303 out of case and with crystal-calibrator unit removed. Right: A view under the chassis shows the substantial ceramic forms used for the high-frequency oscillator coils, and the thorough shielding in the r.f. and mixer compartments.

Model FS-3 Test-O-Matic Meter



Inside view of the FS-3 field-strength modulation meter. Notice the small earphone mounted on the lower side of the bakelite box. The coils for the desired r.f. range are plugged in a socket on the front panel. The tuning capacitor is located on the bottom left of the panel in this view.

THE NAME of this instrument doesn't begin to describe all its uses. Here are a few: The FS-3 can be used to indicate field strength, check transmitter modulation, test for harmonic content of the transmitter, give standing-wave indications, and check for neutralization.

The circuit of the FS-3 is shown in Fig. 1. R.f. from the pickup antenna is tuned by L_1C_1 and rectified by the crystal diode CR_1. If S_1 is in position 1, the rectified d.c. will flow through the meter, giving a relative indication of the signal strength. When S_1 is in position 2, the .033-μf. capacitor will couple audio to the base of the transistor, Q_1, which amplifies it. A small earphone HS built into the side of the Test-O-Matic box is connected in the collector circuit of the transistor and allows monitoring of modulation quality of the signal under test. S_1 is a spring return switch, and in normal position disconnects the penlight cell power supply.

The frequency range of the Test-O-Matic is 2.5 through 160 Mc. Six coils plugged into the front panel of the unit cover this range. Also included on the panel are the indicating meter, tuning control and the transistor circuit on-off switch. The collapsible r.f. pickup antenna can be extended out to about 26 inches.

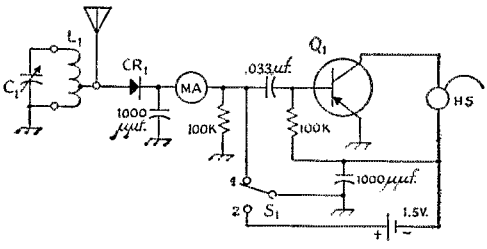


Diagram of the FS-3 Field-Strength Meter.

The Test-O-Matic measures 6¼ × 3¾ × 2½ inches and is manufactured by Shell Electronics Mfg. Corp., Brooklyn, New York, N. Y.

— *E. L. C.*

Transcon R.F. Field-Strength Meter Model H310

THE Model H310 field-strength meter, manufactured by Creative Electronics Corp., Stamford, Conn., is designed primarily for mobile applications and uses the car's b.c. antenna to pick up r.f. from the mobile transmitter. It is intended for installation in the lead between the car antenna and b.c. receiver, and has a switch on the meter box which allows the meter to be switched in or out of the circuit. When switched out of the circuit the b.c. antenna bypasses the meter and goes directly to the b.c. receiver input circuit. The unit requires no power except that picked up by the antenna. No direct connection to the transmitter is needed.

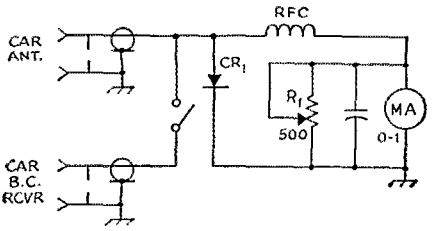
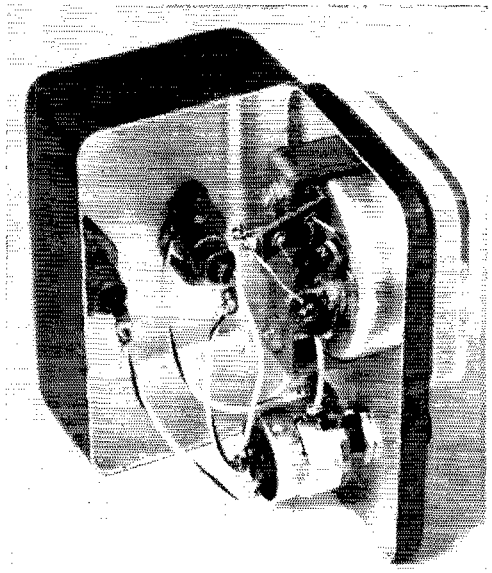


Fig. 1—Diagram of the H310 Field-Strength Meter.

The circuit of the field-strength meter is shown in Fig. 1. R.f. from the pickup antenna is rectified by the crystal diode, CR_1, and the d.c. is measured by the 0-1 ma. meter. A variable resistor, R_1, in shunt with the meter acts as a sensitivity control. The crystal diode is connected to the antenna even when the unit is switched to straight-through operation. This arrangement might possibly lead to some cross-modulation in b.c. reception under certain conditions, but this trouble did not occur during our test of the unit.

The meter is housed in a hammertone box measuring approximately $4 \times 2\frac{1}{4} \times 2$ inches. The indicating meter is $2\frac{1}{4}$ inches square.
— *E. L. C.*



The Transcon Model H310 Field-Strength Meter. The two jacks in the case on the left are the input and output antenna connectors. The meter is switched in or out of the circuit by a switch mounted on the back of the potentiometer.

April 1934

. . . A single-tube short-wave converter was described by W1SZ, using a 2A7 or 6A7 tube. It covered from 1400 kc. to 19,000 kc., and worked into a standard broadcast set.

. . . W3LW continued his discussion on the operation of r.f. power amplifiers, and had some interesting three-dimensional drawings showing tuned-circuit impedance variation and load power variation.

. . . W1DF described an r.f. power amplifier and an antenna coupling unit to be added to the single-tube transmitter which was described in the previous issue. The tube was a type 841.

. . . W1HRX and W1BZR described a simple cathode-ray oscilloscope.

. . . W2AOE improved on the freqmeter-monitor.

. . . There were articles on amateur work in emergencies in California, Canada, and the Pacific Northwest, and on the Naval Reserve station in Philadelphia.

. . . Items for the experimenter, dope on how to get those foreign QSLs, amateur station descriptions, the usual departmental notes on overseas activities, operating activities, and section reports rounded out this issue of 25 years ago.

Strays

The passing of Jack Barnsley, VE7GA, writes "30" to the career of another of those whose activities in the early days made ham history. Old timers will remember him as Canadian 9BP at Prince Rupert, B.C. — the most consistent, and at times the only, contact with WNP on the Bowdoin's historic 1923–24 trip. Don Mix credited him with handling over half the thousands of words of traffic from and to WNP during its year of isolation in the Arctic.

Silent Keys

It is with deep regret that we record the passing of these amateurs:

W2GYL, Edward Ruth III, Amityville, N. Y.
W2QEG, Walter Assenheimer, Merchantville, N. J.
K2UTO, Mario Melillo, Belleville, N. J.
W2VNZ, Rev. George Billy, Little Falls, N. Y.
W3AKH, William Donald Miller, Ambler, Pa.
K4CTD, Major William P. Kidwell, Nashville, Tenn.
W4EBD, Sumpter D. Christian, Birmingham, Ala.
K4JGP, George L. Freeman, sr., Chattanooga, Tenn.
K4TWN, Ethel L. Steward, Birmingham, Ala.
W5AW, Andrew Jones, Big Springs, Texas.
W5WRY, Jesse T. Russell, jr., Fort Worth, Texas.
W6ABF, Kenneth C. McAfee, Santa Clara, Calif.
W6ATV, John L. Utschig, San Mateo, Calif.
W6CCJ, William A. Slocomb, Capitola, Calif.
W6GFZ, Ernest L. Henning, Arvin, Calif.
K6MVL, Donald K. Pierce, Santa Ana, Calif.
KN7DFY, Melba Shallcross, Klamath Falls, Wash.
W8COL, Rev. H. T. Cliff, Stubenville, Ohio.
W8FBM, Robert H. Hoierman, Alliance, Ohio.
W8JJM, Rev. H. S. Garnes, Mansfield, Ohio.
W8PRU, Russell G. Braman, Saginaw, Mich.
W8YNG, William W. Maxwell, Mount Pleasant, Mich.
W9BEF, H. T. Sagert, Saint Charles, Ill.
K9DXV, Vivian F. Johnson, Chicago, Ill.
K9HEI, Carl Wilcoxson, Urbania, Ill.
W9ZOU, Bruce Ammerman, Des Plaines, Ill.
KØJYA, Francis A. Hoopes, White Bear Lake, Minn.
WØOGY, Maxwell D. Edgar, Goodland, Kansas.
WØPCQ, Joseph W. Jensen, Cedar Rapids, Iowa.
WØVKM, Robert L. Lidlak, Omaha, Neb.
VE1YC, Frank Rose, Kentville, Nova Scotia.
VE2FL, Guy C. Midwinter, Bourlamaque, Quebec.
VE3EBG, Louis P. Hebert, Ottawa, Ontario.
VE7GA, Jack Barnsley, Victoria, British Columbia.

Technical Correspondence

ARC-5 AND 274N

926 Woodgate Ave.
Elberon, N. J.

Technical Editor, *QST:*

The article, "Getting Started with the BC-454," in *QST* for January 1959 is an excellent and interesting job about a good little receiver. One slight mistake gives me a chance to sound off. The BC-454 is not a part of the AN/ARC-5 but is a part of the SCR-274N! I think Footnote 1 is also in error as the equivalent ARC-5 receiver is the R-26.

The following tabulation may be of value to those of us who have an interest in this still popular line of surplus equipment:

Radio Set SCR-274N

Radio Receiver	BC-453	190–550 kc.
Radio Receiver	BC-946	0.52–1.5 Mc.
Radio Receiver	BC-454	3.0 –6.0 Mc.
Radio Receiver	BC-455	6.0 –9.1 Mc.
Radio Transmitter	BC-696	3.0 –4.0 Mc.
Radio Transmitter	BC-457	4.0 –5.3 Mc.
Radio Transmitter	BC-458	5.3 –7.0 Mc.
Radio Transmitter	BC-459	7.0 –9.1 Mc.
Modulator	BC-456	–

Radio Equipment AN/ARC-5

Radio Receiver	R-23/ARC-5	0.19–0.55 Mc.
Radio Receiver	R-148/ARC-5X	0.19–0.55 Mc.
Radio Receiver	R-24/ARC-5	0.52–1.5 Mc.
Radio Receiver	R-25/ARC-5	1.5 –3.0 Mc.
Radio Receiver	R-26/ARC-5	3.0 –6.0 Mc.
Radio Receiver	R-27/ARC-5	6.0 –9.1 Mc.
Radio Receiver	R-28/ARC-5	100 –156 Mc.
Radio Transmitter	T-15/ARC-5	0.5 –0.8 Mc.
Radio Transmitter	T-16/ARC-5	0.8 –1.3 Mc.
Radio Transmitter	T-17/ARC-5	1.3 –2.1 Mc.
Radio Transmitter	T-18/ARC-5	2.1 –3.0 Mc.
Radio Transmitter	T-19/ARC-5	3.0 –4.0 Mc.
Radio Transmitter	T-20/ARC-5	4.0 –5.3 Mc.
Radio Transmitter	T-21/ARC-5	5.3 –7.0 Mc.
Radio Transmitter	T-22/ARC-5	7.0 –9.1 Mc.
Radio Transmitter	T-23/ARC-5	100 –156 Mc.
Modulator	MD-7/ARC-5	–

In general, the SCR-274N and the ARC-5 units are similar. All, except the R-148/ARC-5X (14 volts d.c.) are built for 24-28 volt d.c. operation. Of course, one can use a.c. on the heaters if he so desires. The 274N receivers use a 12SK7 for the second i.f. while the ARC-5 receivers, except for the R-28, use a 12SF7 for the second i.f. The A and B models of the 274N receivers are exactly alike, except that in the B models the secondary of the audio output transformer has a tap for use with a 600-ohm headset. The receivers were normally wired for high-impedance headsets, but if one wants to use a 600-ohm pair of phones, remove the two wires from terminal 3 of the output transformer and connect them to terminal 6. Modulator BC-456 uses one 1625 tube while Modulator MD-7 uses a pair in push-pull. The SCR-274N transmitters are wired for screen-grid modulation while those of the ARC-5 are for plate and screen modulation.

— *William B. Gould, W1NP/2*

GROUNDED-GRID TETRODES

San Carlos, Calif.
December 11, 1958

Technical Editor, *QST:*

The article in December, 1958, *QST*, about grounded-grid amplifiers is timely and concise, and will be most useful to the s.s.b. linear amplifier designer in particular. We agree with your statements concerning triodes, but would like to elaborate a little on some of the information given on tetrodes.

The tetrode may be connected for high-μ triode operation by operating both grids at the same d.c. and signal voltages. This is the circuit shown in Fig. 3A, page 35. If low-μ triode operation is desired, the screen may be connected to the plate. This provides a μ nearly the same as the grid-screen amplifier factor shown in the published data. It is not recommended for grounded-grid operation.

Some tetrodes in their high-μ, grounded-grid, grounded-screen configuration (Fig. 3A), are very unsatisfactory amplifier tubes. For proper operation of the tetrode the screen requires much larger voltages than the control grid. When these electrodes are tied together, the control grid draws tremendous currents and there is grave risk of destroying it. For example, in the table below, the control grid current of 4X150A is 1.3 amperes at the positive peak of the driving cycle, and the screen current is about 0.5 ampere. At the same instant, the plate current is only about 0.8 ampere. In other words the plate is getting *only a third* of the current emitted by the cathode, instead of *nearly all* the current! By any standards, such a triode is a sad thing. Observe that the grid dissipation in the table below is 1000 times as great for the "high-μ" connected tetrode as it is for the "tetrode-biased" tube.

4X150A Tetrode, Comparison of Tetrode-Biased and High-μ Triode Operation of Driven-Cathode Amplifiers

	"Hi-μ"	"Tetrode-Biased"	
D.C. Plate Voltage	2000	2000	Volts
D.C. Screen Voltage	0	250	Volts
D.C. Grid Voltage	0	–50	Volts
D.C. Plate Current	250	250	Ma.
D.C. Screen Current	105	20	Ma.
D.C. Grid Current	305	3	Ma.
Plate Dissipation	145	145	Watts
Screen Dissipation	5.7	6.3	Watts
Grid Dissipation	**18**	**0.02**	Watts
Plate Power Output	355	355	Watts
Plate Power Input	500	500	Watts
Driving Power	**38**	**13.0**	Watts
Stage Gain	**10**	**28**	(Times)
Cathode Impedance	86	120	Ohms

By far the best way to operate such tetrodes as the 4X150A, 4X250B, or 4CX300A in a cathode-driven amplifier is to ground the grid and screen through bypass capacitors and operate them at their rated d.c. voltages, as shown in Fig. 3B. The grid dissipation reduces to little or nothing when this is done, and the stage gain is greatly increased.

The grid dissipation in cathode-driven, tetrode-biased operation is vanishingly small, but the screen dissipation is nearly the same as in the high-μ connection. Greater stage gain can be obtained with Fig. 3B, largely the result of the fact that the driver does not have to supply large screen and grid losses. If it is desired to dissipate some excess of driving power for some reason, it will be far better expended in a linear, resistive load than in a nonlinear grid-circuit load.

Tetrodes such as the 4-65A, 4-125A, 4-250A, 4-400A, and the 4-1000A are more suitable for connection as grounded-grid tetrodes because of their more favorable current division characteristic. Under most conditions, however, the situation is similar to that of the 4X150A family. The maximum capability of these tubes is difficult to realize without exceeding the control-grid dissipation rating. The 4-1000A, however, may be operated as a triode-connected grounded-grid amplifier in the following manner:

D-C Plate Voltage	4000	Volts
D-C Plate Current	700	Ma.
D-C Screen Current	65	Ma.
D-C Grid Current	170	Ma.
Driving Power	135	Watts
Driving Impedance	90	Ohms
Load Impedance	3200	Ohms
Plate Dissipation	1000	Watts
Plate Power Input	2800	Watts
Plate Power Output	1885	Watts

The differences in the grounded-grid characteristics and the grounded-cathode characteristics are relatively small, when high-μ, high-perveance tube are concerned, and calculations based on the grounded-cathode characteristics curves will usually serve very well as the basis for cathode-driven designs. However, many manufacturers of electron tubes can furnish curves not usually given in the published information. This applies especially to the grounded-grid curves, which are often available upon request.

— *James R. Welch, Manager, Application Engineering, Eitel-McCullough, Inc.*

SLOW-SPEED PHONE?

8841 Amboy Ave.
Sun Valley, Calif.

Technical Editor, *QST*:

A buddy and I were just discussing an extremely interesting idea, and I thought I'd pass it on to you as having possible applications for amateur communication.

Basically, it's an extremely narrow-band method of phone communication, accomplished with tape recorders. Say that a sentence five seconds long is recorded on a standard tape recorder running at 16 inches per second. The operator then changes the speed of the recorder to 0.8 inches per second — a 20:1 reduction — and plays it out over his transmitter. It takes 100 seconds to send it, for sure, but the transmission occupies only 1/20 of the bandwidth. On s.s.b., for example, with a nominal 300-3000 cycle bandwidth, the slowed-down transmission would take only 15-150 cycles! The man at the other end records it slow and plays it back rapidly.

The advantages are:

1) A 20:1 increase in available spectrum space. Five kilocycles in the upper end of a band would handle 35 channels.

2) A 13 db. increase in signal-to-noise ratio in the receiver, resulting from the possible increased selectivity.

3) Short-term static pulses would "wash out" during the high-speed playback.

4) It might be possible, under some conditions, to use this system simultaneously on the same carrier frequency with normal phone signals, particularly s.s.b. signals where the bandwidth is restricted and the a.v.c. doesn't kick around.

Others may suggest themselves as the idea takes hold.

Some disadvantages are:

1) The obvious — you spend a whale of a lot of time waiting around to say something.

2) Some modification of the receiver and transmitter would be required to handle the low-frequency response required.

3) A special spindle would be required on the tape recorder to obtain the extremely slow speeds.

Principal applications:

1) Traffic handling. Most messages are essentially short, and "stretching out time" should result in nearly 100 per cent copy, even under very poor conditions.

2) The "leave a message" technique, used in RTTY. A pulse could trigger on the other station's recorder, and you would simply play your message to be read out later.

3) Last, but not least, "leisurely" rag-chews, more or less free from QRM and other problems. A 5:1 or 10:1 reduction might be more practical here, increasing the "active" talk time sufficiently to maintain interest.

How about that?

— *Bob Bunce, K6QHZ*

DUMMY LOADS

221 Shennecosett Parkway
Groton, Conn.

Technical Editor, *QST*:

On reading over the excellent article on dummy loads by WA2ANU in the December issue I was impressed by the amount of effort necessary to make a usable load for v.h.f. As I had need for one but am a naturally lazy type, I decided to see if a simpler solution could be found.

The problem appeared to be complicated by the residual inductance usually found in the wire-wound bifilar types made by Sprague and Ohmite. A search of the literature shows that truly noninductive resistors are commercially available from The Carborundum Company of Niagara Falls, N. Y. I have before me their Bulletin GR-1 which describes their line of ceramic resistors designated type "CX" Globar. These are made of a silicon-boron composition with no wires.

In my search for a source of supply for some type "CX" units to try I encountered W1IJD, who reported that he was already using one of them in an antenna impedance bridge at 145 Mc. with excellent results. The resistor he was using was a 50-ohm, 9-watt size, 2 inches long and ½ inch in diameter, which he mounted in fuse clips with flat copper-strap low-inductance leads. He uses his Gonset III to drive the bridge as the resistor can easily handle its full output.

In the Bulletin is also a description of a line of type "A" carbon composition resistors for load use in the same ranges as the type "CX." Looking over the data on the temperature coefficients it is of interest to note that the "CX" has a slightly positive (0.11 per cent) coefficient while the type "A" is 0.09 per cent in the negative direction. It is obvious that it would be possible to attain a zero coefficient by combining type "A" and "CX" units. While this may not be necessary for use in a dummy load or bridge element which is to be used indoors, where there is little change in temperature, it may be worth considering for constructing rhombic antenna terminations for use outdoors where ambient temperatures may vary a hundred degrees or more.

It should be practical to make up a load capable of handling over a hundred watts by paralleling 5 type "CX" units each 5 inches long and ¾ inch in diameter.

— *Carl T. Milner, W1FVY*

[Globar resistors are well known in the industry but are not "distributor" items, except for the thermistor types (not suitable for dummy antennas) used in TV receivers. The types mentioned by W1FVY should be excellent for the purpose if the prospective user can find a source of supply. — *Editor.*]

RE THE SLOT ANTENNA

18 Country Way
Greenbush, Mass.

Technical Editor, *QST*:

On page 44 of December *QST* in "Technical Correspondence" mention is made of the "slot antenna," in a letter from Julian N. Jablin, W2QPQ. I am not trying to take anything away from our British cousins, but would like to add the following background:

In early 1947 I was attempting to install an f.m. broadcast station, WCFR, and in looking around for an inexpensive transmitting antenna I approached Workshop Associates, who had a receiving turnstile antenna that I thought had possibilities for a low-power f.m. transmitting antenna. I was shown an experimental slot antenna operating on about 400 Mc. The unit had been designed to give a circular pattern, incorporating two slot antennas at right angles, each slot several wavelengths high and about 1/10 wavelength wide. Coupling was by means of a probe inserted into the slot to excite it, the effect being the same as if a probe were inserted in a waveguide, and the waveguide material cut away until only the metallic loop around the probe remained. The top and bottom of the slot were cold for r.f. so the antenna could be erected vertically and stacked if desired. With another slot placed at right angles to the first and fed 90 degrees out of phase, a circular pattern resulted, and the antenna consisted simply of four vertical members with a mounting plate at top and bottom.

Workshop supplied their developmental f.m. model to WCFR, and in this case it consisted of 2 × 4s covered with copper, and a wooden top and bottom. Quite a number of these antennas in 1-, 2-, and 4-bay models were supplied the f.m. broadcasting industry at that time by the Raytheon Mfg. Co., marketed under the name of "Tower" antennas.

I had always felt that it would be an excellent antenna for the v.h.f. amateur, but W2QPQ's mention is the first I have seen.

— *George W. Brooks, W1JNO*

THE ORIGIN OF BELL BREAK

Amateur Radioteletype Society
38-06 61st St.
Woodside 77, N. Y.

Technical Editor, *QST*:

It is always a pleasure to us to see articles on amateur radioteletype appear in the pages of *QST*, ever since our founder's now-famous initial article was published in October 1948.

The article by W1OUG in the latest (Jan. 1959) issue, page 44, should be of interest to the "gadgeteers" among us. As is usually the case when the slightest mention of RTTY appears in amateur literature, it is usually followed by a heavy increase in the mail load here with inquiries how one gets started in this interesting hobby. Reading W1OUG's article should have the customary effect in stimulating interest among non-RTTYers.

However, we would like to take issue with Gordon's statement that the "bell-break" method originated with W3LGK in 1956, although Fred *did* obtain a clarification of

(*Continued on page 164*)

Simulated Emergency Test—1958

AREC Groups Turn Out for One of the Best SETs in Years

BY GEORGE HART,* W1NJM

JUDGING by the results of the 1958 SET, the AREC is continuing to gain strength. All of our figures were up over last year. More reports were received, more traffic was handled, apparently more amateurs participated than in any recent year. The total point accumulation exceeded last year's by about 50%.

Encouraging as these data may be, what was even more gratifying was the "sound" of the SET during the week end when most of the AREC groups were conducting their tests. Participation by many groups far exceeded the expectation even of the EC concerned. One EC was actually swamped by over 100% more participants than he had counted on. Civil defense stations turned out in greater numbers than ever before, indicating increasing recognition by c.d. for AREC and a growing desire to work together. Red Cross had its usual fine turnout of stations and personnel for their part of the program. And the ARRL long haul nets stood up manfully under the week end deluge of ARRL, Red Cross and civil defense traffic.

When something like this happens, we start asking ourselves how come. What caused the upsurge of activity this year? It would be nice if we could just pat ourselves on the back and assume that we are just getting on the ball, but we know that there is something deeper than this behind it. We think that what is really happening is that amateurs are beginning to wake up to the realization that the civil defense honeymoon is over, that RACES is an extension of AREC facilities and potential, not a substitute for it, and that our own organization is still the "stuff" out of which really effective amateur emergency communication grows; for when we operate as the AREC we are amateurs operating *as* amateurs and we can exercise to the utmost our characteristic ingenuity and versatility in our own field.

What the SET Is

Each year, usually early in October, units of the Amateur Radio Emergency Corps, sponsored by ARRL but open to all amateurs, put on a simulated emergency to test their facilities, the practicability of their emergency communications plan, the versatility and stamina of their operating personnel, and at the same time put on a demonstration for the public showing that amateur radio is willing and ready to serve them in any emergency in which communications are affected.

The SET takes on many forms, depending almost entirely on the circumstances of the community, city, county, area or state in which it is conducted. In some places, a natural emergency is simulated. In others, a man-made disaster, either war or other, is assumed. Services are performed, either on a simulated or actual basis, for a great number of different agencies, depending on what agencies locally need them or and will cooperate. Such agencies include civil defense, the Red Cross, law enforcement, public safety, weather bureaus, railroads, newspapers, broadcast stations and public utilities.

Beside this local aspect, there is also a nationwide activity by means of which local organizations are linked. Red Cross and civil defense officials originate messages to their state, regional or national headquarters, and amateurs who participate originate messages to ARRL indicating their presence. Messages from civic and state officials fly thick and fast. All are handled by amateur radio — mostly efficiently, some not so efficiently, a few, alas, very poorly. But that's one of the things the test is for: to show up our own weaknesses and shortcomings. Let's dwell for a few lines on the national aspect before we talk about local activities.

Red Cross Activities

The Red Cross has always been, you might say, our "first love" when it comes to emergency communication. From the very beginnings of the AREC, almost 25 years ago, the American National Red Cross and its affiliated chapters nationwide have been served by amateur radio communications, and through the years a firm cooperative agreement has sprung up between Red Cross and ARRL. This year (i.e., the 1958 SET) as in previous years, four Red Cross-sponsored amateur stations were activated to

Muskingum County, Ohio, threw a hidden-transmitter hunt for its SET on Sept. 28. Sitting at the hidden transmitter controls are K8LAV and K8JPN. It was found in 27 minutes by EC W8RVU.

* National Emergency Coordinator, ARRL

act as collecting stations for messages from chapter chairmen throughout the nation to national headquarters. In addition, a number of regional collecting stations were set up to facilitate the flow of traffic from chapters to regional stations to the "big four": W3PZA in Washington, W2CRD in Syracuse, N. Y., W9DUA in Springfield, Ill., and W6CXO in San Francisco. Regional stations active numbered about 15, but no specific reports received tell us just how many were active. One thing for sure: The Red Cross was conspicuous by its presence in the 1958 SET, as it always is, thanks to the interest and efforts of W4PHL and Red-Cross-affiliated amateurs everywhere.

Civil Defense

As already mentioned, this was a big year for c.d. in the SET. Not only did national headquarters in Battle Creek have stations on the air, but several of the OCDM Regions were also active. Region I was represented by W7GFT/1, who handled several messages for Region I headquarters at Harvard, Mass. In Region III, W4POI and W4YB received 50 messages from c.d. officials and others in that region. Region IV was represented by K8JAL and considerable traffic was handled. The Region VI RACES network was activated under the control of WØWBC. Region VII had K6HA on the air but no traffic was received at this station; however, several messages were delivered by local amateurs who received them through regular amateur networks. Of the seven OCDM regions, only Regions II and V were not heard from.

At national headquarters in Battle Creek, K8ERA was activated and 8 messages received during the test. In addition, OCDM staffers W8DUA and W8DD had their home stations on the air. A total of 44 messages were received, most of them via W8YAN, the Michigan SEC. This was a far better turnout than we have ever had for federal c.d. in previous SETs, and we cannot help but be greatly pleased by it.

ARRL Traffic

Your own headquarters received 1701 messages in the SET, 1457 of which were from participating AREC members. Many NTS nets were swamped with them, the Connecticut nets in particular, and several Connecticut amateurs made BPL on SET traffic alone. As usual, W1AW took the brunt of the load, handling 783 of the total. Other Connecticut amateurs who worked hard included W1YBH (289), W1NJM (224), W1FYF (201), W1TUW (78) and K1AZG (54). We could have used many more.

But this wasn't all the traffic handled by the ARRL nets. We were kept busy not only with relaying traffic from AREC members to headquarters, but also with relaying traffic from various officials to Red Cross, c.d. and ARRL headquarters. It was a big week end for traffic-handling, and most of our nets had a good workout.

Many messages of greeting, praise and pledges

From this business-like operating position, K2EHI, EC for Putnam County (Brewster), N. Y., directed the Simulated Emergency Test on October 11.

of support for our efforts were received from high officials, among them messages from Senator Strom Thurmond of South Carolina, the governors of North Dakota and Georgia, and officials of the following entities: Rock Hill, S. C.; Spartanburg, S. C.; Ft. Mill. S. C.; Barnwell, S. C.; Menlo Park, Calif.; Stutsman County, N. Dak.; Ft. Pierce, Fla.; Hayward, Calif.; Jamestown, N. Dak.; Brown Co., Wis.; McCurtain Co., Okla.; Edmond Co., Okla.; Warracres, Okla.; Bethany, Okla.; The Village, Okla.; Oklahoma City; Midwest City, Okla.; Del City, Okla.; State of Oklahoma; Miami Springs, Fla.; Brevard Co., Fla.; Miami; Bradenton, Fla.; Carlsbad, N. M.; Eddy Co., N. M.; Redlands, Calif.; State College, N. M.; York Co., S. C.; Lacrosse Co., Wis.; Eau Gallie, Fla.; Ottawa, Ill.; Painesville, Ohio; Willoughby, Ohio; Palo Alto, Calif.; Charleston, S. C.; Summerton, S. C.; Columbia, S. C.; Cayce, S. C.; Greenville, S. C. We hope we have not omitted anyone, but probably we have. To those, our apologies.

Last year we printed the call letters of each AREC member from whom we received a message. Space limitations will not permit us to do so again this year, but we do want to mention that the W/K4s came through again

Landslides caused by heavy rains were simulated in the Canal Zone Section, where this gang put on an effective SET. Standing, l. to r., are *KZ5s* RM BW VR (SEC) and RV (SCM, extreme right); kneeling, *KZ5s* HO JJ EP.

with by far the greatest number of messages. A total of 399 was received from the fourth call area. The ninth call area was a poor second, with 213, followed closely by the tenth (W/K0) with 211 and the eighth with 189. Down at the bottom of the heap, also as usual, was the third call area, from which only 20 messages were received. The VEs contributed only 7, and Canal Zone 10.

Local Activities

The increase in number of reports of activity this year, and therefore the increase in total points, was attributable to an increase in mail reports received — 154, compared to 125 received last year. While encouraging, this upturn is not exactly phenomenal, and neither does it represent a maximum over the years. But improvement is improvement. Let's not look askance at it.

We list the reports of activity by states, footnotes indicating anything unusual. Those marked "hearsay" are indications of activity which were apparent from messages or other information received but no word received from the EC himself. The "person reporting" is usually the EC, but now and then in a case where the EC was out of town an assistant EC or some amateur put on the test. Comparable figures for the 1957 SET are given in parentheses:

Total reports of activity — 216 (205)
By mail — 154 (125)
By radio — 128 (128)
By "hearsay" — 24 (24)
AREC members represented by mail reports — 5496 (3457)
Total known participation — 2712 (1971)
Mobiles and portables — 957 (610)
Fixed stations on emergency power — 142 (87)
AREC member messages dispatched to ARRL — 1488
AREC member messages received by radio at ARRL — 1457
EC radio reports dispatched to ARRL — 161 (159)
Total points compiled — 21,794 (14,867)

Area	*Reported By*	*Points*
ALABAMA		
Jefferson County[2]	W4EOH	209
Morgan County[3]	W4LEN	111
BRITISH COLUMBIA		
Southern Section[2]	VE7APH	192
CALIFORNIA		
Berkeley/Albany	K6EDN	82
East Contra Costa County	W6LGW	...
Fortuna[3]	K6EKC	...
Fresno & Madera Counties	K6BGO	87
Hayward[4]	.....	...
Redlands & vicinity[2]	K6GGS	106
Redwood City, Menlo Park, Atherton[1,2]	W6DEF/ K6IEE	329
Sacramento[4]	.....	...
San Diego[1,8]	W6LYF	397
San Jose[1,2]	W6HZW	68
Santa Barbara	K6DXW	118
So. Alameda County[10]	K6JNW	131
Tulare County[1]	W6ARE	77
Vallejo[1,7]	W6ZZF	130
Western Contra Costa County	K6QZG	...
Whittier Area[1,9]	W6LVQ	131
CANAL ZONE[2]	KZ5VR	116
COLORADO		
Boulder[3]	WØRRV	...
Grand Junction[11]	WØPXZ	...
Jefferson County	WØSIN	82
San Luis Valley[11]	WØKQD	...
CONNECTICUT		
Bethlehem[3]	W1FHP	...
Bloomfield[12]	W1PRT	92

The Control Center Station, W1KOO, was a busy place during the SET in Chittenden and Grand Isle Counties, Vt. Shown operating, left to right, are W1ZFA on ten meters, K1BNL on 2 meters and W1HIN on 75 meters. W1VSA is the EC.

Danbury[2]	W1ADW	101
Falls Village[3]	K1BEN	...
Mansfield & Storrs[2]	W1MHF	49
Newington[1]	W1NJM	60
Torrington[3]	.....	...
FLORIDA		
Broward County[2]	W4DLM	130
Collier County[3]	W4AZK	...
Columbia County[14]	W4YNM	40
Dade County[1]	W4SJZ	654
E. Volusia County[1,13]	W4RWM	125
Gulf County[2]	K4RZM	63
Manatee County[2]	W4EDH	75
Marion County[2]	K4ANJ	87
Monroe Co.[2]	W4ZUT	118
N. Brevard County[3]	W4UCQ	
Okaloosa County[13]	W4RKH	111
Okeechobee County[2,16]	W4PZT	41
Orange County[14]	W4NKD	214
Sarasota County[4]	W4LMT	...
Seminole County[3]	W4NGR	...
S. Brevard County[1,2]	W4BWR	150
S. Pinellas County[1,2]	W4WPF	222
St. Johns County[2]	W4UHC	61
St. Lucie County[4]	K4CXW	...
GEORGIA		
Dalton[4]	.....	...
Fulton County[4]	.....	...
Taft, Cook & Irwin Counties	K4LAX	29
Thomas County[3]	.....	...
IDAHO		
Pocatello[1]	W7BDL	72
ILLINOIS		
Cook County[2]	W9HPG	736
Danville & Vermillion County[2]	W9UJ	147
Evanston[2]	W9BUK	...
Fulton County[4]	.....	...
Greene, Jersey & Calhoun Cos.[1,2]	W9IFA	83
McHenry County	W9KMN	94
McLean County[2]	W9SXL	165
Monroe County[11]	W9ICF	...
INDIANA		
Clark County[4]	.....	...
Floyd County[3]	K9GCE	...
Harrison County[4]	.....	...
Jackson County, Seymour[1]	W9RTH	75
Marion County[2]	W9MHP	210
Morgan County[1,2]	W9ZSK	67
Porter County[1,2]	W9EHE	195
Vanderburgh County[15]	W9WUH	116
Wabash River Basin[1,2]	W9TT	287
IOWA		
Clayton County	WØVQX	59
Des Moines County[2,18]	KØAAH	122

Guthrie County[3]	KØHFQ	...
Jefferson County[2]	KØBRE	62
Polk County[2]	WØMJH	284
Story County[1,2]	KØEXN	162
KANSAS		
Wyandotte County[3]	WØZGK	...
KENTUCKY		
Barron Co. & vic.[31]	W4TQD	101
Boone, Campbell & Kenton Cos.	W4RHZ	...
Cumberland County[31]	W4SZB	...
Davis, McLean, Ohio, Muhlenberg and Butler Counties[1]	W4NGN	144
Louisville Area[2]	W4BAZ	208
LOUISIANA		
Bonita	W5CYF	20
Shreveport-Bossier City[2]	K5MMP	140
Westside Area, New Orleans[1,2,15]	W5INL	98
MARYLAND		
Baltimore[3]	W3MAZ	...
Calvert County[3]	W3ZNW	...
Prince Georges County[2]	W3CVE	...
Saint Mary's County[1,2]	W3FUR	79
MASSACHUSETTS		
Barnstable[2]	W1NPR	45
Concord	W1WNP	92
Groveland[1]	W1MRQ	108
Pittsfield[15]	W1BKG	79
Waltham[2,15]	W1JSM	78
Winchester	W1ADR	109
Winthrop[12]	W1BB	264
MICHIGAN		
Berrien County[2]	W8QQO	188
Calhoun County[1,2]	K8CIS	161
Emmet, Cheboygan Counties[2]	W8RHD	75
Isabella County[1]	W8PDF	59
Kalamazoo County[1,2,15]	W8PDP	265
Midland County[19]	W8BVY	83
MINNESOTA		
Douglas & Polk Counties[3]	WØGTX	...
Kandiyohi & Meeker Cos.[2]	WØVOA	69
Olmsted County[1,2]	WØTJA	132
MISSOURI		
Springfield Area[1]	WØHUI	166
West Plains, Howell County	KØHHG	123
MONTANA		
Billings[1]	W7YHS	110
Missoula Area	W7COH	54
Wheatland County[3]	W7INM	...
NEBRASKA		
Seward County[2]	WØZWG	102
NEW JERSEY		
Salem County[21]	K2ARY	65
Wood-Ridge[20]	W2DMJ	89
NEW MEXICO		
Albuquerque Area[2,10]	W5WNU	147
Chaves County	W5VC	167
Dona Ana County[2]	K5LWN	176
Eddy County[1,2]	K5DAB	137
Guadalupe County	W5BQC	37
McKinley County[3]	K5LOV	...
Otero County[3]	K5GDU	...
San Juan County[2]	W5CIN	76
Santa Fe	W5FHL	119
NEW YORK		
Albany County	W2AWF	187
Bronx County[4]	.....	...
E. Central Nassau County[23]	W2ZAI	...
Erie County[26]	W2GBX	737
Five Towns Area (Nassau Co.)[23]	W2GQP	...
Herkimer County	W2BGO	...
Nassau County[2]	W2FI	1412
Onondaga County[3]	W2CYD	...
Oswego County	W2ZHU	31
Poughkeepsie & Dutchess Co.[1,2,22]	W2HZZ/ K2GCH	226
Putnam County	K2EHI	78
Queens County (10 Meters)[1,15]	W2IAG	162
Schenectady County[3]	W2WWK	...
Southeast Nassau County[24]	W2DUS	31
Suffolk County[25]	W2KNA	247
West Haverstraw	W2EHZ	65
NORTH CAROLINA		
Area 2[2]	W4GXR	79
Areas 2A & 2B	W4BAW	212

The Carlsbad (N. M.) c.d. director sits in at the operating position of K5DAB, right, EC for Eddy County, during the SET.

Gaston County[2]	W4SHF	
NORTH DAKOTA		
Devil's Lake[3]	WØUCL	...
Burleigh County[4]	.....	...
Adams County[4]	.....	...
Emmons County[4]	.....	...
Stutsman County[4]	.....	...
OHIO		
Adams County[3]	W8KXN	...
Clermont County[3]	W8WYS	...
Cuyahoga County[1]	W8AEU	432
Dayton[4]	.....	...
Fulton County[1]	K8BJL	103
Hamilton County[3]	W8CLS	...
Henry County[3]	W88MW	...
Hocking County[3,32]	W8DCX	...
Jefferson County[3]	W8ERR	...
Lake County[2]	W8QLJ	68
Lawrence County	W8EPJ	73
Logan County[2]	W8LER	96
Muskingum County[27]	W8RVU	110
Stark County	W8AL	162
Tiffin & Seneca County[1,2]	W8WAB	123
Washington County[1,2]	W8VZ	153
OKLAHOMA		
Comanche County	K5KTW	201
Pittsburg County[2]	W5BGC	130
ONTARIO		
Hamilton Area	VE3KM	90
OREGON		
Clackamas County[2]	W7UQI	112
Coos County[1,2]	W7BLN	146
Douglas County[1,2,14]	W7UZU	53
PENNSYLVANIA		
Allegheny County[2]	W3LMM	648
Cambria County[4]	.....	...
Columbia County[2]	W3EPL	130
Lancaster County[3]	W3KFI	...
Luzerne County[11]	W3DUI	...
Montgomery County[2]	W3ZCV	226
Schuykill County[2]	W3ZRQ	100
RHODE ISLAND		
Barrington[1,2]	W1TGD	100
Newport[1,28]	W1JFF	60
SOUTH CAROLINA		
Aiken[4]	.....	...
Barnwell[4]	.....	...
Charleston[3]	W4ZRH	...
Gaffney[4]	.....	...
Richland County[3]	K4AVU	...
Rock Hill, Ft. Mill, Ft. Lawn[1,14]	W4VEP	185
Spartanburg County[4]	.....	...
Sumter[4]	.....	...
SOUTH DAKOTA		
Lawrence County[3]	WØDQK	...
Minnehaha County[3]	KØDYR	...
Turner County	WØEUJ	41
TENNESSEE		
Chattanooga & Hamilton County[2]	W4JVM	195

In control of fixed stations in the Cabell County (W. Va.) SET was K8HRO, shown at the mike. That's EC W8FUM at left, and K8GXR standing. Both K8HRO and K8GXR are assistant ECs in the Cabell County AREC group. *Huntington (W. Va.) Herald-Dispatch Photo.*

Memphis Area[2]	W4BAQ	241
Nashville, Davidson County	W4DMU	112
Oak Ridge	W4CXY	...
Washington County[2]	W4AOY	86
TEXAS		
Baytown[3]	K5PEQ	...
Harris County[2]	W5AIR	404
Nueces County	W5LOW	336
Tarrant County	K5AEX	...
Taylor County[2]	W5ANL	104
Tyler County[2]	W5ZTB	70
VIRGINIA		
Arlington County[2]	K4MJZ	241
Bristol & Washington County[2,28]	W4THM	24
Fairfax County[2]	W4ZLN	119
Falls Church[1,2]	W4OP	59
Norton & Wise Counties	W4CFV	25
VERMONT		
Bennington County[2,29]	W1MEP	46
Chittenden & Grand Isle Cos.[2]	W1VSA	215
Lemoille County[4]	....	...
Orange County[2,11]	W1OAK	...
Washington County[3]	K1BGC	...
WASHINGTON		
Kitsap County[2]	W7UWT	105
Spokane Area[2]	W7EQU	185
WEST VIRGINIA		
Cabell County[1]	W8FUM	170
Kanawha County[3]	W8CLX	...
Marshall County[3]	W8KXD	...
WISCONSIN		
Brown County[2,30]	W9HDV	186
Eau Claire County[2]	W9BEW	109
Lacrosse County[3]	W9VRI	...
Marathon County[10]	W9VHA	84
Racine County[2]	W9SZL	125
WYOMING		
Sheridan[3]	K7EWV	...

[1] Bettered last year's score. [2] Reports received by both radio and mail. [3] Report received by radio only. [4] Hearsay report, EC not heard from directly. [5] Oct. 8. [6] Sept. 29. [7] Oct. 7 & 11. [8] Oct. 26. [9] Oct. 31. [10] Oct. 16. [11] Reported no test held. [12] Oct. 6. [13] Oct. 20. [14] Oct. 10. [15] Oct. 13. [16] Oct. 11–19. [17] Oct. 10–12. [18] Sept. 20–21. [19] Oct. 21. [20] Oct. 15. [21] Oct. 30. [22] Oct. 6, 9, 10, 11. [23] Score included in W2FI report. [25] Oct. 6 & 13. [26] Oct. 12 & 16. [27] Sept. 28. [28] Oct. 22. [29] Oct. 14. [30] Oct. 12 & 13. [31] SEC mail report, EC radio report. [32] Participated under Washington County EC W8VZ. [33] Includes eleven EC jurisdictions: *W2s* QBR JKX CLG BTA DUS UAL GQP ZAI, KSKSP.

Miscellany

South Carolina had a statewide exercise under W4AKC. Beaucoup traffic was originated to W1AW and the Red Cross stations, and answers received back in jig time.

W4EOH (Ala.) suggests a standard participation message to simplify traffic into headquarters, to be published in *QST* with the SET announcement

"Not much of a score, but will be easy to beat next year — SET instructions didn't arrive until Oct. 14, suggest earlier mailing." — *K6JNW.* "Everybody pre-occupied with civil defense, so no SET in Grand Junction, Colo." — *W0PXZ.* "Had promises of more participants but they didn't show. Typical?" — *W0SIN, Colo.* (Usually, but not this year! — *G.H.*) "Trying to work along with the c.d. people here to gain a further understanding between AREC and RACES, a slow but sure battle." — *W1EOR, SEC Conn.*

"All —— broke loose! So many stations checked in so fast we made no attempt to take personal station traffic to ARRL. . . . When you expect about 10 or 15 stations and you end up with 56 in all, it's most encouraging. . . . Never underestimate a ham. . . . This was the best turnout we have ever had." — *W4WTF, St. Pete, Fla.* "The 1958 ARRL SET was without a doubt the best Florida has ever had." — *W4IYT, SEC. E. Fla.*

"Everything considered, the test was an unqualified success in all ways — pointed up a lot of things that need hashing over." — *W9SXL, McLean Co., Ill.* "All traffic was made up in advance and there was something for everybody to do. Our score is getting higher each year." — *W9EHE, Porter Co., Ind.* "Under 'Computation of Score' 1 object to limitation in message counts. We should count many more which we handled for ECs and AREC members." — *W9TT, Wabash River Valley.* "The fellows here in Story County, Iowa, are working *very hard* on AREC." — *K0EXN.* "I have no suggestions. I think you are doing a fine job. Competing against previous scores is a good idea and hardly see how it would be practical to compete with others." — *W4NGN, Daviess, etc., Counties, Ky.* "Suggest two copies of form be furnished so can keep copy without having to recopy entire form." — *K5MMP, Shreveport, La.*

"Excellent cooperation from area nets in taking traffic." — *W1NPR, Barnstable, Mass.* "More test alerts are necessary; we need an emergency generator; we all got a lot of good experience from the SET." — *W8RIID, Emmet-Cheboygan Cos., Mich.* "Getting favorable publicity is a ticklish situation because of a few cases of six-meter TVI." — *W8QQO, Berrien County, Mich.* "We find that drills lose interest without some contest feature." — *W8BVY, Midland County, Mich.* "We are all very much disgusted with c.d." — *W7COH, Missoula, Mont.* "Fourteen new members signed up due to SET." — W5WNU, *Albuquerque, N. M.* "A *roaring* success. Messages were slow in coming, as all wanted to draw the test out as long as possible." — K5LWN, Dona Ana County, N. M. "This year I believe that New Mexico had one of the best SETs that has ever been put on." — *K5DAA, SCM N.M.* "It is our opinion that this was the best SET effort to date." — *W2HZZ, Poughkeepsie, N. Y.* "Our first SET, all the fellows were really enthused. Amazed at volunteers who relayed messages to W3PZA and K8JAL, they sure deserve lots of credit." — *W2EHZ, W. Haverstraw, N. Y.* "W2LGK mobile modulator broke down during drill and his message was sent by c.w." — *W2IAG, Queens Co., N. Y.* "We stage a simulated test once each month, sponsored by AREC and c.d. alternately." — *W4BAW, N. C. Areas 2A & 2B.* "Throughout the state, the best turnout for the ARRL and c.d. ever." — *W1JFF, Newport, R. I.*

The Oak Ridge, Tenn., gang under W4CXY waited for the customary statewide alert via the SEC on 75 meters, but decided to go it alone when nothing happened. A hurricane was simulated. The statewide alert was called later in the day.

"Too much football and murder stories down here for the newspapers to pay much attention to the lowly ham who causes TVI, but we are going to make believers out of these guys one of these days. Red Cross served rolls and coffee both days of the test." — *W5AIR, Harris County, Texas.*

"There was no idle talk observed at any time. There was no confusion. Each and every transmission was short and concise. I have never seen an operation run so smoothly." — *K5AEX, Tarrant Co., Texas.* "We have done well because of the members in the organization. They are certainly of the best caliber. We act as the AREC." — *K4MJZ, Arlington, Va.* "Practically all the work and planning was done by the assistant ECs — yours truly just observed." —

W8FUM, Cabell County, W. Va. "These statewide phone and c.w. nets are extremely well operated, with all hands adhering to the instructions of the NCS. But, after seven years of drills, should it be otherwise?" — *W2BGO, Radio Officer, N. Y. State.*

Many ECs, some old and some new, went all out to put on a good show. Those who were successful are usually prone to give all the credit to the AREC members making up their organizations, but, as we have always said, leadership is important. We compliment *all* those who conducted a SET or tried to, especially those who succeeded in bettering their last years' scores, and in particular those big-city ECs who underwent the considerable difficulty of coordinating complicated operations in heavily-populated districts involving hundreds of members. From many big cities we received no reports, but to the following ECs, whose groups were responsible for 300 or more points, we offer our sincere congratulations: W6LYF, San Diego, Calif.; W6DEF/K6fEE, Redwood City, Menlo Park, Atherton, Calif.; W4SJZ, Dade County (Miami), Fla.; W9HPG, Cook County (Chicago), Ill.; W2GBX, Erie County (Buffalo), N. Y.; W2FI, Nassau County, N. Y.; W8AEU, Cuyahoga County (Cleveland), Ohio; W3LMN, Allegheny County (Pittsburgh), Pa.; W5AIR, Harris County (Houston), Texas; W5LOW, Nueces County (Corpus Christi), Texas.

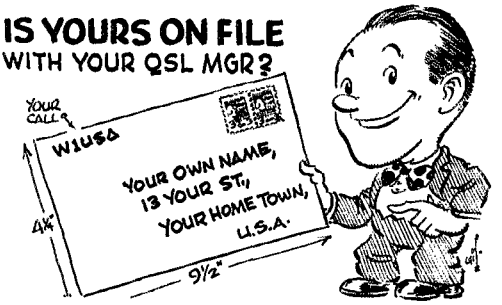
Some of the larger cities were conspicuous by their absence. Where, for example, were the big scores that should have been forthcoming from Boston, New York City, Washington, Philadelphia, Detroit, St. Louis, Kansas City, Milwaukee, Minneapolis, Dallas, Denver, Seattle, San Francisco and Los Angeles? Had these come through in the same way that the above came through, what an SET this would have been! Next year, fellows?

W3ZRQ, EC for Schuykill County (Tamaqua), Pa., explains the SET plan to C.D. Director Richard Bassler. Standing, left to right, are W3s PTM RZV LDV and CPR.

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.

W1, K1 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.
W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.
W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Brad A. Beard, W5ADZ, P.O. Box 25172, Houston 5, Texas.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount Avenue, Oakland, Calif.
W7, K7 — Salem Amateur Radio Club, P.O. Box 61, Salem, Oregon.
W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, P.O. Box 663, Halifax, N. S.
VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Point Claire, Montreal 33, Que.
VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, 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, 833 10th St., North Lethbridge, Atla.
VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newf.
VO2 — Douglas B. Ritcey, Dept. of Transport, Goose Bay, Labrador.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namanu Dr., Honolulu, T. H.
KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.
KZ5 — Catherine How, KZ5KA, Box 407, Balboa, C. Z.



Strays

YV5ABD asks us to point out that Danny Weil ("Yasme II to Aves Island," December *QST*) was not the licensee of YVØAB. The calls YVØAA and YVØAB were issued to the Radio Club of Venezuela and YV5GO respectively. Mr. Weil was allowed to be only a second operator because in Venezuela a foreigner cannot be issued a call.

— • • • —

Various Canadian amateurs are getting together to establish an 11-meter trans-Canada network, meeting every Sunday at 1100 PST on approximately 27,100 kc.

— • • • —

Longest club name? The Louisiana State University and Agricultural and Mechanical College Air Force Reserve Officers Training Corps MARS Station and Amateur Radio Club. — *K5ELP*

Portable and Mobile Rules

A Summary of the Regs for Operation Away from Home

I AM about to go on a trip across the country, and I plan to take my rig along. How do I notify FCC and what address do I write?"

Along about the time that the snow melts, the grass springs up, and the boss puts the vacation roster on the bulletin board, this question pops up in the League's bulging mailbags. This year we're trying to beat you wandering hams to the punch — and avoid steno overtime in answering queries. Let's cover whom you should notify, under what conditions, how often and what the notice should contain.

First of all we want to remind readers that the pertinent regulations were made more liberal effective a year ago. Thus, if this article departs from the way you have been notifying for your previous travels, don't be confused — this way is now the right way.

When: Anytime you are going to operate away from home for more than 48 hours without a return to the address shown on your license, whether portable or mobile, you need to be covered by a notice to FCC. Formerly, such notices were valid for 30 days; under present rules they are valid for periods up to a year provided there is no change in the facts contained in your notice. For example, if you *always* go up to your country place the last week end of the month and operate from there, you can now send one notice for the whole year, giving the expected dates and the other information mentioned in this discussion. If you're a traveling salesman who *always* follows the same route, again you may submit one notice a year, giving the approximate dates and places for all your trips. If, after sending in a notice for either type of activity, you decide to *change* the routine in any respect, then an additional notice is required; otherwise, you need send a notice only once a year.

To Whom: There are 24 FCC districts scattered around the country and its possessions, each headed by an Engineer-in-Charge and encompassing a certain amount of real estate. The approximate district boundaries are shown on the map; a list by counties can be found in the chart on page 79 of the 41st or 42nd edition of the *License Manual*. You mail notices to the Engineer-in-Charge of each district in which you plan to operate. The point is that FCC wants to be able to reach its licensees within a reasonable time, and if you're not home it wants to know just where you can be reached. You may mail a postcard, carbon copy or even mimeographed notice early enough for the notification to reach each engineer before the operation begins. It's wise to make a notation in your log as well.

What: Here it's probably best to quote directly from the rules; you can peel off the parts of the notification not applicable to your particular case:

> Section 12.91. *Notice of operation.* . . .
> The notice required by this section shall contain the following specific information:
> (a) Name of licensee.
> (b) Station call sign.
> (c) Authorized fixed transmitter location.
> (d) Portable location(s), or mobile itinerary as specifically as possible, or temporary fixed transmitter location, or new permanent fixed transmitter location.
> (e) The dates of the beginning and end of each period or operation away from the location specified in the station license.
> (f) The address at which, or through which, the licensee can be readily reached.
> (g) In the case of mobile operation, the official name, registry number or license number (including the name of the issuing state or territory, if any) of the aircraft, vessel, or land vehicle in which the mobile station is installed and operated.

Temporary Fixed Stations: You will see by paragraph (d) that the present rules also apply to temporary fixed locations of amateur stations, such as college dorms and Army barracks. For the college boy, one notice at the start of the school year is now enough; the only difference is that this notice for a temporary fixed station should go not only to the District Engineer, but also to the Federal Communications Commission, Washington 25, D. C. Another notice is required when you go back home, if the original notice did not specify an ending date.

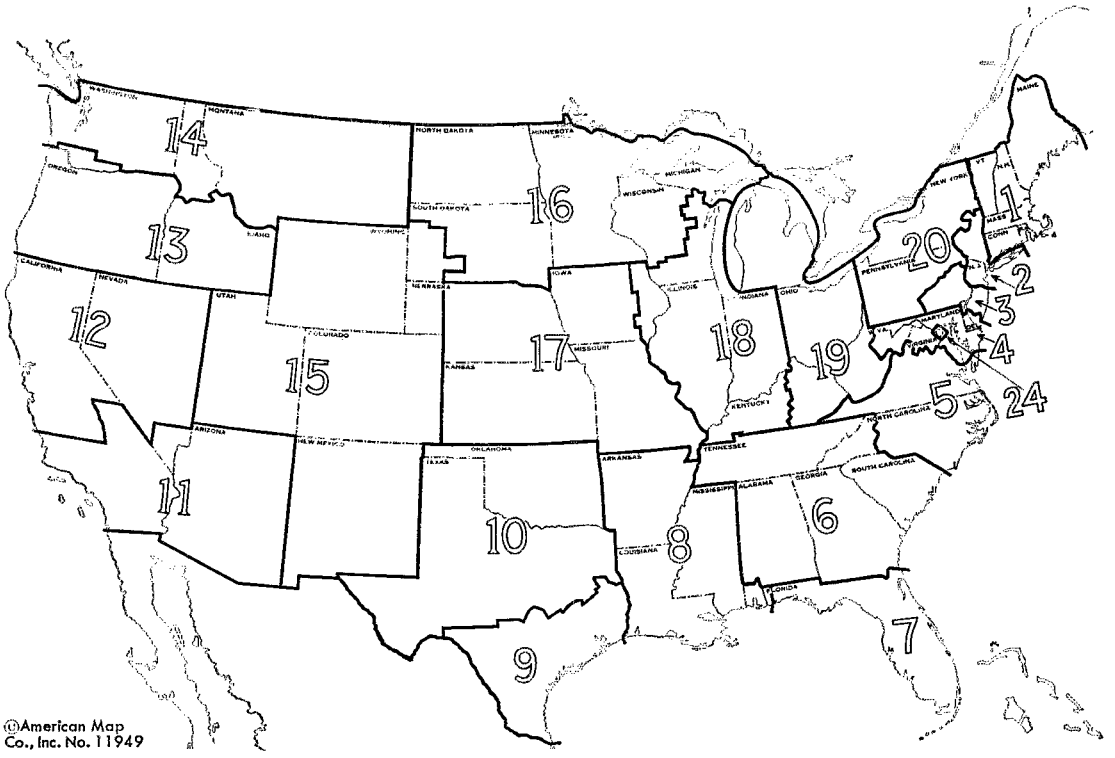
Canada: American hams whose vacation travel will take them into Canada can get permission from the Department of Transport, Ottawa, Ontario, to operate under their U. S. calls in Canada. (Since there is no Canadian equivalent of the U. S. Novice and Technician Classes, holders of these classes are not eligible.) You should request the necessary forms from the Department of Transport a few weeks before your planned departure. A reminder: when a U. S. licensee operates outside the country, he is required to notify the FCC Engineer of his home district in advance.

Canadians coming south can get application blanks from the Secretary, Federal Communications Commission, Washington 25, D. C. The VEs also notify FCC Engineers for the districts in which travel is contemplated, in the same manner as W/K licensees.

Mexico: Foreign visitors to Mexico who hold licenses in their own countries can secure mobile licenses for Mexico. Application is made through the *Liga Mexicana de Radio Experimentadores*, Liverpool 195-A, Mexico 6, D. F. (For further details, see page 84, *QST* for December, 1957 and page 77, April, 1958.)

Identification: When you are operating mobile, you must show your approximate geographical location. Some examples of correct phone procedure follow:

"W9XXX this is W1XXX mobile in Pittsburgh."



United States Radio Districts

Address the District FCC Engineer-in-Charge

1—1600 Customhouse, Boston 9, Mass.
2—748 Federal Building, 641 Washington St., New York 14, N. Y.
3—1005 New U. S. Customhouse, Second & Chestnut Streets, Philadelphia 6, Pa.
4—400 McCawley Building, Baltimore 2, Md.
5—402 Federal Building, Norfolk 10, Va.
6—718 Atlanta National Building, Atlanta 3, Ga.
7—312 Federal Building, Miami 1, Fla.
8—608 Federal Office Building, New Orleans 12, La.
9—324 U. S. Appraisers Stores Building, 7300 Wingate St., Houston 11, Texas.
10—401 States General Life Insurance Building, 708 Jackson Street, Dallas 2, Texas.
11—Mez 50, 849 South Broadway, Los Angeles 14, Calif.
12—323A Customhouse, 555 Battery St., San Francisco 26, Calif.
13—502 U. S. Court House, 620 S. W. Main St., Portland 5, Oregon.
14—802 Federal Office Building, First Avenue and Marian, Seattle 4, Wash.
15—521 New Customhouse, 19th St., Denver 2, Colo.
16—208 Federal Courts Building, 6th & Market Streets, St. Paul 2, Minn.
17—3100 Federal Office Building, 911 Walnut St., Kansas City 6, Mo.
18—826 U. S. Court House, 219 South Clark St., Chicago 4, Ill.
19—1029 Federal Building, Detroit 26, Mich.
20—328 Post Office Building, Ellicott & Swan Streets, Buffalo 3, N. Y.
21—502 U. S. Customhouse, Court House & Post Office, Honolulu 1, Hawaii.
22—322-323 Federal Building, Post Office Box 2987, San Juan 13, Puerto Rico.
23—Room 53, U. S. Post Office Building, Anchorage, Alaska.
24—718 Jackson Place, N.W., Washington 25, D. C.

"KØXYZ this is WA6XYZ mobile about 15 miles east of Houston on Route 90."

"W3QRK from W4QSA portable on Cape Cod."

Incidentally, FCC accords no recognition to that oft-heard phrase, "fixed-portable" or to the equally-well-worn "mobile One," "portable Four," or variants of either.

When you operate c.w. away from home, it's simpler: No matter whether you're on dry land, in the air, afloat, or motoring down route 6, so long as you are in the United States the only proper way to sign is with the slant bar and district numeral — e.g., "WØXYZ de W7XXX/2."

The only times the words "aeronautical mobile" or "maritime mobile" (or the c.w. equivalents "/AM" and "/MM") are correctly used by American amateurs is when they are engaged in communications from aboard a plane or ship over or on international waters.

Examples of Notices: First, a college student plans to operate his rig as a temporary fixed station:

The Secretary,
Federal Communications Commission
Washington 25, D. C.
Dear Sir:
This is notice that amateur station W2QRT will be operated at a temporary fixed location, Dormi-

tory 9-F, Podunk State College, Kansas, from October 1, 1959 to December 15, 1959; January 4, 1960 to January 31, 1960 and February 10, 1960 to May 31, 1960. During these periods, mail may be addressed to Box 295, Podunk Station, Kansas.

Sincerely yours,
John A. Smith, W2QRT
1434 North Rattlesnake
Horseheads, New York

Copy to: District Engineer-in-Charge
3100 Federal Office Building
Kansas City 6, Missouri

Next, a two-week vacation involving portable operations:

Engineer-in-Charge
Federal Communications Commission
1600 Customhouse
Boston 9, Massachusetts
Dear Sir:

This is notice that amateur station W4ABC will be operated in portable status at Johnson's Camp, Algonquin, Maine, between April 25 and May 10, 1959.

John A. Smith, W4ABC
1357 W. Evergreen Ave.
Springfield, Ala.

Another for an extended mobile trip, with multiple copies in separate envelopes addressed to each district office involved:

Engineers-in-Charge
Federal Communications Commission
Districts 18, 17, 15, 11
Gentlemen:

This is notice that amateur station W9XYZ will be operated in mobile status along the itinerary and for the dates shown below. Installation is in a 1957 Ford sedan, Illinois license plates 327-918.

May 4–6, 1959 U. S. Routes 30 and 6, Chicago to Omaha
May 7–9, 1959 Routes 6 and 30, Omaha to Denver
May 10–12, 1959 Routes 40 and 189, Denver to Provo, Utah
May 13–16, 1959 Route 91, Provo to Los Angeles, (C/o Mayfair Motel, Ocean View Ave., Los Angeles, Calif.)

Yours truly,
John A. Smith, W9XYZ
327 Brandon Avenue
Glen Ellyn, Illinois

Mobile Laws

In several states and municipalities, there are laws which deal in one way or another with mobile radio communications. While they affect normal amateur operation but little, it is well at least to know about their existence. We present herewith a summary of such laws on which we have been able to obtain information, with no guarantee of its completeness:

California: Los Angeles has a city ordinance prohibiting the installation in a motor vehicle of receiving equipment which can tune to municipal (fire and police) frequencies.

Connecticut: The law prohibits the operator of a motor vehicle from using two-way radio while such vehicle is in motion, but is intended primarily to cover subscribers to the telephone company's mobile service, and specifically exempts amateurs, RACES, and most other mobile services.

Florida: The law prohibits the use in a motor vehicle of equipment capable of receiving on police frequencies; however, amateurs are specifically exempted.

Indiana: Prohibits use in motor vehicles of equipment capable of receiving on police frequencies.

New Jersey: Prohibits use in motor vehicles of equipment capable of receiving on police frequencies, unless user has a permit from local chief of police.

New York: Same as New Jersey. Additionally, the city of New York prohibits the operator of a motor vehicle in motion from using two-way radio equipment: *no exemption for amateurs.*

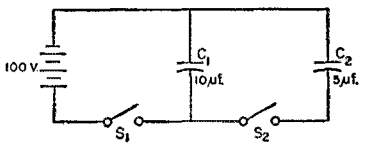
North Dakota: Prohibits installation and use of mobile short-wave receivers without a permit. (Like many others of this nature, the law was originally passed to give authorities a means to control "ambulance-chasers." To our knowledge it has never been applied to amateurs, though technically it could be.)

South Dakota: Same as North Dakota.

As a matter of interest, the states of Connecticut and Vermont prohibit the installation of a television set in a motor vehicle in a location where it can be seen by the driver!

It goes without saying that any amateur operating mobile should double-check to make certain he has both his motor vehicle operator license, registration, and amateur license always in his possession. — *P. W.* QST

Bruce Damerell, K9GCD in Joliet, Ill., illustrates a basic principle with the following problem: In the circuit shown below, S_1 is first closed and C_1 charges to the battery voltage Then S_1 is opened and S_2 is closed. When things settle down, what is the voltage across C_1?



In the electrical-tape problem last month, you don't have to worry about the fact that each turn has a slightly greater length than the preceding one. The area of the edge of the tape is the area of a 6-inch diameter circle minus the area of a 1-inch diameter circle, and the length equals the area divided by the thickness. If you want a number, it would be 175π or 549.8 inches.

Edison Award to K2KGJ

JULIUS M. J. MADEY K2KGJ, of Clark, N. J. was chosen to receive the 1958 Edison award, sponsored by the General Electric Co. Madey, an 18-year old high school student, was selected from a large field of worthy candidates because of his outstanding public service in handling more than 12,000 messages and telephone calls for isolated South Pole personnel.

Ceremonies were held at the Sheraton-Carlton Hotel in Washington, D. C., on February 26, and were attended by many prominent amateurs, military personnel, FCC Commissioners, and other government personnel. In fact, this annual Edison award ceremony always brings out many of the well-known names in communications along the East coast and is one of the best "ham-fests" that we get to attend. We'd like to see a west-coast version of this someday.

In addition to the many prominent people present at the ceremonies, telegrams of congratulations were received from Vice-President Richard Nixon, General Curtis LeMay (K4RFA), Rotary of Clark, N. J., and Herbert Hoover, jr. (W6ZH).

The principal speaker of the evening was the Reverend Daniel Linehan, S.J. (W1HWK), whose experiences in Antarctica have already been reported in *QST* (December, 1958, p. 78). Here is some of what Father Dan had to say.

W1HWK left, K2KGJ right.

We meet here tonight to honor one who has performed a meritorious public service while he followed his hobby of amateur radio as a citizen of these United States. The recipient of this award has been carefully chosen from the many names suggested, and it is only after a great amount of study on the part of the judges that such a choice is made. When you see the list of names of candidates and the efforts that have been expended by some of them, you realize the difficulty the judges are placed in.

Although this award in fact sets one person apart from the others tonight it morally includes the others of this nation for the public service they have too rendered. The gratitude of America is due them. I feel, too, that the Edison Award Committee of the General Electric Company should also be congratulated for the labors they have accomplished in having effected this award. Although a radio amateur may enjoy his hobby without expectation of reward or remuneration, it is nice to know that his extra labors are appreciated.

What is a radio amateur? The Federal Communications Commission defines him as ". . . a person interested in radio technique solely with a personal aim and without pecuniary interest, holding a valid license issued by the FCC authorizing him to operate licensed amateur stations." That is the definition on paper, and perhaps that is all the self-called "ham" means to others outside the fold of amateur radio. To us who are actively engaged in this hobby, we know that the ham is something more than this. Our group is made up of all sorts of people — wealthy and poor, learned and unlettered, Protestant, Catholic and Jew, young and old. Color and creed are no more of a handicap than is a physical disability. There are old timers and there are novices. We are quite a cross section of America. Amateur radio, however, permits us to do a lot of things that others cannot do — we can enter the homes of one another, and meet people on the opposite side of the earth; we can know almost everything that goes on in another man's life, what he or she works at in their business; their ambitions; their sports; their physical ailments; where they have travelled to; what their weather is at the moment; how many members in their family; their favorite dessert; their favorite book; their favorite presidential candidate; their complaints; their woes — we know almost everything about them, except what they look like. An amateur too, is a very friendly person — not only willing to help another but eager to do so. Witness the number of amateurs who take so much of their own time to run code classes for beginners; how all hands will rally around to help raise a new tower for an antenna; how many will volunteer their time to help work on your rig. Listen to the advice that is given over the air on how to improve this or that piece of equipment, — this is not just boasting and showing off ones superiority — it is relaying knowledge that someone else gave to him in the past. Witness how amateurs will allow themselves to be regulated into a "net" that they may be of greater aid to the group at large; how they participate in field day activities or rush to aid in time of disaster, whether it be flood, hurricane or fire. The contributions of time, equipment and effort on the part of some in Civil Defense Work is a public contribution that is beyond cost. To the amateur these things are a sort of duty, a volunteered duty, if you will, that has been born in a spirit of generosity and the desire to be friendly. Perhaps one of the outstanding exemplifications of this duty is the program of handling and relaying messages to all parts of the country. Today amateur radio has become almost a necessary link between Americans in exile and their families at home.

Men in the service, scientists on some remote project, artisans on some distant construction job, have found that amateur radio has made their lot the more easy to bear. For such as these the novelty of the new land they are visiting soon wears off and they are forced to settle down to a routine existence. Barracks life at its best is not the easiest form of life for an American. The constant eating of the same food day after day, looking at the same faces, forced to live with the same personalities, — not everyone can be happy under these conditions and although he longs to be back with his family and loved ones, there is no way out, and the thought of this being bound in can affect many a man's outlook. We know how morale officers and others in charge try to arrange programs to take care of recreation and to ease the mens lot, but such efforts are only partly successful.

Stories of expeditions of other years impress one with the feeling that "cabin fever" is one of the necessary psychopathic diseases of any expedition to a remote land. We read how people living under confined conditions away from home for a year or so begin to loath one another. Usually the relief party that arrives to replace them will find a camp full of men who will not speak to one another and who have but one project in life at the moment, and that is to get away from their place of confinement, return to their native land with the hope that they never see each other again.

In some of my own experiences of the past few years I have found that living in close confinement in places like the Antarctic has not produced this spirit of loathing and hatred in the camp. There the spirit of comradeship and camaraderie is quite contrary to the camps of other times and places. Strong friendships have been formed and life-long pals have been found. You may ask about the morale of a base as you visit it and invariably it is the same boast "We have the best base in Antarctic." You really have to question pretty closely to find any complaints. What has

(*Continued on page 69*)

Hints and Kinks For the Experimenter

BANDSPREADING THE BC-455

This modification to the popular 6-9.1 Mc. Command receiver should appeal to both old hands with surplus equipment and those newcomers who are using this receiver as a mainstay of their stations. The end result of about an hour's work on the BC-455 will double its bandspread so that the 40-meter band covers about 2½ inches of dial circumference compared with the original one inch it occupied.

First, take off the outer dust cover of the receiver and remove the cover over the tuning capacitor. In order to do this it will be necessary to remove two of the i.f. cans and several tubes unless a right angle screwdriver is available. This provides access to the two bolts on the cover of the plate that supports the 12K8 grid cap lead. Now remove all rotor plates from the capacitor except the right-hand three in each section (looking at the capacitor from the rear of the receiver). Replace the dust covers. The dial will now have to be recalibrated. First paint it completely with black enamel. Locate the 40-meter band with a transmitter, signal generator, or the 7.335-Mc. Canadian Observatory signal. The rest of the calibration is best done with a 100-kc. crystal calibrator that has been checked against WWV. The dial can be calibrated by scratching it at 100-kc. intervals. Commercial decal numbers will dress it up and give it a professional appearance.

— *Hovey M. Cowles, W3JWZ*

PENCIL LIGHT FOR DARK CHASSIS CORNERS

The 110-volt pencil soldering irons with screw-in tips will also accept the small 7½-watt "night light" bulbs. This makes a convenient light for searching dark chassis corners, and is also useful when you're looking under the workbench for small parts.

— *C. Cool, W2EBZ*

FINDING PORTABLE GENERATOR FREQUENCY

Browsing through old copies of *QST*, I came across an article in the October, 1956 issue, page 39, entitled, "Checking the Frequency of Portable A.C. Generators." Having wrestled with the same problem recently myself, this article interested me, but the author specified one thing that I did not have — commercial power of accurate known frequency. I am now located in the southern part of the Philippines, and the nearest commercial power of any accuracy is 200 miles away!

I had heard that ordinary electric clock accuracy is controlled by the frequency of the power. If the clock were plugged into a generator with an output frequency of 60 c.p.s., it should keep perfect time. However, if the generator frequency were fast or slow, the clock would gain or lose time. When I want to check the speed of the generator I plug in an electric clock and time the interval for the sweep second hand to make one complete revolution with a stop watch. If it takes over a minute I know the frequency is low, and if it takes less, the generator is running fast. The formula used to find the generator frequency is 3600 divided by the number of seconds for a complete revolution of the clock second hand.

— *John Lawless, W1YEF*

SOCKETS FOR 1625s

While building a new transmitter, I found I needed 7-prong tube sockets for the 1625 tubes. The ARC-5 transmitter from which I obtained the 1625s contained 7-prong sockets but they were useless in their original state since there was no convenient way to mount them on the new chassis. I checked the tube tables in the *Handbook* and found that pins No. 2 and 5 on the 1625 have no internal connections. So, I drilled out the rivets of pins 2 and 5 on the socket, enlarged the holes a bit and placed a small strip of metal to each of the holes as shown in Fig. 1. This arrangement permitted me to mount the socket on the new chassis.

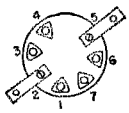


Fig. 1—Metal strips on ARC-5 sockets permit easy mounting on other surfaces.

— *Richard Niessen, K2SRA*

NOISE SNIFFER

Transistorized b.c. receivers are very useful in locating pockets of motor noise. Tune the receiver to a spot at the high end of the b.c. band. Move the receiver around the engine compartment and over the various panel instruments while listening for noise hot spots. This technique can also be used around the fixed station for locating noisy electrical appliances.

— *Eli H. Laakko, W8QMP*

SEALING OUTDOOR ANTENNA CONNECTIONS

HAVE you ever been plagued with eroded antenna connections? Erratic loading of the transmitter, or noises in the receiver can sometimes be traced to just such a condition. Some amateurs use candle wax to seal open antenna connections; however, this provides only a temporary seal. Constant beating by the weather will cause this type of seal to crack and allow moisture to enter the connection. What to do about it? Use that old piece of coax! Remove the outside jacket and shield from a piece of the cable. Strip about ½ inch of the insulation from the conductor. Holding the exposed piece of the center conductor with a pair of pliers, bring the flame of a match under the insulation at the other end of the cable. After a few seconds, the insulation will melt and start dripping off in a molten form. Hold the cable over the connection to be sealed and let the drippings fall onto the connection. When the joint is sealed, let it set for an hour or so. Now you have a sealed connection that even old man weather can't touch!

— *David L. Cabaniss, W1TUW*

CRYSTAL MICROPHONE TIPS

MOST crystal microphones contain a Rochelle salt crystal which should be protected from high temperature, humidity, and high voltage. The Rochelle salt crystal can be permanently damaged by temperatures above 125 degrees F. (50 degrees C.) and by excessive humidity. The best service from a crystal microphone will be obtained if it is used at room temperature, at a humidity of about 50 per cent. Since inside automobile temperatures rise to high values in the summertime, it's not a good idea to use crystal microphones for mobile service during hot weather. Be careful when soldering connections to a crystal mike. Don't connect the mike to speaker or power outlets carrying high voltage.

— *R. Bruce Campbell*

MANUAL CONELRAD MONITOR

IT is still necessary to monitor the broadcast band for conelrad purposes and here is the way I do it.

My receiver has a phono input position on the "mode" switch which switches out the front end and i.f. stages of the receiver but leaves the audio stages connected.

A simple crystal set (a diode across a coil will do in areas with strong b.c. stations) is connected across the audio-stage input terminals. To check for conelrad, quickly flip the mode switch to the "audio" position and see if there are any b.c. stations on. With the simple circuit mentioned above, it is likely that more than one station at a time will be heard. It may be necessary to add a ground and small antenna to the crystal set circuit.

— *Dan Kruss, K9GDQ*

LOW-POWER V.H.F. DUMMY ANTENNA

AN easily constructed dummy antenna and relative power output indicator is shown in Fig. 2. The indicator is a 32-volt 15-watt lamp which can be obtained at most electrical supply distributors. Capacitor C_1 is inserted in series with the center conductor. C_1 should have an approximate value of 40-$\mu\mu$f. for frequencies between 28 and 50 Mc., and 3-$\mu\mu$f. for 144 Mc. A miniature variable capacitor or trimmer can be used in place of the fixed value so that the dummy is useful on several bands without need for changing capacitors.

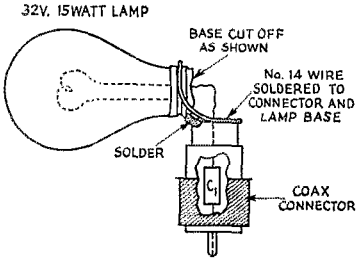


Fig. 2—V.h.f. dummy antenna.

The dummy antenna will give a visual indication of output at relatively low power. The popular Communicator transmitter will light the bulb to a useful brilliance.

— *Motorola*

ILLUMINATING METERS

A SIMPLE and effective method of providing illumination for most of the standard panel meters is to cut a small slot in the top of the meter case, as shown in Fig. 3, and mount a pilot

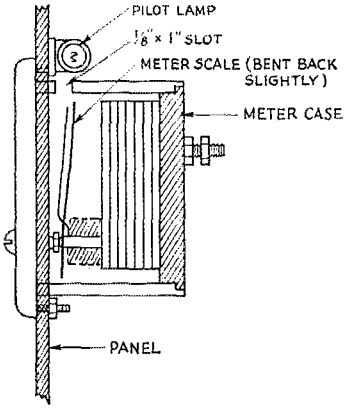


Fig. 3—Cross section of the meter showing special illumination slot.

lamp directly above the slot. The meter scale will have to be bent back slightly and the slot covered with transparent cellophane or plastic material to keep dust out of the instrument.

— *William Vandermay, W7DET*

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

IT's probably just old age creeping up on us, but as we listen on the v.h.f. bands these days we get the impression that some fellows are not getting as much out of their hamming as they should. How can this be, in view of the tremendous potential of all our bands today, compared to what we considered to be the almost certain limitations of the world above 50 Mc. a generation ago?

For perspective we dug out a 1934 *Handbook*. (It cost a buck, and it was about a third the size of today's $3.50 version.) As we thumbed its pages we wondered if it was just that we were 25 years younger then that enabled us, and thousands of other newcomers to amateur radio, to build up such a head of steam over the possibilities of the 5-meter band?

Certainly it wasn't any sales talk in the *Handbook* that did it. Right at the start it warned the potential user of the "ultrahigh frequencies" that this portion of the spectrum could not be expected to provide DX. Prominently displayed was the formula for the distance to the visual horizon:

$$d \text{ (miles)} = 1.32\sqrt{h} \text{ (ft)}$$

If you can get 100 feet above flat terrain you can see 13.2 miles. Use the same formula for the location of the fellow you want to work, add the result, and if the sum is less than the distance between you, a contact can be made — maybe! But don't count on it, for intervening hills will cut down this range. The fellow in a valley? Well, frankly, the ultrahighs are not for him.

But thousands of hams, newcomers and oldtimers alike, did get on 5 meters, and they had the time of their lives. They even got on in valley locations, and found it fun. Your conductor had such a location, and never dreamed of working out of it beyond perhaps 5 or 10 miles, depending on how far away the hills were. What, then, made us v.h.f. enthusiasts?

First, we built our own equipment. This meant a lot more than ordering a kit of parts and following through on a carefully-prescribed assembly procedure. We even had to make the parts, in some cases, and we scrounged for all the rest, including power supply stuff. Cast-off junk from defunct broadcast receivers was helpful here. Suffice to say, it was enough work to build a receiver or a transmitter so that when we finally heard a signal, or worked someone across town, we reached a peak of achievement that kept us going for months. Antennas, receivers, transmitters — all were in the tinkering stage of development, so we had plenty of projects to keep us occupied, before we got to do any communicating.

Secondly, though the supposed limitations of our world were well laid out for us by the experts, we were never quite sure but what someday we'd prove them wrong, and work some real DX. And sure enough, we did. Tropospheric propagation, extending the horizon far beyond the formula distance, came during our second year in the game, 1934. In another year we'd heard our first skip signals, though reception of a signal from 700 miles away seemed so completely beyond the realm of possibility that we wrote off as a local prank the first instance of a W8 breaking through, one spring morning in 1935.

A couple of years later we heard our first aurora, when a frantic phone call from a 5-meter associate dragged us out of bed. "Get on the air, quick — I just worked a guy in Buffalo!" It was some time before we had any inkling of the cause, but what a thrill it was to hear those buzzy signals from the north!

We were in the game more than 5 years before we worked our first real DX, a double-hop E_s contact with W6QLZ, but no ham alive ever had more fun in his first years of hamming than W1HDQ. Later years were still more rewarding, and today the future of the world above 50 Mc. looks even more intriguing than its past. How is it that anyone can be bored with the prospect of work on these frequencies?

There can be only one reason: a lack of appreciation for the potential of the medium in which

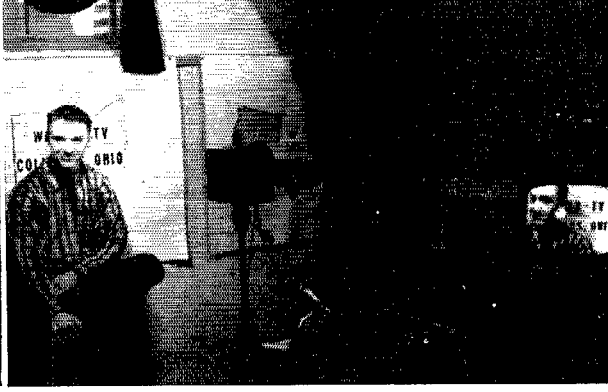
50 Mc. WAS

1	WØZJB	17	WØOGW	33	WØPFP	49	WØFKY
2	WØBJV	18	W7ERA	34	W6BJI	50	W8LPD
3	WØCJS	19	W3OJU	35	W2MEU	51	WØZTW
4	W5AJG	20	W6TMI*	36	W1CLS	52	W6GCG
5	W9ZHL	21	K6EDX	37	W6PUZ	53	W2RGV
6	W9OCA	22	W5SFW	38	W7ILL	54	W1DEI
7	W6OB	23	WØORE	39	WØDDX	55	W1HOY
8	WØINI	24	W9ALU	40	WØDO	56	W6ANN
9	W1HDQ	25	W8CMS	41	K9DXT	57	W1SUZ
10	W5MJD	26	WØMVG	42	W6ABN	58	W1AEP*
11	W2IDZ	27	WØCNM	43	W6BAZ	59	W5LFH
12	W1LLL	28	W1VNH	44	VE3AET	60	W6NLZ
13	WØDZM	29	WØOLY	45	W9JFP	61	W7MAH
14	WØHVW	30	W7HEA	46	WØQIN	62	W8ESZ
15	WØWKB	31	KØGQG	47	WØWWN	63	W2BYM
16	WØSMJ	32	W7FFE	48	K9ETD	64	W7ACD

*49

VE7CN	45	XE1GE	30	LU9MA	26	LA7Y	20
KL7AUV	44	KH6CTC	30	ZS3G	26	VQ2PL	18
VE1EF	42	SM7ZN	29	CT1CO	24	JA8AO	18
VE2AOM	38	PZ1AE	28	SM6ANR	24	JA8BU	17
KH6UK	37	SM6BTT	28	CO6WW	21	JA1AAT	17
EI2W	37	CO2ZX	27	LA9T	21	JA1AUH	16
VE4HS	31	ZE2JV	26	SM5CHH	20	ZE2JV	12

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



Amateur TV in the Columbus area. W8RRJ, Worthington, Ohio, is seen at the left, with John Hull, operator, behind the camera. Bob Walker, W8VCO, is the camera subject. At the right is W8DMR, with Gordon Sager, W8UST, "on camera."

we work. The fellow who seems to be getting less enjoyment than he should from his use of the v.h.f. bands usually turns out to be one who has gone no further than to learn which way to throw the send-receive switch on a Communicator. Chances are he got started too easily, with a by-mail license and a store-bought station. Is there any hope for him? We think so.

First, he needs some boning up on the various forms of DX available to him. He need not be a scientist; the *Handbook* of today tells him most of what he needs to know. Once interested, he'll learn the rest soon enough. V.h.f. men in the know realize that right now we are passing through a period of radio conditions the likes of which we may never again see in our lifetimes.

Second, it would pay our newcomer to investigate all the modes of communication on the v.h.f. bands. Perhaps he needs, for example, to appreciate the true worth of c.w. in weak-signal v.h.f. work. The v.h.f. operator with no b.f.o., or without a means of keying his transmitter, is automatically cut off from some of the biggest thrills available to today's occupant of the world above 50 Mc. Is learning to use the code effectively too high a price to pay for a 17-db. improvement in station effectiveness? How else can you get the effect of increasing power from 10 to 500 watts so easily as by plugging a key into your transmitter?

Last, a bit of research through *QST* and the *Handbook* for the past 30 years or so can be rewarding. Though reading about it is a poor substitute for having lived it, the day-to-day story of the early years of v.h.f. endeavor should be must reading for anyone who would understand and appreciate the world above 50 Mc. as we know it today.

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

"How about giving us something besides all that guff about 50-Mc. DX?" So runs a common complaint from readers, if any, who are not interested in the 50-Mc. DX news. Gladly — but that this is a news column. What goes into it is what comes through the mails to us in the form of reports. And this month's mail, like that of many months before, has 10 50-Mc. DX reports to 1 of any other kind of news. This even though the 50-Mc. DX has tapered off considerably in recent weeks.

What happens when a good contest man catches a 6-meter opening? This answer is not exactly news, but it does show what can be done. Contest man from 'way back, KH6IJ, has been making passes at the 6-meter band occasionally. One of these was on Nov. 27, 1958. Katashi's log shows 51 QSOs on 6 between 1005 and 1205 HST on that date: 21 7s, 13 9s, 11 Øs, 3 4s, and 1 each of 2 and 3. Several W1s and VE1s were heard.

More recent news from Hawaii comes from KH6CTC. The last part of January was very quiet, Esther says, but things picked up a bit thereafter. Only one opening was heard in the period from Jan. 18 to 31, that to KL7 on the 26th. On Feb. 4, VE7AFB and W7IKM were worked. The following day brought in 10 stations in Arizona, Colorado, Oregon, Nevada and Washington. On the 6th Esther worked W7EXQ in Arizona and heard one Illinois station. W4HHK, Collierville, Tenn., reports reception of KH6UK at 1345 CST Feb. 9. K5HVC worked KH6UK, KH6CTC, and JA8EF, JA7AGG and CT3AE, all on Feb. 12. And here's a hot one via W5LFM: CEØZD, Juan Fernandez Island, 50.2 Mc., is reported worked by XE1GE.

Though the path to Europe showed a marked drop in the number of openings, there was some sign of life across the North Atlantic up to at least Feb. 20. On that date your conductor was hearing unidentified video signals, believed to be of European origin, as early as 0825 EST. CT1CO, Lisbon Portugal, was heard on automatic c.w. up to about the middle of February. EI2W, Dublin, Ireland, reported working into the United States on Feb. 8 during an opening of an hour's duration beginning about 1600 GMT. Harry found the band very good on Feb. 1, but his permit for 50-Mc. operation had not then been officially renewed, so he spent the day in frustration, listening to one of the best openings observed since back in the fall of '58. EI2W is now set for operation on 50 Mc. for the present, whenever the band is open for *F*2 DX. His record through Feb. 8, 501 transatlantic QSOs, with 305 different U. S. stations, 22 Canadians (VO, VE1, VE3), and 1 XE. He has 37 states, the highest 50-Mc. total for a station outside North America.

Our principal DX circuit during February was to South America. True to expectations, transequatorial openings have been more frequent than before in this solar cycle. The morning of Feb. 1 produced something never before observed in these parts on 50 Mc.: a simultaneous opening to Europe and South America. At about 0915 HC1FS, Quito, Ecuador, began coming through, and from about 0930 to 1010 he was S9-plus.

Simultaneously CT1CO was in well, and European TV signals indicated that the North Atlantic m.u.f. was at least 52 Mc. HC1FS faded out at about 1018 EST, but conditions to Europe seemed to improve. The BBC Channel 3 sound, 53.25 Mc., was in as late as 1210, and before this the band began to open to the West Coast. The Western and eastern openings overlapped for at least an hour.

South America and Europe were heard again on Feb. 8, though it was a more marginal opening. PZ1AE, Surinam, and CT1CO were heard on the 12th by W1LGE. Ed also heard PZ1AE and HC1FS on the 15th. HC1FS says that

2-METER STANDINGS

Figures are states, U.S. call areas, and mileage to most distant station worked.

W1REZ	29	8	1175	W5CVW	11	5	1180
W1AZK	24	7	1205	W5NDE	11	5	625
W1KCS	24	7	1150	W5VY	10	3	1200
W1RFU	23	7	1120	W5SWV	10	3	600
W1AJR	23	7	1130				
W1HDQ	20	6	1020	W6NLZ	12	5	2540
W1MMN	20	6	900	W6WSQ	12	5	1390
W1IZY	19	6	875	W6DNG	9	5	1040
K1CRQ	18	6	800	W6AJF	6	3	800
W1AFO	17	6	920	W6ZL	5	3	1400
W1ZJQ	17	6	860	W6MMU	3	2	950
W1CLH	17	5	450				
				W7VMP	15	5	1280
W2NLY	37	8	1390	W7JRG	9	4	1040
W2CXY	37	8	1360	W7LHL	4	2	1050
W2ORI	37	8	1250	W7JIP	4	2	900
K2GQI	30	8	1200	W7JU	4	2	353
W2AZL	29	8	1050				
W2BLV	27	8	1020	W8KAY	38	8	1020
K2IEJ	25	7	1060	W8WXV	35	8	1200
W2AMJ	25	6	960	W8PT	34	8	985
W2DWJ	23	6	860	W8LOF	33	8	1060
K2HOD	23	7	950	W8RMH	32	8	910
W2PAU	23	6	753	W8SVI	30	8	1080
W2SMX	22	6	940	W8SFG	30	8	1000
W2CEH	22	8	910	W8LPD	29	8	850
W2LWI	21	6	700	W8EHW	28	8	860
W2RXG	20	6	700	W8WRN	28	8	680
W2UTH	19	7	880	W8BAX	27	8	960
W2RGV	19	6	720	W8DX	26	8	720
W2WZR	18	7	1040	W8ILC	25	8	800
W2ESK	18	5	850	W8JWV	25	8	940
K2RLG	17	6	980	W8GFN	23	8	540
				W8NOH	21	8	975
W3RUE	30	8	975	W8LCY	21	7	610
W3GKP	29	8	1020	W8BLN	21	7	610
W3KCA	28	8	1110	K8AXU	19	6	750
W3TDF	28	8	915	W8GTK	18	7	550
W3SGA	26	7	700				
W3FPH	22	8	1000	W9KLR	41	9	1160
W3NKM	20	7	730	W9WOK	40	9	1150
W3LNA	20	7	720	W9GAB	33	9	1075
W3LZD	20	7	650	W9AAG	32	8	1055
				W9REM	31	8	850
W4HJQ	38	8	1150	W9ZIH	30	8	830
W4HHK	35	9	1280	W9LVC	27	8	950
W4ZXI	34	8	950	W9EQC	26	8	820
W4AO	30	8	1120	W9ZHL	25	8	700
W4MKJ	38	8	850	W9BPV	25	7	1030
W4UMF	28	8	1110	K9AQP	24	7	900
W4VLA	26	8	1000	W9PBP	23	8	820
W4EQM	25	8	1040	W9LF	22	7	825
W4WNH	24	8	850	W9KPS	22	7	690
W4JCJ	23	6	725	W9PMN	19	6	800
K4EUS	23	6	765	W9ALU	18	7	800
W4VVE	21	6	720	W0SMJ	29	9	1075
W4IKZ	20	6	720	K0EMQ	29	7	1110
W4OLK	20	6	720	W0IHD	27	7	890
W4AIB	19	7	840	W0BFB	27	8	1060
W4CPZ	18	6	650	W0GUD	25	7	1065
W4TLV	18	7	1000	W0RUF	23	7	900
W4RFR	18	7	820	W0INI	21	6	830
W4MDA	17	6	650	W0UOP	21	7	900
K4YUX	16	8	830	W0TGC	21	7	875
W4LNG	15	6	1080	W0RYG	17	6	925
W4RMU	13	6	920	W0IFS	16	6	1100
				W9IC	12	6	1240
W5RCI	33	9	1215				
W5DFU	25	9	1300	VE3DIR	28	8	1100
W5LPG	25	7	1000	VE3AIB	26	8	910
W5AJG	23	8	1360	VE3BQN	19	7	790
W5KTD	22	8	1200	VE3AQG	17	7	800
W5JWL	21	7	1150	VE3DER	16	7	820
W5PZ	16	8	1300	VE2AOK	13	5	550
W5VKH	15	5	720	VE3BPB	14	6	715
W5ML	15	5	700	VE7FJ	2	1	365
W5FSC	12	5	1390				
W5HEZ	12	5	1250	KH6UK	1	2	2540

220- and 420-Mc. STANDINGS

220 Mc.

W1FOS	16			K6GTG	2	2	240
W1HDQ	11	5	450	W6MMU	2	2	225
W1RFU	11	5	480	W8LPD	6	4	480
W1OOP	7			W8PT	4		
W1UHE	10			W8SVI	6	4	520
W2AOC	13	5	450	W8WRN	4		
K2CBA	8	3	315	W9EQC	7	4	740
W2DWJ	13	6	740	W9JFP	6		
W2DZA	8	4	410	W9UED	4	4	605
W3UJG	8	5	300	VE3AIB	5	3	350
W4UMF	11	5	420				

420 Mc.

W1FOS	7			W2DZA	5	3	130
W1HDQ	8	2	210	W2DWJ	6		
W1RFU	8	4	410	W4VVE	6	4	410
W1OOP	7			W9GAB	5		355
W2BLV	11	5	360				

this was a good one, lasting from 0830 to 1000, to W1, 2, 3, and 4. HC1FS was reported by K1DKX and others on the 22nd, and he worked W2, 4, 5 and 8 on March 1. Note that most of these South American observations are for Sunday mornings. This is almost certainly not the result of any natural causes, but rather the limited operating habits of 6-meter men. We're sure that the band is open for trans-equatorial DX more often than most people realize.

To help in catching South American openings of the evening scatter type, a TEW (transequatorial warning) net has been set up by W1VLH of our PRP office, following a suggestion from W3OJU. A chain of consistently-active stations extending from Ft. Lauderdale, Fla., to Canton, Conn., will be on the watch for any sign of South American openings after 1600 EST. Anyone observing such an opening will call the next station to the north and south in the chain by telephone. Presumably most calls will be made to the north, as openings are expected to be observed more frequently in the lower latitudes. Each station has an alternate who will be called if the regular TEW net member is not available by telephone. These net stations and alternates include some of the most active operators in each area along the Atlantic Seaboard. If *TE* openings develop during this spring season this net should help mightily to spread the word. The chain of net stations includes W4FNR W4GJO W4RMU W4LNG K4KSM K4UMK W3OJU K2RRG and W1HDQ. Alternates are K4HIL K4QHN K4FBL W4FWH K4PRG K4BCP W3VAM W2IDZ and W1SUZ.

It should be noted that this net is to function only after 1600 EST. Its purpose is to aid in observation of evening TE scatter. The morning openings, presumed to be normal F_2, are most likely to occur following ionospheric disturbances, but any morning after about 0830 local time we should be on the watch. The frequencies just below 50 Mc. are usually alive with Spanish speech at such times, but don't rely on this. We've heard HC1FS when there was no evidence of commercial activity on the frequencies just below the band edge, just as CT1CO seems to pop in at times when all indications are that the transatlantic m.u.f. is well below 50 Mc.

Other times there may be commercial signals but no hams. Such a morning was Feb. 26. There had been a good aurora the night before, so we were camping on the 50-Mc. band from early morning on, and we had plenty of company. By 0830 there began to be a couple of Spanish-speaking stations coming through, one at 49.6 and another at 49.8. Back-scatter W sigs showed up soon after. W4IKK was easily workable on c.w. throughout the morning. Other stations worked included W5DAA, Kingsville, Texas, and W0IC, Denver, Colo. All call areas were heard except W6 and W7, and every signal peaked with the beam south. Not a single ham signal was heard from outside U. S. A., but the back-scatter was a joy to behold. Here was a perfect example of the sort of thing the phone-only operator misses out on. All the interesting stuff was far too weak to be handled with anything but c.w., in this fine session of some three hours duration.

Records Boxes — New Style

For years now the hardy souls who make a specialty of working on 220 and 420 Mc. have been badgering us about including these bands in our tabulations of states, call areas and DX worked. "Not enough listings," we have replied. "Start something, and you'll get 'em," they counter. So we're starting them. For want of a better way of doing it, we're listing the information we presently have, incomplete though it may be, in alphabetical-numerical order. If you are in this list, and your record as published is incorrect or not complete, please send us the latest and complete information. If you're not in the list, and you are consistently active on either 220 or 420, send us your standings. Include the states, call areas, and the call and location of the most distant station you have worked.

To keep this department from becoming all boxes, we've done some paring on the records for 50 and 144 Mc. Let's face it, men, making WAS on 6 is not quite the ordeal it once was — and working 40 states or so is too easy to be worthy of special mention any more. From here on, to make the 50-Mc. list you must have submitted cards to ARRL and received WAS, an award issued to people who can prove they they have worked all states. (This means 48 up to Jan. 3; 49 thereafter.) Only exceptions are KH6, KL7,

(*Continued on page 166*)

Happenings of the Month

20-Meter Phone Expansion Proposed

License Renewals — RACES Filing

National Convention News

20-METER PHONE EXPANSION

Responsive to ARRL request, the Federal Communications Commission has now issued a notice of proposed rule making to add the top 50 kc. of the 20-meter band as part of the segment where voice operation is permitted. (For the information of members, the League's initial request sought limitation of use of the proposed 50 kc. phone addition to holders of Advanced or Extra Class licenses; by subsequent Board action, this condition was withdrawn, and current proposal likewise contains no special license restriction.) Final date for comment is May 1. The text of the notice is published at the end of this department.

LICENSE RENEWALS

FCC regulations governing the amateur service provide that if an amateur submits an application for renewal of his license in advance of its expiration date, he may continue normal operation past that date even if he has not received his renewal authorization from the Commission. This provision is particularly important at times when, through overload, FCC gets behind in its license-processing work — a situation which exists at the moment of writing. A great many amateurs who have applied for renewal become concerned, however, at lack of response from the Commission and bombard Washington with inquiries as to what has happened. This only slows up the entire operation. So, if you have submitted a timely renewal application, go ahead and operate and don't bother FCC with letters of inquiry which only further clog the machinery.

WYOMING LICENSE PLATES

SCM W7AMU furnishes the good news that Wyoming, as a climax to five months of intensive work by a special amateur committee and many other hams throughout the state, has adopted legislation permitting use of call letters on car license plates. The bill became law with Governor Hickey's signature on February 9. One result will be an intensive drive by the SCM and SEC to organize each county into efficient AREC units and integrate amateur facilities with the civil defense setup.

Forty-three of the 49 United States now authorize amateur calls on license plates.

RACES FILING

In accord with instructions of the Executive Committee, the League has filed comment with FCC as shown below in the matter of a proposed expansion of frequencies available for the Radio Amateur Civil Emergency Service. (See the editorial in this issue for further discussion).

COMMENT OF THE AMERICAN RADIO RELAY LEAGUE, INC.

Pursuant to Paragraph 7 of the Notice of Proposed Rule Making in Docket 12719, The American Radio Relay League, Inc., files these comments on behalf of some 70,000 FCC-licensed amateurs who are members of the League.

The League offers no objection to the proposal to make additional portions of the amateur frequency bands available for use by amateur stations authorized to operate in the Radio Amateur Civil Emergency Services (RACES). The League believes that the arguments submitted by petitioner are valid and meritorious.

STAFF NOTES

We welcome to the ARRL Hq. Ten Year Club two employees who have recently completed ten years with the League's staff: Frank L. Higgins, building custodian, and J. Murray Powell, W1QIS, in charge of the Maxim Memorial Station, W1AW. Frank came to us at the start of 1949 and, although actually over retirement age, likes the job so well he is continuing; the feeling is mutual, for in addition to being one of the most pleasant fellers we know, he is one of the most reliable — an important attribute in a job where many duties are involved both before and after normal working hours.

Murray Powell, whose anniversary date is February 21, is well-known to thousands of hams as "chief op" at W1AW, and is responsible for the station's numerous activities including regular transmission of bulletins, twice daily on eight c.w. frequencies simultaneously and eight voice frequencies similarly; a daily hour of code practice on the same c.w. channels; several net and traffic schedules; general operations for contacts (or ragchew, when time permits) with amateur stations using all major bands and modes of emission; and welcoming visitors from all parts of the country. (Next time your rig acts up, think of the headaches involved in keeping eight of the ornery critters constantly in line!) It is mighty reassuring to know that the responsibility for such extensive and intricate operations is in such capable hands. Drop in at W1AW some time and see if you don't agree.

With regret, but with good wishes for success

in his new post in industry, we announce the resignation of David L. Cabaniss W1TUW, for the past year a loyal and hard-working member of the Secretarial Department.

TRIBUTE

The public service of amateurs in general, and Texas hams in particular, was recently accorded high praise in the Senate of the United States by the Hon. Ralph Yarborough of Texas. We publish below an excerpt from the Congressional Record of January 23rd quoting the Senator:

Mr. President, in our modern world, the field of communications is especially valuable and important. This is particularly brought to our attention in times of emergency.

And there is one group of people who are always on hand to help in any way possible in this field. They are the amateur radio operators of this Nation.

The services this group provides are innumerable and invaluable. They have assisted law enforcement officers both in the apprehension of criminals and finding persons who are lost. Amateur radio operators have received distress messages from ships at sea and downed aircraft and have notified authorities so help can be sent. During times of serious fire and flood, these people — often endangering their lives and valuable equipment which they purchased with their own funds — have stood by authorities, relaying emergency messages for help and supplies and assuring anxious relatives that their loved ones are safe. They have also crossed many miles with their radio beams to bring messages from home to our servicemen and scientists in remote outposts.

As an example of the type of service these "hams" render, it was an amateur radio operator who first got out word of the disaster which had befallen Cameron, La., and parts of my own State when struck by Hurricane Audrey in 1957. As a result, aid was quickly dispatched to the scene.

Wherever these amateur radio operators are needed, they are on hand, helping in any way possible. They specifically prepare themselves to be able to give highly mobile assistance in any emergency.

Mr. President, in recognition of the outstanding services performed by these people, I ask unanimous consent to have printed in the Appendix of the RECORD an article by Woody Montgomery which appeared in the Temple, Tex., Daily Telegram for Sunday, January 11, 1959, under the heading "Central Texas Hams Set for Emergency Work."

There being no objection, the article was ordered to be printed in the RECORD, as follows:

CENTRAL TEXAS HAMS SET FOR EMERGENCY WORK

(By Woody Montgomery)

In some circles when a fellow is called a big ham he's liable to resent the implications, but in amateur radio circles being called a big ham is a compliment.

Temple has about 25 active hams, the radio variety, as members of the Temple Amateur Radio Club and they're ready for any emergency.

Central Texas has not called for their services to a great extent since the Waco tornado a few years back, but the Temple club hasn't relented in preparing for any emergency.

And the rigs, a term the amateurs fondly call their transmitters and receivers, range from a small mobile job to the near-maximum 1-kilowatt jobs.

The Temple club is equipped to move on short notice to any location and is ready to set up to aid in flood, fire and any disaster.

The local club at one time had a fully equipped mobile unit for use in emergencies but the van truck had its limitations and was abandoned.

Now, according to Club President Paul Gardner, the club has a portable generator mounted on a small trailer that can be towed behind any car.

On another trailer, furnished by the Red Cross, can be mounted at a moment's notice a fully-equipped transmitter and receiver.

"With the separate units they can be moved by any member when needed and as a number of the hams have mobile units in their cars it makes the operation doubly effective," Vernon Starnes, a club member said.

"Right now things are running smoothly but no one knows just when the amateurs may be pressed into emergency service," Gardner said.

Amateurs never seem to be satisfied with their equipment and are always either working on it or building something new to add to their present rig.

And the hams are the "tradingest" bunch of people in the Nation. They never buy a part if they can trade someone out of what they need.

The Temple club meets the first and third Tuesday of each month; the members engage in a swap session, swapping either information or radio parts.

The Temple club, boasting members from the radio, photography, medical, electrical and just about every field, is getting ready for their annual nationwide field day.

It isn't until June, but then the members of central Texas clubs will journey to the Ed Brod farm near Cameron and set up camp.

During the field day, operated only on emergency power, the clubs across the Nation vie for the honors in contacting the most other stations over the world.

It's a fascinating hobby and pastime, but as one ham put it, "It takes up a lot of time."

FAMILY MEMBERSHIP

For families with two or more amateurs, ARRL By-Laws provide that, after one individual has become a Full Member of the League at the regular dues rate ($4 in the U. S.), additional amateur members of that family may join the League for a special dues rate of $1, with all rights and privileges except the receipt of additional copies of *QST*. Our correspondence indicates some misunderstanding of this arrangement. Please note:

1) All participants in the Family Membership plan must be Full Members — i.e., holders of amateur license. Unlicensed persons do not qualify.

2) There must be an immediate family relationship — i.e., husband or wife, brother or sister, father or mother, son or daughter.

3) The rate for the initial membership is the standard $4 ($4.25 in Canada). The rate for additional amateur members of the family is $1 — not $2 as many seem to believe.

4) All Family Memberships must be concurrent — i.e., expire in the same month.

So if you are part of a ham family, slip in an extra dollar for each other ham in your clan next time you renew your League membership.

NATIONAL CONVENTION

Several south Texas amateur radio clubs are assisting the Galveston County Amateur Radio Club in preparation for the ARRL National Convention June 19–21. The Houston Amateur Radio Club, besides supplying chairmen for some of the technical sessions, is going to sponsor a unique exhibition and demonstration in one of the booths. The Electronic Technicians and Amateur Club of Texas City will greet all visiting mobiles by operating on all bands. The Royal Order of the Wouff Hong initiation ceremony will be conducted by the Bayshore Radio Club of

Galveston County Amateur Radio Club members l. to r., K5MIY; W5JSU, Exhibits Manager National ARRL Convention; W5ZG, General Manager; K5OHB; and, seated, W5DMM, president GCARC, at a portable rig in the lobby of the Galvez Hotel. The demonstration was held to acquaint manufacturers and representatives at the Southwest Electronics Conference on the exhibition hall plans for the ARRL Convention. As a result of this and other activities the 11th National ARRL Convention will have the biggest exhibit of amateur gear ever displayed in Texas.

LaPorte. Hidden transmitters for mobile hunts will be placed and manned by members of the Brazoria County Amateur Radio Club of Angleton.

Activities for licensed YLs will be planned by the GAYLARKS of Houston, under the chairmanship of Lillian Beebe, W5EGD. With special attention to unlicensed YLs, the ladies program is in charge of Dorothy Fulton, W5JSV. Features of the general program are now being planned, and complete information will be published in an extensive article in May *QST*. Or firm up your plans now by writing Box 73, Route 1, Galveston, Texas, for data and registration forms.

21 *KILO*MEGS

A year ago FCC, as part of a general shuffling around of assignments of microwave frequencies to various services, proposed to move our 21,000 Mc. (megacycles — *not* kilocycles) band to 22,000–23,000 Mc. It has now been decided that the shift will not be necessary after all, so the band will remain at its present location, 21,000–22,000 Mc.

Before the
FEDERAL COMMUNICATIONS COMMISSION

In the Matter of Amendment of Section 12.111(d) of Part 12 of the Commission's Rules to Permit Radiotelephony Between the Frequencies 14,200 kc. and 14,350 kc.	DOCKET NO. 12780

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 an amended petition filed by The American Radio Relay League, Inc., 38 La Salle Road, West Hartford, Connecticut, requesting amendment of Section 12.111(d) to allow radiotelephony operations (A3 emission) on the frequencies between 14,200 kc. and 14,350 kc., rather than on the frequencies 14,200 and 14,300 kc. as presently allowed. In an earlier petition, The League asked that such operations be restricted to holders of an Advanced or Extra Class license. However, the amended request does not contain this limitation. In other words, the effect of this requested amendment would be to widen the permissible limits for A3 emission by 50 kc.

3. The League points out that in 1954 the Commission, when faced with an identical request to permit radiotelephony between the frequencies 14,200 kc. to 14,350 kc., dismissed the proposed amendment. At that time, the Commission in Docket 10927, *In the Matter of Petitions of the American Radio Relay League for Amendment of Part 12, Rules Governing Amateur Radio Service* stated: "In view of the fact that the effect of the availability of the 21 Mc. amateur frequency band upon congestion in the 14 and 28 Mc. bands cannot be assessed until sometime in the future when propagation conditions are such as to encourage increased activity in the 21 and 28 Mc. bands, the Commission believes it to be in the best interest of the Amateur Radio Service to defer further consideration of expansion of the 14 and 28 Mc. sub-bands for telephony."

4. In support of its petition, the League states that although optimum conditions operation in the 21 Mc. telephony sub-band have not been reached, "there are openings almost daily for long-distance communications at the 21 Mc. frequency. During these regular occurrences, the 21 Mc. telephony sub-band is also extremely crowded. But not the slightest decrease in congestion of the 14 Mc. radiotelephony sub-band has been noticed. With even better propagation conditions yet to come, it is already obvious that use of the 21 Mc. band is no answer to crowding in the 14 Mc. band."

5. The petitioner further states that since 1954 when the 21 Mc. band became available, the number of amateur licensees has increased by approximately one-third. Since all indications point to a continuation of this rate of growth, the problem of crowding will become more serious. In addition to the contemplated larger number of licensees, the League avers that "the trend to voice operation in recent years has resulted in a condition of overcrowding to an extreme unusual even in amateur experience." It would appear that this mode of operation will correspondingly increase in the future thus creating a need for relief to lessen the ever-growing radiotelephony congestion in the 14 Mc. band.

6. The Commission is persuaded that the facts stated by petitioner in support of the requested amendment warrant re-examination of the conclusions rendered in Docket number 10927.

7. In view of the foregoing, the Commission is on this date issuing a Notice of Proposed Rule Making to amend Section 12.111(d) in accord with this petition by permitting radiotelephony operation on the frequencies between 14,200 kc. and 14,350 kc. rather than the present 14,200–14,300 kc. limit.

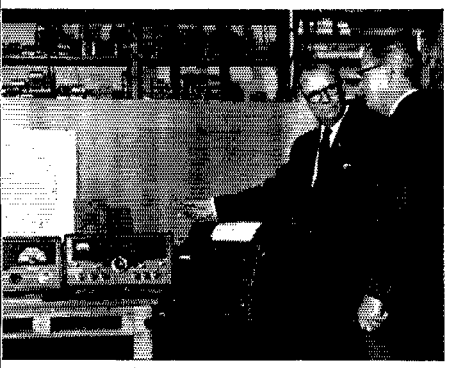
8. The authority for the amendment proposed herein is contained in Sections 4(i) and 303(1) of the Communications Act of 1934, as amended.

9. Any interested person who is of the opinion that the proposed amendment should not be adopted or should not be adopted in the form set forth herein, and any person desiring to support this proposal, may file with the Commission on or before May 1, 1959, a written statement or brief setting forth his comments. Replies to such comments may be filed within ten days from the last date for filing original comments. No additional comments may be filed unless (1) specifically requested by the Commission, or (2) good cause for the filing thereof is established. The Commission will consider all such comments prior to taking final action in this matter, and if comments are submitted warranting oral argument, notice of the time and place of such oral argument will be given.

10. In accordance with the provisions of Section 1.54 of the Commission's Rules and Regulations, an original and

(*Continued on page 170*)

Committee Vice-Chairman W6QJW tries out one of the receivers to be used at K6USA while K6IPE watches.



W6SJ shows some of the RTTY gear to W6AEE.

W6MLZ and K6QVT assemble some additional equipment for the show station.

K6USA

L. A. Council to Demonstrate Amateur Activities for CCIR Delegates

USING the specially assigned call letters K6USA, the Los Angeles Council of Radio Clubs will install and operate an elaborate amateur station in the Biltmore Hotel for the purpose of demonstrating activities of the amateur radio service to foreign delegates attending the Ninth Plenary Session of the International Radio Consultative Committee (CCIR) commencing April 1.

CCIR is an organization which conducts studies of technical radio problems of international radio interest and recommends solutions for consideration by the administrative radio conferences, such as the one scheduled to meet in Geneva later this year. (It does not deal with allocations, however.) Some 90 nations will be represented at the Los Angeles meeting, which is expected to last six weeks.

Sponsored by the Department of State, which acts as host for the overall meeting, a Government-industry committee is planning various outside activities for the visiting delegates. Under this group, an Amateur Activities Committee has been established with Herbert Hoover, jr., W6ZH, as honorary chairman, and Ray Meyers, W6MLZ, ARRL Southwestern Division Director, as chairman. Vice-chairmen are William S. Grenfell, W4GF, Chief of the Amateur & Disaster Services Section of FCC; Howard Shepherd, jr., W6QJW, attorney; and Merrill Swan, W6AEE, of Cannon Electric Co. George W. Bailey, W2KH, is chairman of the overall budget committee.

K6USA will operate on all modes and most bands. Amateurs throughout southern California — and perhaps some from Arizona — will volunteer to stand watches at the station. The Southern California DX Club will furnish DXperts as chief operators, since special emphasis will be on foreign contacts and third-party messages will be handled where regulations permit. ARRL literature will be distributed to acquaint foreign delegates with amateur radio and its public service functions.

The Biltmore Hotel is furnishing a room on its eleventh floor for the amateur installation and providing engineering help in rooftop antenna installations. Cooperating manufacturers include Cannon, Collins, Eldico, Hallicrafters, National Wire & Cable, Pearson-Holt, and Tri-Ex. Special QSL cards will be provided by Haggerty Radio.

Watch for K6USA starting April 1.

Some of the key personnel in arranging the K6USA installation gather around the desk of Herbert Hoover, jr., W6ZH: *l. to r.*, Lyle Moore, P.T. & T.; George Elsworth, Department of State; Ray Meyers, W6MLZ, ARRL Southwestern Division Director; Merrill Swan, W6AEE; Phineas J. Icenbice, jr., K6VZJ.

The QS-59 is a radically new approach to receiver design. Two oscilloscopes on the panel provide simultaneous panoramic observation of three adjacent amateur bands and continuous monitoring of the selectivity settings and threats of QRM.

The group of concentric knobs at the left control the bandwidth and slope characteristics of the i.f. amplifier and the depth and position of the Q multiplier notch. The three knobs at the right handle i.f. and a.f. gain and the b.f.o. pitch.

Die-cast panels and chassis contribute to the mechanical stability of the receiver, and its compactness is obtained through the use of printed circuits and transistors in the i.f., audio and control circuits. The r.f. sections use saturable reactors for tuning.

The QS-59 Communications Receiver

ONE of the best-kept secrets of the radio industry has been the development of the QS-59 communications receiver. In contrast to the usual advance publicity and trade-show scuttlebutt, this receiver is being offered to the amateur with none of the traditional fanfare that accompanies such an event. However, the receiver is so far ahead of anything that has been available that the immediate acceptance of the receiver is a foregone conclusion.

Some of the ARRL Headquarters staff were fortunate enough to have enjoyed the confidence of the manufacturer and to have been in on the advance planning of this revolutionary approach to amateur reception, and as a result the first receiver off the production line was shipped to the League lab for appraisal and evaluation. Frankly, we don't know where to begin to describe it!

Basically the receiver is a single-conversion superheterodyne using an i.f. at 2.3 Mc. It covers the amateur bands only, from 80 through 10 meters inclusive. The accessory equipment and operating aids are what make it so strikingly different. Looking at the die-cast panel of the receiver, the large 3-inch tuning knob is in the center, below a slide-rule tuning scale that shows only the band being tuned. A square-faced oscilloscope to the left of the dial gives a panoramic presentation of the signal being received and the spectrum ±5 kc. either side. The i.f. selectivity is continuously variable, and the *slope* and *frequency* of each side of the pass band are also continuously variable. To indicate to the operator how the signal is positioned in the pass band, where the interference is and how it can be rejected, the selectivity positioning controls (slope and frequency) are ganged to individual transparent masks on which are stamped white lines showing the sides of the pass band. As the frequency of one side of the pass band is changed, the corresponding mask moves horizontally, and as the slope is changed the mask is canted accordingly. A third mask, carrying the rejection notch offered by the *Q* Multiplier, moves up and down with a notch depth control and horizontally with the *Q* Multiplier frequency control. A fourth mask, carrying a single engraved vertical line to represent the b.f.o. frequency, moves back and forth across the pass band as the b.f.o. pitch control is changed. When the b.f.o. is switched off, edge-lighting of the b.f.o. mask is also removed and the b.f.o. line becomes invisible. As a result of these overlapping masks on the scope face, the operator has at all times a visual picture of the received signal, how it is positioned with respect to the i.f. pass band, and the relative position of any potential interference. No S meter is required, of course, because the amplitude of the signal in the scope is a measure of the signal strength. Dynamic compression in the panoramic channel provides an 80-db. range that will take care of most conditions without running off the scope.

The continuously-variable selectivity in the i.f. amplifier is obtained through the use of recently-developed low- and high-pass crystal lattice filters that can be varied in cut-off frequency and slope. The block diagram of the basic receiver, Fig. 1, shows the position of the filters in the i.f. amplifier. The first filter following the mixer is a fixed bandpass filter 7 kc. wide and −6 db. and 10 kc. wide at −60 db., which affords initial protection to the i.f. amplifier. The range of adjustment of the high- and low-pass filters is such that effective bandwidths of from 180 cycles to 7 kc. at −6 db. can be obtained, with 6- to 60-db. shape factors of from 1.19 to 3, within the restrictions imposed by the 10-kc. pass band at −60 db. of the fixed filter. Following the *Q* multiplier (second i.f. stage), the signal channel is quite conventional in the detector, audio and b.f.o. circuits.

The single bit of circuit wizardry that makes so many of the operating innovations possible in this receiver is the use in the tuned circuits of saturable-reactor tuning.[1] Instead of the conventional variable capacitors or permeability-

[1] Gabriel, "Ferrite Inductors Tune Panoramic Receiver," *Electronics*, August, 1956.

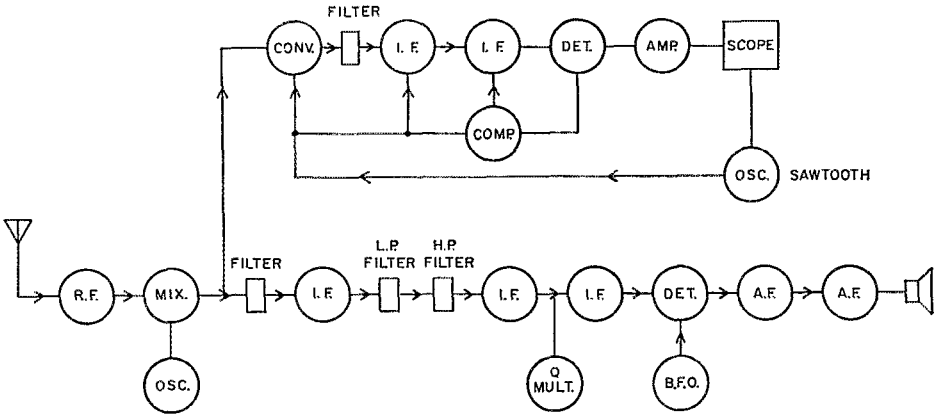


Fig. 1—Block diagram of the signal circuit of the QS-59. The a.f.c. and auto-tune sections are not shown.

tuned inductors, the r.f. circuits (r.f., mixer and oscillator) all use saturable reactors that are tuned by the current changes through control coils on the small toroid forms. Manual tuning of a "front end" for any band is accomplished through a three-gang potentiometer that varies a small direct current through the applicable control coils. This resistance tuning, through a 15:1 reduction drive, is unusually smooth, with no trace of backlash (or hysteresis), although we would have liked it a bit better if the dial could be "spun" a little faster. However, this is really a personal prejudice, because three tuning rates (10 kc., 50 kc. and 200 kc. per knob rotation) are available at the flip of a switch that cuts in suitable shunts and biases. It will seem strange to many operators to find miniature potentiometers used for trimming the r.f. circuits along with the more familiar adjustable capacitors, but there are a number of new concepts in this receiver one must become accustomed to.

One of the more attractive features of the QS-59 is to be found in its perfected automatic frequency control for use in the reception of single sideband. It is a conventional type of a.f.c. (aside from its use of a quartz-crystal discriminator), and its inclusion is made possible through the use of the saturation-tuned front end and the extreme sensitivity of the receiver. Most sideband signals suppress the carrier only 40 or 50 db., enough to be negligible in the usual receiver but a usuable signal in the QS-59. As a result of the a.f.c., a sideband signal that is mistuned by as much as 150 cycles will be pulled back immediately to perfect phase synchronization by the a.f.c. working in conjunction with the b.f.o. Of course the b.f.o. has to be set up properly on the pass band, but this is a simple matter of checking on the positioning of the masks on the signal oscilloscope. Using this feature for the reception of s.s.b. is a revelation, and it makes tuning in a sideband signal no more difficult than tuning in a broadcast station on a car radio. With this feature switched in, it is just as easy to recognize a sideband operator by his voice as it was in the old days of a.m.

Triple Panoramic

So far of course the receiver is merely a superlative job that any one of three or four enterprising manufacturers might have developed within the next 10 years. But the real feature, the one that will endear the QS-59 to the hearts of DX and contest men everywhere, is the inclusion of "triple panoramic reception." A 4-inch 3-trace scope to the right of the tuning scale furnishes a panoramic representation of three bands at any instant. The middle trace shows the band in use, the top trace the next low-frequency band, and the bottom trace the next high-frequency band. These traces are controlled by the band switch, so that the middle trace is always the band the operator is tuning. The middle trace moves horizontally with manual tuning as in conventional panoramic reception, but the top and bottom traces remain fixed and show the entire bands at all times. Thus when the operator is tuning the 15-meter band, he can watch 20 and 10 for pile-ups and openings! When tuning 10 or 80, the next two lower or higher bands are shown on the outside traces.

It probably isn't "cricket" to criticize a rereceiver that represents such a giant stride forward, but after several weeks of operation with it we were able to spot an improvement that should be considered for the next model. The 3-band panoramic reception was found to be invaluable for spotting desirable signals, but a directly-calibrated frequency scale on the panoramic traces would have allowed us to tune more quickly to a pile-up on another band. When there is more than one pile-up it is sometimes confusing to know which one to tackle first.

A feature that will appeal to any DX man with over 275 countries is the auto-tune device. This is simply a very slow sweep of the signal channel by automatic means. The sweep automatically stops on each signal that is weaker than S7, and holds on that signal for approximately 20 seconds before releasing and moving on to the next. This allows the tired DX man to rest on a couch in the shack while keeping an

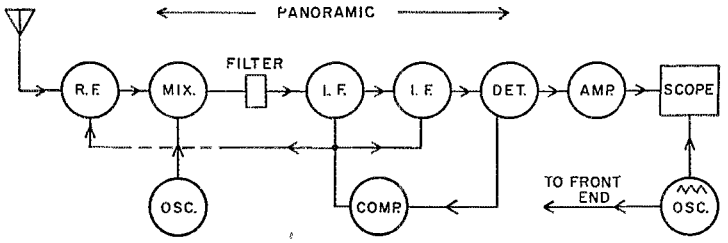


Fig. 2—Block diagram of one of the two panoramic channels that monitor the adjacent bands.

ear on the band. Magnetic memory and erase circuits in the receiver hold the tuning positions for the previous five signals, so that an operator who isn't as agile as he used to be can still jump up from the couch, rush over to the receiver, and immediately locate the rare DX the receiver just tuned through. Of course he has to remember how many signals back the rare one was, but this is no particular hardship.

There is an output jack at the rear of the receiver that can be connected to the input of a tape recorder to record the call of a rare DX station. This is for the specialist who recognizes that he has a better chance of raising a bit of rare (c.w.) DX by calling at the same speed as the CQ. Recording the DX station's sign-over and using it to key the transmitter not only enables the station to be called at the identical same speed but with the identical same fist! The psychological advantage this gives the caller can often mean the difference between raising and not raising a station. This feature seems like a very worthwhile one, and we suspect that it will be included in nearly all receivers in the future. A tape recorder is not furnished with the QS-59, but any of the standard brands can be used.

One of the minor things that bothered us when we first tried out the receiver on the higher bands was the appearance of a backwave or echo on most DX stations that were tuned in. It was finally pointed out to us by a visitor that this was the signal coming around the world again, a remarkable tribute to the sensitivity of the receiver and the effectiveness of the wide dynamic range a.v.c. Judicious use of the gain controls eliminated this effect, and if we had read the instruction book first, as *QST* keeps telling its readers, we would have found that the manufacturer warns against opening the gain to maximum except on the very weakest signals, for this very reason. The manufacturer attributes the superlative sensitivity of the QS-59 to the use of special r.f. and mixer circuitry combined

(Continued on page 170)

Edison Award to K2KGJ

(Continued from page 57)

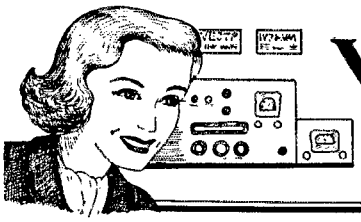
happened in Antarctica has also happened in other camps of Americans the world over. What has happened to make this change? I am quite sure that you will find that amateur radio is the answer.

When a camp is being established, there is a lot of activity, and bustle that keeps men's minds off their own troubles, but when this hurried routine is over then they settle down to worry over what is happening at home. Once the ham shack is built, antennas erected, cables plugged in, and your first call is answered from the States, a different spirit pervades that camp and morale rises. Home is only as far away as the ham shack.

The man who can get away from daily routine to talk to his family at home has his horizons widened. His concepts grow and he is happier. Sometimes just to hear the voice of a wife or mother is all a fellow needs. Communication may be difficult at that moment, but just to have heard them is enough, the news can come at another time.

We have been born into a life of easy communication with the telephone. Before the day of the dial, and we had to rely on the operator in the exchange. We still took her work for granted, and once the connection was made we promptly forgot her and we completed our communications alone. With the dial mechanisms, even the operator has been eliminated. In amateur radio relaying of messages, there are always the two operators that are present and listening to the conversation and waiting for the word "over" that they may throw the switch. We depend on these operators very much. They become the confidants with members of a family, and they bury many secrets in their hearts of love and hate, joys and sorrows, hopes and despairs, almost as a Father Confessor would. You are sorry with one man's financial troubles and you worry about anothers sick child; sometimes you feel like "throwing the switch" to stop some of the woes that come pouring through your receiver to a man and the next time you are the Gabriel who is bringing him news of joy; you hear his little child trying to pipe a "Hello Daddy" over thousands of miles of the ether; and you smile as you hear a fond mother reminding her bearded son to keep his feet dry and not to catch cold. In every case, the amateur operator is in the middle and in the midst of every family. I don t know which area gives the greater thrill to operate from here or to operate from there, as the gratitude expressed is most rewarding. We have all experienced the difficulty in trying to hang up the telephone with a mother you have just completed a contact for — you learn all about her boy from infancy to the present day as she thanks you for bringing him back to her; or the exultation punctuated with sobs of the wife who has just been reunited with her husband on the other side of the world. Perhaps the operators at the base see their efforts more clearly rewarded. There you can watch a man's face as you hand him a hamgram, the first news he has had in months. Or, as you complete a contact for another, there is a squeeze on your shoulder or a thump in the back expresses more gratitude than any words can. Few people think of Hertz, Marconi, DeForest and the rest who have made radio possible, these grateful people think only of the operator who made this contact a reality.

The stateside operators, I think, have the more burdensome task. At the end of a year, their task is not over, they have to begin all over again. The band may fade out with one area then they must turn to answer calls from another, and it is rare that an operator ever turns down a call when needed despite the fact his own tired body is crying for rest. These are the real heroes who have brought a good deal of America to the exiles away from home . . . QST



YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

TO RESORT to an old proverb: "One picture is worth a thousand words." Here's the picture we'll spare you the thousand words we might have written in an effort to stir up a little enthusiasm for "do-it-yourself" building of radio gear. (Yes, we know that any OMs who perchance are reading this have already had their enthusiasm aroused, and not necessarily for building equipment, but we're thinking of YLs only now.)

The beauteous YL gracefully wielding the soldering gun and long-nosed pliars is Miss Joan Thompson of Washington, D. C. Alas, KN3-AMT's novice ticket just expired but expect to hear Joan back on the air with a general class license after she returns from China, where she has been on a mission for the Chinese Embassy.

We'll recommend Joan for an ad for kit-building anytime. What model could exhibit better technique? She makes building look like the thing to do, doesn't she, girls?

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

Handy Hints

The following ideas contributed by Marge Campbell, K4RNS, are reprinted from the January 1959 issue of *Florida Skip*, a Florida amateur publication edited by OM W4IYT. If *you* have happened upon similar little helpful hints which enable you to enjoy hamming more than ever, how about sharing your discoveries with us too?

"1. I watch all publications for pictures of OMs and YLs whom I have worked and for whom I have QSL cards. I cut out the picture and attach it to the QSL, so when I QSO with them another time I have only to look at the card and know what they look like. Makes it more intimate — huh?

2. Being a certificate hound and not having hang-up space for a lot of frames, I preserve my certificates in the following manner: place certificates on cardboard the same size as the certificate, cover with clear plastic paper (Saran Wrap is perfect) or anything similar, wrap around so it can be secured in back of the cardboard. They can be tacked up like QSL cards or laid flat in a drawer.

3. I list all of my contacts in a looseleaf book in zones, and alphabetically with OMs and YLs separately. It is very handy for quick reference, especially in checking for certificate contacts. I place the date of the contact in pencil and when I receive the QSL card, I erase it, then I know I can count him definitely."

—•••—

The Gulf Area YL Amateur Radio Klub plans to display samples of various certificates offered by YL clubs throughout the country at its booth at the forthcoming ARRL national convention in Galveston. GAYLARK requests certificate custodians to send sample certificates and information on how to obtain them to Lillian Beebe, W5EGD, 2503 Forest Oaks, Houston, Texas.

Another active YL on s.s.b. is K6TQO, Clare Spencer, of Redwood City, California. Clare uses sideband gear for 10 thru 80 meters and a Gonset-50 on six. The XYL of K6TQN, she is active in local c.d. affairs as an RO.

KEEPING UP WITH THE GIRLS

CLUBS:

Polar Amateur Radio Klub of Alaska — Eighteen members attended the monthly meeting in February. Announcement was made of Rose Cowles, KL7ZR's appointment as YLRL district chairman. Geri, KL7ALZ, co-editor of the PARKA *Hi-Lites* newsletter, reminds all amateurs of the PARKA certificate which is issued upon proof of contact with seven members of the club. Stamped addressed envelopes for return of QSLs and sufficient postage for return of the certificate should be mailed to custodian KL7ALZ at her new address: Star Route "A", Box 4017, Spenard, Alaska.

YLRL — The new custodian of the DX-YL award is Maxine Willis, W6UHA, 6502 Wyncoop Ave., Los Angeles 45, California. Vada Letcher, W6CEE, has been appointed club Historian.

N.Y.C. YLRL — New officers pres. K2PDN; v.p. W2EUL; treas. W2EEO; and sec'y. Helen Zuparn, were installed at a February luncheon in the big city.

Camellia Capital Chirps — 1959 officers pres. K6PWH; v.p. K6TYJ; sec'y. K6KCK; treas. K6GKR were installed at the second anniversary dinner in January. Guest dinner speaker OM W6BYB told of his recent South Seas trip. Chirp net meets Thursday at 8:00 P.M. PST on 3915 kc. At 9:00 P.M. members stand by for OM calls.

Hoosier Amateur Women's Klub — The passing of member Lulu Perrine, K9BZU, on Dec. 19, 1958, is sadly noted. Lulu received her amateur license in 1957 at the age of 75 (see her photo in April '58 column). She was active on the 40-meter band and was a member of the YLRL. Shortly before her death she was appointed and enthusiastically accepted the office of membership chairman for the HAWK. Lulu will be greatly missed by her ham friends in Indiana and throughout the country.

Technician Linda Stephens Grant, K4JJN, operates six meters, mobile and fixed, in between senior Home Economics classes at the University of Tennessee. Last June Linda was married to OM W4UVU in a ceremony which was officiated at by minister K4DOC and which included several Athens, Tenn. hams in the wedding party.

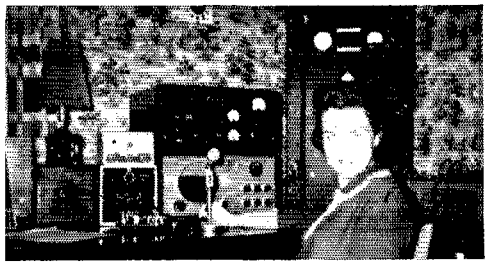
Coming YL Get-Togethers

Women Radio Operators of New England
May 2, Pillar House, Newton, Mass. on Route 128 near Route 9. All W1 YLs cordially invited to attend annual Spring luncheon of WRONE. Contact Onie Woodward, W1ZEN.

Ninth Midwest YL Convention
May 22-24, Milwaukee, Wisconsin, at the Polly Valley Motel. Mary Meyer, W9RUJ, Chairman.

Eleventh ARRL National Convention — YL Program
June 19-21, Galveston, Texas. Program for licensed YLs will be handled by members of GAYLARK, W5EGD, Lillian Beebe, President.

ARRL New England Division Convention — YL Program
Sept. 5 and 6, Hartford, Connecticut, at the Statler Hotel. YLs from the six New England states won't want to miss this one. Convention attendance will be limited, so reserve Labor Day week end right now and watch for further details.



Been searching for a Maine YL contact? K1GUK, Glenda Lentz of Portland, will be glad to oblige with a sked on 20 and 75 most anytime. Glenda's OM W1VBY built her 300-watt transmitter.

Licensed as a novice in 1956, Miss Velma Keister of Oakmont, Pa., received her general class license last November at the age of 69. As K3AIF Miss Keister operates in the 3.5 Mc. band, c.w. or phone, each morning. Her brother, W3DHU, is on the air from the same QTH. K3AIF and W3DHU are both retired high school teachers. (*photo via W3HKV*)

Smiling sprightly at the birdie are 15 members of the GAYLARK (Gulf Area YL ARKlub) who got together for the klub's first anniversary party. K5BJU was presented with a linen tablecloth made by K5SPD in appreciation of Harriett's outstanding efforts as the group's first president. Installed as 1959 officers were W5EGD, president; K5PFF, v.p.; K5SPD, secy.; and K5HTO, historian. The photo shows K5SYT, KN5TIW, K5POD, K5SPD, K5PFF, and W5EGD in the first row; K5ALF, K5MIZ, W5ERH, K5BJU, W5CXM, and W5DRA in the second row; and K5JGC, W5ZPD, KØMET/5 without seats, looking at them all from left to right.

A YL brasspounder from Minnesota is KØIKL, Joyce Polley, of Minneapolis. Joyce placed second highest in the c.w. section of the last YLRL Anniversary Party. Two small sons, a new baby and a toddler, don't keep Joyce from getting in at least two or three c.w. contacts nightly on 10, 15, or 20 meters. KØIKL's OM, VE1EG, is awaiting a U. S. call.

Miscellany

In an appearance on the CBS Chicago TV show "Shopping with Miss Lee," K9BUS, Dolly, and W9STR, Betty, contacted KG1FR in Greenland, using a sideband rig set up on the stage. A salient selling point of ham radio was effectively demonstrated when a member of the studio audience stepped forth to chat with her son in Greenland. The show was arranged by the Chicago Radio Council . . . In Mexico for four months doing biological research, W4UF, Dot, will help her OM write a book on their findings . . . K4LMB, Ethel, is editor of a new edition of the Washington Area Ham Index of the TVI Committee . . . During a month's vacation in sunny Sarasota famous BPLer W3CUL, Mae, was made an honorary member of the Floridora YL club . . . K4CLX is another "YL deer-slayer." Alice skipped duties as treasurer of the Blue Ridge Net long enough to shoot a deer for her freezer . . . K6RLR's phone score of 2958 points was inadvertently omitted in the YLRL AP results given in the Feb. column . . . Baby girls were born in January to well-known D.C. YL W3TSC, Camille, and to *YLRL Harmonics* editor K6ENK, Wanda. W3TSC was recently commended for the excellence of her work by the Office of the Secretary of Defense. K9CZQ, Pat, recently joined the ranks of YLs who have six or more junior operators . . . Have you read any of the "Dear Mabel, Love, Gladys" letters in the *Florida Skip* (reprinted in HAWK's *Eye View*)?

It's downright refreshing and reassuring to see a photo like this of a complete ham station which is more modest than grandiose. This is a good one to produce when non-hams recoil at the thought of investing mucho dinero in elaborate, complicated equipment. With her S-53 and Viking Adventurer, K4TFL, Lucia Porter of Richmond, Virginia, has a fine time brasspounding on several bands. Lucia is the XYL of K4RAP and the mother of two small youngsters.

Please Write Your Postal Zone Number

• By including your correct zone number each time you write your address you can speed delivery of your own mail and help cut Post Office costs. The Post Office must do extra work to deliver each letter, parcel and magazine that does not show the correct postal zone number in the address. It will help you — it will help the Post Office — and it will help us. Thanks.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

A young Greek DX man of about 2400 years ago flung away his blazing fagot in disgust and took off down a hill in the darkening Aegean night. Peer and squint as he might, he had failed to perceive clear acknowledgment of his efforts to signal the Acropolis. The only recourse: an eleven-mile run to headquarters.

As he loped along the surest paths toward Athens he thought grimly of bitter days that had befallen his homeland. The Peloponnesian and Bocotian confederacies had joined to attack the Athenian empire in force while horrors of plague terrified the fading glory of Pericles. The Fates apparently had agreed to sever the imperial destiny and he sensed Atropos running softly behind him, her shears sharpened and poised.

Signal fires from distant hills had told him that the Spartans were moving on Salamis. Why had his own signal failed to relay these grave tidings? Or, if his light had been seen, why had the heights of Athens failed to respond? The leaders must be warned without delay, so he increased his reckless pace, jamming his lungs with crisp valley air. It was conceivable that his message spelled life or death for empire. He sped courageously on.

At length our courier reached the Acropolis signal center en route the Athenian GHQ. He stopped off, caught his breath, and learned with great relief that his relay had been solidly copied. He then politely informed the signal officer that the headquarters beacon was indistinct and feeble, forcing him to confirm receipt in person.

"Oh yeah?" rasped the lieutenant. "Well, the chief wants to see you. And, after he's through with you, report right back here on the double for some real cool k.p."

The hapless runner whipped a scribed potsherd from his tunic and pointed out to the signal officer that he was an accredited member of the Honest Reports Club. "Nuts, OB," snapped his superior. "*I'm* HRC, too — the Honest Reactions Club — and I don't like it. That'll be k.p. for a solid season, soldier."

Our exhausted signalman next staggered into the commander's quarters and officially confirmed that Sparta was out to make mincemeat of Salamis. This was the last straw for the harried C.O., already burdened by bad news, so he meted out some Eastern justice and clapped the unfortunate SV lad into solitary confinement.

* * *

A few days later some joker dashed into those same headquarters with the false but cheery report that Phormio had clobbered hated Alcidas and that all the Spartans were kicking up seaweed. The muttonhead wound up with a promotion, a land grant and a wealthy marriage.

This racy yarn's moral, as old as history, is plain to see: You can dish out all the frankly honest reports you want, OM, but you'll find scant enthusiastic appreciation.

What:

Poor beat Nick played a sort of rushin' roulette but somebody else hit the jackpot. And have you heard the latest definition of the *most* beat generation? Pile-ups in an ARRL DX Contest, of course. . . . The great pitched battle on DX fronts is over for another year, so we settle back to the usual heavy sniping, patrol and commando actions. Here's a late reconnaissance report from front line observers in all DX sectors. . . .

80 c.w., aided by a timely DX Test fillip, enjoys a lively spring. Reporters W1s TS YIS, K1CBR, K4JOS, K8GWT and W9MAK scored with **DM3KIN** 5-6 hours GMT, **EI9J** 1, **Fs** 3BG 7, 8TM (25 kc. above the lower band edge), Gs galore, **GD3UB** 0, **HG1E** 4-9, **KV4AA** (23) 1, **PJ2s** AE (15) 5, RT, **SP8CK** (25), **UB5UW** 6, **YUs** 1DEF (10) 23, 2HBC (5) 1-5 and several ZL troopers. And in addition to the usual bag of garden-type Europeans — DJ/DL HB I LA ON4 OZ SM, etc. — this army of Czechs appeared: **OKs** 1IU (65) 5, 1KAM (40) 4, 1KAY (35) 5, 1KLV 0-1, 3IR (15) 4, 3KAQ (25) 5, 3KAS 1-4, 3KEE 0-1, 3KGI (38) 5 and 3KHE (30) 5, most of these reconnoitered by Hq.'s own W1TS of insomnious fame.

40 c.w. completes its comeback conveniently, supplying stuff like **CN2BK** 22-23, **DM2AGH** (15) 0, **HAs** 2MF 5-6, 5KBP (10) 4, 5KFR 6KNB 4, **HH2HB**, **HR3EXP** (1) 6, **JAs** 1AEA 1AEO 1AHS 1AJN 1BRK 1CJF 1DY 1EF 1MK 1VX 2AAQ 3AIS 3ARX 3BJ 3DY 3ZY 4HM 6AK 6YB 8AE 8FO (most of these snagged by W7DJU), **LZ1s** AF (5) 4, KRU, **MP4BBE**, **OD5LX** (2) 4, **OE9MH** (5) 0, **SPs** 1KAA (5), 1UP (20) 1, 6QH 1, 6ZV 1-2, 8CP (25) 4, **TG9s** LM 3, VS, **UB5s** KAB UW VT WF ZF, **UR2KAE** 3, **VP7BT** (5) 2, **YO3s** FG (10) 0 and IA, plus the usual handy XE VK ZL and ZS crowd, to "How's" operatives W1s IJY TS, K1CDN, K3AHT, K4s IGD LRA, W6JQB, K6DV, W7s DJU VCB, W8YGR, K8GAB, CO2US and KP4AOO . . . . Forty **phone** slips in a sleeper now and then. CO2US, K3BVV and W8GKB (115 worked on 7 Mc.) chopped through to **G3BID**, **HAIM**, **PY7VBR**, **SM4OL** (50) and **VP3IG** (274), mostly between

*4822 West Berteau Avenue, Chicago 41, Ill.

DL1BA, chief of DARC's QSL section, still finds time to operate this businesslike installation in Munich. XYL Hilde holds title as assistant QSL manager and the two spend many hours routing DX confirmations through one of the world's busiest bureaus. *(Photo via W4CYY)*

6 and 8 hours . . . . . Forty **Novice** news is light, KN6TUN specifying the workability of **WH6**CXO. But K6DV writes, "JA8AE says many KN6 and WV6 lads are being heard in Japan but they fail to spot his own 7149-kc. 300-watt calls. Our Novices should be informed that it's not illegal to *listen* below 7150 kc." With 15 meters sluffing off slightly we expect to be hearing more from our 40-meter ham freshmen.

15 c.w. slackens pace, as we just implied, but W1TS, K1s CBR CDN, W2s BVN GVZ, K2s AYC UYG, K3s BWI CXC, K4s IGD LRA PHY (121/95 worked/confirmed), RSD, K5MHG, W6QQW, W7VCB, K7ABV (101/70), W8s CSK YGR, W9MAK, K9s ICG GSG, W0CVZ, CO2US, I1ER and KP4AOO captured **AP**5B (but see "Where"), **BV1**USB (35) 13, **CE0ZA**, **CN**s 2BK 8JX, **CR**s 5AR (15) 21-23, 8AB, **CT**s 1TT (12) 22, 3AB, **DU7**SV, **EA6**AM, **EL**2S, **FF8**BF (80), **HA**5KDQ, **HL2**MK (90) 19, **JA**1s BKV WU, **KG1**AO (12) 20, **LA2JE/p** (45) 21-22, **OQ**5s EH IG, **PI1**RRS, **SL**s 3AG and 5AX of the Swedish military, **SP**s 1KAA 5YY, **SV0**WP, **TG9**HB 20-21, **TI2**LA, **UA**s 1DA 1OD 4CE 4KED (12) 17, **9OI 0**KAR (80) 21 of Dickson, **UC2**AA, **UN1**AN, **UR2**AR, **VK9**NT, **VP**s 4KR (92), 6AB 8CV (84) 19, **VQ**s 3CF (39) 15, 4GQ (47), 5EZ, **VR2**DG (90) 20, **VS**s 6DV (70) 18, 9AS, **WL7**-CRZ (160), **WP4**AOX, **YO3**WL, **ZB**s 1HPG 2A 2A/**VS9**, **ZD**s 1FG 22, 1GM (60) 16, 7SA, ZE8JJ and **5A3**TQ.

15 phone, apparently the spectral capital of the VP world as indicated in the sampling to follow, provided K1CDN, W2IIE*, K2YLD* (97/89), K3s BWI CXC, K4s LRA 4PHY 4VJD/3, W6QQW, K6OQT, W7VCB, K7ABV, K9GSG, W0QGI (232; 169 phone) and CO2US with the likes of **BV1**US, **CE**s 3RC 6DW, **CN8**s FV JC JE JO, **CR**s 5AR 6BX 6DX, **CT1**PK, CX1FM, **EL**s 1K 3A, **FG7**XE, **FS7**RT*, **GC2**AAO, **HC1**s AG* EB, **HH2**s AD Z, **HL9**KS, **HP**s 1SB 2ON 3FL, **HR2**DK, **HS1**E, **JA6**BC, K6QPG/**KW6**, **KA**s 2QT 9M1F, **KC4**USV*, **KG**s 1AA* 4AU 6AFO, **KR6**USA*, **KX6**BT, **LA2JE/p**, **OA**s 1A 4CS* HQ*, **PJ**s 2AO* 2AV* 2AW 2CE 3AD, **PY0**s NA NE, **TG7**JD (260) 18, **TI2**s CHV OE, **UP2**AA, **VK**s 9AD 9NT **0**TC, **VP**s 1EE (260) 19, 1OLY 2AB 2DA 2DX 2LS 2SL 3HAG 3VN 5AB 5EM 5FP 6FR 6GC 6LT* 6MR 6ZX 7NB 9BY 9I 9LG, **VQ3**ERR*, **VR2**BC, XE1s AAP JP, **XZ2**TH, **YN**s 1SV 8OK (270) 20, **YS1**s LA RE*, **YV**s 2AZ 3BJ, **ZD9**AH, **ZK**s 1BS 2AB, **ZP5**CG, **3A2**AF*, 4X4DK*, **5A5**TO and **9G1**CW, the specks specifying s.s.b.

15 Novice DX diggers KN1s IFJ (14 countries, 4 continents), IMP, WV2BWC (5 continents), KNs 5QPG 6TUN (all continents worked), 8LHL (KP4AOO's dad) and 8NGR (mom) dig deftly for such items as **EA8**CF, **HB9**s FL TY, **JA**s 1ACB 4JU, **KC4USB**, **KL7**s CVO CXD, **KP4**s AMA AMU AOO ZM, **KZ5**s AX ESN, **OH**s 2VZ 3DG 5RU, **OZ7SN**, **PY0NA**, **SL**s 3AG 9VR, **UR2**AN, **WH6**CXD, **WL7**s CRZ CUS CUV CUY, **WP4**s ANH AOD AOF AOV APB, XE1VR and **ZS4**MG. Obviously the propagation peak is past — grab fast!

10 phone fanatics bounce off the rarifying ionosphere with commendable perseverance, especially K1s ADH CBR CDN, W1JNZ, W6JQB, W7VCB, CO2US and I1ER who caught up with **CE0**s ZB ZC ZD of Juan Fernandez, **CR6**s AK BX CA DX, **CT2**AH, EA8CF, **EL**s 1G 1H 8D, GB2SM just England, **GD3**UB, **HC1**s AGI HL, **HH**s 2Z 7OR, **HI8**GA, **HP1**AC, **JA**3s ACT/mm IS, **KA**s 2EB 2KS 2MF 2UJ 5MC 9MW, **KB6**BM, **KG**s 4AG 4AU 6FAF, **KJ6**BV, **KR6**s CA CG, **KX6**s AF BT BU CG CJ CM, **KZ5**s TG US, **MP4BCC**, OE5HE, **OQ**s 5FF 0DM, SL6BA, SV0WAD, **TI2**OE, **UB5**FG, UQ2AN, **UR2**BU, **VP**s 1OLY 2DX 3HAG 5AB 5FP 5WB, **VP8**s BW DS DW, **VQ3**PBD, W3RVM/KV4, **XE**s 1AE 1BBP 1SN 1ZZ 2KF, YN4CB, **YS1**IM, **YV5**s AEV EF, **ZB1**s TKG USA VJ, **ZC4**IP, **ZD**s 1FG 6JL, **ZE2**JA, **ZP5**EC, **4X4**FR, **5A5**TO, **9K2**AZ and **9M2**GA. Anybody using s.s.b. for 28-Mc. long hauls?

10 c.w. news arrives in more quantity than the A3-type dispatches, strangely enough, a bit like the 10-meter tail wagging the dog. W1TS, K1s CDN IEM, W2CVW, K2s UPD UYG, K3s AMH/4 BWI, W6QQW, W7s RGL VCB, W8s CSK YGR, W9MAK, I1ER and KP4AOO (112/75) treed this game: **CE0ZA**, **CN2**AY, **CO2**US, **CR6**CA, **CX**s 1FB 3BH, **DM2**s AGB AGH, **FA8TT**, **HC1**HL, **HH2**Z, **JA3**JM, KA2LN, **KW6**CO 22, **OA4**FA, **OX3**AY, **PI1**NTB, **SP**s 2DX 7ID 9NH, **SV0**s WP WR, **UA**s 1DZ 3DB **0**KIA, **UB5**UF, **UC2**s AX KAB, **UQ2**s AN AS, **VQ**s 2AB 2RB 3HH, **VR2**DG, **VS1**GL, **ZB1**CR, **ZD7**SA, **ZE3**JO, **ZP5**JP and **5A2**CV. But the phone types are favored with more varied quarry.

20 c.w., the lair of true DX tycoons, regains some of the popularity temporarily lost to 15 and 10 during the sunspot maximum. But its fits of despondency cause W7DJU to comment: "Speaking of *echoes* — 20 has been horrible in that respect. Most DX has had such bad echo for weeks that I can hardly copy it. And beam directions have been anything but normal. I've been working Europe with the beam southeast when I can't hook them in the proper direction. Same goes for other areas. What gives?" Well, W1s APA AZW (147/139), LJY MLJ TS, K1s CBR CDN, W2s BVN CVW GVZ (245/236), JBL, K2s AYC GFQ RQC (71/53), UPD UYG (73/42), WA2CCC (111/29), W3s LMA LOS (89/68), K3AHT, K4s IGD JOS LRA (94/64), RSD, K5MHG, W6s BSY JQB JQB KG, W7s DJU RGL VCB, W8s CSK (128/115), KX (150/127), YIN ZNH, W9s MAK (113/69), UBI, CO2US, I1ER and KP4AOO give us the word on **BV1**s US (40) 2-11, USB 14, **CE**s 8AA (40), **0ZA**, **CN**s 2BK 22, 2BR (60) 0, 8BK 8FJ, **CR**s 4AX (48), 5AR (55) 22, 7CI (25), 7CR (31), **CT3**AB, **CX1**NE (54), **DM2**s ALN (32) 22, ATH, **DU**s 1CV 13, 1GT 11, 7SV, **EA**s 6AW 1, 8BC 12, 8BF 9AP 9AQ 9BU, **F9**s QV/**FC** UC/**FC**, **FA**s 3DU (85), 8XS/sh (20) in the Sahara, 9VN, **FB8XX**, **FF8**s AC BX, **FG7XE**, **FO8**AC (65) 5, **FQ8**s AP HA (61), **FU8**AC, **FY7YT** (47) 0, **GC**s 2FMV (15) 9, 3HFE, **HA**s 1KSA 5AM 5KFR 7CS, **HC**s 1HL (20) 3, 4IE 12, 4IM (33) 8, **HH2**s LD 12, LR (32), **HK**s 4JC (76), 5SG **0**AI, **HR2**FG, **HS1**C (22) 12, **HZ1**s AB (325) 4, HZ, copious quantities of JAs in all call areas, K6QPG/**KW6**, **KA**s 2BE (25) 12, 2FEC 13-14, 2KS 12-13, 8KW 12, 8RH 13, 9MF (22) 12, **KC**s 4USG on shipboard, 6JC of Truk, **KG**s 1EM 1FR 1LJ (28) 1, 4AI 6LF, **KM6**BL (14) 3, **KR6**s AC 11-12, CK (60) 0, RP 12, **KV4**s AA (80) 23-1, BO (58) 1, **KW6**s CE (50) 7, CL 9, Svalbard **LA**s 2JE/p 2TD/p (6) 0-2, 4CG/p (6) 2, rare **LU3**s XO ZX, **LZ**s 1AF 2, 2KDO (4) 16-22, **OA**4s BR (18), GT, **OD5**LX (15) 4, **OQ5**NG (34) 19, **OX3**s BQ (80) 4, RH UD, **OY**s 1J 1, 7ML 8RJ, **PI1**NTB, **PJ**s 2ME 3AB, **PZ1**s AH AP (4) 4, AR, RAEM of Moskva, SM5WN/LA/p, **ST2**AR (28) 4, **SV0**s WB WP (61) 22, TF3KG (40) 2, **TG9**HB (35), **TI2**EA (80) 2, UA1KAU/6 of the U.S.S.R. polar regions south, **UA9**s AA 6, DR (58), DV 5-12, KCA (55) 5, KCO (50) 12, KDL, 12, KHB 14, KQA (30) 6, KYB (40), SA (80) 5, XE 12, YD 11, **UA0**s AR 12, AZ 13, CA 12, CC 12, CN CP 12, FR 11, IG (40) 8, JB 11-12, JJ 11, KAR (30) 4, KCO (50) 12, KIA 8, KJA (35) 12, KOC 13, KQB KSB 12, KUA 11, KZA (25) 1, LN 14, OG RF 12, SL 12, **UB5**s by the log page, **UC2**s AR AX 4, BG (77) 2, KAB, **UD6**s AI (84) 5 AM (66) 16, DG 12-13, **UF6**s AS (55) 5, DD 3, FB (30), **UII8**AA (25) 7, **UI8**s AC (90) 12, AD 5, AG 3, KAA (66) 4, **UJ8**s KAA (65) 4-5, KAB (47), **UL7**s GL 14, GP 13, HB (50) 5, KAA (50) 13, **UM8**AD (48) 6, **UN1**s AB AE (40) 4-5, KAB 3, **UQ2**s AN (10) 3, KBR (41) 1, **UR2**s AK 1, BU (18) 6, **VE0**NI, **VK**s 2FR 11 on Lord Howe isle, 9ML (10) 8, 9RO (100) 8, 0CC (82) 2, 13, **0**DA 14, **VP**s 2AT 2KR (57), 5WF 6AP 6PV (10), 8EP (21) 0, 9EP, **VQ**s 2AW 2RB 3CF 4GT (87) 4, **VR**s 2DK (100) 8, 3B, **VS**s 1FZ (90) 23, 1GZ 5JA (67) 0, 6DO 12, 6DV 12, **VS9**s MA (25) 21-22 MB OA OB OM (45) 20-23, **VU2**s AJ DR 12, JG 13-14, LL 13, XE1MB, **XZ2**TH, **YO**s 2CD 3AI 3AR 3FG 5LF,

Reykjavik's TF3PI is fairly new to the DX scene but already has supplied many first-TF contacts on 20 c.w. That DX-40 and AR-77E soon will see phone action on 10 and 15 meters when Pall receives A3 authorization. ***(Photo via W8KX)***

YVs 4AU (110), 5GO (40), **ZB2s** A and **A/VS9**, **ZDs** 1GM 21-22, 2GUP (1) 15, 7SA (45) 0, **ZKs** 1AK (10) 7, 2AD 4, **3V8s** AC AO, **4X4s** HK 0, JR (48) 21, LC 0-1, **5A3TQ** 23 and **9M2**DW.

20 phone still suffers from the attractiveness of 15 and 10 but W1APA, K1CDN, K2QXG*, W6KG, W8YIN*, W9UBI* and VE1PQ* (218, 115 phone, 93 sideband) rallied 'round ET2US* (305) 3, roaming Ks 1ELZ/**KL7** 21VJ/V**E8** ØKPW/**KL7**, **KC4s** USA USB USG/mm USK USV USW, **KGs** 1BB 1DZ 4AO 6CCA, **KJ6**BV, **KM6**BL, **KW6**CQ 22-23, **KX6s** BT CC, **OY7ML*** (305) 12, **SVØWL*** (310), **TF2**WDP, **TI2s** AL DS, VE8CH, **VK9LE*** now closed, **VP3**HAG, **VQ1SSB*** (305) 5, W3ZJU/**KP6**, **YS1**MM*, **ZD7SA*** (305) 21 and **9K2**AM* (305) 19, asterisks indicating sideband action.

160 c.w. prolonged its parsimonious propagational performance well into February with the W/K/VE-Europe transatlantic path practically closed. A few wispy sigs drifted across one-way here and there. Perusing W1BB's excellent 1958-'59 Bulletin No. 5 we note that the outstanding recent transoceanic was scored by **VP3**AD and G3PU on the 8th of February. **VPs** 7BT 9DM and 9EP were in there pitching our way with good cess. W6s KIP LN and ZH contributed an interesting diversion with profuse transcontinental workings. **UB5**CM and **ZC4**IP are heard by G3CNM, while **DL1s** FF YA, **HB9**QA, **UB5**FJ and **ZL3**RB also are reported active on 160. All in all, 'twas a *rough* go this season for the low-band lads. The dust hasn't entirely cleared yet, though, and we may have more on this score in months to come.

Where:

Asia — XZ2TH QSL service via W2CTN now terminates with a log transcript dating from October 15 through November 28, 1958 . . . JA1AG advises that the P.O. Box 7, Nerima, Tokyo, address of Japan DX Radio Club no longer is valid. Use the JA1AG *Call Book* address . . . VS9MA brass-pounder Don Tranmer, ex-4S7DT, returns home to the address that follows. Vic Render of VS9MI will look after the VS9MA interests pending other arrangements . . . "Advise all who have not yet received my deserved Okinawa QSLs to resubmit cards [to the QTH to follow] and I'll be glad to help 'em out," writes ex-KR6BW . . . "My address, Box 4074, Karachi, is the QSL bureau address for all cards incoming to Pakistan," informs AP2AD. "Many cards have lately been received for 'AP5B' but there is no such station licensed and these QSLs cannot handled." . . . The ex-VS1FJ address in the listing to follow will be valid until November. Thereafter he will sign G3IDC once more. Frank further states, "All 4S7KD s.s.b. QSLs have gone forth to W/Ks direct or via ARRL," and opines that QSLs for VK9XN (erstwhile ZC3AC) have safe route through the MARTS bureau . . . Boston gang-buster W1DWH does QSL honors for CR9AH activity dated January 1, 1959, and thereafter, requiring s.a.s.e. from applicants in the U. S. and possessions, appropriate IRCs and s.a.e. from foreign clients. Jim also will do his best to take care of inquiries concerning earlier CR9AH QSOs but can accept no further correspondence pertaining to pre-1959 CR9AH doings . . . HS1C, through W8KX, writes: "Al Williams, HS1B, is acting as HS1 QSL manager at P.O. Box 1038, Bangkok, Thailand," . . . WGDXC sleuths confirm that ex-BV1US op Leo Fitzpatrick is available at Hq. Det., OTC, Aberdeen Proving Ground, Md.

Africa — W2CTN's QSL managership on behalf of ZS7M commences January 29, 1959, at which time the station ceased to sign ZS5RP/7. Jack also adds VQ3HH to this impressive array of W2CTN QSL-service beneficiaries: FK8AT, JZØHA, KW6CU, OX3RH, VKs 2AYY/1h 2FR 9BW 9NT, VQ3CF, VR2s DA DK and ZD2DCP. Self-addressed stamped envelopes are the thing. Jack also handles non-W/K QSL matters for FM7WU . . . From K9EAB: "I have a supply of ZD2JM cards and will respond to W/K requests for QSLs when s.a.s.e. are furnished. Any W/K who already has sent a card to John via bureau or direct to Ikeja or Kaduna, Nigeria, should drop me a note giving date, GMT and RST of QSO; as soon as a check can be completed a ZD2JM QSL will be returned. On future contacts or on past contacts where no QSLs have yet been sent to ZD2JM, applicants' QSLs should go to K9EAB. Non-W/K stations can send their cards direct to ZD2JM [via the address in March *QST*] or via bureau. John soon will receive a supply of blanks and then will pick up all back QSLs still due. Everyone sending QSL *will* receive one if QSO was bona fide." . . . Regarding the CN8FJ listing to follow, K2UYG understands the chap will return to W5SFI in June.

Oceania — Concerning his QSL endeavors on behalf of FO8AU and ZK1AK, W3GJY stresses the need for petitioners to use his current *Call Book* address. "I now have FO8AU logs on hand for the period October 2, 1958, to January 17, 1959. My ZK1AK logs are complete from March 24, 1958, to February 2, 1959. Requests not accompanied by s.a.s.e. must be answered via bureaus." In about a month John will begin clearing *all* unclaimed QSLs via bureaus to close out those particular logs . . . W1KXU learns that VK4FJ's QSL labors for VKØCC of Macquarie go forward apace . . . VK3EL assures W1ELL he has been inactive for years despite recent evidences to the contrary . . . WGDXC understands that the ZL1ABZ QSL backlog for W/K/VEs now will be cleared through ZL2GX's good offices . . . "I QSL 100 per cent card for card," declares K6QPG/KW6, XYL of KW6CQ . . . Alas — ZK1AK tells W3GJY there is no ZK1BD on Aitutaki . . . Regarding his three-month Down Under activation of last year, W3DRH comments: "My choice of the call VK4AL was unfortunate since the *Call Book* still listed it to the previous holder. This resulted in considerable confusion, some QSLs going through several re-addressings and others not reaching me at all."

Europe — Multibandsman LZ1AF admits to an 800- or 900-card confirmation deficit, so WØBSK of the West Gulf crew contributed 500 blanks to the cause . . . "If anyone is missing QSL for OH3AA or Alands DXpedition station OH3AA/Ø he should contact OH3VH," directs OH3OD . . . LX1SI assures miffed W1MIJ and other victims that he does *not* work 14 Mc. This brings to mind peculiarities encountered in the old days of hard-driven unshielded finals and tight antenna couplings. A Yank on, say, 14 Mc. might work a European on 28 Mc., harmonic to subharmonic, with neither party aware that it was a "cross-band" QSO until the QSLs arrived. Ha! . . . DL4LS's timely tip: "I plan to operate from the island of Crete in April

The saints apparently come marching in too noisily to suit visitor UB5DW as friend UC2AA steps on out with some Minsk-type blues. Ben digs Dixie deep but Toly would just as soon spade a little 20 meters on the UC2AA receiver.

with the call SVØWT, possibly on 15 and 20 meters, mostly a.m. phone. Last year I visited that area and had a very successful trip. However, very little advance notice was given and the QSL situation was a tough one. This time, with advance information dispatched and the goodness of W4TAJ, the operation should be much more satisfactory. W4TAJ has agreed to handle all QSLs and my logs will be sent to him upon completion of the DXpedition." . . . . . "I will take care of QSL service for LA2JE/p on Hope Island, Spitzbergen," announces OZ7FG. "At present I am receiving his log over the air (some 800 contacts so far) because Odd will not return to Norway before August and there is no mail boat. Addressed envelopes and International Reply Coupons are required." . . . . . SM5AHK confirms, "I am handling QSLs for SM5WN/LA/p, Murchison Bay, Spitzbergen. Logs go via radio because there is no winter mail. SM5WN will remain there until summer." . . . . . W/K/VEs who work G3s IOR LDI MPN or CQE on their lark to the Isle of Man this month, GD call unspecified, can obtain QSL satisfaction via K9ELT. "Stamped self-addressed envelopes will be appreciated as well as use of GMT."

Here abouts — Pasteboards for the W9EVI & Co. DXpedition to Serrana Bank, KS4s BA and/or BB, can go to W9JUV pending other advices. Mac writes, "S.a.s.e. will be required for direct QSL, otherwise through the bureaus." . . . . . KZ5LC, ex-WØDEA and former ARRL director, reminds us that U.S. postage is n.g. down Canal Zone way and cannot be exchanged there . . . . . "Although the idea of sending foreign stamps to bring back rare or wanted QSLs is not original, the problem of acquiring such stamps has always loomed large. Regular stamp dealers just aren't interested in selling single stamps for this purpose and are not always aware of the correct value required to pay the cost of return mail," points out W2SAW. "With the QSL-return problem being what it is, I decided to start my DX Stamp Service for those who want quick direct replies." This procedure also licks the impasse resulting in areas where IRCs are not convertible. Check with Sax for more detailed details . . . . . The man from MARS responsible for KG1 matters writes W1TUW that OX3s should be QSLd via EDR (Denmark) or direct, *not* through the KG1 bureau. And OX3BQ, as listed hereafter, tells W6KG he desires his QSLs direct . . . . . "All FP8BA cards now have been sent out," says K2YLD. "Any still lacking QSLs should reapply with s.a.s.e." . . . . . "At my WØBUR QTH I have been receiving cards for KG1CK. I know nothing of this station but I do appreciate the problems of QSL senders. Possibly they have miscopied the call." This from K5MAT/WØBUR who, along with K1CBR and K2GCE, offers to assist overseas DX with bona-fide QSL difficulties . . . . . VP9BY emphasizes that his *Call Book* QTH should be used except only when otherwise indicated during QSO . . . . . W3RVM/KV4 assures K1ADH of 100-per-cent QSL upon return to Haverford . . . . . Perhaps one or more of the following will come in handy for you:

CEØZG, Box 13536, Santiago, Chile
CEØZD (to CE3QG)
CN2AL, J. Coriat, 25 Stonor Rd., London W.14, England
CN8FJ (to W5SFI or via AAEM)
CR4AX (via CR4AI)
CR9AH (see preceding text)
DJ4XQ, G. Griedinger, Blumenstrasse 4, Goeppingen, Germany
EI8AE (via EI4Q)
F7CF (to W5WAW)
F7FI, Lt. H. Kiefer, III, 40th Troop Carrier Sqdn., APO 253, New York, N. Y.
FE8AP, Pierre Minot, B.P. 77, Yaounde, Cameroons
FF8BX, c/o PTT, Ouagadougou, Haute-Volta, F.W.A.
FF8CI, Box 8723, Dakar Yoff Airport, Senegal, F.W.A.
FO8AW (via W6PHF)
FQ8HD, Box 894, Brazzaville, F.E.A.
FU8AC, V. Fonsagrive, Box 49, Vila, New Hebrides
FU8AE, L. Chaumont, Santo, New Hebrides
G3NBE (via VE7ABE)
HA5AIR, % Central Radio Club, P.O. Box 185, Budapest 4, Hungary
HB1TC fl (to HB9TC)
HC1AGI, Project Vanguard, U.S. Embassy, Quito, Ecuador
HC1VF, P.O. Box 69, Quito, Ecuador
HH2AD, P.O. Box 1143, Port-au-Prince, Haiti
HI8FE, F. Everts, Maximo Gomez 29a, Ciudad Trujillo, D.S.D., Dominican Republic
HK1GF, M. Peralta, P.O. Box 50, Cartagena, Colombia
HR2CC, C. Coleman, Casa 3, Colonia Victoria, San Pedro Sula, Honduras
I5GN, J. Nudson, Box 16, Mogadiscio, Somalia
JZØAG (via PAØKOP)
KA0CG, USCG Loran Stn., APO 815, San Francisco, Calif.
KA0IM, APO 815, San Francisco, Calif.
KL7AIZ, Adak Radio Club, Box 10, Navy 230, FPO, Seattle, Wash.
ex-KR6BW, F. Reed, jr. (W6PWQ), 2875 GEEIA Sqdn., Box 36, APO 323, San Francisco, Calif.
KS4s BA BB (via W9JUV)
LA2JE/p (via OZ7FG)
LU2DFY, A. Decareux, Grand Hotel International, Ezeize Airport, Buenos Aires, Argentina
MP4BCN, c/o Inter-Aeradio, Bahrein Island, Persian Gulf
MT4TG, O. Perez, Calle Canal 62, Sevilla, Spain
OH3AA/OHØ (via OH3VH)
OK2QR, R. Staigl, Box 49, Gottwaldov, Czechoslovakia
OQ5BK, F. Schepers, P.O. Box 2696, Elisabethville, Belgian Congo
OX3BQ, S. Jorgensen, Upernavik, Greenland
PI1NTB, 2e Radio Cie, Oranje Nassau Kazerne, Bergen op Zoom, Netherlands
PI1RRS, RNAF Radio Amateur Club, Luchtmacht Electronische School, Koningsweg 23a,, Schaarsbergen-Arnhem, Netherlands
ex-PK4DA (via PAØFMI)
PY0NA, F. Serrano, Caixa Postal 5292, Rio de Janeiro, Brazil
PZ1AH, A. Soeperman, c/o Radiodienst, Zandery Airport, Surinam
SM5WN/LA/p (via SM5AHK)
SV0s WJ WL, P. O. Box 134, Salonika, Greece
SVØWT/Crete (via W4TAJ)
TF2WDY, APO 81, New York, N. Y.
TF3PI (via TF5TP)
TG9HB, P. Langenegger (HB9PL), Box 689, Guatemala City, Guatemala
UA3BW, A. Shadsky, Poste Restante, Moscow K9, U.S.S.R.
VK4AL (to W3DRH)
VK9RO, c/o P&T, Port Moresby, P.T., via Australia
VK9XN (via MARTS; see preceding text)
VP1FA, Box 337, Belize, British Honduras
VP2GS, A. Munro, P. O. Box 46, St. Georges, Grenada, W.I.
VP2KH, C. Henderson, Salt Pond Alley, St. Kitts, W.I.
VP2KR, Golden Rock Airport, St. Kitts, W.I.
VP2SK (via W4FIJ)
VP3IG, P. O. Box 231, Georgetown, British Guiana
VP4KR, 70 St. James St., San Fernando, Trinidad
VP5CF, F. Perkins, RCA, c/o PAA, Grand Turk via Patrick AFB, Florida
VP8CC (via RSGB)
VP8CV, P. O. Box 182, Port Stanley, Falkland Islands
VP8DN, P. Catlow, FIDS, via Port Stanley, Falkland Islands

The ladies are away, the vintage is choice, the fellowship is admirable and the QRN is nil—*what* a night for DX! W1BB's camera seems to have captured the essence of ham spirit in this photo of HB9CM (pipe) and HB9OM hunting 160-meter DX in HB9CM's cozy Swiss chalet near Neuchatel.

VP8EP, c/o 31 Barnfield Gardens, Kingston-on-Thames, Surrey, England
VP9BY (see preceding text)
VP9EN, Box 465, Hamilton, Bermuda
VQ1SSB (via W5EB)
VQ3GX, P. O. Box 8001, Dar-es-Salaam, Tanganyika
VQ3HH (via W2CTN)
VQ5EZ (to VQ4EZ)
ex-VS1FJ, F/Sgt. F. Johnstone (G3IDC), Sgts. Mess, RAF Staging Post, Katunayake, Ceylon
VS5JA, H. McQuillan (ZL4JA), c/o BSP Co., Ltd., Seria, Brunei
VS9MA (see preceding text)
VS9MI, Vic Render, Royal Signals, c/o RAF Gan, BFPO 180, Maldive Islands
VS9OM (via W6BSY)
W3RVM/KV4 (to W3RVM)
XE1BBP, P. O. Box 907, Mexico, D.F., Mexico
XZ2TH (see preceding text)
YK1AT, P. O. Box 2249, Damascus, Syria
YN1SV, P. O. Box 805, Managua, Nicaragua
YS1MM, M. Molina, Box 517, San Salvador, El Salvador
YV2AZ, L. Castillo, P. O. Box 112, San Cristobal, Venezuela
YV5AEA, P. O. Box 5517, Caracas, Venezuela
YV5AEV, W. de Vlieder, Edif. Panorama, Calle no. 12, Vista Alegre, Caracas, Venezuela
ZB2A/VS9 (via RSGB)
ZC4RF, R. Thomas, No. 7 Signals Unit, Kormakiti, c/o RAF Nicosia, Cyprus, BFPO 53
ZD2JM (W/Ks via K9EAB)
ex-ZD8JP, J. Packer, High Knell, Furze Close, High Salvington, Worthing, Sussex, England
ZD9AF, Dave Watt (via SARL)
ZD9AH (to W6YLI)
ZPs 5LS 6AY (via RCP)
ZS2MI (via ZS6ANE)
ZS5RO/ZS7 (to ZS5RO)
ZS7M (via W2CTN)
5A1TA, P. O. Box 372, Tripoli, Libya
5A2CU, Box 62, Benghazi, Libya
5A2CV (to G3BBF)
5A2TW, J. Alto, 7272nd ABW, APO 231, New York, N. Y.
5A2TZ (via 5A2TW)
5A3TQ, P. O. Box 325, Tripoli, Libya
9G1CW, P. O. Box 1955, Kumasi, Ghana
9G1CX, P. Stein, P. O. Box 26, Akwatia, Ghana
ex-9K2AQ (to 5A3TQ)
9M2DW (to VS2DW)

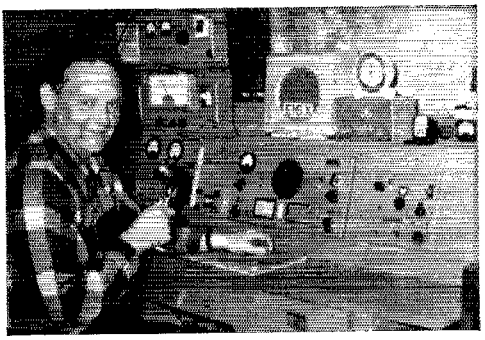
Donors of the preceding glossary: W1s APA TS TUW VG, K1s ADH CDN, W2s BVN GVZ JBL, K2s GFQ UPD UYG, WA2CCC, W3LMA, W4LHT, K4s IGD LRA, W6s JQB KG, K6s OQT ZDL, W7RGL, W8s CSK KX YIN ZCQ, K8BSZ, W9MAK, K9EAB, W0s ANF QGI, VE3EIL, Hamfesters (Chicago) Radio Club, Japan DX Radio Club, Newark News Radio Club, Northern California DX Club, Ohio Valley Amateur Radio Association, Southern California DX Club, West Gulf DX Club, Willamette Valley DX Club and VERON's *DXpress*.

Whence:

Europe — Contest buffs, mark this: VERON (Netherlands) invites amateurs world wide to participate in the Fourth Annual PACC DX Test to be held (c.w.) 1200 GMT on the 25th of this month to 2400 the 26th; (phone) May 2nd and 3rd, same times. Stations outside Holland will strive to contact PA colleagues once per band, exchanging the usual RST001, RST002, etc., serials ("T" omitted on phone, of course), each successful QSO counting three points. For your total score multiply all QSO points by the number of Netherlands band-multipliers collected, these based on Dutch provinces as indicated by the following suffixes appended to PA call signs: *DR*, Drente; *FR*, Friesland; *GD*, Gelderland; *GR*, Groningen; *LB*, Limburg; *NB*, Noord-Brabant; *NH*-Noord-Holland; *OV*, Overijssel; *UT*, Utrecht; *ZH*, Zuid-Holland; and *ZL*, Zeeland. To be eligible for merit certificates to be awarded to high scorers in selected areas, log transcripts must be mailed to Contest Manager P. v.d. Berg, VERON, Keizerstraat 54, Gouda, Netherlands, no later than June 15, 1959. The battle cry is "CQ PA" — have fun! . . . . . W2EHN, K9ELT and VE2DR call attention to an imminent Isle of Man DXcursion by G3s CQE IOR LDI and MPN who hope to sign an undisclosed GD call for several days commencing April 11. Phone and c.w. action is contemplated on all bands 3.5 through 28 Mc. . . . . Concerning his SVØWT/Crete project scheduled for this month, DL4LS (W4WNY) communicates: "Not positive as to the exact dates of operation yet although I'm sure it will be early in April around 1600 on week days, no time limit on week ends." . . . . . W1WPO of the ARRL DXCC desk tells us that LZ1AF is program manager for a Radio Sofia ham broadcast beamed to the U.S.A. on 9700 kc. at 0100-0130 and 0400-0430 GMT the first Saturday of each month. Bob's initial monitoring produced no Radio Sofia signals, just a large earful of Radio Moscow . . . . . W1TUW makes it clear that REF (France) DUF certification is *not* processed through ARRL. F9IL emphasizes that W3ZA/3W and 3W8AA QSLs count naught for DUF purposes, also that acceptable QSLs for French Guinea credit must confirm QSOs dated prior to October, 1958 . . . . . Through W1WPO, UB5DW submits a neatly inked Jeevesie with a sputnik plot. Look to your laurels, W1CJD . . . . . W1VG directs our attention to OE3WB's announcement of the new WAOE (Worked All OE) diploma sponsored by Austria's OVSV. Non-European amateurs can qualify by accumulating QSLs from three OEs in each of the eight OE call areas "on three bands, of which one of the worked bands must be either 3.5 or 7 Mc. Working the same OE station on different bands or when portable in another OE district at which time it changes just its call-sign numeral, is valid for WAOE credit." Note also that the necessary 24 QSOs must date after January 1, 1957; OE4 and OE9 are considered a single call area; and the current processing fee is 10 IRCs. Check further specifications with OVSV at P. O. Box 15, Klosterneuberg 2, Austria . . . . . Ws 1VG and 8JIN made off with the first WALA (Worked All LA) sheepskins issued to Yank DX hounds, Nos. 14 and 18, respectively. Check with LA4ZA of NRRL for the fine points on this one . . . . . DL9PF tips us off through W1VG that he will be on Rhodes from mid-July to mid-August, intending to operate "all bands," phone and c.w. Nothing on his SVØ suffix as yet . . . . . After an interminable wait for his F7FI ticket, W2ZVS now gets together with old on-the-air pals via 20 c.w. "Our bands here are (Mc.) 3.5-3.8, 7.0-7.15, 14.0-14.35, 21.0-21.45, 28.0-

VS9MA's Don Tranmer got plenty of DXercise dishing out Maldives QSOs prior to his recent return to England where he now awaits a G label. Don's distinctive sideswiper rests on a notepad near that DX-35 and AR-88 combo. "I've operated regular a.m., s.s.b. and c.w., and I say give me the key every time!" VS9MA's electronic assets fall to Vic Render, VS9MI, so continued Maldives availability seems assured.

UA6UF does his share and more to keep Astrakhan on the DX map. Igor's 40 watts, 9-tube super and 66-foot wire are frequently found on 14 and 21 Mc. *(Photo via W7DJU)*



Jolly EI6X has a host of W/K/VE phone friends on 10 and 15 meters and is 140/120 on the vocal DXCC ladder. The trim console houses Bryan's 100-watt 1625s modulated by 1625s, modified HRO-MX receiver and associated gadgetry. EI6X's potent two-band quad is a salient feature of County Limerick's verdant pastoral.

29.7, 72.0–72.8 and six higher ranges, phone or c.w. as you like. Power below 21 Mc. is limited to 50 watts, 100 on higher freqs. Now that I have a European license it will be easier for me to pick up tickets for operation in PX LX 3A2, etc. Have recently visited such interesting spots as EP and YA, by the way." Interesting, indeed! . . . . . HB9TC and associates notify us that HB1TC/f1 will be activated in Liechtenstein between the 10th and 17th of next month on bands 2 through 160 meters excepting 6 . . . . . W2SAW confirms that SM7ID now is the chap to consult concerning WGSA and WASM-II matters. Sax is the first W2 to nab the latter . . . . . The Cedar Rapids *Gazette* gave quite a pictorial spread to OK1MB's winning the silver cup offered by W9CVU to the station who became his 100th confirmed s.s.b. country . . . . . European notes thanks to SCDXC, VERON, WGDXC and WIA sources: You might bag SM5WN/LA/p on 14,007 or 14,090 kc. around 0800 GMT. And then again you might not. . . . OK1MB estimates the total JT1AA-JT1YL DX output at over 10 kiloQSOs. . . . 3A2BY is said to be another rare candidate for your YL-type DXCC. . . . A cagy G3 is reportedly cooking up Andorra DXcitement for August. . . . VK2QL is intrigued by the Pelagian Islands aspirations of IT1s ZGY and ZWS. . . . RAEM still maintains there is no Franz Josef Land activity at this time.

Asia — HS1C (K2VOV, ex-W4-5-6-7RIM) sketches the Thailand picture in lines to W8KX: "HS1B is active on phone, s.s.b and a.m. on 10 and 15, also a little 20. HS1C works mostly 20 c.w. around 14,020, also a.m. with v.f.o. on that band, and hits 15 and 10 meters in contests. HS1E is active on 20 and 15 phone plus some c.w. at times. HS1G has a new Apache primed for c.w. DX. HS1s JN VR and WR also trade local QRM." Hal has WAS, is verging on DXCC, and expects to keep HS1C rolling till Stateside return in September . . . . . "JA1CR says that Japanese c.w. Novices will be working 7000–7150 kc. beginning next month. Heavy local QRM will cause them to do much listening in the U.S. 7-Mc. Novice range. Heretofore JA novitiates used only phone on 40." This from K6DV whose Globe Scout and doublet rap into Japan right smartly on 7 Mc. . . . . Third Marine Division ham stations on Okinawa include KR6s CP DI GF MA MB MD MH MI plus Novice-type KR6s ZE ZF and ZG. A recent news release reports that the Third Marines now are working on "a new ham station to add to seven already in use. With the building of $9,000,-000 Camp Schwab on the northern part of Okinawa a permanent building will house the station. Waiting rooms, a soundproof control booth and the newest of equipment will help air the broadcasts." More QSLs for the walls of the Halls of Montezuma! . . . . . Add rare YLs: Vera of UA9KCA, spotted by WA2CCC . . . . . WA2CCC found that HZ1HZ, after a year or so QRT, was somewhat shaken by such a call as Paul's . . . . . VS9OM, formerly VS9AS, shared an 8-watt c.w. outfit with ZB2A/VS9 in the Oman Sultanate during February. W3LMAwas happy to be Brian's first U. S. Three . . . . . W6PWQ, ex-KR6BW, is limited to s.w.l. activities at his new post in Japan. "I'm unable to obtain on-base housing and noncitizen off-base hamming is prohibited." . . . . . Newly elected officers of the Japan DX Radio Club: JA8AA, president; JA1AG, bulletin editor; JA1TD, assistant editor; and JA1BF, awards manager . . . . . Ex-VS1FJ champs at the bit in Ceylon. "Rig here all set to go but this state-of-emergency situation is extended from month to month. Closed VS1FJ at 215/192 and I hope to become 4S7FJ before returning to G3IDC this autumn." . . . . . HZ1AB staffer K5IUQ writes W8KX that the glorious DX end isn't all peaches and cream, especially when attempting schedules with home through the DX wolf pack. Bud's XYL is KN5SNQ, his dad is K5JYX, and a brother is K5ORQ. Not only that; his father-in-law is KN5PXZ, his wife's mother has an operator's ticket, and two brothers-in-law are K9s . . . . . Asian oddments via OVARA, SCDXC and WGDXC: XW8AL prowls for Fla., Ky. and Miss. on 14-Mc. phone, usually between 14,120 and 14,140 kc., 1200–1400 GMT. . . . AC3SQ tries his DX hand at AC5PN's shack now and then. 'Tis also said that AC4NC currently resides in Sikkim. . . . A new fist is heard signing JT1AA of late. One JT1AB also flits about. . . . KAØIJ representatives are escorting a new KWS-1 to Iwo Jima from JA-land. KAØIM is noted near 28,430 kc., 0100–0200 GMT, while neighbor KAØCG puts a BC-610 through its paces around 28,455 beginning at zero hours.

Africa — FE8AP tells K8BSZ he goes back to France in June, darn it . . . . . W6KG overheard ZD7SA tell W9FJY that VP9DU plans to descend on Ascension one day soon . . . . . "ZD2JM increased power to 150 watts at his new Kano QTH," informs K9EAB. "John will be active three nights weekly between 1800 and 2000 GMT, 14,100-kc. c.w., and Sundays around 0800–1000 on 28-Mc. c.w." . . . . . W4LHT confirms FQ8AP's departure for France last month after a rousing 172/164-country French Equatorial Africa DX career . . . . . K2UYG finds EA8BK teetering on the DXCC brink with a 125/99 box score . . . . . W1BB observes that neighbor W1LSZ has amassed over 600 ten-meter QSOs with buddy ZS5MP . . . . . Marion Island's ZS2MI continues to be hampered operationally by a scarcity of diesel fuel but occasionally appears Sundays on 20 phone at 0145–0545 GMT. This from WGDXC . . . . . SCDXC indicates that ex-ZD8JP may return to Ascension in six months but then again may stay away for two years or so . . . . . OVARA's W8JIN & Co. welcomed ST2KO's 10-watter to the hunt. 14,025 kc. at 2000–2200 GMT.

Oceania — VS5JA (ZL4JA), a field geologist for British Shell, signed VS5AT's call for a short while before his own Brunei suffix was assigned. K2GFQ learns, "Harry spends part of his time in Seria, the rest at field bases in the jungle. He has a gas generator with him on his jungle jaunts and hopes to add a portable ham station one day soon." VS5JA intermittently appears near 14,067 kc. around zero hours GMT . . . . . K6QPG/KW6, XYL of KW6CQ, is having a high DX time on Wake. "Yesterday I was someone's 98th country, today somebody's 100th!" . . . . . FO8AU's v.f.o.-6146 combination stirs up much business for QSL agent W3GJY on 10, 15 and 20 meters. Ed now is cooking up a 6BL7-type keyer unit . . . . . ZK1AK tells W3GJY he's been hamming since 1927 and has held the call ZL1FT for some thirty years. "Receiving conditions are ideal down here at Aitutaki. I can hear stuff that's S2 so long as some KH6 doesn't park on it." Norman works all he can hear on 14 Mc. with an 829B final and a specialized Zepp skywire and is the CAA administrative head on Cook. "Lately the ZK1AK shack has been overrun with bugs, crabs and flying pests that get under my shirt and tickle. Half an hour of this is enough, and then I pack up and leave. Bugs also get under the 829s and cause flash-overs at the tube pins." Field Day perpetual! . . . . . W3GJY has it that ZM6AS returned to New Zealand, leaving Western Samoa even rarer than ever . . . . . KH6IJ, Hawaii's contest king, found himself somewhat cramped in the ARRL Test what with no 27 Mc., 160-meter restrictions, and 50 Mc. quiescent . . . . . Early-February QSOs with VK9LE let Ws 3LMA and 8YIN just under the wire, for Lionel left the Cocos a few days later . . . . . ZL1TB announces that W6FEX captured the first Yank-won Auckland Branch NZART certification (p. 68, Aug. '58 *QST*). In addition to working all those ZL1 chaps W6FEX has had nearly a thousand contacts with buddy ZL1GI. Wally delivered his award evidence in person while touring New Zealand . . . . . W3DRH operated VK4AL from March to November last year, rolling up 1500 QSOs (900 with W/K/VEs in all United States) in 118 countries. Ninety per cent of this activity was on 14-Mc. c.w., the remainder on 10 and 15 meters. Everett used a DX-40, SX-25 and cubical quad dimensioned for 14 Mc. "There was no difficulty obtaining a VK call although we understand that very few Americans have held them. We were treated very cordially." . . . . . W1s APU and KXU find the VK9CC 813 frequently available near 14,067 kc. around 1100 GMT. VK9CC welcomes DX contacts with those who need Macquarie Island but he reserves his Sunday operation for Australia liaison . . . . . WGDXC Oceaniagrams: ZK2AD scouts 14,040 kc. for Ark., Nebr. and rare Ones shortly after 0300 GMT. . . . VK3IB, formerly of VKs 1AC and ØAB, reportedly heads for the Gilberts on a two-year government contract, VR1 call pending.

Hereabouts — *The Tempest*, DX style! VP9DC and Radio Society of Bermuda invite W/K/VE/VO amateurs to participate in a special 350th Anniversary Contest, a single-op affair, using phone and/or c.w. on 7 through 28 Mc. during two operating periods: 0001 GMT, April 25, to 2359 the 26th, and same times the 9th and 10th of May. Yanks and Canadians need send only RS or RST to Bermudians; in exchange they will receive RS or RST plus parish QTHs of VP9s worked, each once per band at three points per sue-

(Continued on page 152)

Correspondence From Members-

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

ORCHIDS

3700 Page Street
Redwood City, California

Editor, *QST:*

I can't help but express my appreciation for the fine business articles published in *QST* and written by David B. Fell, W3TN. I haven't been a member of a National Traffic System net very long. These two articles have helped me greatly in the proper handling of traffic from beginning to end. Becoming a member of the NTS has helped me to more fully enjoy my hobby. The dealing with the "third parties" is every bit as enjoyable as the dealing I have with my brother hams.

The proposition of "selling" an individual on the value of dispatching a non-essential message in the hopes that later on something of greater importance will be handled is peculiar. I find that some people will accept with eagerness and delight; others will have no part of it. I go back to those who seem to enjoy being the "third party" and obtain additional traffic.

I have become interested in chess, stamp collecting and photography because such are the hobbies of others; they in turn have become interested in my hobby. It's a kind of Golden Rule, if I may be a philosopher for a moment.

Thank you again for making ham radio of greater enjoyment. The XYL is not an operator but does enjoy the traffic I have handled for her. Now she thinks that ham radio might be O.K. after all. Hi!

— *Hal Moore, W6DEF*

121 Spencer Avenue
East Greenwich, Rhode Island

Editor, *QST:*

The February issue of *QST* was terrific. The articles on the c.w. equipment were very interesting and prove that the c.w. art has not been forgotten. Keep up the good work. . . .

— *Stephen E. Silverman, W1ZPT*

233 Harbor Road
Southport, Connecticut

Editor, *QST:*

. . . Hearty congratulations on the February issue of the hams' "Materia Medica" — one reminiscent of the old tradition of "something for everybody." I imagine by now others of the Old Guard must have buzzed you with the same sentiments. . . .

— *Carlton A. Weidenhammer, W1ZL*

2625 Hemlock
Vancouver 9, B. C.

Editor, *QST:*

You have certainly outdone yourselves in the February edition! I think it's the best issue in a long time. Perhaps I like it so much because of a few articles that seem to have been written especially for the c.w. trafficker, in which direction I already have a heavy list, hi! So both the article on break-in appealed to me and to at least two other members of BCEN, as I believe their problems will be answered by either of those particular setups.

Other than the above, I have no particular favorites — they were all good!

— *Frank M. Guerard, VE7AOT*

LOVE OF THE SPORT

Old Mystic, Connecticut

Editor, *QST:*

Recently, I have been reading in *QST* much about the Novice operators. As the Novice has come in for such attention, my curiosity was stirred to the point of contacting a few and finding out something about them. I have come to the conclusion that other hams should do likewise. All in all, it was very much like going back in time some quarter century to the days when a 245 in the Hartley gave up enough soup to light the loop bulb.

On eighty I found them jammed into their frequency allocation with the 1, 2, 3 and 8 district Novice stations all very audible, and well blended, and the QRM terrific. Cutting down the power to the final in order not to worsen the situation, I contacted about thirty novices in the above districts.

My investigation revealed them to be young and interested in ham radio in a way which would have pleased the Old Man. One little fellow, who boasted of running a solid ten watts input, could only go on the air when he could borrow a receiver from another ham who lived eight miles away and was not at home on week ends. This situation was due to improve in a matter of a few weeks as a birthday was approaching and there were high hopes that parts might become available then to construct a three-tube regenerator job (tubes already at hand).

One evening I heard a very faint CQ-PSE, CQ-PSE, coming up from the sixth or seventh depth of QRM, gave a call, and was answered at once by a rather shaky fist trying to send with first-class precision. This Novice was running 18 watts, had made two contacts in one week, had been on the air a little over a month, had worked three states so far toward a WAS, and wanted desperately to test antennas with someone at a distance. He had been studying the *Handbook*, tried two antennas (one put up in a snow storm), but couldn't decide which gave the best result and was a little uncertain where his sig was landing.

Another young gentleman sought advice about bringing up his code speed and asked for any criticism of his "fist." He thought his ability to copy had increased and wondered if his sending was doing better. And, to be sure, there is the other type. Running the legal Novice limit and the fast running bug, they really stand out. Even so, the edges come off, and the bugs slow down. We are all human.

Based on my Novice contacts, I personally find the Novice operators a very deserving group. They are having a hard struggle due to very bad band-crowding conditions. They want to QSO to any length and they are not "report and run" contacts. I feel that they deserve and warrant the help of every ham operator.

The future of amateur radio in the years to come rests with those Novices who make the grade and carry forward the spirit.

— *George E. Deneke, W11GU*

WASTED QSLS, II

Tekoa, Washington

Editor, *QST:*

I have just finished reading your section "Correspondence From Members" for February.

I agree with most of the points mentioned in the letter "Wasted QSLs" by KØAGJ who works in the Davenport, Iowa, post office — except for one statement: "Please remember post cards are never forwarded unless the addressee guarantees forwarding postage. . . ." According to the *Postal Manual*, post cards are first class mail and therefore are entitled to be forwarded to the addressee if such an address has been filed at the post office.

— *Lloyd S. Hale, W7EAA*

240 So. 4th Ave.
Pocatello, Idaho

Editor, *QST:*

I wish to correct KØAGJ in the statement "cards are never forwarded unless the addressee guarantees forwarding postage." I quote from "*Postal Manual* — *United States*

(*Continued on page 160*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator — LILLIAN M. SALTER, W1ZJE, Administrative Aide
ROBERT L. WHITE, W1WPO, DXCC Awards — RONALD GANN, W1FGF, Club Training Aids
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W. — ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

First 49-State WAS. Back in September *QST* we outlined the WAS policy to be effective following the official implementation of Alaska's statehood. We wondered which new candidate for WAS would be the first after the date of statehood (January 3, 1959) to get a KL7 *and his card*, and the WAS. Three amateurs share honors on this one. KØGVS, W8GNY and K2YGI working KL7CEE and KL7CXN on date of January 3 all got their package of 49 QSLs to headquarters the same day and receive their certificates as of the same date of issue! W6TMI (already holding 50 Mc. WAS) was the first to report a 50 Mc. contact (KL7AUV) to this writer following the official hour marking "statehood."

About Giving Signal Reports. It's no news to those who read Correspondence that some amateurs very often place pleasant conversation and fine-spoken signal reports above strict scientific accuracy or honesty. No wonder this makes for beefs about RST but RST is a satisfying tool for reporting jobs, provided the two operators follow the scales carefully and accurately.

We wonder how many of today's amateur crop can recall our early less complete reporting methods. Many who date back to the early '30s will recall that an "R" audibility system combined readability and strength on a 9-point scale. There was the reporting of weak, good, and strong signals in terms of QRJ QRK and QSA. In a still earlier era, QSA's definition (merely: your signals are strong) hardly permitted any exaggeration or enlargement of description! But even as the lowest signal report on the totem pole of our language the ubiquitous desire for amateur expression could not be downed. All signals were either QSA, VY QSA or VY VY QSA!

The chief progress represented in RST definitions was the separation of "readability" from "strength" and that it insured or established a tool for giving a *complete* report, covering readability, strength and tone. With RST the "T" tone system became a smoother pattern poorer-to-better; W8RY's earlier tone scale incorporated such terms as "thumps" and "back wave". Any words, such as "clicks" "ripple" etc. presently suggested tend to confuse a list, making it incapable or difficult of memorization. (It was found clearer to add to RST reports, a letter abbreviation, C, K, or X for Chirp, Klick, or Crystal. Such descriptive terms can be quickly sent, yet do not become involved in a basic system which has to be kept simple.)

USE THE DEFINITIONS

The main agreement in current letters seems to be in the desire for *honest* reports. For most purposes one system can be as good as another, provided the intent is carried out and the definitions followed. To give and receive valued reports, it is only essential that the two operators on any radio circuit both agree to follow all scale indications and definitions honestly and carefully — and not report without thought to being useful, honest, and helpful! Good reports permit adjusting one's sending speed and operating procedure accordingly. For correct reporting of R, S or T it is highly important to *follow the definitions* in the reporting scales. *Strength* is a matter of audibility alone; readability depends on other conditions, such as the presence of noise or interference. The readability depends on how you are actually copying. July '58 *QST* (page 74) elaborates on this.

Those of the gang who find RST unsatisfactory in any way can always make checks with each other, consulting the available S-meters and tabulating their behavior as changes are made. Then too, there's the regular five-point QRK- and QSA-systems, which are shown in the League's Operating booklet.

QRK What is the readability of my signals (1 to 5)? The readability of your signals is . . . (1 to 5).

QSA What is the strength of my signals (1 to 5)? The strength of your signal is . . . (1 to 5).

QRI How is the tone of my transmission? The tone of your transmission is . . . (1 good; 2 variable; 3 bad).

Making RST Work. Of course we must *not* expect too much in the unsolicited report. Experienced operators judge conditions very quickly from knowledge of how much intelligence was got across, and if the answers were pertinent. How can we really get fully reliable on detailed reports when it seems vital? Our thought is to get really chummy and frank with your fellow amateur. Be vocal and share your problems. Ask his help in giving a critical report or conducting a test. You will invariably find him a fine fellow, just like yourself, willing to cooperate in a report by S-meters, RST or any other system you elect.

Just one final word, to make RST or other definitions work for everybody. Keep ARRL Operating Aid No. 3 or a list from accredited scales at your operating position. Consult this. Give only honest reports. Each fellow amateur will be appreciative.

FCC Confirms License Suspension. On page 78 of *QST* for last September, we reported that Samuel J. Roley, W6VUP of Beverly Hills, California had appealed a June 16, '58 FCC order which would have suspended for a period of six months his Extra Class Amateur Radio Operator License. The matters at issue were (a) his use of power in excess of 1000 watts on Feb. 22, '58 and (b) alleged failure to observe Sec. 12.151, which requires operation in accordance with good engineering and good amateur practice. This matter, FCC Docket No. 12524, was reviewed at a hearing held before an FCC Examiner Oct. 22, 1958 in Los Angeles, California; a 12-page FCC report covers the findings of fact and conclusions of law.

FCC designated the hearing (1) to determine whether licensee committed the violations set forth in the Order of Suspension; and (2) to determine if the facts or circumstances would warrant any change in FCC's Order. By W6VUP's own instruments the input to the 15-meter final on the occasion of FCC's visit was measured at 1581 watts; FCC's instruments gave 1431 watts; these when check-calibrated against the U. of C. standard indicated the true power as 1624 watts. "All the measurements showed the power input substantially in excess of 1000 watts. "The power supply in the garage . . . appeared capable of developing power of 5000 watts. The final amplifier on this band used a single RCA 6166, a tube rated when new for 18 kilowatt service on 25 Mc. This tube as well as others in his finals had been used in a TV station and given to him after being no longer satisfactory for commercial operation . . . the engineers recalled that Mr. Roley stated . . . that in initial operation power was in excess of 1000 watts but that in a half hour or so, due to a gassy condition of the tube, power would drift down to where it was under 1000 watts. This was deemed an admission that the operator was aware of the fact that on occasion he was using power in excess of 1000 watts . . ."

"The amateur suggested that FCC's observation of the signal from W6VUP during these tests was inaccurate . . ." (The transcripts indicate that the engineer in one car had parked this 200 yards away, from which point he could observe the position of the rotary beam and monitor the transmissions. The other engineers were in direct radio communication with this observer, from the amateur station, as the measurements were made. The FCC testimony indicated its engineer in 16 years with FCC had made over 5000 field intensity and other measurements, and that the observations this same day on this and other stations confirmed the fact that the operational conditions were stable and accurate and also that in each test instance, the needle indicating transmitted field strength went to the same identical spot.

Confirming its initial finding, FCC ordered (9 Dec. '58) that effective Feb. 9, '59 the Extra Class Amateur Radio Operator License (W6VUP) of Samuel J. Roley be *suspended* for a period of six months.

On Safety. "FCC will not permit any license it issues to be used as justification for an installation violating elementary standards of safety and good engineering practice . . ." In addition to the violation of the rule establishing maximum authorized power (Sec. 12.131) which requires measurement equipment to be installed for any inputs to the final exceeding 900 watts, the four pages of FCC conclusions stress that amateur licensees installations in accordance with Sec. 12.151 ". . . shall be operated in accordance with good engineering and good amateur practice." In the operating room was one final amplifier and in the garage, some 15 feet away, were the three final amplifiers for 15-, 20-, and 40-meter bands.

Noting that there was no shielding (common good engineering practice), the FCC report stated that the high voltage power supply was connected to the various amplifiers with open leads. There was no indication that any attempts had been made to install any protective device which would prevent a person from accidentally coming into contact with either the high voltage connections or the antenna leads. It was described as an obvious hazard of life and limb. "Statements of the amateur in this case include an apparent admission that the garage door was not locked and that he relied on the weight of the door and the noise that it made as a means of assuring himself that outsiders, including children, could not enter the garage." FCC's conclusions emphasize that there was no statement in the record that the garage door was locked at any time or was equipped with a lock.

In FCC's conclusions it was the Commission's contention that the installation was an attractive nuisance in a legal sense.

"It was attractive in that the open bread-board type of construction with visible and easily accessible power lines invited inspection of all parts of the equipment, an invitation which many, particularly children, find difficult to refuse. It was a nuisance in the sense that the power was such that it was capable of electrocuting or seriously injuring any person who accidentally or otherwise came in contact with the exposed high voltage leads. Such installation in a garage which was and could be entered merely by raising the door, even a noisy door, ignored the most elementary principles of safety and good engineering practice."

FCC's summation includes a reference to page 543 in the 1958 (35th edition) of ARRL's *The Radio Amateur's Handbook* stating that this is a quotation of the American Radio Relay League:

"Of prime importance in the layout of the station is the personal safety of the operator and of visitors, invited or otherwise, during normal operating practice. If there are small children in the house, every step must be taken to prevent their accidental contact with power leads of any voltage. A locked room is a fine idea . . ." —*F. E. H.*

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

CONTEST NOTES

REF announces the phone section of the French DX Contest from 1400 GMT April 11 to 2200 GMT April 12, the exchange consisting of the RS report plus QSO serial numbers starting at 001. Complete rules are unavailable but probably follow the pattern shown in the box on page 80, February 1958 *QST*. Mail logs to REF, BP 42-01, Paris R.P., France and hope for the best.

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Too late for last month's issue, the U.S.S.R. Central Radio Club advised us of an International Phone Contest March 14 and 15. Full information, however, was transmitted by radio from W1AW and Official Bulletin Stations starting February 19, and sent to all ARRL affiliated clubs and certain league officials via postal card mailing. Entries go to CRC, Box 101, Moscow.

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On January 15, 1959, certificates were mailed to all ARRL Section, Novice, Technician and multiple-operator station winners in the September, 1958, V.H.F. QSO Party.

There are two kinds of information we receive here at headquarters from ECs and SECs — tangible and intangible. Naturally, it is impossible to consolidate information on the basis of intangible factors, yet many of the factors which make or break the efficiency of any particular AREC organization are strictly of an intangible nature. The attitude of the AREC gang, the degree of good (or bad) relations with local officials, the popularity of the EC and his leadership qualities — all these are things most important to the success of any group. They can be described on paper and even evaluated to some extent, but you can't add them up, tabulate them, average them or summarize them to give you an over-all look at the general state of our preparedness. All you can do is keep them in the back of your mind so you can always remember that figures aren't everything.

A good many of the reports we receive here at headquarters are of this nature. They do not deal in figures and quantities, but rather in evaluation of results and qualities. They do not tell us how many AREC members they have, how many mobiles, how much equipment; instead, they tell us what has been accomplished and how, and dwell on the good and bad aspects of activity, and discuss plans for the future.

This is bad? Not at all! In fact, quite the contrary. The tangible figures which *can* be consolidated and surveyed into an over-all perspective are *less* important, perhaps, than the vital imponderables mentioned above; but this does not mean that they are *not* important. Throughout the years, reports of various kinds have flown thick and fast from appointee to leadership appointee to elected official to headquarters. They have been collated, tabulated, summarized, surveyed and filed — and in time, after they have served their purpose, discarded. They have enabled us to arrive at certain numerical facts which have been invaluable in presenting a quantitative picture where such a picture is needed or desired. You would be surprised to know how often we are asked: "How many this-and-thats are in the AREC?"

It has often been said that you can prove anything with statistics. Maybe so. We don't know because we've never tried. It is putting the cart before the horse to set down a conclusion, then draw up the statistics to prove it, like determining the question from the answer. This is statistical dishonesty. We like to set down the data and let conclusions fall where they may. Only in that way can statistics serve a useful purpose.

The reporting system for the AREC is simple. The local EC, who keeps a record of his AREC members with information on each as to address, occupation, age, telephone numbers, equipment, hours of availability, days off, etc., files a small card once a month with his SEC. If his organization is in good order, it takes him perhaps five minutes to fill out this card. Once a month the SEC files a slightly longer report in which he summarizes the figures from ECs and passes along other information which he considers important or vital.

Each year, we ask each EC to file an "annual report" with us, with a copy for his SEC. This gives us full details of his organization from which we can summarize and evaluate the status of the AREC nationally. In previous years the greatest number of such reports received has been in the neighborhood of 400, slightly over 20 per cent of the total number of ECs in our field organization. Some statisticians will say that this is average; some will even say that it is good. We don't think so. We think it's lousy. We're not satisfied with it. Are you? Out of the data summarized from these annual reports we try to arrive at reasonably-accurate national estimates of our strength in various aspects of the emergency communications establishment — a most important establishment in our own welfare as well as that of the nation. This is pretty hard to do when only about one in five ECs comes across with any info. Not only that, but it involves a lot of guesswork.

AREC members in general are prone to shrug this off as something that is not their responsibility. But, fellows, we are *all* involved. Let's not get into the all-too-common rut these days of designating someone to do the leading, then all sitting back waiting to be led. *Support* your EC in his local efforts. If he is or appears to be making no efforts, build a fire under him, needle him, heckle him. There are a few ECs who supply the enthusiasm and energy as well as the leadership for their AREC groups, but there are many more (about 80 per cent) who have to be pushed. From this end, we continuously exert pressure on the ECs to do their job; but our pressure has to be distributed among about 1800 ECs, so no one of them feels it very strongly. Now if *you* will exert some pressure from *your* end, the combination may bring some results. What kind of pressure? Just show him you are interested and concerned and would like to see something done. This will be enough to push many of them over the brink and get them started. For others, more pressure is needed. Maybe it's time we start getting hardboiled and clean out the certificate-holders among our ECs. We'll never do it, OMs, unless *you* insist on having an active man in charge of your AREC unit. Hw?

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Some of you may remember that last June a terrific tornado hit El Dorado, Kansas. No report of amateur participation in this emergency came to us directly, and we were left with the impression that there was little activity. Now, however, WØMEF sends a copy of *The Log*, a publication of the Flint Hills Amateur Radio Club, in which appears a full account of amateur participation written by KØIZM, who was on the Kansas Storm Net on 3840 kc. shortly before the storm hit, June 10, 1958, at 1730. KØEHC and KØATB had witnessed the twister forming from the west city limits.

At approximately 1720 the police department called KØIZM and requested a weather report from the Wichita weather bureau. At 1930, KØATB and KØEHC burst into KØIZM with the information that the tornado was forming northwest of town. They watched, fascinated, as the funnel descended to the ground and started moving rapidly toward El Dorado. KØIZM informed the net, then power failed just as the information was passed to KØATS in Wichita. Emergency communication then went into effect.

Amateur mobile units were the first communications units on the scene, minutes after the blow struck. The Butler County mobile frequency was put to work at once with KØCKN/m, assisted by KØCIY and KNØOMJ; KØOMM/m, assisted by KØOMN and WØRFY; KØIZM/m, assisted by KØATB and KØBXD; and KØADV/m, operated by KØMBY. KØADV operated from his fixed location on emergency power, handling hundreds of messages into and out of the stricken area on 3920 kc., the Kansas Phone Net frequency. In this, he was assisted by WØTSY of Wichita and others throughout the long night.

WØECD's station was transported, the evening of June 10, to the Kansas Turnpike interchange, where it was operated from emergency power. This station operated on 3610 kc., the frequency of the Kansas CW Net, primarily for the processing of street address inquiries. WØQGG, Kansas RM, monitored the frequency and contact was maintained with Wichita. Assisting at WØECD were *KØs* BXD EHC, and KNØOMJ. This station was moved back to El Dorado the following morning and set up as a fixed station.

The night of the storm, W5GJP from Blackwell, Okla., transported his entire station to El Dorado and set it up at the location of KØOMM. Operation commenced at 0600 the following day on 7220 kc., assisted by KØOMM and WØRFY, taking traffic from the mobiles in the disaster area. This operation continued for five days, with mobiles and fixed stations operating all day in four-hour shifts. KØLJG/Ø operated in similar fashion for three days, from the basement of Salvation Army headquarters in downtown El Dorado, using equipment loaned by KØOMN. Early in the emergency, the FCC in Kansas City had been contacted and had cleared the frequencies of 7280, 7220, 3920 and 3810 for emergency use. This clearance was maintained until the afternoon of June 11, when wire communications had been restored.

KØIZM and WØMEF maintained communication on 7220 all day June 11, when traffic was heaviest, and on June 12 WØOMM in Raytown took over the schedule.

Later in the week, when storm warnings were again being issued, WØLUI set up a transmitter at the KBTO transmitter site, working with mobile spotters at other posts. This enabled him to break into KBTO transmission with storm warnings if necessary.

The advent of a real emergency forced the Okaloosa County (Fort Walton), Fla., AREC group to change their SET plans on October 20. EC W4BPJ was notified that a 6-year-old boy was lost in Fort Walton. The amateurs were requested by the police to assist search parties. Consequently, K4YVQ was set up at City Hall and six mobiles joined in the search area. W4RKH acted as alternate NCS, and other operators rode with the mobiles or were active from their home stations. When the boy was finally located through an announcement by a TV station in Pensacola, the amateurs had to notify the station to discontinue the announcements, since the station did not answer its listed telephone number after 1700 and the Ft. Walton police could not reach them. So W4RKH contacted W4DAO and K4HYL on 10-meter ground wave and K4MON/m was dispatched to the TV station. — *W4RKH, SCM Western Fla.*

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During a storm in the Pacific Beach area in Washington state, W7UNI, W7ZHZ and K7AJT were of material assistance in handling communications for the naval facility at Pacific Beach in the absence of telephone and power facilities between that point and Aberdeen. All three amateurs received a letter of gratitude from the commanding officer.

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While driving along route 250 in Ferncliff, Va., 100 miles southwest of Washington, D. C., W4TVO/m came upon a truck trailer upside down with the wheels still spinning. This was on Friday, January 16, during a sleet storm. W4SIE, with whom W4TVO/m was in contact at the time, reported his telephone out of order, but W3BHK, who was listening on the frequency (3835 kc.), telephoned the Arlington police and state police aid was summoned at once. W3BHK then advised the net, where he found W4LTO doing the same thing. W4YH and W4VUI were also on frequency to assist. It seems that the truck had gone into a skid on the slippery road to avoid hitting a skidding car and had plunged down an embankment, injuring the driver. The car driver also smashed his car and injured himself. Thanks to prompt action by W4TVO/m, state and county police, fire and rescue squads all arrived at the scene in less than 20 minutes. — *W3BHK.*

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Amateurs in and around Clinton, Ill., were of great service to the Illinois Central Railroad when an extensive ice and sleet storm hit the area from January 20 through January 24. On Jan. 21, W9KRH was set up in the ICRR yard office in Decatur, with a makeshift antenna. W9KXN and K9BJJ did the operating under the former call. W9FMR was also installed in the chief dispatcher's office in Clinton. Traffic was handled on the Illinois Emergency Net on 3940 kc. This included train orders and traffic for civil defense, power companies, telephone companies, broadcast stations and individuals. W9FMR was operated by *W9s* FMR KRH PEK UZE LYE, *K9s* ISZ MDS. This circuit was maintained until January 25. *W9s* FQL IOG MXD and K9LDM figured highly in this operation. Net control was passed around, but *W9s* KCX ACZ AEX and FAW did particularly good jobs. Other stations participating included *W9s* BIL BEJ BWJ CMX CFY CAZ CZP CBZ EAZ FM FAX FTD FVL GWL GJL IVB IOO JMG JXV JVC JGB JOZ KNY LZE LFY MEZ NKM OBN OFI PSP QGU QAZ TTT TGB TSS TUC VTT VWJ YS ZWT ZOW ZEN ZIM BIK, *K9s* APD AMD AXO CRT CIL CSA DCQ DYD DJJ DLR DHZ EAX ESP GTZ IUI IHV ITD IUL JBX JPR, W8JOP, KØBRQ WØERB. — *W9KRH.*

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In Montgomery County, Ill., the same storm called out the AREC group under EC W9VWJ to provide services for the New York Central Railroad and the Consolidated Phone Company. The emergency lasted for three days, with more than two dozen AREC members involved. W9VWJ lists as outstanding among them the following: *W9s* BEJ JFG, *K9s* ESY AMD AXS KYK KYW IXA.

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Ohio had a tough time of it in January, what with sleet, snow, freezing rain, high winds, fog and floods. Luckily, the AREC and RACES are highly organized in most parts of Ohio, so amateurs were very much in the picture. We have reports from three different sources that we shall summarize herewith.

The EC for Cuyahoga County (Cleveland), W8AEU, reports that during the period Jan. 16–Jan. 20 the "Traffic Patrol" of the AREC was kept busy in connection with emergencies caused by slippery streets, stalled cars and accidents. For the most part, this involved reporting of accidents, obtaining help for stalled cars hindering the flow of traffic, reporting of king-sized traffic jams extending over large areas, and correction of incorrect road information being broadcast by local radio stations. The following amateurs were involved in this work: *W8s* AEU BDZ CPP CZM IY NZI OXY UZJ VFU YMJ ZEP, *K8s* AAG HCS IZL JIC.

But this was only the beginning. Starting on January 20, amateurs in the area were called upon to furnish emergency communications because of flood conditions in Cuyahoga, Lake and Lorain Counties. Three emergency nets and 85 amateurs were involved in Cuyahoga County alone, and facilities were offered as well to the ECs of the other two affected counties. Countless messages and communiques of the usual emergency type were handled for police, c.d., Red Cross, news and weather bureaus and individuals. W8AEU, the county EC who always does a magnificent job, gives us the following highlights: (1) K8IHC/m was requested to enter the flood zone in Lake County to furnish information on road conditions and other disaster data; this was done under great difficulties, and he remained to furnish important communications for officials there. (2) Winds of hurricane force accompanying an advancing cold front were forecast by relay from K8DZY, EC for Lorain County, to W8AEU, so that emergency workers were forewarned and additional damage forestalled. (3) After the above winds had passed through, K8DBJ/m toured the West Side area to report any additional damage. (4) A plea for a special boat to buck the current on the Cuyahoga River was placed on the nets, and K8KKO volunteered his boat. However, this was 15 miles from the disaster area and had to be transported through city traffic. With the aid of K8LMF, W8VFU, W8NZD and the police department, the transfer was successfully made, after which K8KKO, at great personal danger, launched the boat and proceeded with rescue operations among floating ice and debris. Sixteen families were evacuated, with as many as ten people in the boat at one time. (5) Amateur radio was used to scotch a rumor that the dam at Cuyahoga Falls had burst. Had this been true, it would have meant wholesale evacuation of the lower Cuyahoga Valley. At the request of W8MDL, W8AEU contacted K8IKA at Cuyahoga Falls, who reported that the dam was intact and in no danger. (6) NCS duty was admirably performed by the following: *W8s* LFY NZD NZI TFW, *K8s* AAG GJW MBV. The following is a comprehensive list of other stations involved in the emergency operation: *W8s* ANB ASW BAH BDZ BHR BPN BUQ CPP CZM DGK EFB ENB EPM FAG FAT FEZ FQM HKG IDM IY KEK LHX LMF MPP MVU MWE OIS OXS OXY OYS PBZ RAK SLE SQU SZU TXZ UEM UKW WZS ZEP, *K8s* AAP ABA BWH CDA CFH CTI DBF DKU DPA DQB GBH GCF GVK GZY HCS HSI HVH IJG ILX IMF IPS JGH JHZ JIC KBE KKP KNH LMV, W5JTY/8.

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Early on the morning of Jan. 21 the Kokosing River started flooding at Mt. Vernon. Club station K8EEN went into action handling "worry" traffic into and out of town. Shortly after noon W8CTZ took over, and later W8HZJ took over with high power. A number of emergency situations were handled. On the 21st a levee on the west bank of the Scioto River in Columbus broke and local amateurs went into action to assist police and fire departments in evacuation work. On the 22nd, Chilicothe started evacuating residents, and W8AOD/8 was set up at the armory to handle traffic on 75 and 2 meters; when the armory was flooded, W8TGJ took over and was the mainstay for traffic until late Friday night, along with W8CSN.

On Wednesday the 21st the rapid rise of the Little Miami River caused the sending of a mobile to Loveland, near Cincinnati, to handle communications for two shelters erected there by the Red Cross. The c.d. unit handled much traffic until the Queen City Emergency Net established six meter communication. W8LPC and W8MGP assisted in this area.

At Tiffin, the Sandusky River started "backing up" because of an ice jam on the 21st. The c.d. director alerted EC W8WAB and the AREC group went into action. A mobile unit accompanied auxiliary police to McCutchenville

where it was planned to dynamite the ice jam.

The flooding hit Fremont on the 24th, again aggravated by an ice jam. The state c.d. communications trailer was operated there under the call W8SGT/8.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for January traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W2KEB	283	1720	1235	248	3486
W3CUL	358	1427	1105	211	3101
W7BA	22	1050	1017	29	2118
WØSCA	23	882	874	2	1781
W8UPH	26	722	669	51	1468
W7PGY	19	683	641	34	1377
WØIA	38	657	654	2	1351
WØBDR	50	688	571	6	1315
WØLGG	60	589	554	25	1228
W9JOZ	27	521	543	1	1092
W9NZZ	310	374	0	374	1058
WØBLI	2	523	509	11	1045
K6YBV	41	493	441	26	1001
WØPZO	4	499	466	8	977
W6GYH	127	401	392	8	928
K1BCS	413	256	231	18	918
K6HLR	22	413	361	18	814
W9DO	372	30	61	341	804
K4UBR	44	382	355	9	790
W5RCF	16	383	361	22	782
WØLCX	25	337	314	25	701
K4QES	158	269	247	16	690
K1CIF	105	315	235	13	668
K2UTV	17	322	310	12	661
K4SJH	35	332	258	34	659
W1AWA	12	371	221	17	621
W3PZW	28	306	212	73	619
K2MES	33	288	266	18	605
W1EMG	5	300	260	31	596
KØONK	85	242	256	10	593
W5CEZ	29	300	232	30	591
KØKBD	23	278	262	10	573
W1NJL	149	214	163	39	565
WØOHJ	12	276	268	8	564
W9DYG	43	261	215	43	562
WØKQD	55	265	223	14	557
W6EOT	2	270	236	43	551
K2SIL	17	255	242	22	546
K6LVR	17	283	225	4	529
W8GKB	298	215	6	13	532
KØHHG	109	207	206	1	523
K4ELG	9	256	227	27	519
W7ZB	16	259	226	13	514
W2RUF	39	276	106	87	508
K6GK	18	244	160	84	506
W8SYD	5	250	244	5	504
Late Reports:					
K6LVR (Dec.)	21	704	654	6	1385
K2QHR (Dec.)	9	411	389	72	881
W4FFF (Dec.)	10	279	259	20	568
W4PFC (Dec.)	38	241	228	13	520

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
KG1DT	181	252	81	171	685
Late Reports:					
W6ZJB (Dec.)	516	770	516	112	1914
K6MCA (Dec.)	108	774	812	44	1738
K5FHU (Dec.)	42	621	562	59	1284

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

K5FGF	377	WØVPQ	109	Late Reports:	
K6GZ	229	W9ETM	108	W9PCQ (Dec.)	191
K5ILL	181	K4QER	107	KØHHA (Oct.)	165
W4SRK	153	K4EZL	106	W2SOW (Dec.)	140
				K4KUZ (Dec.)	129
K1JAD	143	W4SHJ	105	W2VDT (Dec.)	124
W4QDY	141	K5JCC	104	W8AXX/2 (Dec.)	113
K4QLG	139				
K3AHT	135	K5KBH	104	KN9LMQ (Dec.)	103
K1DIO	121	W3TN	103	KØHHA (Nov.)	100
W2VDT	113	K8JLF	103		
K4ILB	112	K1AHE	101		
W1YBH	111	K6EWY	101		
W8DAE	109	KØJPJ	101		

More-Than-One-Operator Stations

K3DKZ/V01	183	K4WCZ	122	Late Reports:	
W1AW	159			K7FAE (Dec.)	111

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: K2GWN, K2YBC, W4BVE, K4DRO, K4HQK, K4LEM, K4QES, W7ZB, K8BPX, W9FAW, KØDCW, KØIRL, KØONK, WØWMK, KL7BJD.

The BPL is open to all amateurs in the United States, Canada, Cuba, and U. S. possessions who report to their SCM a message total of 500 or more or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

The Ohio Emergency Net on 3860 was closed at 1343 on the 24th. SEC W8UPB and OEN-NCS W8HZJ give us the following list of other amateurs who did outstanding work in this emergency: *W8s* AOX BQJ DMM FEM FNI FPZ HQK HXQ IGW JUM KFK LGK LT LWJ NTP NTZ NXF OPU UPV OUZ PEN PGP PLQ PSX PZS QEF QQ SGT SFW SWF TSU VHO VZ VVV YUS YPH ZCQ ZQC ZIO, *K8s* BNL AKK HEJ IOD DOK, *KN8s* MMI MPO LFA LFH LDB.

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On Jan. 21 at 0015, W4PVA, EC for Prince William County, Va., was notified of a power failure on the line feeding station WPRW in Manassas. With telephone lines down and no communication to power company headquarters in Warrenton, W4PVA sent out an emergency call which was answered by W8GDQ in Ohio. A telephone call was placed from there to the power company in Warrenton, whereupon the electric company advised that the breakdown would be serviced. Power was restored in time for most early morning programs, thanks to amateur radio.

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Sometimes amateurs are equipped to assist in emergencies not strictly involving communications. Following the disastrous mine flood at Port Griffith, Pa., on January 22, W3TYQ, c.d. communications chief of Scranton, was able to provide emergency lighting for rescue and engineering operations at the scene of the disaster, with the assistance of W3DVU. — *W3TYQ.*

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Seems that on January 22 a teen-aged boy had run away from home to avoid hospitalization and was in danger from not having proper medication. At the time of this writing, the lad had still not been located, but it was not because amateurs of Florida and Georgia didn't have a good try at it! The original report came from K4DNL in Atlanta to K4RNR at Daytona Beach. Since past history indicated the boy was interested in racing, it was thought he might be at the speedway, so K4TDN, who works at the speedway, was contacted. The father flew down from Atlanta and rode with K4RNR tracing every lead, searching as far as Orlando, while K4RNS kept a circuit alive to keep the family informed. Approximately 85 amateurs in Florida and Georgia checked in and offered their services during the 3-day operation. Among those checked were local police, radio and TV stations, motels, and the boy's known acquaintances. W4FSS did a motel-to-motel search in his mobile. So far, no soap. — *W4IYT, SEC E. Fla.*

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We received 20 SEC reports for December activities, representing 6045 AREC members. This is the same number of reports as December '57, but an increase of over a thousand AREC members represented, and a new section, Western Mass., is added to the list of sections heard from in 1958. Other sections reporting: NYC-LI, Ga., E. Fla., Santa Barbara, E. Bay, Minn., San Joaquin Valley, Wash., Wis., S. Texas, N. Mex., Colo., Nev., B.C., Ala., Mich., Santa Clara Valley, Mont., Ont.

The record for the year, however, shows *quite* an improvement. We received reports from 44 different sections (37 in 1957) and a total of 275 reports altogether (256 in 1957). The following sections turned in 100% reporting records for 1958: Alabama, San Joaquin Valley, New Mexico, Colorado, NYC-LI, E. Fla., Ga., Santa Clara Valley, and Wis. Of these, Eastern Florida records its *seventh* consecutive 100% reporting year (and W4IYT says he sees no possibility of a lapse in the near future). NYC-LI completes its fifth consecutive 100% year. San Joaquin Valley and Santa Clara Valley have three-year runs, while Ga. and Colo. have completed their second straight 100% years. Felicitations to the above!

Other sections reporting in 1958, with the number of reports received from each: Santa Barbara, E. Bay (11); Montana, S. Texas (10); Conn., Mich. (9); Minn., Maritimes, W.N.Y. (8); Ont., Wash., E. Pa. (7); Nev., N. Texas, Md.-Del.D.C. (6); R. I. (5); B.C., Vt. (4); Mo., N. C., W. Va. (3); Va., Iowa, Tenn., Ind., W. Fla., Okla., Sask., N. Dak. (2); Utah, S.N.J., Ore., Ky., Me., W. Mass. (1).

January CD Parties

Last minute demands on *QST* space crowded out the scores of the leaders in the CD QSO Parties of January 17–18 and 24–25 but we can advise that K6SXA topped c.w. entrants with 209,300 points while W1ECH's 33,660-pointer paced the radiotelephone appointees. The usual listing of high claimed scores will appear in the May issue.

RACES News

Mercer County, N. J., RACES held a municipal-to-county and check-point-to-county drill on January 20. Messages were exchanged between six municipal points and county and between four check points and county. The municipal net was conducted on 2 meters and the check point net on six meters. After the drill, a critique was held to pick out flaws in the operation.

On Jan. 27, Mercer County RACES took part in a statewide drill, operating on emergency power the entire time. Twenty-six messages were passed to the state control center on 2 meters, using an intermediate relay. The c.w. circuit was manned and monitored, but not used. — *K2IIW*.

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Some c.d. officials are prone to regard the RACES frequencies as exclusive c.d. channels on which they can do just as they please. It is up to us amateurs to remind them that these are *amateur* frequencies, and that RACES is an amateur service, to be used strictly in accordance with specific regulations set down by FCC. We amateurs have not abdicated any portion of our bands to civil defense and don't intend to. The RACES frequencies are set aside for *our* use in c.d. communications, not for indiscriminate c.d. use.

The new FCC proposals for expanded RACES segments on certain bands and new ones on other bands will greatly improve the potential of this service and will be a boon to our present RACES groups in providing for much-needed medium and long range facilities. This will make it possible for amateurs to expand their implementation of RACES on a shared basis with other normal amateur communications.

Attention: Code Practice Stations

We're getting together a new up-to-date listing of all individual on-the-air code practice stations. Those who have not registered with ARRL are urged to do so by sending for form CD-62, or by mailing in the following info: call, name, *complete* QTH, *exact* frequency of transmission, day(s), time(s) in EST, CST etc., and if known, the date schedule concludes. Data must be in by April 15, 1959. Be sure to include *all* information requested.

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 Section. The 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 the 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. 10, 1959	W. R. Williamson	Mar. 17, 1949
West Indies	Apr. 10, 1959	William Werner	Aug. 10, 1958
Michigan	Apr. 10, 1959	Thomas G. Mitchell	Feb. 17, 1959
British Columbia*	Apr. 10, 1959	Peter M. McIntyre	Mar. 13, 1959
Hawaii	Apr. 10, 1959	Samuel H. Lewbel	Apr. 10, 1959
Nebraska	Apr. 10, 1959	Charles E. McNeel	Apr. 15, 1959
Saskatchewan*	Apr. 10, 1959	Lionel O'Byrne	June 10, 1959
South Dakota	Apr. 10, 1959	Les Price	July 2, 1959
New York City & Long Island	May 11, 1959	Harry J. Dannals	July 31, 1959
Oklahoma	June 10, 1959	Richard L. Hawkins	Aug. 9, 1959
Maine	June 10, 1959	John Fearon	Aug. 9, 1959
Manitoba*	June 10, 1959	James A. Elliott	Aug. 9, 1959
San Francisco	June 10, 1959	Fred H. Laubscher	Aug. 14, 1959
Southern New Jersey	June 10, 1959	Herbert C. Brooks	Aug. 26, 1959
West Virginia	July 10, 1959	Albert H. Hix	Sept. 18, 1959

* 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 named.

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.

Vermont	Harry A. Preston, jr., W1VSA	Dec. 10, 1958
Idaho	Mrs. Helen M. Maillet, W7GGV	Feb. 10, 1959
Sacramento Valley	Jon J. O'Brien, W6GDO	Feb. 25, 1959
Los Angeles	Albert F. Hill, jr., W6JQB	Apr. 18, 1959

In the Eastern Florida Section of the Southeastern Division, Mr. John F. Porter, W4KGJ, and Mr. Adam F. Moranty, K4UJW, were nominated. Mr. Porter received 494 votes and Mr. Moranty received 152 votes. Mr. Porter's term of office began February 27, 1959.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on April 20 at 2130 Eastern Standard Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted April 1 at 2100 PST on 3590 and 7128 kc.

Any person can 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 are made from W1AW each evening at 2130 EST. Approximately 10 minutes' practice is given at each speed. Reference 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 sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with W1AW.

Date Subject of Practice Text from February *QST*

Apr. 2: *A 500-Watt Package*, p. 21
Apr. 6: *Solving Your TVI Problem*, p. 18
Apr. 9: *A Simple Electronic Key*, p. 36
Apr. 14: *The C.W. Man's Friend*, p. 40
Apr. 17: *DX-Dream*, p. 51
Apr. 22: *Portable ZS9*, p. 52
Apr. 28: . . . *Delivering Messages*, p. 60

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....292
ZL2GX.....291
W6AM.....289
PY2CK.....289
W3GHD....288
KV4AA.....287
W3JNN....286
W6SYG.....286
W5ASG.....285
W8BRA....285
W8JIN.....285
W2AGW....284
ZL1HY.....283
W9RBI.....283
W3KT.....283
G2PL.....283
W2BXA....283
W1ME.....283
W6CUQ....283
G3AAM....283
W8DMD....283
W8HGW....282
W2HUQ....282
W8BKP....282
W6GFE....282
W6DZZ....282

Radiotelephone

PY2CK.....289
W8GZ.....280
W1FH.....279
ZS6BW....278
VQ4ERR...277
W3JNN....275
W8BF.....273
ZL1HY.....272
W9RBI.....270
W8KML....268

From January 1, to February 1, 1959 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

W5LW.....195
DL9RK.....169
W3BVL.....151
W1KXP....145
G2HHV.....117
VE7CE.....116
K5BDO.....113
W9AZP.....112
W0VFE.....112
K5EJC.....111
UZ1KSZ.....111
K4RXQ....110
OE5HE.....109
SM7BVO...108
W3SW.....107
I1FT.....107
W6PYN....106
LU1QB.....106
SM7EH.....106
K8BOD.....105
DJ2CM.....105
DJ2SK.....105
G3FIU.....105
W4EPL.....104
W4KR.....104
W9MLE.....104
G3CEP.....104
KL7GI.....104
PY4OD.....104
UA3BN.....104
W4HZT....103
W9OVH....103
ZS6APQ....103
K2KID.....102
W4WHN....102
DJ1SY.....102
HB9LN.....102
PJ2CA.....102
SM3AZI....102
ZS2AW.....102
W5HCL....101
K6VXM....101
W8CCD....101
W8VOW....101
W9HDV....101
W9YZA....101
OH8NC....101
W1AJZ.....100
W1TSZ.....100
W4KAC....100
K4OMR....100
K5BHV.....100
W5CK.....100
W7CMO....100
W8FDN....100
W8TFU....100
W9GHK....100

Radiotelephone

G2HAP.....152
W2LKW....142
ON4BX.....140
ZS5PG.....121
YS1O.....115
W1HTR....114
WØTGQ....113
VS4JT.....113
OK1HI.....112
OA4V.....110
ZS6UR.....108
W1ZSR....105
W8VPA....103
PJ2CA.....102
K5EXW....101
F9MD.....101
VP6ZX.....101
W3SW.....100
W9HDV....100
W9QNO....100
EA2EL....100
EA5EP....100
I1RO.....100
ZS8I.....100

ENDORSEMENTS

W3BEX....281
W6EBG....281
W6MX.....281
W5ADZ....280
W2HMJ....271
W6YY.....271
W6GPB....270
W9FIB.....261
W2IDS.....260
W3LMA....260
W8MPW....260
WØNLY....260
W5ABY....259
W3CGS....253
W6KSM....251
W5OLG....250
W9GRV....250
DJ1BZ.....249
W6FOZ.....248
K6EVR.....241
W2TXB....240
W3PGB....240
W5ALA.....240
GM3EST...240
W6WO.....233
W1BIL.....230
W4CYY....230
W6GMF....230
W9KXK....224
KH6PM....224
EA2CA.....223
ON4FQ....222
W1ZZK.....221
W7EJD....221
W1LZE.....220
W2CWK....220
W2FBS.....220
W4TFB.....220
K6UYC.....220
W6WWQ....220
W7HIA.....220
HB9ET.....220
W5HJA.....213
W9JUV.....213
W4GRP....212
W9YNB....212
W7GHB....211
W8TJM....211
WØUQV....208
K4LNM....205
EI9Y.....204
SM5KV....204
SM5WJ....203
W1NLM....201
K2PIC.....201
W6PLK....200
SM5CCE...200
VE3JZ.....200
VE7SB.....200
YS1O.....200
PY7VG.....193
W4NBV....192
W2ESO....191
W8UMR....191
VE3PK.....191
W1ODW....190
W1TS.....190
W6PZ.....190
W7ACD....190
W1NHJ....188
DJ2AE.....188
W5MMD...185
W9WIO....184
K5ADQ.....183
W6ETJ.....181
W4UKA....180
W5DA.....180
K9AGB....180
WØGUV....180
WØMLY....180
W6IPH.....178
K6EDE.....172
K2BSM.....171
K4HRG.....171
K4HFS.....170
W7QON.....170
W8NJC.....170
EA2CB.....170
W4IEH.....169
W9HCR.....169
W7AQB....168
WØAJU.....168
W6KG.....166
W9GFF.....165
W9IRH.....164
W3BQA....163
K2QXG....162
VE2YU.....162
W6ZMX.....161
K4JVZ.....160
W7NRB....160
K2JGG.....156
W8LY.....156
K9ATZ.....155
W9ZTD.....155
ST2AR.....155
W1OOS.....154
W8ZCK.....154
OH3TH.....153
W1MIJ.....151
W1VAN.....150
W3LUD.....150
W8GB.....147
K9DQI.....144
W4JUI.....142
K6QXF.....142
DJ3JZ.....142
WØIJW.....141
K9ECO.....141
VE5KG.....141
W1CTW.....140
WØUYC.....140
KZ5KA.....140
ZS1FD.....140
DL1SO.....139
G3GSZ.....138
W8YGR.....137
W1IUU.....135
W4KKG.....135
K6RWO.....135
W3QQL.....134
K2HXL.....133
K2QQQ.....132
W3BKA.....132
W1UWB.....130
K2IAD.....130
K6KII.....130
K9CUY.....130
KØGXR.....130
DL8CM.....130
G3JLB.....130
SM5WZ.....130
W3TLN.....127
WØLPA.....126
K6CTV.....123
DL8CH.....123
EA4GA.....123
W1IKB.....121
K2PFC.....121
K6GCF.....121
WØGTU.....121
KP4ADS....121
W2QIQY....120
K4UGS.....120
W4WGB....120
W8VVD....120
W9WNB....120
WØDEI.....120
WØSLB.....120
VE2BK.....120
W4LHT.....118
VE7EH.....118
W2IP.....115
K4QIJ.....113
W8KBT.....112
W6KNM....111
K6BXA.....111
GM3EFS...111
W1KYK....110
W2ABL.....110
K2IRO.....110
K2RNN....110
W3GGT....110
W3YZT....110
W7YTU....110
W8MTQ....110
K9BLY....110
W9IGK....110
W9KQD....110
W9KXZ....110
W9RUB....110
W9TPA....110
KH6DKA...110

Radiotelephone

EA2CQ....250
W8DMD....240
W6SYG....230
W9RNX....230
PY4TK.....230
PY4KL.....224
EA2CA.....221
W4ANE....220
W7HTB....220
W1CLX....211
IIAOF.....210
W5HJA.....202
W2HTI.....200
W5ALA.....200
K2CJN.....191
W8WT.....182
F3DJ.....181
W7MBX....180
PY7VG.....180
SM5WJ.....173
W3CGS.....172
W4GRP....162
W1DCE....160
W2KUW....160
W2LV.....160
W9BEK....160
G8QX.....157
W9JUV.....153
K6EVR.....152
WØGUV.....144
G4JW.....143
W1VAN.....141
W6BCQ.....141
W8TJM.....141
W8MXS....140
W3HCO....138
W3ICQ....136
VR2BC.....135
K2JGG.....134
WØUYC.....132
W1PMZ.....131
WØWYV.....131
W1UWB....130
K2QQQ.....130
W4NBV....130
I1ZJG.....130
OZ7BG.....130
PAØZD.....130
K9ATZ.....129
EI3R.....128
WØMLY....124
W3ROA....123
W4YQB....123
K2PIC.....122
W9HPS.....122
W1OOS.....120
K2GSO....120
K2JFV.....120
W8UMR....120
K5JEA.....114
W1AJV.....111
W8HTP....111
W9IGK....110
KØCTL....110
F9QP.....110

U. S.-Canada Area and Continental Leaders

W4TO.....276
W4TM.....276
W7GUV.....279
W7AMX.....279
WØELA.....272
KL7PI.....202
VE1EP.....220
VE2WW....237
VE3DHF....212
VE4XO.....180
VE5RU.....163
VE6NX.....214
VE7ZM.....265
VE8AW.....195
VO1DX.....199
ZS6BW.....278
4X4DK.....267

Radiotelephone

W2BXA....241
W4HA.....235
W5BGP....241
W6YY.....267
W7PHO....227
WØAIW....233
KL7AFR....190
VE1NH.....122
VE2WW....172
VE3KF.....224
VE4RP.....102
VE5RU.....156
VE6NX.....115
VE7ZM.....235
G2PL.....257
4X4DK.....260

TRAFFIC TOPICS

Net Reports. Hudson traffic net reports 30 sessions, 273 check-ins, 231 messages handled. The 7290 Traffic Net reports 40 sessions, 491 messages with 1355 check-ins. Sundown Traffic Net had 31 sessions, 288 check-ins, 102 messages; Sundown Novice Net fifteen sessions, 87 check-ins, 14 messages. Transcontinental Phone Net handled 3068 messages in January. Early Bird Transcontinental Net had 31 sessions in which 971 messages were handled. Interstate SSB Net report: 75 meters, 31 sessions, traffic 911, 1612 check-ins; 20 meters, 19 sessions, traffic 572, 358 sessions; totals, traffic 1485, check-ins 358.

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National Traffic System. Once again, for the third straight year, we have to acknowledge 9RN as the "statistical champ" of the NTS. This midwestern regional made top ranking in traffic, rate and average per session, was fourth in number of sessions and sixth in representation. Second place goes to RN5, which was not tops in any single category but which maintained a level near the top in all of them. And third place went to the other Central Area regional, TEN, for first place in number of sessions, second in traffic and rate and fourth in average per session, but falling to tenth in representation. Thus, the Central Area this year makes a clean sweep of the NTS statistical standing.

The final standing is an average of the standings in five factors, most of which have a tendency to balance each other. That is, a net with a lot of sessions will place high in that category, but this will make it difficult for them to place high in average per session and representation; on the other hand, if they're really good, they *can* do it. Conversely, a net with a low number of sessions will place low in that category but may do better in some of the others, if they make the sessions they have *good* ones.

We thought you might be interested in how the various regional nets stack up against each other according to these

five factors: number of sessions, total traffic, rate, average per session and representation — and the average of all these resulting in that net's over-all standing for the year.

Net	Sessions	Tfc	Rate	Average	Rep.	Final Standing
9RN	4	1	1	1	6	1
RN5	2	3	4	4	3	2
TEN	1	2	2	4	10	3
2RN	3	6	6	7	1	4
1RN	9	7	5	2	2	5
RN6	8	4	3	3	8	6
4RN	5	4	8	6	11	7
3RN	7	8	7	9	4	8
8RN	6	10	10	10	5	9
TWN	11	9	11	8	9	10
ECN	12	12	9	11	7	11
RN7	10	11	12	12	12	12

You can argue all night about which of the above factors is the most significant, but the fact remains that the general impression is borne out that the midwest is the traffic-handling center of NTS as it is of the rest of the traffic world. Anyway, congratulations to 9RN, RN5 and TEN for their high 1958 standings. January reports:

Net	Sessions	Traffic	Rate	Average	Representation (%)
EAN.....	28	1380	.882	49.3	99.4
CAN.....	31	1425	.763	35.1	98.9
PAN.....	31	1762	.758	43.1	98.9
1RN.....	31	767	.436	24.7	87.0[1]
2RN.....	62	528	.352	8.5	98.4
3RN.....	62	469	.314	7.4	86.0
4RN.....	62	684	.311	11.0	50.5
RN5.....	62	1333	.537	21.5	96.1
RN6.....	61	1116	.444	18.3	91.6
8RN.....	54	343	.219	6.3	72.2
9RN.....	62	1111	.572	17.9	80.2
TEN.....	87	959	.437	11.0	68.1
ECN.....	44	92	.151	2.1	63.7
TWN.....	31	412	.282	13.2	65.1[1]
Sections[2]....	1076	9634		9.0	
TCC Cent...	62[3]	980			
TCC Pac....	108[3]	1114			
Summary...	1784	24409	EAN	12.5	EAN
Record.....	1303	16010	.659	12.1	100.0

[1] Representation based on one session per night; others based on two or more.

[2] Section nets reporting: SCN (S. C.); SCN (Calif.); SMN (Md.); WSSN & WIN (Wis.); ILN (Ill.); S. Dak. 40 Phone; S. Dak. 75 Phone; S. Dak. CW; Iowa 75 Phone; FMTN, Gator, FN, NWFN, FPTN (Fla.); QMN (two Mich. nets); TLCN (Iowa); Tenn. CW; MDD (Md.-Del.-D. C.); KMG, MSPN Noon, MSPN Evening, MJN, MSN (Minn.); WVN (W. Va.); CPN & CN (Conn.); MKPN, KPN, KYN (Ky.); WSN (Wash.); AENP, AENP Morning, AENB, AENT, AENO (Ala.); GSN (Ga.); HNN, CWXN (Colo.).

[3] TCC functions reported, not counted as net sessions.

In January, we broke all records again, and again by a wide margin, this time including even the average traffic per NTS session — which is hard to beat because we have so many more nets reporting now than in previous years. The increase of over 400 sessions reported and over 8,000 messages is particularly noteworthy. The *increase* in traffic from last January is greater than that handled by the whole system in January, 1954, and greater than that handled by the whole system as recently as June, 1956. Dunno how long we can keep this up, but we're sure riding high now!

W8SCW has put out a new EAN bulletin to let the boys know he's still on the job; EAN keeps going with a minimum of supervision from the manager. In his January report, W9DO comments that CAN has quite a turnover in personnel, but no lapses for this reason. W6YHM reports for PAN in the absence of W6PLG on sick leave; Clem is coming along fine but will have to convalesce a while. K2RYH is bowing out as 2RN manager; 2RN certificates have been issued to *K2s* UYK MES QBW YBJ and W2FEB. W3UE reports that 3RN is "slipping upwards." The Third, Fourth and Fifth Regional Nets are putting out a combined bulletin, edited by W4QDY who previously edited the 4RN Bulletin; we have received a couple of issues, and they're real fine. W4QDY is careful to point out that only the bulletin is combined; the nets operate as before. 4RN certificates have been issued to K4GPI and W4PED. RN5 certificates have been issued to *K5s* NQF OEA JGZ, *K4s* UBR SSB, W4SRK. K6HLR has announced the RN6 Serivce Award to be issued to the top three RN6 participants on the basis of cumulative points over a year's time as follows: one point for each night's attendance; 2 points for each session as NCS; 2 points for each performance as PAN liaison; 2 points for each "utility station" performance; 1 point for representing a section. It is hoped in this way to increase interest in RN6. The following have been awarded hard-earned 8RN certificates: *W8s* VYR GWR PBO HZA BWK SZU OPU HXB QLJ VTP FWQ GKT OCC ILP QQD ELW, *K8s* HID BPX DDG.

Transcontinental Corps. January reports:

Area	Functions	(%) Successful	Traffic	Out-of-Net Traffic
Central.....	62	96.8	1682	980
Pacific.....	108	96.3	2188	1114
Summary.....	170	96.5	3870	2094

The TCC roster: Central Area (W9BDR, Dir.) — *W9s* LCX SCA BDR LGG; Pacific Area (W6BPT, Dir.) — W5DWB, *K6s* DYX ORT EWY HLR LVR GID, *W6s* ADB PLG BPT EOT VZT HC ELQ YHM, *W7s* VIU GMC ZB BDU, WØKQD.

A.R.R.L. ACTIVITIES CALENDAR

Mar. 20–22: DX Competition (c.w.)
Apr. 1: CP Qualifying Run — W6OWP
Apr. 11–12: CD Party (c.w.)
Apr. 18–19: CD Party (phone)
Apr. 20: CP Qualifying Run — W1AW
May 7: CP Qualifying Run — W6OWP
May 19: CP Qualifying Run — W1AW
June 3: CP Qualifying Run — W6OWP
June 13–14: V.H.F. QSO Party
June 17: CP Qualifying Run — W1AW
June 27–28: Field Day
July 2: CP Qualifying Run — W6OWP
July 18–19: CD Party (c.w.)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

Mar. 14–15: USSR Phone DX Test, Central Radio Club (p. 81, this issue).
Apr. 1–5: Helvetia-22 DX Contest, USKA (p. 76, last month).
Apr. 4–11: Goose Bay QSO Party, Goose Bay ARC (p. 144, last month).
Apr. 11–12: French Phone Contest, REF (p. 81, this issue).
Apr. 11–12: Ohio Intrastate QSO Party, Ohio Council of ARCs (p. 116, this issue).
Apr. 25–26: PACC Contest (c.w.), VERON (p. 77, this issue).
Apr. 25–26 and May 9–10: Bermuda-U.S.-Canada Contest, Radio Society of Bermuda (p. 78, this issue).
Apr. 25–26: New Hampshire QSO Party, Concord Brasspounders (p. 128, this issue).
May 2–3: PACC Contest (phone), VERON (p. 77, this issue).
May 8–10: West Virginia QSO Party, Mountaineer ARA (next month).
May 16: Armed Forces Day Receiving Competition and QSO Party, Dept. of Defense (next month).

• 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, Richard B. Mesirov, W3JNQ—SEC: DVB. RM: AXA. PAM: TEJ. PFN meets Mon. through Fri. at 1800 on 3850 kc. E. PA. Net meets Mon. through Fri. at 1830 on 3610 kc. New appointments. K3AAX as OES; K3DZN as ORS and OBS. New officers of the Keystone ARC are GSB, pres.; AUF, vice-pres.; PDJ, secy.; RCE, treas. New officers of the Carbon ARC are: PVY, pres.; K3BGF, vice-pres.; KN3EXW, act. mgr.; AIW, secy.-treas. DJW carries out his OBS skeds with the help of a tape recorder. WQL has been QRT because of family illness. WQK moved his QTH from Lewisburg to Williamsport. UIU received Keystone Award No. 33. New officers of the Central HS (Phila.) "807" Club are EYT, pres.; WHK, vice-pres.; K3EPN, secy.; K3ANU, treas. ZRQ is building a QRP 75-meter rig for traffic use. KMM and UCY have the first home-brew s.s.b. rig on from Monroe County. K3GCI dropped the "N" from his call and ordered a Pacemaker and a Thunderbolt. K3ALL traded in his SX-100 for an NC-300. K3ALD was QRL with final exams. An average of 15 stations report in on the Lancaster Emergency Net each Mon. on 2 meters. WHK spent much of his school vacation operating. GYP went to town in the Jan. CD Test and helped BES during the DX Test. K3AHT made the BPL on deliveries and has a new triband vertical. JPV made WAC with a South American for the last QSO. CUL reports good traffic on s.s.b., c.w. and phone. K3BHX is interested in starting a 10-meter phone net. If interested, contact him direct or via the SCM. WIP started handling traffic for the first time after 19 years on the air. FKE and ZLP received Section Net certificates. New officers of the South Phila. ARK are IVO, pres.; NJS, vice-pres.; K3BZE, rec. secy.; K3BUC, corr. secy.; HEE, treas. KN3DTA is interested in forming a slow-speed net. Anyone interested should contact him direct or via the SCM. The E. Pa. Net needs outlets in the Ephrata/Reading/FYR has been on 10 and 15 meters. K3EEA passed the General Class exam at age 11. K3BKO and K3BKP are on 6 meters with a new Viking Challenger. IKI is on 40 and 10 meters with a completely rebuilt DX-100, and an SX-100. K3CNG is on 10 meters with a DX-100 KN3DZE plans to be on 40 meters with a new antenna. In response to many queries, the SCM now has full vision after a two-month seige, and does NOT intend to run for reelection. Many thanks to all who inquired about both, and apologies to those who didn't receive answers during the confusion. Traffic: W3CUL 3101, K3AHT 259, W3IVS 148, WHK 115, BNR 77, AXA 74, K3ANU 64, W3ZLP 63, FKE 50, ZRQ 47, K3ASH 35, W3DVB 35, UIU 30, K3BKT 28, ALD 26, W3BFF 23, HNK 20, NF 16, K3GTZ 15, W3WIF 12, FYR 8, NNL 5, PVY 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Asst. SCM for Delaware: Ray DeCourcelle, 3DQZ. SEC: YYB. New appointment: K3GPN as ORS. Section Nets: MDD, 3650 M-S 1915; MEPN 3820; MWF 1800 SS 1300; Del. EN 3905 Sat. 1830; Md. 6-Meter Emerg. Net 50.25 Wed. 2100. The Foundation of Radio Amateur Clubs had Mr. P. McCullough, NRL Physicist, at its quarterly meeting on Jan. 30. He spoke on "Radio Telescopes." OMN spoke at the RCARA meeting of Jan. 23 on "How to Really Juice Up Your Antenna." New officers of the Washington TVIC are AIR, chairman; DHQ, vice-chairman; K4SYP, treas.; AKB, secy.; with ECP continuing as coordinator. New officers of the CARC are CZY, pres.; LMC, vice-pres.; K3BIZ, secy.; JME, treas.; LZZ, sgt. at arms. JME (EC of Baltimore Co.) gives notice that the Baltimore Co. Emergency Net has changed frequency from 29.3 to 29.25 Mc. so as not to conflict with other nets. The net meets on the 3rd Mon. at 2130. *Auto Call* reports the following WMRC members made the Philmont Mobile Radio Club Annual Dinner on Jan. 17 at Philadelphia: CN, IN, NL and XYL, K4IKK and XYL KN4EAM, K3AXX and K4LMB. The B&O RRARC issued the first worked B&ORRARC certificate to BVL. K3BPE has now earned his General Class license. MCH has new Gonset Twins (G66 and G77) installation. YZI received a Johnson Pacemaker for a Christmas present. K3EFR's XYL has bought him a new beam. Other XYLs take note. BQX, ex-8ERY, is back on the air in the Baltimore Area. K3BYR has taken over net control on 29.5 Mc. for the going-home mobilers in the Baltimore Area. K2QFB is new in the Hagerstown Area. The Antietam Net has added 29.53 Mc. at 1900 daily for ragchews and the 1st and 3rd Tue. for formal drill in addition to 3827 kc. at the same times. K3DRK has completed the "Bonus Converter" and enjoys working 29.53 Mc. EDA had a nice write-up in the *Morning-Herald* (Hagerstown). AMX is now on 6 and LII has gone to 160 meters. KLA reports that there are about 25 on 6 meters in the Baltimore Area. BKE's and TSC's first jr. operator arrived Jan. 7 and is named Alice Ruth. 6QYL/4 and OM 6RDQ were at the WAYLARC meeting on Jan. 17 and the WRC meeting on Jan. 16. PZZ is monitoring 145.2 Mc. for those who wish to check into the MEPN at the regular net times. K3CJM reports code classes are now in session at his home QTH on Tue. at 2000 for prospective Novices. WSE is finally on phone after seven years. He is trustee of the new 5th Reg. Armory Station, K3/AA3WAM. QCW will be missed on the traffic nets as he is in SVB-Land for two years. Both PZW and TN made BPL again in January. KL7CDG (a Philco TecRep and avid 6-meter man) is in the Washington Area for a short period of special instruction. K3DKZ/VO1 reports that as soon as the transmitter can be gotten on the air they will be on 6 meters from Argentia, Newfoundland. Bob reports that signals have been good from most parts of the states up there on 6 meters. Traffic men should take note of *The 345 News*, the new traffic bulletin of the 3rd, 4th and 5th RNs. Reports of station and club activity should reach the SCM prior to the 5th of each month for the preceding month. Support your section nets. Traffic: (Jan.) W3PZW 619, UE 306, AHQ 300, TN 128, K3WBJ 119, QCW 114, PQ 109, BUD 106, COK 44, CN 19, OYX 16, EEB 15, WSE 15, EOV/DAG 14, WV 10, STG 7, JZY 3, KLA 3. (Dec.) K3DKZ/VO1 199, W3COK 181.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: W2YRW. RMs: W2BZJ, W2HDW, W2YRW and W2ZI. The DVRA announces that its 14th Annual Old-Timers Nite will be held Apr. 18 at the Tracey-Trent Hotel, Trenton. Contact W2ZI for information. W2BZJ, Pennington, is sporting a new receiver. K2OOK is back in college. W2RG is back on his regular skeds. K2JGU is NCS on 3245 kc., MARS Net, Mon. at 2200. W2HDW is kept busy with TVI problems and also is active with the Boy Scouts. K2JJC, Pitman, advises that the Gloucester Co. Amateur Radio Club has been organized and that W2KE is chairman until the election of officers. K2SOL, Gloucester Co. EC, has returned home after a stay in the hospital. We wish him a speedy recovery. The SJRA's new meeting place is the American Legion Post 372, Delaware Twp. The following received "Certificates of Achievement" issued annually by the SJRA: W2OGZ, K2GCD, K2KCI, K2KNS, K2MBD, K2UQD, W2YRW and K2BZK. The following received Camden County RACES awards: K2PTJ, W2YRW, W2LBX and W2EWN. W2OSD is W2LBX's able assistant in the Delaware Twp. RACES activities. W2TBD has been assisting Haddonfield Explorer Post 51 in c.d. activities. W2DAJ is heard regularly on 15 meters. K2DEI's new QTH is Maple Shade. Burlington County RACES communication equipment has been moved to the new County Hq. W2WKI is county communications officer. I am indebted to K2IIW for the Mercer Co. RACES news. He reports a county to municipal drill held Jan. 20. Also there was a state-wide test Jan. 27. Traffic: (Jan.) W2BZJ 136, W2RG 110, K2JGU 63, W2HDW 9, W2ZI 8. (Dec.) K2SOW 146.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2GBX. RMs: W2RUF and W2ZRC. PAMs: W2PVI and W2LXE (v.h.f.). NYS C.W.

(Continued on page 102)

TRANSMITTING TUBE RATINGS

THE various manufacturers of transmitting tubes specify the highest current and voltage conditions under which their tubes should operate. Most of these manufacturers also supply graphs which show various conditions under which their tubes operate at peak efficiency, and optimum tube life.

ONE of the commonly considered values is plate dissipation. This is the difference between the D.C. plate power input and the R.F. power the tube delivers to its load. Most amateurs consider this factor important in the design of their amplifiers.

HOWEVER, another point, equally important in the design of linear amplifiers, is the relationship of plate voltage to plate current. Some transmitting tubes in the kilowatt class are designed to operate under high voltage — low current conditions. These tubes, if operated as recommended by the manufacturer, do an excellent job as linear amplifiers. On the other hand, if we scrimp on voltage and run higher current, we lose efficiency, and plate dissipation increases. Thus, we get a smaller percentage of our power input delivered to the antenna.

IN ADDITION — operating these tubes under the wrong conditions can result in a loss of linearity and an increase in distortion, which contributes to splatter and broad signals on our ham bands.

THEREFORE, it is recommended that we study the tube manufacturers' specifications, and select tubes that match the voltage we have available. Even in the purchase of a commercially built linear, the canny buyer will compare the conditions under which the tube operates with those recommended by the tube manufacturer.

NEEDLESS to say, this important factor was considered in the design of the HT-33A, and the selection of the PL-172, with its 1000 watts of plate dissipation, was based on sound engineering practices.

TOM STUART, WØREP

Bud Hallgan Jr. W. S. Hallgan W9AC for **hallicrafters**

WHETHER THEY BUY 'EM WIRED . . . OR BUILD 'EM . . . AMATEURS WILL TELL YOU

Viking transmitters outsell all others!

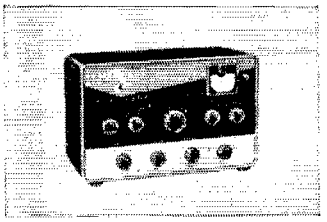
Yes, dollar-for-dollar and feature-for-feature you'll get more of everything in a Viking transmitter . . . that's why Viking transmitters outsell all others! Write for your free Viking Amateur Catalog and you'll soon see why your best transmitter buy is a Viking!

NEW!... "6N2" CONVERTER

This compact, new Viking "6N2" Converter provides instant front panel bandswitching from normal receiver operation to either 6 or 2 meters. Designed for maximum sensitivity and low noise figure . . . offers excellent image and I. F. rejection. With tubes.

Cat. No.	Amateur Net
250-43-1, or -2, or -3..Kit	$59.95
250-43-12, or -22, or -32..Wired, tested	$89.95

NOTE: Specify either Kit or Wired plus your choice of the following ranges: 26 to 30 mcs.; 28 to 30 mcs.; 14 to 18 mcs.



"6N2" TRANSMITTER

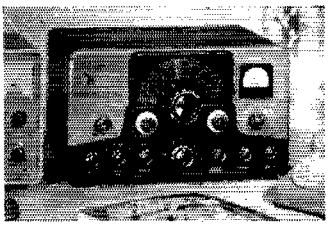
Instant bandswitching 6 and 2 meters. Rated 150 watts CW; 100 watts AM phone. Use with "Ranger", "Viking I", "Viking II", or similar power supply/modulator combinations. With tubes, less crystals.

Cat. No.	Amateur Net
240-201-1..Kit	$129.50
240-201-2..Wired, tested	$169.50

"6N2" VFO

Compact—stable! Replaces 8 to 9 mc. crystals in frequency multiplying 6 and 2 meter transmitters. With tubes and pre-calibrated dial.

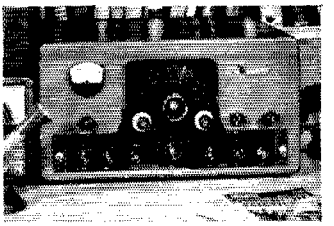
Cat. No.	Amateur Net
240-133-1..Kit	$34.95
240-133-2..Wired, tested	$54.95



"RANGER" TRANSMITTER/EXCITER

This popular, superbly engineered transmitter also serves as an RF/audio exciter for high power equipment. 75 watts CW or 65 watts phone input. Built-in VFO or crystal control—instant bandswitching 160 through 10. 6146 final amplifier—wide range pi-network output. Timed sequence keying. TVI suppressed. With tubes, less crystals.

Cat. No.	Amateur Net
240-161-1..Kit	$229.50
240-161-2..Wired and tested	$329.50



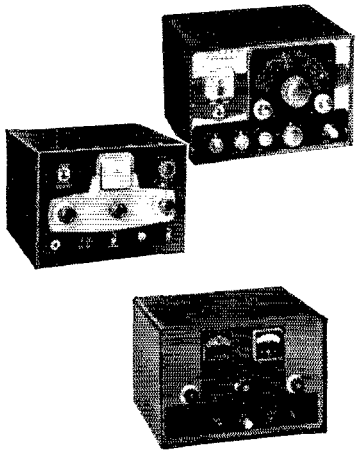
"VALIANT" TRANSMITTER

Here's effective power, wide flexibility, and many unique operating features combined in a compact desk-top transmitter! 275 watts input CW and SSB (P.E.P. with auxiliary SSB exciter) and 200 watts phone. Bandswitching 160 through 10. Built-in VFO or crystal control. Final amplifier utilizes three 6146 tubes in parallel—wide range pi-network output. With tubes, less crystals.

Cat. No.	Amateur Net
240-104-1..Kit	$349.50
240-104-2..Wired and tested	$439.50

E. F. JOHNSON COMPANY

2804 SECOND AVENUE S.W.



"NAVIGATOR" TRANSMITTER/EXCITER

More than a novice transmitter—serves as a flexible VFO-Exciter with enough RF power to excite most high powered amplifiers on CW and AM! 40 watts CW input—6146 final amplifier tube—wide range pi-network output. Built-in VFO or crystal control—bandswitching 160 through 10. Timed sequence keying. TVI suppressed. With tubes, less crystals.

Cat. No.	Amateur Net
240-126-1..Kit	$149.50
240-126-2..Wired and tested	$199.50

"ADVENTURER" TRANSMITTER

Perfect for novice or experienced amateur! 50 watts CW input—instant bandswitching 80 through 10 meters. Crystal or external VFO control. With tubes, less crystals.

Cat. No.	Amateur Net
240-181-1..Kit	$54.95

"CHALLENGER" TRANSMITTER

Ideal for fixed station or portable use! Fast, easy tuning—excellent stability and plenty of reserve drive. 70 watts phone input 80 through 6; 120 watts CW input 80 through 10 . . . 85 watts CW input on 6 meters. Wide-range pi-network output—effectively TVI suppressed—excellent keying system. For crystal or external VFO control. With tubes.

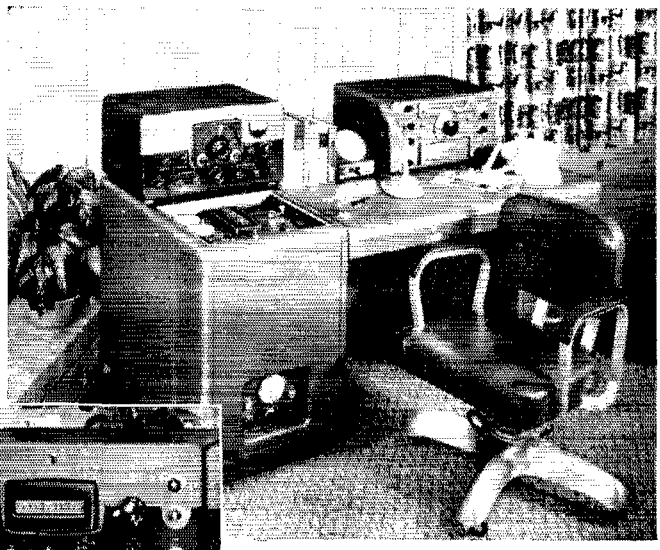
Cat. No.	Amateur Net
240-182-1..Kit	$114.75
240-182-2..Wired	$154.75

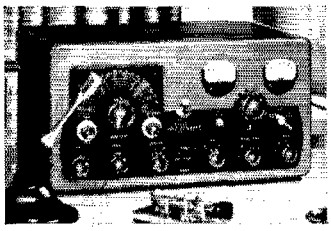
"KILOWATT" AMPLIFIER

Here's the most exciting unit you've ever seen . . . the unit that puts the whole world at your fingertips! Brilliantly designed and engineered, the Viking "Kilowatt" is the only power amplifier available which will deliver full 2000 watts SSB* input and 1000 watts CW and AM! Continuous coverage 3.5 to 30 mc. Excitation requirements: 30 watts RF and 10 watts audio for AM; 10 watts peak for SSB.

Cat. No.	Amateur Net
240-1000..Wired and tested	$1595.00
251-101-1..Matching desk top, back and 3 drawer pedestal..FOB Corry, Pa.	$132.00

The FCC permits a maximum of one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.

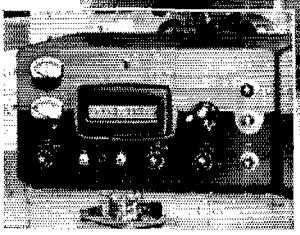




"FIVE HUNDRED" TRANSMITTER

More than one-half kilowatt of power and operating convenience! 600 watts CW input . . . 500 watts phone and SSB (P.E.P. with auxiliary SSB exciter)—instant bandswitching 80 through 10 meters! All exciter stages ganged to VFO tuning. High gain push-to-talk audio system. Highly stable, built-in VFO or crystal control. Wide range pi-network output. Low level audio clipping—effectively TVI suppressed. With tubes, less crystals.

Cat. No.	Amateur Net
240-500-1..Kit	$749.50
240-500-2..Wired	$949.50



"THUNDERBOLT" AMPLIFIER

Here's real power and peak performance in a compact desk-top amplifier. Rated 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear! Continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the "Ranger", "Pacemaker" or other unit of comparable output. Two 4-400A tetrodes in parallel, bridge neutralized. Wide range pi-network output. With tubes.

Cat. No.	Amateur Net
240-353-1..Kit	$524.50
240-353-2..Wired	$589.50

"PACEMAKER" TRANSMITTER/EXCITER

An outstanding power bargain when used as a transmitter or exciter! 90 watts SSB P.E.P. and CW input . . . 35 watts AM. Highly stable built-in VFO. Instant bandswitching 80, 40, 20, 15 and 10 meters. VOX and anti-trip circuits. Wide range pi-network output. Effectively TVI suppressed. With tubes and crystals.

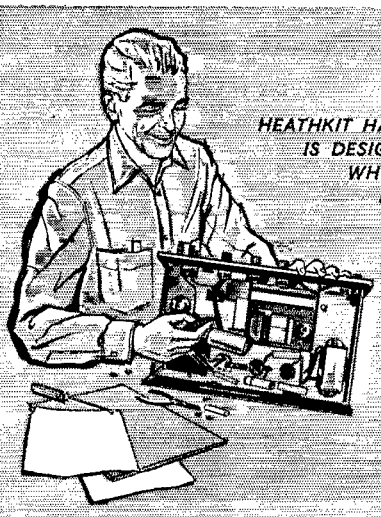
Cat. No.	Amateur Net
240-301-2..Wired	$495.00

Viking

FIRST CHOICE AMONG THE NATION'S AMATEURS

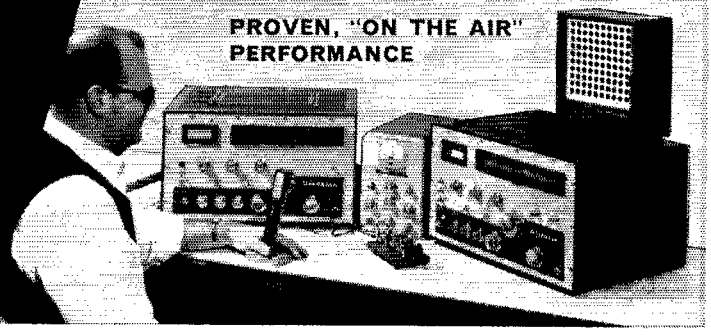
WASECA, MINNESOTA

BUILD YOUR OWN HEATHKIT® HAM GEAR



HEATHKIT HAM EQUIPMENT IS DESIGNED BY HAMS WHO KNOW YOUR PROBLEMS AND NEEDS.

PROVEN, "ON THE AIR" PERFORMANCE



"SENECA" VHF HAM TRANSMITTER KIT

Beautifully styled and a top performer of highest quality throughout. The "Seneca" is a completely self-contained 6 and 2 meter transmitter featuring a built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions, 2 power supplies, 5 radio frequency stages, and 2 dual-triode audio stages. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. An auxiliary socket provides for receiver muting, remote operation of antenna relay and remote control of the transmitter such as with the Heathkit VX-1 Voice Control. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings slightly reduced in the 2 meter band. Ideal for ham operators wishing to extend transmission into the VHF region. Shpg. Wt. 56 lbs.

HEATHKIT VHF-1 **$159.95**

HEATHKIT DX-20 **$35.95**

DX-20 CW TRANSMITTER KIT

Designed exclusively for CW work, the DX-20 provides the novice as well as the advanced-class CW operator with a low cost transmitter featuring high operating efficiency. Single-knob bandswitching covers 80, 40, 20, 15 and 10 meters using crystals or an external VFO. Pi network output circuit matches antenna impedances between 50 and 1,000 ohms. Employs a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. Easy-to-read panel meter indicates final grid or plate current selected by the panel switch. Complete RF shielding to minimize TVI interference. Easy-to-build with complete instructions provided. Shpg. Wt. 19 lbs.

HEATH COMPANY Benton Harbor, Michigan — a subsidiary of Daystrom, Inc.

Mobile Gear...for the Ham on the Go!

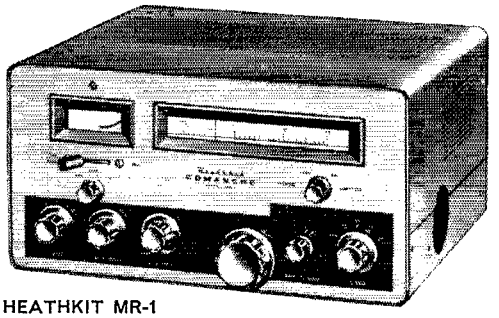
"CHEYENNE" MOBILE HAM TRANSMITTER KIT

All the fun and excitement . . . plus the convenience of mobile operation are yours in the all-new Heathkit "Cheyenne" transmitter. The neat, compact, and efficient circuitry provides you with high power capability in mobile operation, with low battery drain using carrier controlled modulation. All necessary power is supplied by the model MP-1 described below. Covers 80, 40, 20, 15 and 10 meters with up to 90 watts input on phone. Features built-in VFO, modulator, 4 RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. High quality components are used for long service life and reliable operation, along with rugged chassis construction to withstand mobile vibrations and shock. Thoughtful circuit layout provides for ease of assembly with complete instructions and detailed pictorial diagrams to insure success. A spotting switch is also provided. A specially designed ceramic microphone is included to insure effective modulation with plenty of "punch". Plan now to enjoy the fun of mobile operation by building this superb transmitter. Shpg. Wt. 19 lbs.

HEATHKIT MT-1
$99.95

"COMANCHE" MOBILE HAM RECEIVER KIT

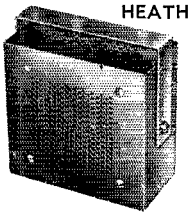
Everything you could ask for in modern design mobile gear is provided in the "Comanche" . . . handsome styling, rugged construction, top quality components . . . and, best of all, a price you can afford. The "Comanche" is an 8-tube superheterodyne ham band receiver operating AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. A 3 mc crystal lattice-type IF filter permits the receiver to use single conversion without image interference, and at the same time creates a steep sided 3 kc flat top IF bandpass characteristic comparable to mechanical type filters. The neat, compact and easy-to-assemble circuitry features outstanding sensitivity, stability and selectivity on all bands. Circuit includes an RF stage, converter, 2 IF stages, 2 detectors, noise limiter, 2 audio stages and a voltage regulator. Sensitivity is better than 1 microvolt on all bands and signal-to-noise ratio is better than 10 db down at 1 microvolt input. One of the finest investments you can make in mobile gear. Shpg. Wt. 19 lbs.



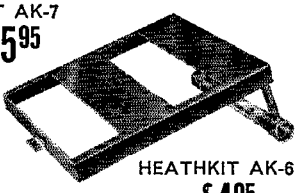
HEATHKIT MR-1
$119.95

MOBILE SPEAKER KIT

A matching companion speaker for the "Comanche" mobile receiver. Housed in a rugged steel case with brackets provided for easy installation on fire wall or under dashboard, etc. Uses 5 PM speaker with 8 ohm voice coil. Measures 5" H. x 5" W. x 2½" D. Shpg. Wt. 4 lbs.



HEATHKIT AK-7
$5.95



HEATHKIT AK-6
$4.95

MOBILE BASE MOUNT KIT

The AK-6 Base Mount is designed to hold both transmitter and receiver conveniently at driver's side. Universal mounting bracket has adjustable legs to fit most automobiles. Shpg. Wt. 5 lbs.

HEATHKIT MP-1
$44.95

MOBILE POWER SUPPLY KIT

This heavy duty transistor power supply furnishes all the power required to operate both the MT-1 Transmitter and MR-1 Receiver. It features two 2N442 transistors in a 400 cycle switching circuit, supplying a full 120 watts of DC power. Under intermittent operation it will deliver up to 150 watts. Kit contains everything required for complete installation, including 12' of heavy battery cable, tap-in studs for battery posts, power plug and 15' of connecting cable. Chassis size is 9 1/16" L. x 4¾" W. x 2" H. Operates from 12-14 volt battery source. Circuit convenience provided by self-contained relay which allows push-to-talk mobile operation. Shpg. Wt. 8 lbs.

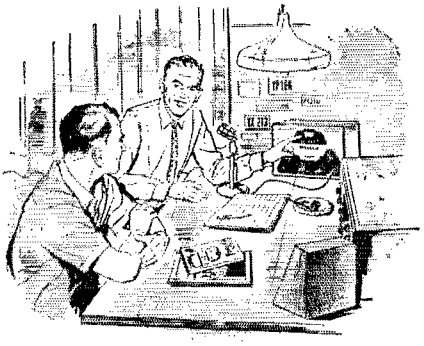
POWER METER KIT

This handy unit picks up energy from your mobile antenna and indicates when your transmitter is tuned for maximum output. A variable sensitivity control is provided. Features a strong magnet on a swivel-mount for holding it on a car dashboard or other suitable spot. Has its own antenna or may be connected to existing antenna. Sensitive 200 ua meter. Shpg. Wt. 2 lbs.

HEATHKIT
PM-2
$12.95

HEATHKIT®

COMPANION UNITS

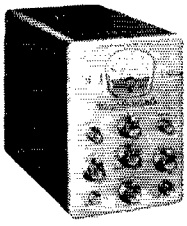


HEATHKIT TX-1 $234.95

"APACHE" HAM TRANSMITTER KIT

The many features and modern styling of the "Apache" will provide you with just about everything you could ask for in transmitting facilities. Emphasizing high quality the "Apache" operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission using the SB-10 External adapter. The newly designed, compact and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample bandspread and precise frequency settings. The bandswitch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. A cooling fan is also provided. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and control panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button enables the operator to "zero beat" an incoming frequency without putting the transmitter on the air. Equip your ham shack now for top transmitting enjoyment with this outstanding unit. Shpg. Wt. 110 lbs. Shipped motor freight unless otherwise specified.

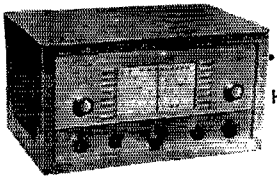
HEATHKIT SB-10 $89.95



SINGLE SIDEBAND ADAPTER KIT

Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter, this unit lets you operate on SSB at a minimum of cost, yet does not affect the normal AM and CW functions of the transmitter. By making a few simple circuit modifications, the DX-100 and DX-100-B transmitters can be used, utilizing all existing RF circuitry. Extremely easy to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. An easy-to-read panel meter indicates power output to aid in tuning. A built-in electronic voice control with anti-trip circuit is also provided. 10 watts PEP output. Unwanted sideband suppression is in excess of 30 db and carrier suppression is in excess of 40 db. An EL84/6BQ5 tube is used for linear RF output. Shpg. Wt. 12 lbs.

MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. $8.95.



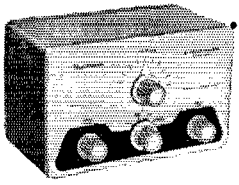
HEATHKIT AR-3 $29.95

(less cabinet)

ALL-BAND RECEIVER KIT

A fine receiver for the beginning ham or short wave listener, designed for high circuit efficiency and easy construction. Covers 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. Transformer operated power supply. Features include: bandswitch, bandspread tuning, phone-standby-CW switch, phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Shpg. Wt. 12 lbs.

CABINET: Opt. extra. No. 91-15A. Shpg. Wt. 5 lbs. $4.95.



HEATHKIT QF-1 $9.95

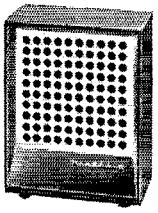
"Q" MULTIPLIER KIT

Useful on crowded phone and CW bands, this kit adds selectivity and signal rejection to your receiver. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Provides an effective "Q" of approximately 4,000 for extremely sharp "peak" or "null". The QF-1 is powered from the receiver with which it is used. Shpg. Wt. 3 lbs.

OF DISTINCTIVE QUALITY

ACCESSORY SPEAKER KIT

Handsomely designed and color styled to match the "Mohawk" receiver this heavy duty 8" speaker with 4.7 ounce magnet provides excellent tone quality. Housed in attractive ⅜" plywood cabinet with perforated metal grille. Speaker impedance is 8 ohms. Shpg. Wt. 7 lbs.

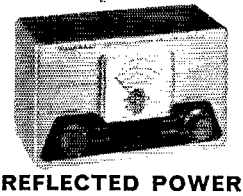


HEATHKIT AK-5
$9.95

HEATHKIT RX-1 $274.95

"MOHAWK" HAM RECEIVER KIT

Styled to match the "Apache" transmitter the "Mohawk" ham band receiver provides all the functions required for clear, rock-steady reception. Designed especially for ham band operation this 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. Specially designed for single sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled wired and aligned front end coil bandswitch assembly assures ease of construction and top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, bridge T-notch filter for excellent heterodyne rejection, and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Each ham band is separately calibrated on a rotating slide rule dial to provide clear frequency settings with more than ample bandspread. Front panel features S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, Bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and illuminated gear driven vernier slide rule tuning dial. Attractively styled with die-cast aluminum control knobs and escutcheons. No external alignment equipment is required for precise calibration of the "Mohawk". All adjustments are easily accomplished using the unique method described in the manual. An outstanding buy in a communications receiver. Shpg. Wt. 66 lbs. Shipped motor freight unless otherwise specified.



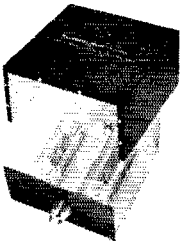
HEATHKIT AM-2
$15.95

REFLECTED POWER METER KIT

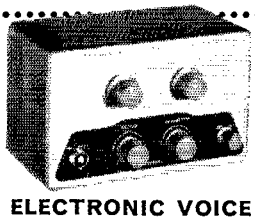
The AM-2 measures forward and reflected power or standing wave ratio. Handles a peak power of well over 1 kilowatt of energy and covers 160 through 6 meters. Input and output impedance provided for 50 or 75 ohm lines. No external power required for operation. Use it also to match impedances between exciters or RF sources and grounded grid amplifiers. Shpg. Wt. 3 lbs.

BALUN COIL KIT

Match unbalanced coaxial lines, found on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance with this handy transmitter accessory. Capable of handling power input up to 200 watts, the B-1 may be used with transmitters and receivers covering 80 through 10 meters. No adjustment required. Shpg. Wt. 4 lbs.



HEATHKIT B-1
$8.95



HEATHKIT VX-1
$23.95

ELECTRONIC VOICE CONTROL KIT

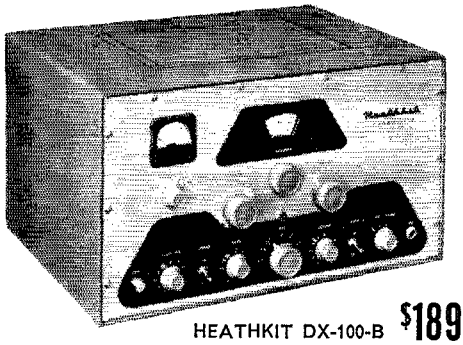
Eliminate hand switching with this convenient kit. Switch from receiver to transmitter by merely talking into your microphone. Sensitivity controls allow adjustment to all conditions. Power supply is built in and terminal strip on the rear of the chassis accommodates receiver and speaker connections and also a 117 volt antenna relay. Shpg. Wt. 5 lbs.

HEATHKIT VF-1
$19.50

VFO KIT

For below the cost of crystals to obtain the same frequency coverage this variable frequency oscillator covers 160, 80, 40, 20, 15 and 10 meters with three basic oscillator frequencies. Providing better than 10 volt average RF output on fundamentals, the VF-1 is capable of driving the most modern transmitters. Requires only 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a. Illuminated dial reads direct. Shpg. Wt. 7 lbs.

Save 1/2 or more...with Heathkits



HEATHKIT DX-100-B $189.50

DX-100-B PHONE AND CW TRANSMITTER KIT

A long standing favorite in the Heathkit line, the DX-100-B combines modern styling and circuit ingenuity to bring you an exceptionally fine transmitter at an economical price. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The rugged one-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. The chassis is punched to accept sideband adapter modifications. Featured are a built-in VFO, modulator, and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience single-knob bandswitching and illuminated VFO dial on meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage modulated by a pair of 1625's. Shpg. Wt. 107 lbs. Shipped motor freight unless otherwise specified.

HEATHKIT DX-40 $64.95

DX-40 PHONE AND CW TRANSMITTER KIT

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob band-switching is combined with the pi network output circuit for complete operating convenience. Features a D'Arsonval movement panel meter. A line filter and liberal shielding provides for high stability and minimum TVI. Provision is made for three crystals easily accessible through a "trap door" in the back of the cabinet. A 4-position switch selects any of the three crystals or jack for external VFO. Power for the VFO is available on the rear apron of the chassis. Easy-to-follow step-by-step instructions let assembly proceed smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.

Free Send now for latest Heathkit Catalog describing in detail over 100 easy-to-assemble kits for the Hi-Fi fan, radio ham, boat owner and technician.

HEATH COMPANY BENTON HARBOR 9, MICH.

pioneer in do-it-yourself electronics

a subsidiary of Daystrom, Inc.

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All prices and specifications subject to change without notice. Please include postage on orders to be shipped parcel post. 20% deposit is required on all C.O.D. orders. All prices are NET F.O.B. Benton Harbor, Mich., and apply to Continental U.S. and Possessions only.

NAME

ADDRESS

CITY ZONE STATE

QUANTITY	KIT NAME	MODEL NO.	PRICE

IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—with only 65 watts and a $16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California
January 31, 1959

GOTHAM
1805 Purdy Avenue
Miami Beach 39, Florida

Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,
Thomas G. Gabbert, K6INI (Ex-TI2TG)

List of 105 countries/stations worked with 65 watts and a V-80 vertical

BV1US	KG4AI	VK3YL
CE3DZ	KG6FAE	VK9XK
ZL5AA	KH6IJ	VK9AT
CO2WD	KL7BUZ	VKØCJ
CN2BK	KM6AX	VP2KFA
CN8FB	KP4ACF	VP2AY
CR9AH	KP6AL	VP2DW
CT1CB	KR6BF	VP2MX
CX2FD	KS4AZ	VP2LU
DL1FF	KV4AA	VP2SW
DU7SV	KW6CA	VP5CP
EA1FD	KX6AF	VP5BH
EI4N	KZ5CS	VP6TR
F8VQ	LA3SG	VP7NM
FB8ZZ	LU2DFC	LU1ZS
FG7XE	LZ1KSP	VP9BK
FK8AL	OA4AU	VR2DA
FM7WT	OE9EJ	VR3B
FO8AD	OH2TM	VS1HC
G3DOG	OK1FF	VS2DW
GC8DO	ON4AY	VS6LN
GI3WUI	KG1AX	XE1PJ
GM3GJB	OZ2KK	XW8AI
GW3LJN	PAØFAB	YN1JW
HA5KBP	PJ5AA	YU3FS
HC4IM	PJ2ME	YV5HL
HC8LUX	PY2EW	ZC5AL
HE9LAC	PYØNE	ZE1JV
HP1LO	SM5AQB	ZK1BS
I1MV	SP6BY	KH6MG/ZK1
JA1ANG	TI2LA	ZK2AD
JZØHA	UA1AU	ZL1ABZ
W1AW	UAØKKB	ZL3JA
KB6BJ	UQ2AB	ZM6AS
KC4AF	VE8OJ	ZS1OU

SOME QUESTIONS AND ANSWERS

Why are all Gotham beams of the Yagi type, all metal, and grounded at the center? Answer: To get the maximum strength for the minimum weight, to get maximum efficiency, and to avoid the use of wood, tuning stubs, traps, or other substitute devices, all of which are undesirable and unnecessary. In addition, grounded beams are lightning-proof and protect your home.

How do Gotham beams gain compare with higher priced antennas? Answer: No beam, regardless of price, can give more gain, for a given boom size, than a Gotham beam. Obviously, the more elements, the more gain. Our gain figures are published in our literature, and are available, free, on request.

Why is the Gotham price so very low? Doesn't the low price mean a lack of quality? Answer: The Gotham price is low because we sell in quantities and make only a fair profit on each antenna. We do not add on a tremendous overhead and engineering charge. As for quality, we have always used the best materials, and every antenna is doubly inspected before shipment. Thousands of Gotham antennas are in use the world over.

What is the difference between the Standard and the DeLuxe beams? Answer: The Standard beams in the 6, 10, and 15 meter bands use 5/8" and 3/4" tubing elements; the DeLuxe models for these bands use 7/8" and 1" tubing. In the 20 meter beams, the Standard beams have a single boom, while the DeLuxe beams use twin booms. All 20 meter beams use full 12 foot booms. In the 20 meter beams and in the Twobanders and Tribanders, only 7/8" and 1" tubing are used.

Is it advantageous to use a Gotham Twobander or Tribander beam? Answer: Hundreds of these beams are in daily use. They are compromise beams, but by having each element a full half-wave, their gain figures are more than reasonably good. Of course a single three element beam on a single band will outperform a Tribander on that band, but the Tribander permits beam operation on three bands.

Do the Gotham verticals perform well on all bands? Answer: Yes, thousands of ham users attest to their efficiency on all bands from 6 to 160 meters. Reports of tremendous DX on low power are common.

Are mounts supplied with the vertical antenna? Answer: Yes, four mounting straps for side mounting are furnished with each vertical.

Are radials needed with a Gotham vertical? Answer: No, except a few rare locations. 99% of the installations are done without radials.

How much power can be used with a Gotham vertical? Answer: Anything up to the legal limit.

Is much space required for installing a vertical? Answer: No, only a few square inches are needed.

Can you give details on the loading coil used in the Gotham verticals? Answer: Yes, it is made for us by Barker and Williamson. It is 3" in diameter and exceptionally rugged. No other loading coil in the antenna industry has a higher Q.

Do you need a separate loading coil for each band? Answer: No, a V160 loading coil will cover 160, 80, 40, 20, 15, 10 and 6; a V80 loading coil will cover 80, 40, 20, 15, 10, and 6; a V40 loading coil will cover 40, 20, 15, 10, and 6 meters.

What antennas are best for a novice? Answer: The V80 vertical and the S153N beam are the most popular choices.

Why should a ham buy a Gotham antenna? Answer: The tremendous progress of the amateur radio art makes it imperative that hams graduate from the antiquated antennas of years past to a modern antenna system. We will be glad to send, free of charge, our technical literature on our 50 antennas, or you can order for immediate shipment.

73,
GOTHAM

FREE literature? YES
FREE specifications? YES
FREE beam gain calculator? YES

OR ALL THREE AND IMMEDIATE SHIPMENT IF YOU ORDER FROM THIS LIST OF 50 ANTENNAS

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST

1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TWO BANDER BEAMS

A full half-wave element is used on each band. No coils, traps, baluns, or stubs are used. No calculations or machining required. Everything comes ready for easy assembly and use. *Proven Gotham Value.*

6–10 TWO BANDER.....	☐	$29.95
10–15 TWO BANDER.....	☐	34.95
10–20 TWO BANDER.....	☐	36.95
15–20 TWO BANDER.....	☐	38.95

TRIBANDER

Do not confuse these full-size Tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

☐ 6-10-15 $39.95 ☐ 10-15-20 $49.95

2 METER BEAMS

Gotham makes only two different two meter beams, a six-element job and a twelve-element job. They are both Yagi beams, with all the elements in line on a twelve foot boom.

☐ Deluxe 6-Element 9.95 ☐ 12-El 16.95

6 METER BEAMS

New records are being made every day with Gotham six-meter beams. Give your rig a chance to show what it can do, with a Gotham six-meter beam.

☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95

10 METER BEAMS

Ten meter addicts claim that ten meters can't be beaten for all-around performance. Plenty of DX and skip contacts when the band is open, and 30-50 miles consistent ground wave when the band is shut down. Thousands of Gotham ten meter beams have been perking for years, working wonders for their owners, and attesting to the superior design and value of a Gotham beam.

☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95

New! Ruggedized Hi-Gain 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

☐ Beam #R6 (6 Meters, 4-El)....$38.95
☐ Beam #R10 (10 Meters, 4-El).. 40.95
☐ Beam #R15 (15 Meters, 3-El).. 49.95

15 METER BEAMS

Fifteen meters is the "sleeper" band. Don't be surprised if you put out a quick, quiet CQ and get a contact half-way around the world. Working the world with low power is a common occurrence on fifteen meters when you have a Gotham beam.

15 METER BEAMS

☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95

20 METER BEAMS

A beam is a necessity on twenty meters, to battle the QRM and to give your signal the added punch it needs to over-ride the high power boys. Hundreds and hundreds of twenty meter beams, working year after year, prove that there is no better value than a Gotham twenty meter beam.

☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

ALL-BAND VERTICAL ANTENNAS

You could work the whole world, and get fantastic reports, with a Gotham vertical and only 55 watts, like VP1SD.

You could work tremendous skip and DX, and be surprised at the way your Gotham vertical brings them in, as R. E. C. of Washington, D. C., found out.

You could have a simple, easy-to-install-and-operate vertical antenna, and switch from band to band, as thousands of Gotham customers have done.

☐ **V40 vertical for 40, 20, 15, 10, 6 meters. $14.95**
☐ **V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....$16.95**
☐ **V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....$18.95**

HOW TO ORDER. Send check or money order directly to Gotham. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

FREE! WITH EACH ANTENNA OR REQUEST FOR FREE BROCHURE, THE NEW GOTHAM BEAM CALCULATOR.

Name.....

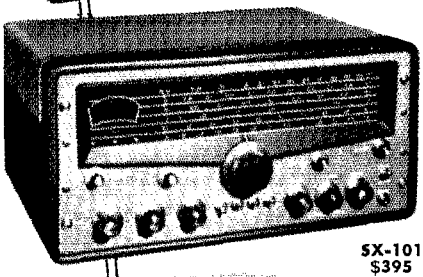
Address.....

City.....Zone.....State.....

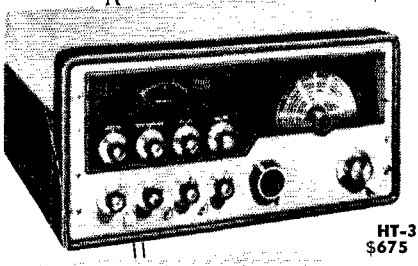
A RADIO SHACK EXCLUSIVE!

20% BONUS!

SX-100
$295 Net

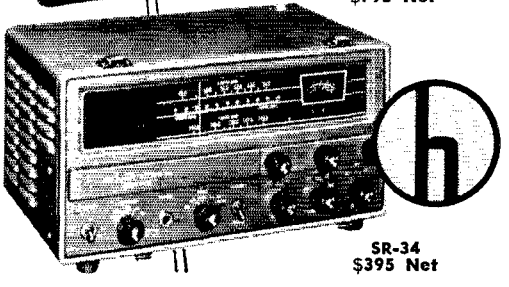


SX-101-IIIA
$395 Net



HT-32A
$675 Net

HT-33A
$795 Net



SR-34
$395 Net

YESSIR! WE'RE ADDING AN EXTRA 20% BONUS TRADE-IN ALLOWANCE (Above Our Usual Liberal Allowance) TOWARDS ONE OF THESE 5 GREAT

hallicrafters

OF YOUR CHOICE!

PLEASE ACT NOW! We can't keep this offer open for long and remember this . . . Radio Shack has the largest stock of ham equipment READY FOR IMMEDIATE SHIPMENT THE DAY WE RECEIVE YOUR ORDER!

SEE RADIO SHACK'S EASY-PAY-PLAN ON NEXT PAGE

HALLICRAFTERS AVAILABLE ON THIS OFFER

SX-100: Broadcast 538-1580 kc, three S/W 1720 kc-34 Mc. Double conversion superhet over entire frequency range.

SX-101-IIIA: 13 tubes, voltage regulator, rectifier. Powerline fuse. Covers 7 ham bands—160, 80, 40, 20, 15, 11-10 meters.

SR-34: 2 & 6 Meter receiver/transmitter. Complete fixed, portable or mobile. AM or CW. 49-54 & 143.5-148.2 mc range.

HT-32A: New amateur band, transmitter. S.S.B. AM or CW output on 80, 40, 20, 15, 11 and 10 meter bands.

HT-33A: Linear amplifier. Complete coverage of amateur bands: 80, 40, 20, 15 and 10 meters.

NEW IDEAS are born at HALLICRAFTERS In the limitless world of communications, new ideas are the real measure of leadership. In the past quarter-century, Hallicrafters engineers have brought to amateurs, novices and listeners more than 100 major communications designs. That is why Hallicrafters is a leader in this field . . . acknowledged by over a million satisfied users.

W1RVQ

Radio Shack's Al Coe Will Be There!

WHERE: At the New Ocean House in Swampscott, Mass.
WHEN: May 17, 1959.
WHY: To attend what promises to be the biggest and best Ham Convention of the year!

Al Coe

Radio Shack Manager of Amateur Sales

USE RADIO SHACK'S EASY-PAY-PLAN

EXAMPLE: (No Down Payment Required)

If the price of the equipment you want is **$200.00**
And the trade-in allowance on your equipment is **80.00**
The balance would be..... **120.00**
Payments are only $10 Monthly

IF YOU DO NOT TRADE IN A RECEIVER.
If Equipment price is $200..... Down Payment $20..... Monthly $13

Small monthly payments while you're enjoying the superb performance of your HALLICRAFTERS that has ALL the newest electronic features!

TRADE BY MAIL AT RADIO SHACK!

There is no other concern that has a larger stock of ham equipment than Radio Shack. With our tremendous mail order facilities our store is near to you as your door. You can trade with utmost confidence at Radio Shack, a favorite source of equipment for hams since 1923. Everything sold with a MONEY-BACK GUARANTEE!

OUR LARGE AMATEUR DEPARTMENT HAS OPENINGS FOR HAMS THAT HAVE SALES ABILITY. WRITE IN.

RADIO SHACK CORPORATION

STORES
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NEW MAIL ORDER HDQTRS.

Radio Shack's new mail order headquarters and electronic shopping center covers 80,000 square feet. An entirely new system fills your order with the greatest speed in the industry!

FILL IN AND SEND TODAY!

RADIO SHACK CORPORATION, Dept. 4D, 730 Commonwealth Ave., Boston 17, Mass.
Please quote me an allowance on my present equipment:

Model _____

I would like to trade for the following Hallicrafters

Model _____

Name _____

Address _____

City _____ Zone____ State _____

Station Activities

(Continued from page 88)

meets on 3615 kc. at 1900, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, LSN on 3970 kc. at 1600. Those making BPL are K2MES, W2RUF and K2SIL. Appointments: K2VAW as EC for Erie Co.; K2SDD as OBS.; K2JZM, W2RSL, K2UOV and W2EFX as OOs.. W2QNA was endorsed as OPS and K2EQB received an NYSPTEN certificate. W2ICE announces that the WNY Hamfest again will be held at the Doud Post in Rochester May 16. WA2DNK is the new secy. of ECEN. The North Chautauqua ARC elected K2ZRF pres.; K2SLW, vice-pres.; W2SB, secy.; W2CDX, treas. The Kenmore Senior High RC elected K2YJQ, pres.; W2TPC, vice-pres.; W2TAU, rec. secy.; K2CEK, corr. secy.; KN2OER, treas.; K2RHQ, program chmn. The ARATS elected W2DMI, pres.; K2JKL, vice-pres.; R. Hartman, secy. The SWNYVHFA elected K2OVB, pres.; W2EJO, vice-pres.; K2IAX, secy.; K2VAX, treas.; W2THG, publicist. The club meets the 3rd Sat. at 2000 in Machias Town Hall. K2DVC is converting to s.s.b. W2YLM continues to keep the Broome Co. AREC in fine shape with 35 members on 6 meters. K2ERQ is NCS. W2PTD has received WASM-2 and WPX awards. W2RQR joined K2HRB, W2ZOC, W2SOK and W2QNA on 220 MC. K2SSX has earned W-DEL and WWCNY awards. W2RUF published the NYS Net Bulletin for January. K2DOZ has a new Viking II and an HQ-140X. W2THG would like to correspond with other YLs or XYLs. K2QPC has the 829-B rig perking on 6 meters. W2RHQ made 96 contacts and 14 sections in the V.H.F. SS. K2JFV is living it up with a new KWM-1! W2QZI and K2ISP passed the Extra Class exam. W2QYT is on 40-meter c.w. with a 400-watt v.f.o. rig. He has been assigned to monitor NYS c.d. nets as to frequency, etc. W2ATO has a new NC-303. K2BFO is building an HBR-14. A new net is being formed by the North Country RC. It meets on 3935 kc. at 2300 Sun. Your SCM wishes to express his appreciation to the editors and organizations responsible for mailing him copies of their excellent publications, namely CARA's *QRM*, *The RARA Ray*, *RAGS Review* and the *RAWNY Bulletin*. Traffic: (Jan.) K2MES 605, K2SIL 546, W2RUF 508, W2EZB 158, K2SSX 141, K2AOQ 121, K2DIN 114, K2RTN 103, K2GWN 102, K2RYH 88, W2OE 77, W2PGA 75, K2TPV 74, K2JBX 73, K2QDT 49, K2RWV 45, K2TDV 43, K2EQB 36, W2RQF 36, K2MBU 34, W2BKC 31, W2COB 31, K2QNM 29, K2KQC 28, W2CXM 26, WA2ABL 22, K2YJN 16, K2EE 15, K2OBU 15, W2RJJ 13, K2BCL 8, K2RIT 6, K2HUK 4, K2MWS 4, K2RHQ 4, W2PVI 3, W2GBX 1. (Dec.) K2QHR 881, K2KQC 207, K2DXD 102, K2JBX 70, K2GQU 44, W2ZRC 25, K2DG 15, K2BCL 8, K2BLO 8, W2CXM 5.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA. RMs: GEG and NUG. PAMs: AER and TOC. The WPA Tfc. Net meets Mon. through Fri. at 1900 EST on 3585 kc. A new appointee is K3COT as OBS. New officers of the Warren County Emergency Radio Assn. are YZR, pres.; BOI, secy.-treas.; YZR, trustee. NQA, Warren County EC, reports the following amateurs demonstrated their capabilities and the benefits of preparedness during the Allegheny River flood at Warren on Jan. 22: BOI, BOZ, LFV, NQA, SQL, TOJ, YUL, YZR, YZS, ZFB and KN3HJN. New Novices around Johnstown are KN3HGJ and KN3HHB. KUN is busy handling traffic on WPA. SIJ finally got his rig working. WIQ is moving to Florida. LXU is doing a fine job on the traffic nets. New officers of the Carnegie Tech RC (NKI) are K2UUE, pres.; HXF, vice-pres.; HFP, chief op. NKI will be operating on 6 meters soon. ZWZ is working hard for DXCC. The Conemaugh Valley ARC spaghetti dinner was held Jan. 10 with Director Crossley, YA, as guest speaker. New officers of the Aliquippa Area Radio Amateur Assn. (K3DBE) are LRC, pres.; DDR, vice-pres.; KN3DDB, secy.; DNG, treas. Meetings are held the first Thurs. at Aliquippa C.D. Hq. at 1930. The Butler County Amateur Radio Assn. (UDX) is looking for a new meeting place. ZKR is building RC airplanes. Up Erie way: KNQ is conducting code and theory classes for the Radio Assn. of Erie; new licensees are K3CWB, K3HHD, K3HFL, K3BLX and BHJ; UQE was guest speaker at the 6-meter January meeting; VNB has been discharged from the Air Force. The Etna RC reports via the *Oscillator* that KZF is home recuperating; AER, our PAM, will be presented with an Honorary Lifetime membership in the Etna RC; KSJ is home from the hospital; K3DOO received his General Class license the day before Christmas. The Third, Fourth and Fifth Regions of the ARRL Natl. Traffic System, through the efforts of 4QDY, UE, 4SHJ and 4RLG, are editing "The *345 News*. The Steel City RC (KWH) reports through *Kilo Watt Harmonics* that KWH won the first prize

(Continued on page 106)

More "Workable Watts" per Dollar!

- New filtered keying circuit virtually eliminates key clicks.
- Improved VFO circuitry for greater stability.
- Tailored for more "power punch" in the voice frequency range.
- Improved shielding for TVI-protection and stability, eliminating RF feedback.

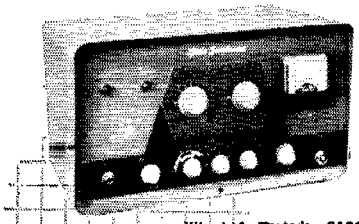
350w CW, 275w AM
450w (PEP) SSB - DSB
(Suppressed Carrier)
Wired & Tested: $495

Globe Champion 300A

Revised and tested to perfection, this 10-160M bandswitching transmitter is TVI-suppressed, filtered & bypassed. Built-in VFO. High level Class B modulation with new compression circuit. Pi-Net output, 48-300 ohms. Push-to-talk, antenna changeover relay, time sequence keying. Single knob bandswitching.

Sidebander DSB-100

100w PEP DSB, Suppressed Carrier



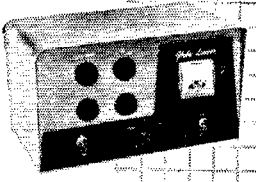
Wired & Tested: $139.95
In Kit Form: $119.95

Double Sideband, AM, CW at Low Cost

A complete Xmttr., self-contained, bandswitching 80-10M, 100w PEP DSB Suppressed Carrier, 40w AM, 50w CW. Min. 45db carrier suppression. 3-stage RF section allows straight through operation. Automatic balancing & floating grid circuit. Speech clipping & filtering for min. band width. Accessory socket on chassis rear apron. Use barefoot or as driver for higher power Xmttr. Covers most MARS and CAP frequencies.

Globe Linear LA-1

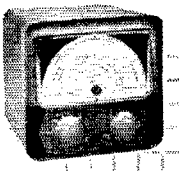
Grounded Grid, Class B or C



W/T: $124.50
Kit: $99.50

For 6-80M, complete with well-filtered power supply, 200w input AM Class B, 300w DC or 420w PEP input Class B linear SSB or DSB. 300w Class C for CW. Pi-Net 80-10M; 52 ohm Pi-Link coupled on 6M. Extensively TVI-protected. Meter for monitoring final plate currents also indicates approx. RF output voltage enabling operator to tune for max. efficiency and output.

Globe VFO 755A

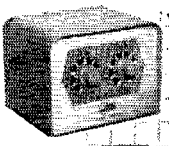


W/T: $59.95
Kit: $49.95

10-160M

Complete with well-filtered power supply with voltage regulation. Output on 40 & 160M. Vernier drive with shock absorbing features. 13:1 tuning ratio. Approx. 50 RF volts output. Temperature compensated for utmost stability for DSB, AM, CW.

Vox, Model 10



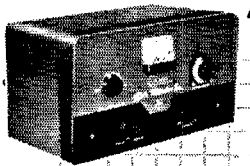
For voice operated control of the DSB-100 as well as the Champ and other similar transmitters. Extra contacts for auxiliary circuits. Simply plugs into rear of DSB-100.

QT-10

An anti-trip accessory for the VOX, Model 10.

VOX, Wired & Tested: $24.95
Kit: $19.95 QT-10: $9.95 Wired

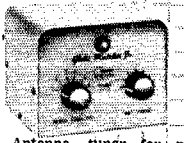
Globe Matcher Sr., AT-4



Wired: $79.50
Kit: $69.50

Antenna tuner with built-in SWR bridge for any Xmttr. with final RF input up to 600w, 80-10M. Fixed link coupling. Coax input, 2-wire balanced or unbalanced output. Built-in switch allows bypass of tuner circuits for coax input and output. Special calibrated panel meter for monitoring actual SWR. Vernier dial.

Globe Matcher Jr., AT-3

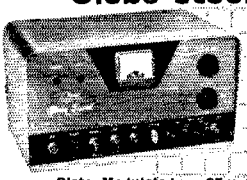


Wired: $15.95
Kit: $11.95

Antenna tuner for power input 100w CW, 75w fone, or less. Substantial amount of harmonic attenuation when properly tuned. Aids matching Xmttr. output to various antennas. Unbalanced output. Forward Look cabinet of steel for TVI-prevention.

Globe Scout 680A

for 6-80 Meters

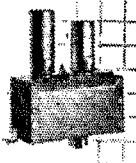


Wired: $119.95
Kit Form: $99.95

Plate Modulated — 65w CW, 50w AM

Completely bandwitching, self-contained, with built-in power supply. High level modulation maintained. TVI-shielded cabinet. Pi-Net output on 10-80M, Link-coupled on 6M, matching into low impedance beams. New type, wide view shielded meter. Kit contains all parts, tubes, pre-punched chassis and complete manual.

Power Booster PB-1



Wired: $21.95
Kit Form: $14.95

For straight through operation on 6M (Scout 680A or 680 only; plugs internally into Globe Scout). Approx. 50% more power output, while attenuating harmonics and further suppressing TVI.

Watch for Announcement of Globe's NEW **CITIZEN'S BAND TRANSCEIVER** *Coming Soon!*

Visit Your Favorite Distributor for Details!

OTHER TOP FLIGHT GLOBE PRODUCTS

Globe King, wired $795.00; Globe Chief, w/t: $74.50, kit: $59.95; Hi-Bander, w/t: $149.95, kit: $129.95; VFO 6-2, w/t: $59.95, kit: $49.95; Power Attenuator, w/t: $10.95; Plate Modulator UM-1, w/t: $49.95, kit: $32.50 (less tubes); Screen Modulator Kit, $11.95; 6-Meter Converter 6PMC, w/t: $29.95, kit: $21.95; Speech Booster, w/t: $24.95, kit: $15.95.

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3417 W. BROADWAY
COUNCIL BLUFFS, IOWA

maximum punch, power & popularity
IN THESE GREAT REMODELED

Globe Transmitters

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"the house the hams built!"

Get acquainted with World Radio! Discover, as so many other hams have, why it pays to do business with "the world's largest distributor of amateur radio equipment!" Our Reconditioning Department works full time to supply a ready-made ham market with "like factory new" used equipment. Because this demand is so great, we can most often offer you the very top trade-in prices on your present gear. Try us! We keep tremendous stocks of equipment from the nation's leading manufacturers at your disposal continually. Yet our turnover is so rapid, we can guarantee you the latest serial numbers always. Personalized attention to your questions and your orders and shipment from the center of the U.S. guarantees the sincerest, promptest service available anywhere. And since World Radio finances their own paper, we can offer the easiest E-Z Pay plan with up to 24 months to pay. Here are just a few of the Name Brands of Amateur Equipment in our stock:

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RME
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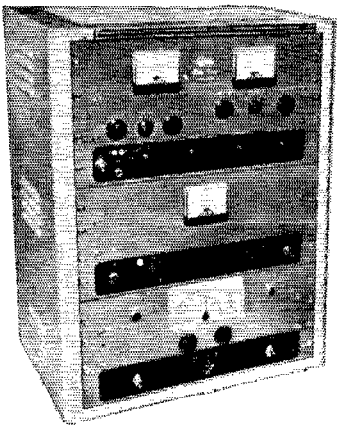
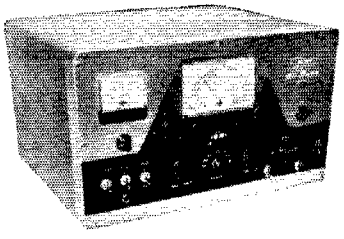
POWERHOUSE PUNCH with this KING of TRANSMITTERS



Bandswitching 10-160M, 540w on AM and CW, 700w max. watts on DSB or SSB (P.E.P.) with 15-20w external exciter. Housed in specially designed cabinet, 31x22x14¾", for TVI-suppresion. Built-in antenna relay, built-in VFO (may be used for Xtal. operation, also), separate power supply for modulator for better overall voltage regulation. Commercial type compression circuit keeps modulation at high level. Grid block keying for signal clarity. Pi-Net matches most antennas 52-300 ohms. Single Sideband input and operation with external exciter. Push-to-talk. A sturdy table-top transmitter for the amateur who wants the best.

$79.95 Down $35.78 per mo. or $795.00 ham net

the CHAMPION of HAMDOM



NEW!!

- ★ New filtered keying circuit virtually eliminates key clicks.
- ★ Improved VFO circuitry for greater stability.
- ★ Tailored for more "power punch" in the voice frequency range.
- ★ Improved shielding for TVI-protection and stability, eliminating RF feedback.

$49.50 Down $22.28 per mo.

or $495.00 ham net

Bandswitching 10-160M, 350w CW, 275w AM, 450w SSB (P.E.P.) with any 10w external exciter. Extensively TVI-suppressed, filtered and by-passed. High level class B modulation maintained without usual clipping distortion with new commercial type compression circuit. Pi-Net output circuit 52-300 ohms, built-in VFO, push-to-talk, antenna changeover relay, and improved time sequence keying. Final tubes air-cooled. Single knob bandswitching. Modern, advanced-look cabinet 12x21⅜x17".

"Mini-tribander... Maxi-Value!"

SAYS LEO I. MEYERSON, PRESIDENT, WØGFQ

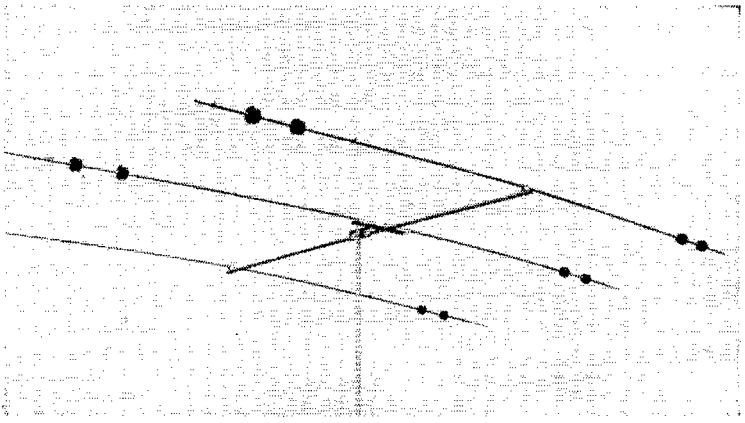
"After looking over the entire field, I believe this is one of the greatest values in Amateur Antennas!"

We carry the largest stocks of Hy-Gain gear in the country — over 400 antennas in stock!

Take Maximum Legal Power:—1 KW AM, 2,000w P.E.P.

As much as higher priced tribanders, more than 3 times the power handling capacities of others!

NO NEED TO LIMIT YOUR PRESENT or FUTURE POWER TO 300 WATTS!



- ★ **May be rotated by most heavy duty TV rotators**
- ★ **Carefully tuned for maximum gain & F/B ratio available in small size array**
- ★ **Hy-Gain guarantees as much or more gain as any other 2 and 3 element split dipole fed 3-band beams regardless of price**
- ★ **As large, but superior in construction to beams selling for $30 more**

  Boom is 1½" dia. by .065" wall thickness, hot dipped galvanized steel. Elements are 6061T6 high strength aluminum alloy. Telescoping sections of 1", ⅞", ¾". Heavily plated 10 Ga. steel channels attach all elements to boom and boom/mast with positive grip. High quality, galvanized and iridite treated hardware used throughout.
- ★ **Featuring the famous, light-weight insu-traps**

2-Element MINI-TRIBANDER

This Mini-Tribander weighs only 33.8 lbs.; is easily one-man installed in the shortest possible time . . . and nearly anywhere, with a turning radius of only 12' 11". Boom length 6 ft. Longest element 27 ft.

$49.95

3-Element MINI-TRIBANDER

The 3-Element Mini-Tribander is extremely lightweight, only 39.8 lbs. Turning radius 13'10"; may be installed nearly anywhere, yet boasts most of the features of the full-sized tribanders. Boom length 12 ft. Longest element 28 ft.

$69.95

LESS THAN 1½:1 SWR WITH 52 OHM COAX

Send for Brochure on Complete Line of Hy-Gain Antenna Products!

Dear Leo: Please send your ☐ FREE CATALOG and top trade-in offer for my present

_____ on a new ☐ King ☐ Champion!

Enclosed is my check (money order) for the ☐ 2-Element ☐ 3-Element Mini-Tribander! Please also send ☐ latest Reconditioned Equipment List.

NAME: _____

ADDRESS: _____

CITY & STATE: _____

trophy for the 6-meter portion of the SHBP&M Ground-Wave Contest; APN has a new Elmac PMR-7; OKU is on 10-meter s.s.b.; NKM has 223 countries confirmed; JQJ has a new mobile rig. RFX lost his tower and beam in the high windstorm. K3BUX was appointed Director of Education at the Washington County ARC. Traffic: (Jan.) W3LXU 403, KUN 162, WIQ 116, UHN 61, NUG 20, WRE 9, SIJ 6, TOC 6, JWZ 2, K3AJB 1, W3KBZ 1. (Dec.) W3EPM 30, PDY 20, GJY 11.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME. SEC: HOA. RM: PCQ. PAM: RYU. EC Cook County: HPG. Section Net: ILN, 3515 kc. Mon. through Sat. at 1900 CST. Reports from all the nets gave good accounts of the various group participation in the recent ice-storm emergency set-up. The combined Central and Midwest Division Convention has definitely been scheduled for the Aug. 22 and 23 week end at the Chase Hotel in St. Louis, Mo. The various committees have promised a diversified program for the meeting. HPG is making the rounds of the Chicago clubs in his new job as vice-director. K9JBK is now DXing with a new Globe Scout, while K9AMC is trying the same with a new BW kilowatt. PCQ reports that the traffic count for the ILN was 501 in 26 sessions for December and 245 messages in 24 sessions for January. CSW and the North Central Phone Net cleared 550 pieces of traffic during January. IDA and the 20-Meter S.S.B. Net handled 562 messages in 19 sessions during January. The new officers of RAMS (Chicago) are K9GTS, K9HAI, K9GVN, UML and K9GVD. The Hamfesters, also of the Windy City, elected ECY, K9IJC, STR, PBM, GVO, ESC, QKE, KLV and RAE to guide the club for the new year. The Starved Rock Radio Club celebrated the 25th anniversary of its ARRL affiliation with a dinner honoring the charter members. The League approved the applications of the National Trail Amateur Radio Club and Radio Amateur Society of Dupage County and declared them duly affiliated societies. New calls heard are K9QHZ, K9PFD, KN9QCJ, KN9KZU, K9QBM and K9KIL. In the recent ARRL Frequency Measuring Test JJN, PBI, HPG, K9HCP, FKC and NN were high for this section. KLD's new QTH is Alaska. New Novice calls in the Kankakee Area are KN9PRP, KN9PLC and KN9OSE. LYA has been appointed chairman of the V.H.F. Man of the Year Committee of the Midwest V.H.F. Club. K9AIT, KDK and ERU are the proud owners of new Pacemakers. JARS (Joliet) elected K9ATK, KPC and HMC as officers for the coming season. The Sangamon Valley Radio Club graduated 15 new Novices from its latest code class. K9MHF's transmitter has been heard in Springfield without any high voltage applied to the final. K9CYU is the new editor of *Ham Gab* replacing LNQ, who resigned because of other activities. Your SCM has been receiving several envelopes containing self-addressed envelopes for the return of QSLs. Please forward these to the QSL Bureau which is listed in almost every issue of *QST*. UYP is now s.s.b. with a Heath 10B and an Apache transmitter. Many EC appointments are now expiring and an endorsement for the next 12 months can be had by forwarding certificates to your SCM. Traffic: (Jan.) W9DO 804, K9MHW 299, W9FAW 212, K9ISP 127, W9SXL 126, MAK 122, K9GVD 102, W9USR 74, K9GDQ 64, W9CSW 50, K9CIL 40, ERH 31, W9YYG 28, K9JBK 26, GSR 15, W9FDL 14, KN9LOO 11, K9BTE 8, W9CZP 8, SKR 8, HPG 7, K9IXK 6, W9SZK 4, JJN 3, PRN 3. (Dec.) W9PCQ 384, K9CIL 61.

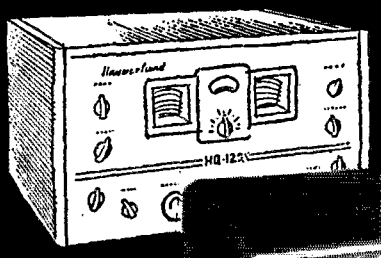
INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: SNQ. PAMs: BDG, BKJ, KOY and UXK. RMs: DGA, TT and VAY. Net skeds: IFN (a.m.), 0800 daily and 1800 M-F on 3910 kc.; ISN (s.s.b.), 1830 daily on 3920 kc.; QIN, 1900 daily and RFN 0700 Sun. on 3656 kc. K9ECW has been appointed EC for Randolph County. K9GEE is a new OBS. New club officers are as follows: Duneland ARA—OKR, pres.; CWG, vice-pres.; K9IRZ, secy.; K9ISA, treas. Elkhart ARC—GUX, pres.; DVE, vice-pres.; MLE, secy.-treas. Kokomo Radio Club—K9CFG, pres.; ALM, vice-pres.; K9MXG, secy.-treas.; DKR, dir. The Clark County ARC is a new ARRL affiliated club. Another affiliated club is the Winslow ARS, which holds meetings the 2nd and 4th Mon. of each month at 1900. K9AUE, GLL, JOZ, QWI and SVZ lost antennas and poles in the big storm. K9KBW has an FB signal with his new Valiant. LDL is adding a cascode front end to a pair of ARC-4s. EHZ and WTY are remodeling their shacks. K9AYI added an HQ-129 to his shack. K9DWK is running 400 watts to a 4-125A. K9JWJ gave talks to the high school science club and a local hobby club on ham radio. KLR worked Wyoming for state No. 41. The ISB members and friends held a dinner at Lebanon on Feb. 7. The attendance was 27. KOY reports ISN traffic as 147. IFN traffic reported by SWD was 462.

(Continued on page 108)

by **POPULAR DEMAND!**

a favorite comes back—

1947



1959

HAMMARLUND HQ-145

A streamlined, improved version of the world-famous HQ-129-X

The amateur fraternity asked for it — Hammarlund did it! From out of the past we took one of the all-time greats, applied improved, modern circuit techniques, and out came the HQ-145 . . .

This general-coverage receiver offers all the long-lasting features of the HQ-129-X, **plus** new features geared to today's reception requirements. The HQ-145 is a receiver with a future — proved by the HQ-129-X and its **lasting value.**

Take a few minutes — check the prices on used HQ-129-X receivers — compare with other receivers of the same vintage, and you'll see why the HQ-145 is truly your best buy in a general-coverage receiver.

and only

$269.00

Clock-Timer $10 *extra.*

WRITE FOR THE COMPLETE HQ-145 STORY . . .

Established 1910

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QIN traffic reported by VAY was 290. TT reports that RFN handled 67 messages. The only 6-meter net report this month was by K9GLL for IMO with a traffic count of 45. There is some interest in starting up a Novice traffic net probably on the 80-meter band. This would not be limited to Novices as we need some of the General Class gang to lead the way and help the newcomers. Anyone interested, please drop me a card or a message. The address is 823 North Bosart, Indianapolis. ETM, JOZ and NZZ made BPL. Traffic: (Jan.) W9JOZ 1092, NZZ 1058, ZYK 479, VAY 238, TT 221, ETM 186, K9AYI 143, W9JBQ 130, TQC 100, RTH 94, SWD 73, SNQ 66, MEK 64, KOY 62, DGA 58, EHZ 55, EGV 53, BDG 49, K9GBB 48, W9GJS 47, FJR 43, K9JKK 43, W9NTI 43, PMT 42, K9BSU 41, W9EJW 40, ZSL 34, DOK 30, QWI 30, CC 25, K9IXD 23, HMC 22, W9YYX 20, HUF 19, QR 19, ENU 15, MEU 13, IMU 11, NTR 9, BDP 8, K9AUE 6, JWJ 6, KBW 6, DWK 5, GFQ 5, W9DZC 4, VQP 4, UXK 3, QYQ 2, NH 1. (Dec.) W9FJR 46, ELE 10, OCC 8, WAU 7.

WISCONSIN—SCM, George Woida, W9KQB—SEC: YQH. PAM: NRP, Northern Wis. V.H.F. PAM: GFL, Southern Wis. V.H.F. PAM: K9IQO. RMs: K9AEQ, K9ELT and SAA. New appointees: GXD as EC Manitowoc County; UTV as OPS; K9ALP as OO Class III and IV. BPL certificates went to DYG and KN9LMQ. New officers of the Jefferson County Club are LUB, pres.; NAJ, vice-pres.; SCM, secy.-treas. For the Door County Club: UFY, pres.; K9CEF, vice-pres.; GJK, secy-treas. For the Four Lakes Club of Madison: K9AWH, pres.; SZR, vice-pres.; UTV, secy.; K9GSF, treas. The Racine Club is issuing a "Worked 99 Wis." certificate (W99W). For details, write QGR. The Waupaca Club is issuing a certificate for working all Wis. counties. For details write LTD. The Brown County Mobile Amateurs is setting up a weather warning net. K9BSH, a Milwaukee high school senior, passed exams for 1st class radiotelephone and 3rd-class radiotelegraph on one day and amateur Extra Class the following day. OO PJT now is with Airforce MARS. Talks and demonstrations on amateur radio were given to Scouts and the Rotary club by UTV. RM SAA reports the WSSN is now on a six-day-per week schedule, Mon. through Sat., on 3617 kc. A visit by the Milwaukee DX operators to the Madison DX group on Jan. 24 resulted in a very pleasant evening. Old-timer RH is recuperating from a heart attack. K9ALP received WAVE and WACAN certificates. New Novices in the Eau Claire Area include PYQ, PZH, QBB, QHP, QKG and QKH. GFL, OO Class I, had an average error in parts per million of 65.9 for three measurements in the Nov. '58 ARRL Frequency Measuring Test. DXer DYG is editor of the new DX column for *WIN NEWS*. Traffic: (Jan.) W9DYG 562, K9GDF 213, W9KQB 136, SAA 116, K9DAC 53, ELT 47, W9CBE 29, IKY 29, K9DTK 27, AEQ 26, DOL 23, GYQ 22, LMX 17, IQO 14, ALP 12, GSC 11, W9PJT 8, CXK 7, K9LXF 6, W9YT 6, CCO 5, GIL 5, K9CEF 4, W9MWQ 2, RKP 2. (Dec.) KN9LMQ 106, W9SIZ 7.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold A. Wengel, WØHVA—SEC: KØJLW. PAM: YCL. NCSs for the 75-Meter Phone Net are KØAZX, CNC, JLW, MBG, GRM and HVA, with YCL acting as alternate for all NCSs. The 75-Meter Phone Net reports 27 sessions for January with a total of 918 check-ins; the highest number 42, the lowest 14 and an average of 34. IHM reports the North Dakota 160-Meter Phone Net will meet weekdays on a frequency of 1980 at 2100 CST. JPW, while vacationing in Florida, kept a regular sked with KØJLW on 20 meters. ECX took his rig along to Bismarck and worked portable while serving in the legislature. Traffic: KØJLW 36, ITP 27, CNC 23, ADI 12, WØDNJ 12, KØATK 10, WØYCL 9, CAQ 8, KØGGL 8, KJR 8, WØIHM 6, OAB 6, KØJLU 5, AZX 4, OUD 4, IQJ 3, AJW 2, OLM 2, PLY 2, WØVMS 1.

SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM: Gerald F. Lee, ØYKY. SCM assistants: FKE and NEO. SECs: YOB and GDE. PAM: SCT. RM: KØBMQ. The S.D. Weather Net, which meets Mon. through Sat. at 12:15 P.M. CST on 7225 kc., had 26 sessions, QNI 437, high 23, low 9, average 16.8; QTC 426, high 24, low 9, average 16.4. The S.D. 40-Meter Phone Net, which meets Mon. through Sat. at 12:15 P.M. CST on 7225 kc., had 27 sessions, SCT 3, KØLXF 24; QNI 549, high 28, low 10, average 20.3; traffic 117, high 12, low 0, average 4.3; informals 84, high 9, low 0, average 3.11. The S.D. C W Net, which meets Mon., Wed. and Fri. at 7 P.M. CST on 3645 kc., had QNI 84, high 10, low 3, average 6.5; 3 formals, 8 informals. The S.D. 75-Meter Phone Net, which meets daily at 6:30 P.M. CST, Sun. 9:30 A.M. on 3870 kc., had 35 sessions, KØBQR 3, GWA 4, CTZ 2, KØDUR 4, EXX 5, YVF 5, SCT 12; QNI 1114, high 46, low 12, average 31.80; traffic 109, high 10, low 0, average

(Continued on page 110)

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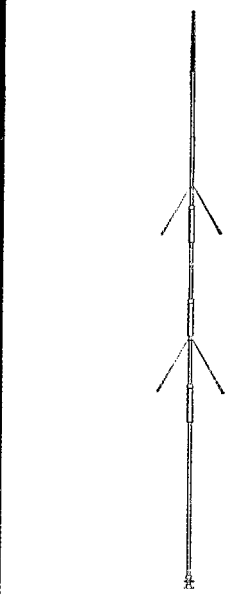

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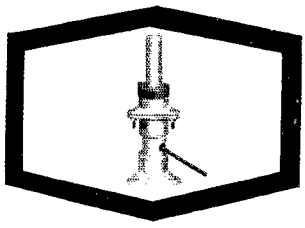

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3.114; informals 116, high 11, low 0, average 3.31. The Sioux Falls ARC again is publishing *FeedBack* on a non-regular basis. New officers of the Aberdeen Club, CQ ARC, are ZLB, pres.; HVZ, vice-pres.; and IEI, secy.-treas. The club address is 812 So. 9th St., Aberdeen. ELV, formerly with WNAX, Yankton, and more recently manager of KABR, Aberdeen, is now affiliated with the new TV station in Aberdeen, KXAB-TV. EXX lost a plate transformer in the kw. PMA and wife Donna, VTX, set up a demonstration station at the Crop-Show Jan. 26-27 in DeSmet. SDK mobiled in to see the set-up. KØIAX was home for a visit in Watertown from Chanute Field, Ill. OFS is operating portable at Mankato, Minn. KØGDS is operating portable at Rapid City. KØOXU visited RSP, YVF, IER and KØRRB, of the Redfield Area, visited the Huron Club in January. KØHHZ, Huron, underwent eye surgery at Mitchell. The Rapid City ARC is getting a new home in the fire station at the Sioux Sanatarium, Rapid City. Traffic: WØSCT 412, KØZWL 217, BMQ 152, WØDVB 75, KØDZG 29, AIE 28, BYV 28, WØCTZ 26, KØRKJ 23, INZ 20, WØZLB 20, KØLXH 16, KLR 15, PZI 10, WBW 10, MML 7, WØOFP 7, YVF 6, KØOMP 5, WØFLP 4, NNX 4, KØCWJ 3, DHA 3, DUR 3, DYR 3, IAW 3, MHF 2.

MINNESOTA—SCM, Robert M. Nelson, WØKLG—SEC: TUS. There is plenty of QSL-card-exchanging going on now, after the announcement of the "Worked All Minnesota" (WAM) award. This award is being presented by the St. Paul Radio Club. A certificate is issued to any amateur upon furnishing proof of QSO with fifty of Minnesota's counties. Endorsement stickers are issued for more. All contacts made after Jan. 1, 1957, count. For further details, contact KØIDV, KØAGR/mobile, KØEPT/mobile, KAI and UCF, of Redwood Falls, provided communications for fighting a fire at the Municipal Airport there. A new radio club has been organized at Pine City called the East Central Minnesota Amateur Radio Club. Its officers are KØCHV, pres.; ZQQ, vice-pres.; KØKKQ, secy.-treas.; AHV, act. mgr. The Stillwater High School Radio Club, FVG, is on the air with a new DX-100 transmitter. KØMGF is a new General Class licensee at Alexandria. KØDUO is majoring in Electrical Engineering at St. Thomas College in St. Paul. KØGCN received the Traffikers Club 2500 Award. MJN Net certificates have been issued to KØIZD, KØKYK, KØMIJ, KNØQLM and KNØQVB. The CD gang sure enjoyed the January CD Party. The phone section showed more activity and competition than has ever been displayed before in Minnesota amateur history. This being my last report as SCM, I wish to thank all of you Minnesota amateurs for your wonderful, kind support during my term, and especially to the ARRL appointees and radio club secretaries for their reports for this column. We are happy to learn that our new SCM is Lydia Johnson, KJZ, 1258 Van Buren, St. Paul 4, Minn. Traffic: (Jan.) KØIDV 337, ORK 201, KYK 133, WØTUS 112, KLG 79, KJZ 68, KØIZD 64, MIJ 64, EWC 38, GCN 38, MAH 38, WØOJK 35, KØEPT 34, WØUMX 33, KØMAK 30, WØOPX 29, ISJ 28, KFN 28, KØHJC 27, MGT 27, WØFGP 24, OJG 21, KYG 20, LST 19, QVR 18, VOA 18, PET 16, KØJCF 14, MPG 14, WØBUO 13, DQL 13, NNG 11, OET 11, WCD 11, WMA 10, HEN 8, RIQ 8, EMZ 7, OOU 7, KØQEK 7, WØQVQ 7, TCK 7, KØLBA 5, OIU 5, BDD 4, PML 3, WØSZJ 3. (Dec.) WØKJZ 223, EMZ 7.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: K5CIR. PAM: DYL. The club at Jonesboro has started its training program again. There have been more than a dozen prospective hams attending. Out of last year's class 11 of the boys passed the exams with most of them still active. KBO is now an Official Observer. RTTY is gaining more popularity in the State. The Razor Back Net is in session each Tue. at 2030 on 3624-kc. RTTY. YM, the club station at Fayetteville, is NCS. Reported as active in the net are SYM, FPD, VQD, K5GXH, GRT, FIM, GOP and LFQ. The hamfests held recently at Russellville and El Dorado were a success. 7BED/5 is now acting as RM for this section. John sure is doing a nice job with the nets. The Tri-State Teenagers Net has been started on 3975 kc. at 1600 Sun. A code and theory class has been started in Monticello by 6BMM/5. Bill invites all who are interested in getting a ticket to attend. 7BED/5 has a new HQ-170. The club at Fayetteville is rigging out the e.d. truck with emergency gear. Traffic: W7BED/5 117, K5HYB 99, HSJ 94, IPS 67, W5WZN 24, ZZY 15, UED 12, DYL 6.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—YU, the Tulane Radio Club, has modified its transmitter to run 480 watts and, with the addition of an s.s.b. exciter which has been ordered, will be running about a kw. input up to 15 meters. Novice exams were taken by three club members and passed. K5ESW has been off

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lately as he is building a new Heath Apache transmitter. ML, active on 144 Mc., is now located at Vivian. A new Novice is KN5TNF. K5SBF is now AF MARS. The Nitwits held a hamfest at Kilgore, Tex. K5JAA won the transmitter hunt. K5SJJ now has a GF-11 on mobile. The Jefferson ARC had a chicken dinner that was a grand success. CEZ seems to be the only ham in the section who is able to make BPL. The Baton Rouge ARC's new officers are K5IJH, pres.; K5DAC, vice-pres.; KN5SNC, secy. K5DMA is active on MARS and in the Gulf Coast Hurricane Net. K5ANN reports that K5JRK has been appointed Asst. EC for the Crowley Area. K5ABD and K5ANN are active on 10 meters since they put up new beams. K5KLA still is having trouble with his rig! W5WYN, net control for the Delta 75 Net which meets Sun., 7:30 A.M., 3905 kc., built up an Apache TX-1 transmitter and the SB-10 adapter to go with it. He is rebuilding the old 813 final to bandswitching to put some muscles on the TX-1. BV is on s.s.b. with a borrowed B&W adapter while his is at the factory being fixed. Recently your SCM had the pleasure of visiting Director BSR and PAM CEW. Traffic: W5CEZ 591, MXQ 160, K5KLC 20, DMA 16, W5EA 8, K5ANN 6.

MISSISSIPPI—SCM, J. Adrian Houston, sr., W5EHH—DEJ reports ham activity in Meridian at an all-time high. The club meets the 3rd Fri. night of each month. About 25 stations are very active on the air. The club net meets each Sun. on 3808 kc. at 1 P.M. with an average attendance of about 15. Civil defense work is the main project with the Meridian Club. DEJ worked 300 stations in 54 sections in the January CD Party for a score of 82,800. AMZ reports the Tupelo Club is very active with K5CHT, pres. EHX has a new triband beam. Working sideband are BX, FSE and K5AYA. The Tupelo Club has a new 200-watt emergency rig. The Tupelo ARC placed 3rd in the Delta Division 1958 Field Day Class A. The Cleveland Amateur Radio Club has set the 2nd Sun. in June for its hamfest, the place 5 miles north of Indianola on highway 49W at the Weber Place. The CARC is re-equipping its mobile emergency unit. The club has requested the call QQ. New appointments are K5IUE, EC Sunflower County; K5QNF OPS and ORS. Traffic: W5FPI 85, K5AUR 67, QNF 59, W5JHS 57, K5SQS 26, QNE 13, MFY 11, IHQ 9, HAR 6, W5TIR 3, VME 3.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—K4MEN reports reorganization of the U.T. Amateur Radio Society, ONO, with K4MEN, pres.; BTX, vice-pres.-treas.; AEG, secy. The club operates 40- through 15-meter c.w. with a kw. and 80- through 20-meter phone with 350 watts using an SX-99 receiver. The home rig of K4SGF is a DX-100 and an SX-99. OGG also is proud owner of a DX-100. K4JNK says his new equipment is a v.f.o. and electronic key. K4KYL reports that a low-pass filter eliminated a 6-meter signal in his receiver that was the result of a difference between a TV signal and a THP transmitter. AOY reports that the Johnson City Club is installing equipment in the club trailer. A note from F7CV/W4ZJY says that he has applied for WAC and is looking for W7 for WAS. The Oak Ridge ROC tells us that SGI is s.s.b.ing with a 32-S1 and that K4LTA has lost a carrier and a sideband. VNE is keeping daily skeds with ZS1O on 7, 14, 21 and 28 Mc. for propagation studies. PVD says that his DX record now stands at 155/150. TDZ reports his major activity is a little of everything. YRM has a new HQ-110. EIN has completed a relocation of his shack and we welcome him back to TN. K4LTA reports s.s.b. operation with an SB-10 and a Viking linear and his DX total is now 172/148. TZG reports he operates 300 watts phone, 500 watts c.w., and s.s.b. on a Globe linear. Traffic: W5RCF 782, W4OGG 210, K4JNK 73, W4VJ 61, IGW 46, NHT 41, CXY 36, TZG 26, UIO 23, DMS 22, PQP 20, K4LTA 18, OUK 14, W4UVL 12, EIN 11, TYV 10, JVM 9, PAH 8, WGJ 7, PVD 5, VNE 5, K4KYL 4, W4TDZ 4, YRM 1.

GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thomason, W4SUD—Asst. SCM: W. C. Alcock, 4CDA. SEC: BAZ. RMs: K4AIS and LHQ. PAMs: GTC and K4MMW. S.S.B. PAMs: NGN and K4HBF. V.H.F. PAM: K4LOA. K4UCS, assisted by VJV and SUD, moved his s.s.b. station on location of the Owensboro Scout-A-Rama and invited the public to send ARRL text messages. A large volume of traffic was placed on our section and regional nets without confusion or overload. This operation was a Simulated Emergency Test in every sense, and pointed out several weak points in our communication emergency preparedness. Others are urged to initiate similar projects. Comments are invited on the Kentucky QSO Party. Another is planned for June. K4BUB has not missed a single monthly report since he was appointed OO a year ago. Thanks, Carl, for the service you have given hundreds of amateurs. Inquiries about the OO appointment

(Continued on page 114)

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are invited. New KYN stations: K4QYP, PPK and MIQ. New KPN members: W8LKA, K4LSB, LMS, MPV, QYP, ZML and TXJ. OGY is leaving Kentucky. The Louisville Hamfest will be held at Parkway Field Aug. 2. K4IFB is on with an Apache. Traffic: K4AIS 264, W4BAZ 127, SUD 121, K4SBL 117, W4GTC 112, K4ZML 100, IFB 94, W4JSH 70, HTD 69, RHZ 68, CDA 61, K4CSH 54, JOP 52, W4OGY 48, K4MMW 46, QCQ 43, W4KKG 39, K4PNA 39, W4YYI 37, K4WBG 36, QHZ 33, ECJ 18, W4SZB 18, K4HCK 17, W4NGN 17, K4SBZ 15, W4HOJ 13, K4KIS 12, VTY 12, W4ELG 11, K4KYZ 7, EMR 4, W4NGZ 3, K4QYP 3, HOE 2.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—SEC: YAN. RMs: FWQ, OCC and W8QQO. The Dayton Hamvention is scheduled for May 9 and I have been asked to remind the Michigang that they are planning to award the "Outstanding Ham of the Year" choice again this year. Some Michigan, Ohio, Indiana, Kentucky or West Virginia amateur will receive this award for the greatest public service rendered. Your nomination should be mailed to DHJ as soon as possible. SDP (ex-W8PUV) sent his greetings to the Michigang from Great Falls, Mont. The new officers of the Detroit ARA are JKD, pres.; RGB, vice-pres.; MOB, rec. secy.; YJY, treas.; and LEU corr. secy. The Kalamazoo ARC has elected K8AJD, pres.; BQR, vice-pres.; K8DJH, secy.-treas. KL7CRE (ex-W8FGB) has just returned from his civilian assignment in Alaska. While up there, Dean acted as a very convenient relay point for the Berrien County AREC Net when 29.610 kc. would not cover the whole county. During his trip home, via the Alcan Highway, he was in almost constant contact with the local gang. Shortage of further news allows the following. Since February, 1955, it has been my pleasure to whack out these reports and to attend to the other duties as your SCM. My second term has come to an end and I am not a candidate for reelection. It has been an honor to serve as the SCM for the Michigan section and doubly so when asked to serve a second term. My associations and new friendships generated during this period have been enjoyable, helpful, and—I hope—lasting. I owe much to our mutual hobby and feel that in serving as your SCM I have been able to repay part of that debt. Next month's report will be my last and will serve to introduce your new SCM. Traffic: (Jan.) W8OCC 265, QQO 204, FWQ 132, YAN 120, K8NAW 114, W8JKX 104, NOH 56, FX 55, WXO 51, K8KVV 49, IYN 43, AEM 36, W8TBP 30, ILP 27, SCW 22, SWF 22, K8EXE 17, W8PXA 16, AUD 13, RAE 11, K8ABW 10, W8QIX 6, DSE 4, EGI 4, HKT 4, ALG 3, FOV 2, WVL 1. (Dec.) W8NUL 289, K8KVV 34.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RMs: DAE and VTP. PAMs: HPP, HUX and HZJ. The Stark County ARC was organized in Canton with K8DHJ, pres.; K8GVV, secy.-treas.; and six others present. New appointments are K8KTK and K8ITO as OESs; K8BXT, K8EIID and W8NTZ as OOs; K8HVT and K8JIX as ORSs. The Dayton Hamvention will be held May 9. Again amateurs in Ohio, West Virginia, Kentucky, Indiana and Michigan are asked to nominate an outstanding amateur in these states, with the award to be presented at the Hamvention. Send your nominations to D. L. Marquette, W8DHJ, 4209 N. Hyland Drive or P.O. Box 44, Dayton, Ohio. The Massillon ARC's 1959 officers are NP, pres.; FSM, vice-pres.; K8EJN, secy.; FRB, treas.; and K8EKG, act. mgr. The Triangle ARC's 1959 officers are K8EID, pres.; KN8JKB, vice-pres.; K8HGY, secy.; KN8JCZ, treas.; and RZ, act. mgr. West Park Radiops' 1959 officers are YPT, pres.; MWE, vice-pres.; K8MVA, secy.-treas.; AJH and K8ABA, trustees. The Seneca RC showed a movie "Gateway To The Mind." DSX tells us that 8RN is now on a 7-day schedule. DSX has another baby boy. Springfield ARC's *Q-5* tells us that K8DEO now uses an HQ-150, LAB broke his arm ice skating, IMP and K8BPY received their WAS certificates, KN8KLD received an HQ-100 for Christmas and Santa brought BFP a mike. Toledo's *Shack Gossip* names GDE as its "Ham of the Month," INR underwent surgery, K8DOF has his first son, JKR worked WAC on s.s.b. The Warren ARA's 1959 officers are K8JUZ, pres.; W8KCE, vice-pres.; PTQ, rec. secy.-treas.; K8GAS, corr. secy.; KGD act. mgr.; K8BXT, W8KJE and K8JUZ, trustees. K8GAS has a new HQ-170, HSP has a new Viking 500, FWL has a new 32S-1, RQL has a new beam, OTI built a receiver, RBM has a new Apache, KN8LCX has a new NC-300, K8HQN returned from Alaska, AQW has a new Valiant and an SZ-96, PPH has a new Drake receiver. Tusco RC's *News Bulletin* informs us that K8JPA has a new Valiant. The Kenton RC elected KNK, pres.; K8HSU, vice-pres.; Morris Johnson, secy.; K8HTH, treas.; and K8HRX, act. mgr. KN8IJH is in the Air Force. AL received WAOC No. 10. The Cleveland V.H.F. Club's officers are K8GJW, pres.; K8KNJ, vice-pres.; SQU, secy-treas. The Henry County RC's officers are UPL, pres.; SMW, vice-pres.; QCL, secy.-

(Continued on page 116)


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treas.; K8CRF, act. mgr.; K8MHO, pub. mgr. The Ohio Emergency Net immediately went into operation during the recent floods with HZJ, CTZ, EEQ, LGR, TGJ, SYD, SFW and SGT as net controls and the following taking part: AAU, AJW, AKW/1, AOC, AOX, AXR, AYR, BLS, BQV, BTW, BXD, BYL, BYT, BZW, CFX, CGT, CRS, CSN, DDW, DLT, DMM, DNQ/8, EDP, EJX, EKI, EOR, FCW, FEM/8, FFK, FNI, FPZ, FTR, FVW, FWC, HHK, HQK, HTA, HWX, HXG, HXQ, HYJ, IAJ, IGW, IHG, ILE, IYC, IZQ, JAP, JHJ, JID, JIO, JLC, JML, JNS, JUM, KKD, KMK, LER, LFB, LGK, LLY/8, LT, LWJ, LZE, MDL, MEI, NBK, NIE, NLP, NTP, NTZ, NXF, OAC, OZY, PBX, PLQ, PLV, PSX/8, PZS, QA, QEF, QLJ, QQ, RCG, RTX, RXM, SFW, SPR, STR, TIX, TSU, TV, UPB, UPI, UYJ, VTP, VUS, VZ, WBH, WJ, WSY, WXW, WYS, YPH, ZCQ, ZXU, ZXW, K8's: AAG, AXU, AYJ, BIT, BNL, BXG, BYP, COJ, DHG, DHJ, DID, DJM, EDP, EEB, EHY, EQC, GET, GRK, HDO, HEJ, HET, HKR, HRX, IHQ, IJW/8, JBM, JPA, JSQ, JZZ, KEB, LFV, MHO, MIY, MJC, MSI, MSJ and civil defense stations AOD/8, SGT, SHZ, K8EEN and the 5th Area station. UPH, GXB, SYD and DAE made BPL in January. JJM joined Silent Keys. Traffic: (Jan.) W8UPH 1468, GKB 532, SYD 504, DAE 283, IBX 144, K8DHJ 124, W8AL 111, OPU 85, K8FDK 82, W8YGR 60, IFX 49, SZU 40, HZJ 33, LT 32, ZAU 26, BEW 22, K8HVT 20, W8LGR 20, LZE 18, EEQ 17, GQD 17, LMB 16, BZX 13, EPJ 12, MXO 12, QIE 12, K8HUY 10, JZZ 10, W8RO 10, STR 9, PBX 8, K8HDO 7, W8PXX 7, SMW 6, WE 6, K8EKG 4, W8STF 4, EAJ 2, K8GVV 2, W8HPP 2, QCU 2, WYS 2, BUM 1, K8MSI 1. (Dec.) K8DTZ 56, W8PHX 8.

SEVENTH ANNUAL OHIO INTRASTATE QSO PARTY

April 11 and 12

The Ohio Council of Amateur Radio Clubs will sponsor a QSO Party, open to all Ohio amateurs, which will be held from 6:00 P.M. EST Saturday, April 11, until 6:00 P.M. EST Sunday, April 12. All Ohio amateurs may take part. In one county, ten contacts *only*, phone or c.w., may be counted.

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 calls of stations worked, time, date, and the county in which the station is located. Operation near the following frequencies is recommended: 3550, 3740, 3860, 7100 and 7250 kc. On the other bands, take your pick. The call "CQ Ohio" should be used on both phone and c.w. A cup and four appropriate certificates will be awarded to the highest scoring stations. Certificates will also be awarded to Novices, the number of certificates contingent upon the degree of activity.

All contest logs must be postmarked no later than May 1, 1959, and should be sent to the contest manager, Hamlin King, W8EQN, 353 S. Arlington Ave., Springfield, Ohio.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W2KGC. RM: W2PHX. PAMs: W2IJG and W2NOC. Section nets: NYS on 3615 kc. at 1900; NYSPTEN on 3925 kc. at 1800; IPN on 3980 kc. at 1530; ESS on 3590 kc. at 1800; ENY (emerg.) on 29,490 and 145.35 Mc. Thurs. and Fri. at 2100; MHT (Novice) on 3716 kc. Sat. at 1300; LSS on 3701 kc. Mon., Wed., Fri. at 1600. New appointments: K2VTW and K2TEZ as ORS. Endorsed: W2AWF, W2EHZ and W2ZTZ as ECs; K2YTD as ORS; W2LWI as OES; W2CYW and W2DIN as OOs. The new RO for Ulster County is K2YIF. The NYS reports 5590 messages handled in 356 sessions during 1958. W2ATA received an attendance award on NYS and K2UTV honorable mention. Congrats. WV2BLX is a new station in Lake Mohegan. W2GM heads up the Albany Club this year. RM W2PHX is on the air from a new QTH in New City, N. Y. K2CRB is on 6 meters with a new tower and cathode modulation. The Westchester Club meets the last Thurs. of the month at County Center in White Plains. K2PIC received the "Worked all Conn." Award from the Jaycees. A new General Class licensee is WA2AKK. W1LVQ, from ARRL, was speaker at the Schenectady Club in January. Also orating was your SCM on traffic at the Albany Club. The *ESS-ZED News-*

(Continued on page 118)

Another Gonset advance brings added performance and value

new 6 METER fixed station COMMUNICATOR

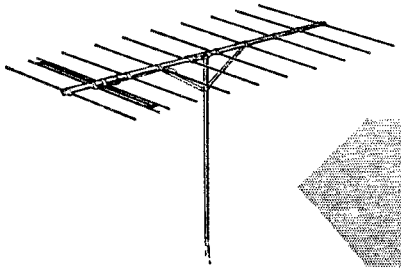
- Coverage 50-54 mcs.
- Complete 6 meter station...50 watts input..
- Type 6146 tube with Pi Network output...
- Highly stable, calibrated VFO with spotting switch to aid tuning...
- Highly selective, sensitive receiver...
- Adjustable squelch...noise limiter... "S" meter...panel mounted loudspeaker
- Heavy duty 115V AC power supply built in

Now...Model G-50, a highly compact, beautifully designed unit, adds materially to the pleasure of local contacts...to the thrill and excitement of 6 meter DX.

Everything's in one cabinet: 50 watt transmitter with pi-network and calibrated VFO (or optional xtal)...sensitive, selective communications receiver...AC power supply. All elements are completely integrated, operate perfectly together. This is Gonset's exclusive "packaging" concept...eliminates extra cost of several individual units...gives you excellent performance, exceptional value.

Simple, straightforward in operation and adjustment, G-50 will put a crisp 6 meter signal with real authority on the air in little more than the time required for connection of antenna and power. This is the sure, easy, inexpensive way to get on 6 meters. G-50, at your dealer soon. Amateur Net $319.50

Model No. 3221



GONSET'S NEW 10 ELEMENT, 6 METER YAGI

Gives more than 12 db forward gain...23 db minimum FBR...tripole driven element provides excellent match...usable frequency range, 50-54 mcs....husky 16 foot boom...light but balanced and rigid construction...no sag or droop...rotated by any heavy-duty TV rotator...makes 50 watts approach a KW...

Model 3282...net 27.50.

GONSET

GONSET DIVISION OF YOUNG SPRING & WIRE CORPORATION
801 SOUTH MAIN STREET, BURBANK, CALIF.

letter is the title of the monthly publication of the RPI Club, W2SZ. The NYSPTEN reports 17,143 stations handling 5745 pieces of traffic during 1958. W2GTC and K2QJL are net controls on ESS. Congrats to K2UTV on making BPL in January. Traffic: (Jan.) K2UTV 661, K2YZI 275, K2LKI 138, K2TEZ 122, K2UYK 120, W2EFU 92, W2ATA 58, K2AYB 55, K2VTW 47, K2MBU 34, K2OXS 25, K2VCZ 18, K2BIO 17, K2UXY 14, W2FVP 11, W2ZBS 11, W2GTC 10, K2CKG 8, WV2AKK 6. (Dec.) K2VTW 44, K2GKK/2 12.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2VDT. PAM: W2UGF. V.H.F. PAM: K2EQH. Section nets: NLI, 3630 kc. nightly at 1930 EST and Sat. and Sun. at 1915 EST. NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. NYC-LI AREC, 3908 kc. Sun. at 1730 EST. V.H.F. Traffic Net, 145.8 Mc. Tue. through Sun. at 2000 EST. BPL cards were earned by W2KEB, W2VDT and W8AXX/2, the latter two on originations plus deliveries. K2QBW very deservedly was awarded the A-1 and 2RN certificates. W2VDT reports that NLI could use additional coverage throughout the section, particularly in Suffolk, Brooklyn and Manhattan. How about it? Join the traffic gang on 3630 kc. K2KXT built a keyer unit to help his traffic break-in operation. K2VCO has a new Navigator and plans a high-power final. W2UGF is operating on 75-meter s.s.b. W2HQL/2 is heard keeping skeds from his new location in Poughkeepsie. New officers of the Radio Club of Brooklyn are W2CCD/W2KW, pres.; K2IWC, vice-pres.; K2EIB, 2nd vice-pres.; K2JFL, secy.; W2AAZ, treas.; W2BKP, W2BN, W2MTD, W2OEJ and W2PF, directors. K2AAS is manager of the All Service Net, 7270 kc. Sun. at 1300 EST. W2LGK has scheduled a Queens AREC get-together at the Tu-Boro RC on Apr. 10. Several stations lost their antennas in the recent high winds, including K2TAZ/2, the Manhasset C.D., K2VIX, W2GXR and your SCM, whose 20-meter Gonset bow-tie came down. The 6-Meter Brooklyn AREC Net meets Wed. at 2030 EST on 50.25 Mc. with K2UMS as EC. K2MEM is adding VOX to his a.m. rig. A new HQ-110 is in use at K2TWZ. K2VIX reports the Eastern Seaboard 6-Meter S.S.B. Net is active on Sun. at 1100 EST on 50.287 Mc. with W2SZE as control. W2OTC put up a two-element 40-meter beam fixed on Europe. K2LIE added a 100-kc. calibrator. YL Jane, W2PWI, keeps activity humming on 28 Mc. The station at K2DDK now consists of a 75A-4 and a Johnson Ranger and Courier. A new NC-300 is in use at K2IBJ. New jr. operators were welcomed at K2IDB and W2TUK—the third for each. WA2BQK is using a DX-20 and a BC-342J. K2UBG is modulating his Adventurer with a pair of 6L6s. W2JGV is operating from Putney, Vt., under a club call, W1ZWP. K2GLX passed his General Class exam and is active on 6 and 15 meters. Officers of the Five Towns RC are W2GXR, pres.; K2VIX, vice-pres.; W2FEI, treas.; and R. Laurie, secy. K2HZC and K2LUR moved to Wantagh. Please note page 6 of this *QST* for your SCM's new address. The new location at Dix Hills offers a 300-ft. elevation for v.h.f. and an acre for the h.f. antennas. Hope to BCNU with a good signal for a change. Traffic: (Jan.) W2KEB 3486, K2QBW 368, W2VDT 362, K2KXT 108, W2DSC 103, K2IRS 68, K2UBG 68, K2VCO 57, W2GP 53, W2EW 45, W2UGF 40, W2DUS 31, K2LYS 31, K2BH 28, W2PF 25, W2AEE 18, K2AAS 15, W2LGK 14, K2UAL 11, K2DEM 10, K2UMS 10, W2EC 9, K2MEM 9, W2IIU 7, K2MIG 6, W2OME 4, K2TWZ 3, W2VSU 3, WA2BQK 2, W2MDM 2 K2VDR 2, K2VIX 2. (Dec.) W2VDT 495, W8AXX/2 143, K2UBG 27, W2IVS 2.

NORTHERN NEW JERSEY—SCM, Edward Hart, jr., W2ZVW—SEC: W2IIN. PAM: K2KVR. RMs: W2ADE and W2RXL. The New Jersey Net (NJN) meets on 3695 kc. daily at 1900, W2RXL Mgr. NJN reports 31 sessions and an attendance of 502 with 271 messages handled. The New Jersey Slow Speed Net (NJSS), 3748 kc. Mon.-Fri. at 1800, had 22 sessions and an attendance of 52 with 28 messages handled. K2UBW received the Conn. Award. K2UKQ took traffic from KZ5MN and KC4USH. W2GCV is using a Valiant and a Matchstick vertical. W2LRO is working on a 2-meter rig. K2ZSQ is all tied up with Channel A and is putting out an FB bulletin. W2RZO has a new NC-303. W2EWZ is now a member of the Old Timers Club. K2EQP is on MARS most of the time. K2MIFF sent 700 OO reports. W2DRV is working nights. K2PBP has a new 6-meter rig. W2CFB has a BW 5100B. K2VLU is a new ORS. K2JTC received WANJ. K2KVR is getting more traffic. W2OPB also is a new ORS. K2MFX had antenna trouble. W2ADE made 457 contacts in the V.H.F. SS. Ex-W2UZN is now WA6CLT. W2NIY had a visit from K1BXE. K2GIF is building a 600-watt final. W2CVW has made 7400 contacts since 1949. W2BVE is now prexy of the Rutgers U. ARC. K2VVL has a tape recorder on the receiver. W2GVU will retire from the Army in May. K2AGJ, a new ORS is secretary of the Kessler Amateur Radio Club. K2AHV is president. The Montclair Radio

(Continued on page 120)

Association now is affiliated with ARRL. New officers of the Ridgewood Amateur Radio Club are W2MQF, pres.; W2LAN, vice-pres.; K2ZZF, secy.; K2ZJF, treas. K2UMW has a new ten-element beam on 2 meters. K2GHP reports fine c.d. work is being done by K2IPR in Monmouth County. Your SCM needs volunteers for the job of EC in Hunterdon, Somerset, Passaic, Morris and Sussex Counties. Present ECs are: Union—W2HXP, W2IBH, K2DN, K2KGJ. Hudson—W2VDE. Monmouth—W2SJI, W2NDU, W2HKY. Essex—W2JGP, W2JYH, W2COT. Somerset—W2GUZ. Bergen—W2VCZ, W2ASY, W2UZC, W2NOM, W2DMJ, W2BZP, W2FMP. Middlesex—W2CWK, W2HIA. Traffic: (Jan.) K2VAB 168, K2ZHK, 151, W2CQB 116, W2ZVW 94, W2RXL 92, K2EQP 52, K2VVL 52, W2EBG 46, K2VNL 44, K2MFF 39, W2OPB 39, W2ADE 34, W2BVE 27, K2VAC 26, K2KVR 25, W2KFR 20, W2ANG 17, W2RZO 17, W2BRC 13, K2VNK 13, K2AGJ 12. W2CVW 12, W2DRV 10, W2OXL 10, K2MFX 8, W2RON 8, W2CFB 6, W2CJX 6, W2EWZ 5, K2VLU 5, K2UKQ 4, K2ZSQ 4, W2NIY 2. (Dec.) W2DRV 36, W2CFB 18, K2KVR 5.

MIDWEST DIVISION

IOWA—Russell B. Marquis, WØBDR—New officers for the Fairfield High School Club are KØKEC, pres.; IQV, vice-pres.; BRE, secy.-treas.; IWF, act. mgr., with DIA and FKA as assistants. Sioux City Club officers are BQG, pres.; MHC, vice-pres.; KØMMS, secy.; QII, treas.; ILL, sgt. at arms. Newton Club officers: FNR, pres.; KØDGX, vice-pres.; ETX, secy.-treas.; CSD, act. mgr. Fort Dodge Club officers: KSP, pres.; NGS, secy.; SNL, vice-pres. and treas.; QHV, LJD and ZKD, directors. Officers of the Tube & Shutter Club of Cresco are KNØMYU, pres.; KØENM, vice-pres. and treas.; GEY, secy. New appointments: QVZ as OO and KØCIG as U.H.F. PAM. Endorsements: KØAZJ as OO, AAH as EC and ORS, CYF and GXQ as ORSs. KØDON is the newest TLCN member. KØGOQ is now 4th alternate NCS for the 75-Meter Phone Net. BDR visited the Council Bluffs Club. KNØSIJ, SJB and SJO are new Novices in Ames. QKF received his Technician Class ticket. KØQHM and QWM are new General Class licensees. EXN and QKF are publishing the *ItF Forum*, devoted to the advancement of amateur radio in Story County. Traffic: (Jan.) WØSCA 1781, BDR 1315, LGG 1228, PZO 977, LCX 701, GXQ 277. KØCLS 151, EXN 89, CYF 63, WØBLH 62, KØBLJ 53, CLI 49, WØQVA 48, SLC 45, VWF 45, KØMMZ 43, APL 39, WØBTX 37, NGS 36, KØQKF 31, RZO 28, WØLSF 24, KØGXP 23, DON 21, WØNTB 20, GQ 16, COD 15, NYX 14, UTD 14, VQX 14, KØAGJ 12, MFX 12, GBB 11, WØYDV 11, KØGHH 10, WØUHO 10, JPJ 9, PTL 9, AYD 8, KØBRE 8, WØIII 8, KØJGM 8, KAQ 8, BPR 7, WØBQJ 7, FDM 7, KØGOT 7, HBD 7, GOQ 6, WØHTP 6, ADB 5, RQA 5, KØIHC 4, JTL 4, LBF 4, WØFMZ 3, KØKBX 3. (Dec.) WØBLH 77, JDV 9, RQA 4, AYD 2.

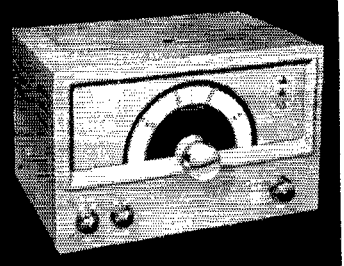
KANSAS—SCM, Raymond E. Baker, WØFNS—SEC: IFR. RM: QGG. PAM: LEW. V.H.F. PAM: HAJ. Appointments: KØIZM EC Zone 11, KØMIZ EC Zone 22, KØBXF EC Zone 5. LNZ EC Zone 16, KØEWW EC Zone 18, VBQ EC Zone 4, TTG EC Zone 3; ABJ as ORS. Endorsements: KØBIX as ORS, KSY as ORS, TTG as OPS. WØRJF has a new HT-32 and an SX-101. ABJ has a new tube keyer. UWN, manager of HB Net, has a new Globe Champ. KØKMZ conducts code classes at the LaBette County ARC's meetings. KØIQA is working choice DX on 40 meters. KØIZM is getting emergency plans going. KØMIZ takes over EC Zone 22 where we have never had an EC. SEC IFR had a good drill with his AREC blizzard conditions prevailing with a total of 54 present, including 8 ECs and control stations IFR. KØIHA, VZM and KØJLY. The Lawrence Amateur Radio Club's new officers are NSB, pres.; KØEDZ, secy.; KØMFI, treas.; KØBIX, act. mgr. The club is formulating plans to handle emergency work on 6 meters to avoid static conditions in the tornado season. The Wichita meeting called by KØJWT was very successful; also we enjoyed the Dodge City Boot Hill Club meeting called by QMG. We take this opportunity to thank ZJB for his fine work as V.H.F. PAM; we know HAJ also will do a splendid job. Traffic: (Jan.) WØBLI 1045, OHJ 564, FNS 256, QGG 205, TOL 153, SAF 142, IFR 138, KØBXF 118, WØSYZ 82, KØBIX 67, WØABJ 65, KØIQA 65, KMZ 48, WØUOL 48, KØJVX 47, WØUTO 44, LEW 22, KØGIG 21, WØSZF 18, KØAWO 17, WØFDJ 14, KØJID 13, HVD 12, MMF 9, EFL 6, WØFHT 6, KSY 6, KØMIZ 6, WØRJF 6, VUI 5, KØMRW 4, WØLIX 3, TTG 3. (Dec.) KØEQY 47, MIZ 12.

MISSOURI—SCM, James W. Hoover, WØGEP—Net reports: MEN, 13 sessions; QNI 431, QTC 123; NCSs, OHC 5, OVV 2, VPQ 2, OMM 2, BUL 2. MON, 51 sessions; QNI 325, QTC 244; NCSs, OUD 33, ARO 5, KBD 5, ONK 4, RTW 4. KØKBD has been appointed NCS for the Tenth Regional Net (TEN) for Mon. ses-

(Continued on page 122)

HERE'S WHY RME LABORATORY ENGINEERED EQUIPMENT IS UNMATCHED

Regardless of price, RME equipment is engineered specifically to balance performance against cost. Each RME product, each RME accessory has this cornerstone for its design.



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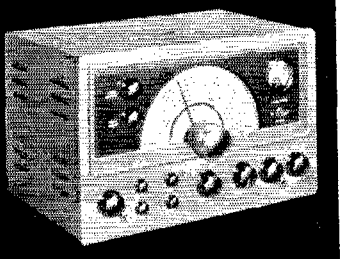
VHF pioneers designed and built this versatile VHF Converter. It will extend the range of any communications receiver through the 6, 2 and 1¼ meter bands. All bands are tuned with equal ease since the 50mc tuner does the tuning for the higher bands in the same way it tunes the 50mc band. Sensitivity ½ microvolt with very low noise figure. Built-in power supply. Simple to install and requires no circuit modification to select either VHF or standard communication ranges. Designed and manufactured to the requirements of costly astronomy receivers.

Experience the finest VHF reception, ever!...**$239.00** Amateur Net.

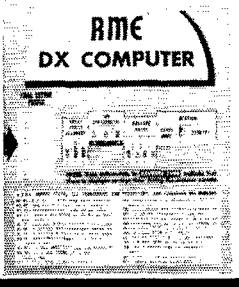


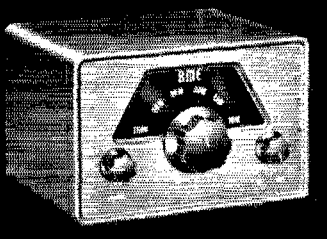
CHECK ANY RECEIVER, THEN CHECK THE RME 4350A.

It has everything you want and need. Study and compare these features usually found in only high-priced receivers. Efficiency concentrated for ham bands only. IF curve is 2.8 kc wide without crystal, down to 100 cycles with crystal. Sensitivity one microvolt with low noise figure. Dual conversion for image rejection of at least 54 DB. Six-pound cast panel with heavy gauge steel chassis and cabinet gives maximum stability. 100 kc crystal calibrator. Single dual speed dial for easy tuning. Engineered for maximum performance on SSB, CW and Phone. Ideal for contests and DX under all receiving conditions. FCDA Item R-16. **$249.00**..Amateur Net. Model 4302 Matching Speaker **$17.50** Amateur Net.

DX COMPUTER...

an operating aid designed to make available DX information about all countries recognized officially by the amateur societies of the world. This unusual computer is a complete DX guide to the ham operator in a handy, compact form. It gives all call letter prefixes; time differentials; international postage rates; continent, zone, and country; in addition to an address listing of all the QSL Bureaus of the World. By sliding the center plate to the desired prefix, you can read all the above mentioned guides at one setting. The call letter prefix column has extra spaces to *fill* in your own QSL record, sent and received. Size: 13¼" x 4¾" **$1.00** Amateur Net.





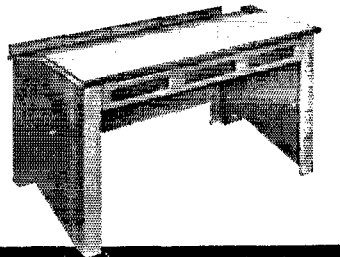
RME DB23 PRESELECTOR...

improves the performance of any receiver. Three 6J6 twin triodes are used as neutralized push-pull stages in a *unique combination of selective and* wide band RF amplifiers. You get a minimum gain of 20 db throughout all ham bands from 3.5 to 30 mc, and signal-to-noise improvement can be as much as 7.5 db over that of the receiver alone. Input circuits are accurately matched to any standard type antenna. Operation is simple; merely set band selector and adjust peaking control for maximum signal...**$49.50** Amateur Net.

KD 88 OPERATING TABLE

Now, get a convenient operating position that will complement any decor. Ample space holds the exciter, receiver, sideband slicer and key; special tilt makes dial and meter readings *easy*. Hard masonite top provides excellent writing surface with elbow room for comfortable operating. Log, call book, and other records in handy shelf. Hide-away table leaf can be inserted to operator's left for extra writings or typing space.

The KD 88 comes completely knocked down. Constructed of rugged gumwood, ready to be custom finished with your choice of six E-V finishing kits. Exposed edges are covered with handsome grained wood. With easy step-by-step instructions, you need only a hammer and screwdriver. Terrific value..just **$57.50** Amateur Net.



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Write Dept. QT-4 for free literature on RME equipment—built by hams, for hams.

sions. CPI missed the BPL list for the first time in many months. Lou is making preparations for moving to Texas. OMM enjoyed YL talks with KØBFH and 9RUJ, both of whom visited her recently. KØONK improved her signal on MON with some antenna changes. KØOJC made WAS. OVV was off about two weeks after losing several high-voltage filter and final components. The Tri-State Radio Society provided radio traffic control for the Christmas Parade in Joplin with KØJAY, BUL and KØLHY operating mobile in the parade line. KØSGJ has a 6-meter, eight-element beam on a 70-ft. tower. EPI has a Communicator III on 6 meters. IRE, formerly of Parsons, Kans., is working with GCL. KØOEP has received his General Class license and is using a DX-100. KØJPJ is enjoying full break-in operation with a new Johnson t.r. switch. The Westminster Amateur Radio Society has been formed at Westminster College, Fulton, Mo. The club call is KØSIO. QLR has moved to St. Louis from Linn. The Northwest St. Louis Amateur Radio Club members suggest that crank-up towers should be climbed in the "down" position. Theirs fell when the cable broke but no one was injured. Traffic: (Jan.) KØONK 593, KBD 573, HHG 523, WØCPI 366, BVL 226, VPQ 151, OMM 120, KØJPJ 117, WØOUD 98, KIK 97, ARO 96, OVV 87, KØOJC 78, WØRTW 58, KØJPH 53, LGZ 52, WØBUL 30, WFF 24, GEP 9, KØIFM 9, OEP 7, IHY 4, SGJ 3, WØEPI 2, GBJ 2. (Dec.) WØVZB 109, KØLWX 42, WØWFF 33, KØIHY 31, IIK 18, DGT 9, HIM 6. (Nov.) KØHHA 100. (Oct.) KØHHA 345.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—The Western Nebraska Net is on 3950 kc. daily. NIK, NCS, reports QNI 686 and QTC 86. The Nebraska Morning Net is on 3980 kc. daily at 0730 and KØKUA reports QNI 536 and QTC 127. Those reporting 100 per cent in the net were KØDGW and VZJ. KØKJL has joined the net. ZWG reports the Nebraska C.W. Net had QNI 238 and QTC 93. The Nebraska 75-Meter Emergency Net is on 3983 kc. daily at 1230 CST, MAO as NCS. The net failed to get a report in this month because of the illness of MAO. We are all sorry to hear that Jerry is back in a Lincoln hospital and confined to an iron lung. Jerry has been very active in Nebraska net activity and holds several ARRL appointments. We all hope for Jerry's speedy recovery. The Sandhills Amateur Radio Club has been organized in Alliance with ZHN, pres.; RIN, vice-pres.; NIK, secy.-treas. The Hastings Amateur Radio Club has the call KØSOQ, and also has a jeep and surplus radio gear for c.d. ZOU is conducting classes in amateur radio and has given seven Novice exams recently with all passing. EGQ and ZWG visited with MAO in the hospital. The Wheat Belt Amateur Radio Club had a good meeting at Herndon. Traffic: (Jan.) WØNYU 144, KØDGW 110, WØZJF 86, KØBDF 72, WØUOV 54, KØIJW 48, WØNIK 47, KØDFO 45, KUA 40, WØKDW 27, OKO 25, ZOU 19, KØBRS 17, WØZWG 17, AEN 15, HOP 14, KØAISS 12, WØOCU 12, VZJ 12, LJO 11, URC 11, KØBRQ 8, CBV 8, ELU 7, RPT 6, WØEGQ 5, KØELQ 5, WØAFG 3, KØCDG 3, CYN 3, QLN 3, WØVEA 3, WZR 3, KØKJP 2. (Dec.) KØNQVM 32, WØOKO 10.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—AW, K1JAD and YBH made BPL in January. New officers of the Hamden ARA are K1ELS, YBI, WHL and FKQ. Six-Meter Net members are K1s ACD, AXM, BHY, BXC, BYD, CRD and DNM. CHI, ECI, FQW, GDC, HCZ, IHA, IMG, IRY, MEK, MEO, NHS, OSQ, WHL, YOL and ZGO met at the home of HCZ Jan. 11. They decided to run the net Mon. (1945 EST) and Thurs. (2200 EST). NCSs are K1DNM and MEO. The net frequency is 50.58 Mc. TD has replaced his exciter unit. YBH reports CPN handled 307 messages during 31 sessions with an average attendance of 25 stations. High QNI goes to FHP, MDB, DHP, 31; K1BEN, TVU, YBH, 30; VQH, 29; K1CRQ, 28; K1ACC, DAV, IHG, 26. New stations on CPN are K1CBV, K1CAK and CWF. The CQ RC of Torrington elected the following officers: EOO, JSU, MBX, YOG. JZA is looking for 220-Mc. contacts. LAS lost 6- and 2-meter antennas in the high winds. OPB has 31 of the 40 states in G-Land. K1ACC got VP2SW, CEØZA and a CT2 with his new HQ-150. KYQ advises that CN handled 563 messages including 124 on the second session in 31 sessions. Average attendance was 12. High QNI goes to K1JAD, REJ and OBR. TSL spends his week ends and college vacations adding to a 209/168 DX total. K1CAK took part in the Novice Roundup. K1DHU added CEØZA to his DX total. ECH needs four QSLs for DXCC. FHP reports CVN handled 49 messages during 13 sessions in January. Average attendance was 12 stations. High QNI goes to FHP, K1BML, K1BMM, HJG, 13; JZA, ZUQ, 11; K1HMU, 9; KN1HKZ, 6. BDI is building a diode keyer. The Connecticut Wireless Assn. is sponsoring NJM's Sun. night 40-55 w.p.m. code practice on 7120 kc. AW has a new HQ-160. New

(Continued on page 124)

THE hy-gain EXTRA HEAVY DUTY Ground Planes

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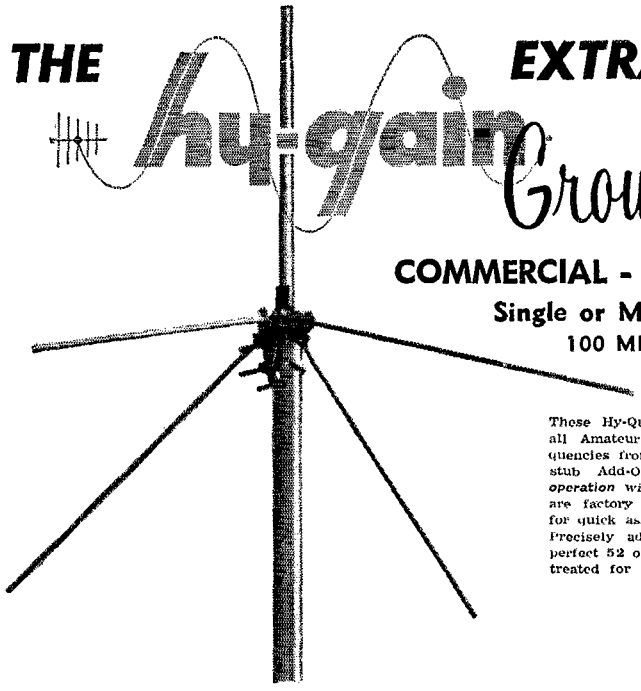
Single or Multi-Frequency Operation

100 MILE PER HOUR RATING



These Hy-Quality, Hy-Gain Ground Planes are designed to cover all Amateur, Commercial and Citizens Band communications frequencies from 25 through 500 mc. Especially designed decoupling stub Add-On Kits available, making possible multi-frequency operation with a single feed line. The antennas and Add-On Kits are factory pre-tuned and complete with easy-to-follow directions for quick assembly on any single or multiple frequency (up to 4). Precisely adjusted drooping ground plane radials make possible perfect 52 ohm match. All hardware hot dip galvanized and iridite treated for maximum weather ability.

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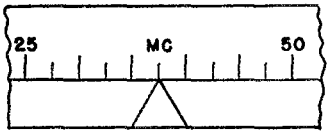
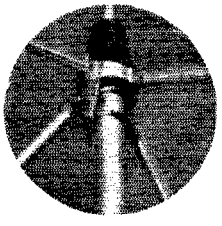
Coaxial Termination: Type 80239
Maximum Power Input: 1,000 watts
***VSWR:** Less than 1.2:1 at Resonance*
Unity Gain



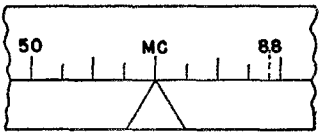
MODEL GP-1

Net **$29.95**



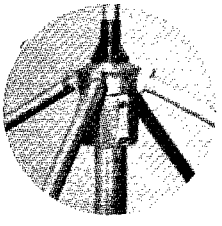
GP-1

Radiator and ground plane radials telescoping ¾" and ⅜" heavy wall aluminum tubing type 6061T6 heat treated alloy. Heavy duty cycolac base insulator and heavy universal base casting. Fits all mast diameters up to 1⅝".



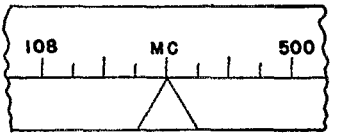
MODEL GP-2

Net **$16.95**



GP-2

Radiator and ground plane radials telescoping ¾" and ⅝" heavy wall aluminum tubing type 6061T6 heat treated alloy. Polyethylene base insulator and heavy universal base casting fits all mast diameters up to 1⅝".



MODEL GP-3

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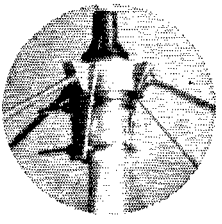

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Radiator ¾" and ⅝" heavy wall aluminum tubing type 6061T6 heat treated aluminum alloy. Ground radials ¼" diameter solid aluminum rod.

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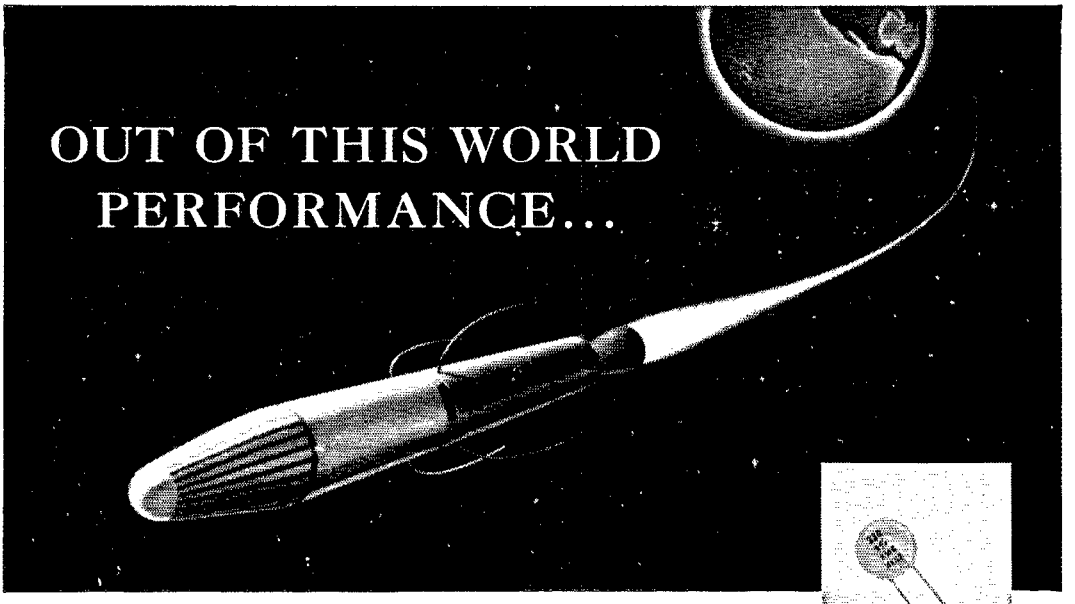
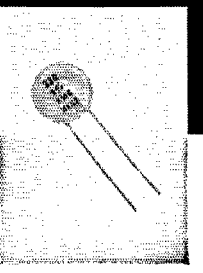
counties are SV0WE on Rhodes and VP2SW. Fifteen members of the Mobilers met at the home of FBD. K1GHJ is operating ZWP at Putney, Vt. ROX has a new DX-100. EJH and GWW are on 160 meters with converted ARC5s. ECI and OLD are on 432 Mc. A broken feeder and the cold weather slowed down MDB in the January CD Party. FVV was active in the V.H.F. Contest. K1CKZ has a converted DX-20 on 6 meters. K1CJX, of Granby, is active on 6 meters. K1IUC is going to Spain. RJA and VSE are working on amateur TV. LGE reports 6-meter conditions poor during January. YOL has his 6-meter beam back up, thanks to the Hartford Fire Dept. The Stamford High School ARC is now an ARRL affiliated club. New appointments: K1JAD, OBR and TUW as ORSs; K1CAK as OPS; K1CKZ as OBS; QPD as OO. ODW renewed his EC appointment. Reports received: OO from K1CKZ, MWB and RAN; OES from K1CKZ, FVV, LGE and YOL. Traffic: (Jan.) W1KYQ 469, YBH 351, AW 338, K1BEN 338, W1EFW 329, DHP MDB 246, NJM 208, K1JAD 187, W1QJM 140, TYQ 138, OBR 129, FHP 93, FYF 87, K1DHU 77, W1KLK 65, CUH 64, TUW 60, RFJ 56, BDI 53, HHR 45, ROX 43, K1ACC 38, W1MWB 38,, VIY 29, K1AQE 21, CAK 12, HMU 12, W1ZUQ 12, HAT 11, EJH 7, HJG 7, KAM 7, RGB 6, JZA 5, K1BFJ 4, W1ECH 4, FPF 4, YNR 3, YOL 3. (Dec.) W1ROX 68, K1AQE 41.

MAINE—Acting SCM, Charles F. Lauder, W1QJA—SEC: QJA. PAM: VYA. V.H.F. PAM: JMN. RM: EFR. Traffic nets: The Sea Gull Net meets on 3940 kc. Mon.-Sat. at 1700; the Pine Tree Net on 3596 kc. Mon.-Fri. at 1900; the Barnyard Net on 3960 kc. Mon.-Sat. at 0800. EIO has received the Helvetia 22 award from U.S.K.A., Switzerland. W1AFT, the call of one of our beloved former SCMs (now a Silent Key), has been issued to the Northeastern Amateur Radio Club of Boothbay. LHA is trustee and meetings are held the 1st Sat. of each month at 7:30 P.M. K1CJK has dropped the "N" and is a new station in Phillips. ZBN/MM should now be in tropical waters ready to work the Maine gang on 29,000 kc. from the *State of Maine* in Cuban waters. George has a special card for all you fellows who work him. K1DYG is converting a 639 and will be heard soon on 75 meters. Many of you fellows have asked for LKP's address. It is John Feuron, 19219 E. Bridwell St., Glendora, Calif. John is now WA6DWP and will be active soon. The Bangor mobiles again turned out in their annual support of the March of Dimes collection. How about some reports from some of our appointees? Let's hear about your section's activity fellows. Traffic: W1GPY 166, QJA 101, CEV 81, FV 52, K1DWQ 46, W1EFR 33, K1AKO 31, DLP 28, W1UDD 26, K1BDQ 25, W1BX 22, K1BYE 12, W1KFY 8, K1EBG 7, W1FNI 7, OTQ 7.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: KN1IWP as OES, K1GUN Norwood, RZF Wayland as ECs. Appointments endorsed: PST Brookline, WK Quincy, LOS Sharon, HSN Stoughton, MMQ Milton, DDF Watertown, KWD Weymouth, YHQ Orleans, NPR Barnstable, MRQ Groveland, MCR Boston, RAI Newton, ZOC Avon, SII Dedham, EIQ Bedford, IBE Rockport as ECs; JLN, TZ, UIR, GDJ as OOs; TZ, UIR, AAR, VMD as OBSs; ZQM, BB, AAR, MRQ, CZW as OPSs; ZQM, AQE, BB, AAR, MRQ, CZW, TY as ORSs; AQE as RM. HWK gave his talk to the Framingham Club. The South Shore Club of Quincy meets the 1st and 3rd Fri. at the Wollaston Public Library. FY is corr. secy. and K1GYH is rec. secy. of the Framingham Club. BOX moved to Reading. ZDN is EC for Medford, KN1GXD, Arlington, is active. The T-9 Club met at MVQ's. UQP is chasing DX on 10-15 meters. DBY has code practice tapes to train new operators. GDJ is very busy at WSAR. DDF was in his first CD party. K2HZK/1 and KN5TEP/1 are on 2 meters. CAM goes to school nights. K1USA, SAD, GDJ, BGW and BB took part in the E.M.T. Area 1 Radio Comm. held a meeting. New officers of the QRA are KI, pres.; EYZ, vice-pres.; WEX, secy.; OG, treas.; OKB, TZR, KTJ, AOG, VRK and EED, board of directors. Win Jackson, of Cannon Elec., spoke at a meeting. MRQ says school in Groveland is going fine with K1CDB and COV doing good jobs. K1CIJ, Lowell, has his Tech. Class license. IBE says his town has voted money for equipment. The Burlington ARA has a net on 10 meters. CB and CAK are Asst. ECs to K1AQI. DOF was one of the first OPSs and took the exam from ZK. KN1HRC, Newton, is on 40 and 15 meters with a T-90. BB put out a nice QSO letter telling his experiences as a ham since 1912. A copy of the *Barnstable Oscillator* was received. New officers of the M.I.T. Radio Society, MX, are 6HBF, pres.; K9CDI, secy.; 3ZGI, treas.; WAJ, station-mgr.; K2KIR, act. coordinator. LVK is Asst. EC to ZDN for the 6-meter net. HRW is back on 10 meters. ZZ has a Viking Challenger. ZDN has a 48-ft. Rohn tower. K1AII has a rotator for the 6-meter beam. AHE is busy building for 220 Mc. and 2 and 6 meters. EMG out of NJI, made BPL again. K1GRP has applied for ORS appointment. Net

(Continued on page 126)





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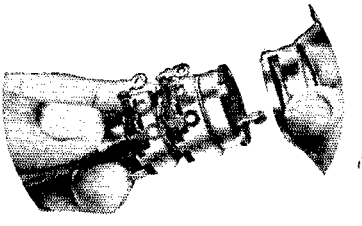

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certificates have been issued to active members in the Eastern Mass. 2-Meter Net, on 145.8 Mc. at 2000, Mon. through Fri. K1JML is active on 6 meters. AKN has a Valiant. AAR is on 2 and 10 meters. FJJ is busy at school. IS is living in Weymouth. RVQ is moving to No. Abington. MPX is on 10 meters. EIB was in Boston for a visit. KN1IMD has a DX-40 RME4350. Heard on 75 meters: NA, VTX, BUA, K1BVT. BNU is on 2- and 80-meter cw. K2QXG/1 is on 2 meters in Peabody. KN1JBH is IAE's son. Heard on 2 meters: OUP, IOO, KRJ, KN1s JEN, HBV, JIC, K1IZS. AWA and K1DGI sent their report in from W6-Land. OFK is now an OBS. K1EGN and K1HPX are on 6 meters. K1DWR is on 6 meters, ANB/MM on 40. K1s CMS, DIO and W1HGN are acting NCSs for the 6-Meter Cross Band Net. LMZ has a BC-625 and a 417A converter on 2 meters. NTK has a Valiant and an HQ-150. LQ, MIX and EUT have the W-Conn Award. BEI is EC and RO for Medfield. K1IZS is ex-8AOP and ex-3QME. SNK and SNW are Asst. ECs to RZF. K1DUF is on 10 meters with a three-element beam, a DX-100 and an SX-96. QFO has a v.f.o. converted BC-459 Gonset 3. AOG was endorsed as ORS-OES. IKR is the new Everett EC. FKS is now W4DSG, Winter Haven, Fla. K1GRP is a new ORS. THO is a new OBS. BGW says the East Coast Rt. Net is growing. JTS has a 6N2 and a Valiant. TBB bought OLU's QSL business. K1BFK has a 10/10 on 6 meters. BL has a 6N2 in the car. K2OHF/1 is in Cambridge, K1AEO/A.M. over Boston. Traffic: (Jan.) W1AWA 621, EMG 596, NJL 565, K1BYL 222, GRP 153, DIO 147, W1EAE 125, QPU 125, OFK 113, K1DGI 74, W1UKO 66, K1CMS 56, W1EUT 54, MIX 43, LMZ 42, HGN/HGO 38, QFO 26, NVV 23, TWG 13, ALP 12, KWD 12, KN5TEP/1 12, W1ZSS 12, QOI 9, GEK 8, K1JML 8, W1AKN 7, K1DEY 6, GPH 5, IZS 5, W1AAR 4, K1ELA 2, W1FJJ 2. (Dec.) W1MIX 58, LGO 50, HIX 43, NTK 30, ATX 21, MER 10, AHP 8, TQQ 6, D1Y 4, DTB 2.

WESTERN MASSACHUSETTS—SCM, John F. Lindholm, W1DGL—Asst. SCM: Richard J. Kalagher, 1KGJ. SEC: BYH. RM: BVR. PAM: MNG. The West Mass. C.W. Net meets on 3560 kc. at 1900 EST Mon. through Sat. The Mass. Phone Net meets daily on 3870 kc. at 1800 EST. The West Mass. Novice and Slow Speed Net meets Tue., Thurs. and Sat. on 3744 kc. at 1830 EST. New appointments go to K1CSW as OO and K1BOX as OES. Endorsements as follows: MNG as PAM, ORS, OPS and OBS; RFU as V.H.F. PAM, OES and EC; JYH as OO, ORS and OPS; AJX as OO and ORS; LDE as OPS. MUN was tops in the November F.M.T. with BKG and EKO close behind. RFU would appreciate any information on v.h.f. nets in the section. K1JSR, from Pelham, and K1JSS and K1JST, from Hadley, are new amateurs and products of code classes conducted by TAY and K1CID. QUO and YXN have been conducting weekly classes in the Fitchburg Area. Are there any other code and theory classes in the section? ZPB is active on MARS besides WMN. BVR reports WMNN is doing fine and all Novices are welcome to report in. DVW has a new DX-40. FOX has engineering a project to install an "Oscar" unit, a milliameter for the sightless amateur, for K1DER. K1BUM has a new Apache. ZUL is operating portable from South Hadley with an Apache. KN1JDQ is a new ham from Pittsfield. SEC BYH requests regular monthly reports from all ECs. Are any groups making Field Day plans yet? We can all show our activity in many ways—traffic, DX, ragchewing or what have you. Let us be an active section; let us have our section known as being enthusiastic in all ham radio activities. Traffic: (Jan.) W1BVR 202, K1CAU 178, W1DGL 143, KGJ 138, TAY 23, DVW 18, OSK 17, AGM 15, ZPB 10. (Dec.) W1TAY 22.

NEW HAMPSHIRE—SCM, Robert H. Wright, W1RMH—SEC: BXU. RMs: COC and K1BCS. PAM: IIQ. V.H.F. PAM: TA. The Concord Brasspounders again will sponsor the N.H. QSO Party Apr. 25 and 26. 1959 elections produced new officers for the following clubs: Manchester Radio Club—K1CIG, pres.; ELH, vice-pres.; KN1HJF, secy.; YHI, treas. Nashua Mike and Key Club—K1COY, pres.; MEL, vice-pres.; K1CKE, secy.; QHS, treas.; TA, act. mgr. Port City Amateur Radio Club—K1CBX, pres.; GGA, vice-pres.; K1CJO, secy.; JWJ, treas. Concord Brasspounders—RMH, pres.; TNO, vice-pres.; BYS, secy.-treas. The Bishop Bradley High School Radio Club of Manchester is now an ARRL affiliated club. The annual banquet of the Nashua Mike and Key Club was held Jan. 17 with about 60 in attendance. YHF was elected net manager of the GSPN. FTZ is the new New Hampshire Director of Army MARS. The U.N.H. Amateur Radio Club (ASZ) claims to be the first college club station on s.s.b. in the East with a club-built rig. New appointments: YHF and K1JDN as OPS; K1JDN as OO; K1CIF as OBS. Traffic: (Jan.) K1BCS 918, CIF 668, AHE 154, W1HKA 64, MTX 35, MOI 27, YHI 26, K1BOO 23,

(Continued on page 128)

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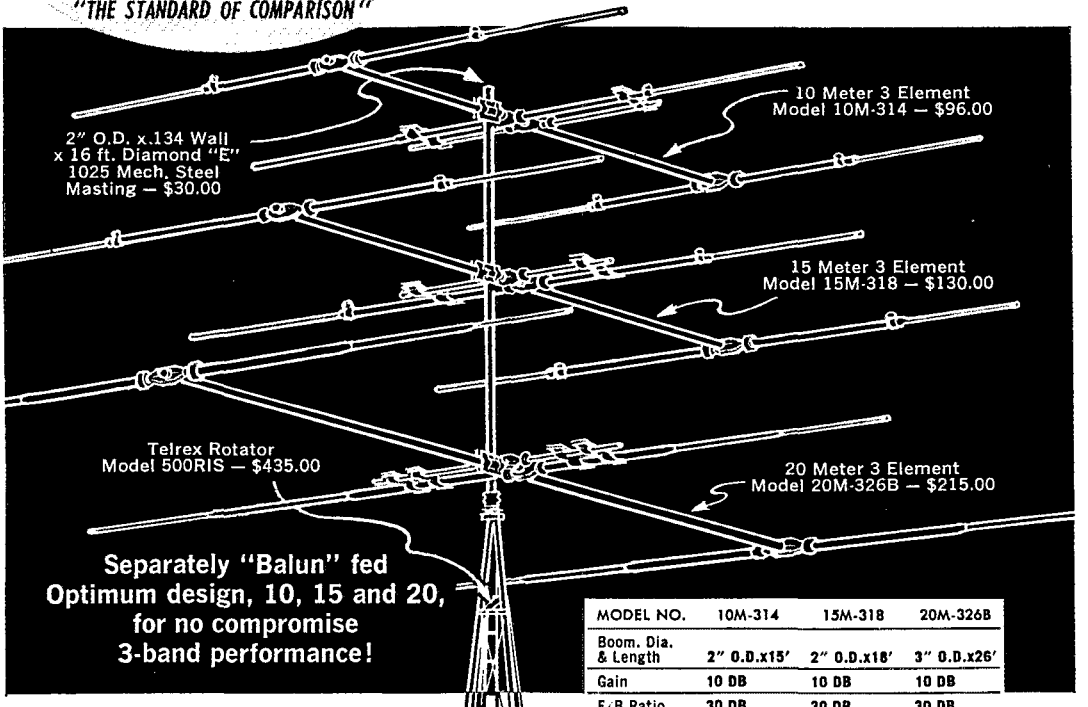

Separately "Balun" fed Optimum design, 10, 15 and 20, for no compromise 3-band performance!

MODEL NO.	10M-314	15M-318	20M-326B
Boom, Dia. & Length	2" O.D.x15'	2" O.D.x18'	3" O.D.x26'
Gain	10 DB	10 DB	10 DB
F/B Ratio	30 DB	30 DB	30 DB
Wind Surface Area	2.90 Sq. Ft.	3.98 Sq. Ft.	6.27 Sq. Ft.
Wind Load at 100 MPH	86 lbs.	121 lbs.	196 lbs.

"Beamed-Power" "Balanced-Pattern"

By far the most powerful and practical 3-element "Tri-band"® System . . . guaranteeing no compromise, 3-band performance, and reliability — rain or shine! "Balun" fed and optimum antenna design assures . . . maximum gain, and impedance bandwidth, plus pattern symmetry with minimum TVI, BCI and harmonic radiation qualities—not possible with so-called "Tri-banders." Install Telrex "Tri-band – Christmas-Tree" for "top-man-on-the-frequency" results!

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TELREX "BEAMED-POWER"-"BALANCED-PATTERN" ARRAYS COST A LITTLE MORE...WORTH MUCH, MUCH, MORE!

CSJ 17, DKD 13, W1AIJ 10, VBX 9, EVN 7. (Dec.) K1BOO 59, W1YHI 34, EVN 18.

TENTH NEW HAMPSHIRE QSO PARTY

The Concord (N. H.) Brasspounders, W1OC, announce their sponsorship of the Tenth New Hampshire QSO Party, and cordially invite all interested radio amateurs to participate. Here are the details:

(1) Contest period: Saturday, April 25, 6 P.M. EST to Sunday, April 26, 6 P.M. EST.

(2) No time limit and no power restrictions.

(3) Scoring: N. H. stations count 1 point for each N. H. contact, plus 2 points per outside contact; stations outside the state count 2 points per N. H. contact; both multiply by the number of counties worked (10 maximum).

(4) Engraved certificates will be issued to all participants reporting, with special endorsements for the highest-scoring stations, both in N. H. and outside in the following categories; phone only, c.w. only, combined phone and c.w. Trophies will be awarded to the top station in each category, both in and outside N. H.

(5) The same station may be worked for additional credit on more than one band, phone or c.w. Suggested frequencies to congregate near are as follows: 1810, 3550, 3842, 7050, 7200, 14,100, 14,250, 21,075, 21,350, 28,100, 28,800 kc.; 51,145 and 221 Mc.

(6) General call: "CQ NH" on c.w.; "CQ NH QSO Party" on phone. N. H. stations are requested to sign *de NH W1OC K* or give other indication of the fact they are from N. H..

(7) Contact information required: Report and QTH (including county of N. H. stations) and number of QSO. Logs and scores must be postmarked not later than May 30, 1959, and should be mailed to the Concord Brasspounders, P.O. Box 339, Concord, N. H.

(8) The WNH (Worked New Hampshire) certificate will be awarded to stations working all ten counties during this QSO Party, participating logs confirming.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ, PAMs: KCS, YRC, RM: BBN, NCRC officers installed Jan. 12 were WLG, pres.; ETM, vice-pres.; KN1HFY, rec. sec.; P. Gaudette, corr. secy.; K1CUY, treas. Speaker for the evening was 4GQE/1, who demonstrated a single sideband unit built entirely by him. The PRA elected VZP, pres.; CJT, vice-pres.; HIJ, rec. secy.; 1UX, corr. secy.; HIK, treas.; KKR, YLB, KN1ILV and TQW, board of directors. A Field Day committee has been elected by the CRA with K1ABR as chairman and K1EGD, WKZ, K1EGH and KN1JLE serving with him. Our two 6-meter nets have been renamed and are now called the Roger Williams V.H.F. Nets (Wed. and Fri. at 2030 NCS on 50.7 Mc.). Stations with traffic for these net sessions are asked to check in when the sessions begin. The BVARC held a Novice Forum Jan. 17. This club has started new code classes with 1HW and AUT as instructors. SMU is now manager of the RIN. The First Annual Installation of the Roger Wms. V.H.F. Society was held on Jan. 24. GFH is a new OBS. CSG is General Class and is active on 6 meters at present. Your SCM had the pleasure of speaking at the Jan. 16 meeting of the ARESNE. Traffic: W1SMU 67, BBN 46, VBR 34, DDD 24, LSP 19, TXL 14, WED 4.

VERMONT—SCM, Harry A. Preston, jr., W1VSA—SEC: EIB, RM: K1BGC, PAM: ZYZ, V.H.F. PAMs: TBG and FMK. Traffic nets: VTPN, Sun. 0900 on 3855 kc.; GMN, Mon.-Sat. 1700 on 3855 kc.; VTN, Mon.-Sat. 1830 on 3520 kc.; VEPN, Sun. at 1700 on 3855 kc. For all the Vermont amateurs I would like to thank Ann, OAK, for her many efforts for her fellow amateurs while SCM. K1AUE worked OX3AY, DJ2HC, G6BQ, SM4BPM G8DI, F3DM, ZL3QX, G2PL, all on 80-meter c.w. with 40 watts. OAK worked 41 states on 50 Mc. K1BTF, formerly of Natick, Mass., is located in Bennington. K1DQB will be on with the mobile twins. EOY and K1DQB simulated a fixed station set-up in a remote area as an AREC practice and used the Vt. QSO Party event as tandem activity. K1BNL is the new Chittenden and Grand Isle Counties EC. K1CEG, of Burlington, is the new Radio Officer for Burlington. The following stations monitor 3855 kc. from 7 A.M. to 11 P.M. daily: K1BQB, YYU and DAP. EIB has instituted an YL and XYL net Tue. at 0830 on 3855 kc. The BARC, Inc. and the Middlebury

(Continued on page 130)

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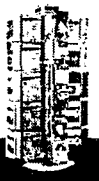

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Mike & Key Clubs are planning emergency trailers, the first of this type in Vermont. Army MARS system is quite active with BXT as leader. Traffic: (Jan.) W1OAK 294, K1DQB 48, W1HRG 39, VSA 36, EIB 35, K1BOL 13, W1ZWN 6, KJG 5, K1AUE 3, W1ZJL 2. (Dec.) W1GQJ 58.

NORTHWESTERN DIVISION

ALASKA—SCM, Eugene N. Berato, KL7DZ—New appointments: BEC, Seward Peninsula, and ASQ, Unalakleet Area. Forms are now available and applications are being accepted for AREC. Submit requests, etc. to BES. BEW is now using an Eldico 100F and Telrex three-element beam on 20-meter s.s.b. ASQ advises there was too much wind during the months and activity is down. CWJ is a new ham at Unalakleet. ASQ is busy with code and theory helping the locals get their licenses. MF reports 166 countries worked with 161 confirmed. CWX, formerly W4RCM, is back in the swing and handling traffic. CRE's skeds with Benton Harbor, Mich., on 29,610 kc. are very successful. CP, our QSL Manager, reports the cards are piling up and requests QTHs and stamps. He threatens to start a bonfire if something isn't done real soon. Activity reports from the west and southeastern areas are slowing up. Keep them coming. Traffic: KG1DT 685, KL7ASQ 23, BEW 12, CWX 7, MF 5, CRE 4.

IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—Some new reports are coming in. Keep up the good work. JJY, in Twin Falls, is back on the air and is keeping in touch with his family that way. WDJ and his XYL, WDR, have moved up to Moscow. The University there also is covered by VQC, VPK, WBB, K7BSM, RNX and K7BOM, reports K7BOM/7. The University station, UQ, still needs a shack. The Naval station there, K7NAO, should be on soon. RACES c.d. stations are active all over the State. The Pocatello Club is getting new Novices on the air and is very active as usual. K7AXM, the club station in Boise, has a new surplus 2-kw. transmitter to call the c.d. net. The annual SCM report was sent out, courtesy of *Ham Hill News*. Thanks to all for their cooperation and help during the last year. Keep up the interest in ARRL in the new hams. Traffic: W7JJY 2.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—The Amateur License Plate Bill passed the Montana House 83-4 and went to the Senate. TPE has worked 303 prefixes and has 247 confirmed. K7ABV worked DXCC. BOZ became a member of the Quarter Century Wireless Assn. and the O.T. Club. GCS got married. K7EAJ and K7EAK are new Conditionals in Bozeman. PHA was appointed Health Officer of Sweet Grass County. YQZ celebrated his 87th birthday. New officers of the Capital City Radio Club are K7BIX, pres.; JZW, vice-pres.; WMT, secy.; JKR, act. mgr. New officers of the Great Falls Radio Club are NZJ, pres.; JVN, vice-pres.; ZOL, secy.-treas.; JGG, USI and KUH, directors. New officers of the Hi-Line Radio Club are EWR, pres.; CQC, vice-pres.; VPU, secy.-treas.; fDK, act. mgr.; K7BQN, membership chmn. Recent appointments: K7EWZ and YHS as ORSs. The Central Montana Hamfest will be held in Lewistown June 6 and 7. Traffic: K7EWZ 113, W7YHS 91, K7BYC 55, BVO 51, DVZ 34, W7TPE 34, K7AEZ 33, W7DWJ 25, K7DCC 16, CFA 14, W7JHL 13, TNJ 13, DEO 8, IOJ 8, CQC 6, DJL 5, EWR 4, YQZ 4, YUB 2, NPV 1.

OREGON—SCM, Hubert R. McNally, W7JDX—OSN is going strong now and seeking new c.w. members. AJN was reelected net mgr. ZB and BDU are making great records on traffic handling with ZB making BPL again. HVX, of Portland, was recognized by the FCC for his efforts in handling interference complaints and his aid to other amateurs. New ECs are VGL, GNC, IGN and EZH. UQI, our new SEC, is coming up with new ideas and new blood. The OARS still is having trouble getting its net back on the air, mostly because 10 meters is very dead around Portland. MW now is EC for Benton County. DEM still is trying to induce JDX to try again for some big salmon. GAJ finally woke up and is handling traffic. Hi. GNC is the new president of the Clackamas County Club. BLN and Edith still are serving good meals! OMO still is under the doctor's care but is improving all the time. LT is trying out 160 and has made a few QSOs. Now there are two Jeans at Veneta—DIC and her OM, who is now K7GSS. RVN is active on phone in Portland. K7AUV resigned as OO. NJS ended her year as YLRL president, and from the increase in membership she must have had a good year. GLZ has worked all JA sections. DIS has 97 countries and TMF around 135. Traffic: (Jan.) W7ZB 514, BDU 479, ZFH 87, K7CLL 68, W7AJN 45, RVN 45, LT 34, DIC 27, BVH 20, OMO 14, BLN 11, GNC 7, DEM 5, GAJ 5, JDX 5, MW 4, JCJ 2. (Dec.) W7DIC 181, ENU 65, DIS 34, GAJ 26, GLZ 18.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—New officers of the Radio Club of Tacoma are K7ATF, pres.; K7CYZ, vice-pres.; CZK, treas.; K7ATD, secy.;

(Continued on page 138)

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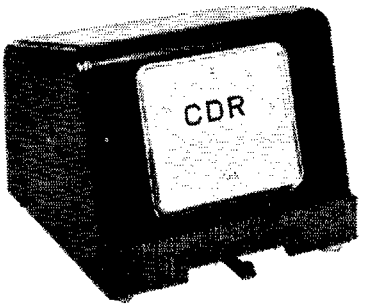

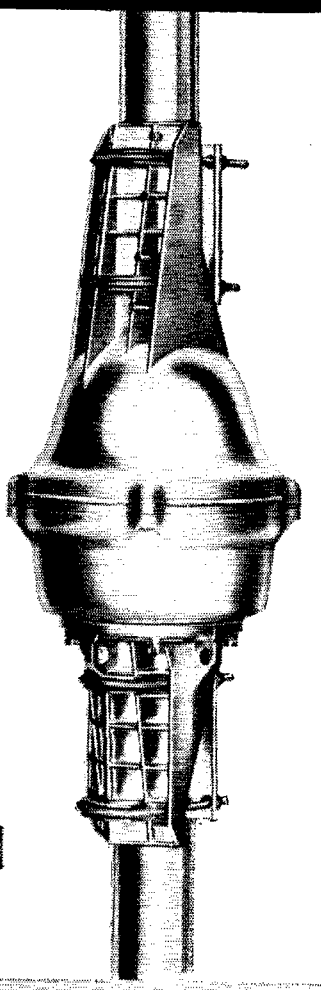

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AZI, trustee, Washington State Net (WSN) now operates on a new frequency of 3535 kc. All Washington State traffic nets desire better coverage in the section. YFO rebuilt the modulator. WXW is working DX. ACA and JHS have a new Valiant. A new Novice in the Prosser Area is KN7GIY. The next semi-annual banquet of the QCWA NW Chapter is scheduled for Yakima, probably some time in June. ZIZ acquired an HQ-150. GHM is looking for a new receiver. K7ASY sent a very good OO report. FIX is awaiting a new transformer for the 500-watt rig and is planning on mobile operation. GSP has a new Morrow receiver and transmitter. BXH now has an XYL. AHV officiated at the ceremony. The W7 Morse Code Net operates on 3575 kc. at 1830 Tue. OE has a new v.f.o. AIB and his XYL left on a trip to Virginia and Florida. HOD has an all-band vertical. DDL and DJV assembled a DX-40 for themselves. MHL still is chasing bugs in the TBS-50. New appointments are GFM and JPH as OOs, JHS as OBS. Renewals: FRU, GAT and OE as ORSs. The Pierce County RACES Net meets Sun. at 2000 PST on 29,510 kc. BA received a special citation award from General Electric. IAA and FJ are going to W3-Land for a couple of years. JNC is building a new exciter and final for s.s.b. The Spokane AREC held five drills during January with 40 check-ins. EHH and UOJ won Merit Award certificates for AREC competition. The Spokane Radio Club's code and theory classes started Jan. 30 with 35 students enrolled. WJR is the new Richland ARC president. KIX is Radio Officer for RACES in Richland. IEU is installing a new Triband-er for 20-15-10 meters. ANZ joined the ranks of Silent Keys Feb. 3. CZY was active in the recent CD Party. CNK worked F2CB on 6 meters. QLH reports traffic away down compared to last month. KL7CTH, ex-W7SLB, holds regular skeds with CMQ. HNQ lost his 10-meter beam in a windstorm. MPH is considering moving to Seattle. NCU is being transferred to a new station in the South Pacific. OEB received Tacoma Loggers certificate No. 45. The VARC code program held at the local high school is progressing very well. Code practice is held on 29.51 Mc. Tue. and Thurs. ZIZ works for Boeing in Seattle. EVV is back from a honeymoon in W6-Land. The SCM expects to visit a number of the clubs in Washington this summer and would appreciate the meeting dates and times of clubs throughout the State. Traffic: (Jan.) W7BA 2118, PGY 1377, DZX 335, QLH 257, APS 167, OE 71, OEB 66, AMC 49, IEU 42, LFA 38, DPW 35, USO 26, UWT 23, AIB 21, WQD 21, K7AJT 15, W7FRU 9, EKT 8, LVB 5, EVW 3, REC 3. (Dec.) K7FAE 352, W7OEB 28, RGL 3.

PACIFIC DIVISION

NEVADA—SCM, Charles A. Rhines, W7VIU—The Nevada Net meets Mon., Wed. and Fri. at 1700 PST on 7106 kc. The net call is NVN and we will QRS for anyone who needs it. We will tie in to NTS through RN6. So far we have had JCY, Babbitt; NIV, Hawthorne; IWT, Fallon; AZF Reno; and HWL, Sparks, on as well as VIU, Elko. We still need more—come on in, gang. TKV is the new Asst. EC for Boulder City. SNP is attending Colorado State U. IWT has a new NC-303 and an s.s.b. adapter for the DX-100. PBG is moving to Livermore. NDG received a safe-driver award from Greyhound. YLO's 2-meter Gonset Communicator was stolen. VIU's vertical blew down—no damage. W6NTE has moved to Boulder City. Welcome. K7DEF has a new Mosley trap vertical. Civil defense 2-meter layouts are going into Reno hospitals. AREC members are to be assigned as operators. Traffic: W7VIU 307, AZF 2, IWT 1.

SANTA CLARA VALLEY—SCM, W. Conley Smith, K6DYX—Asst. SCM: Frank J. Pacier, W6VMY. SEC: W6NVO. Division Director W6HC and your SCM attended the Santa Cruz RC February meeting at broadcast station KSCO. The club has lots of life and interest under the able slate of officers headed by Prexy W6JCZ. Meetings are held the first Fri. of each month. RM K6EWY reports new ORSs, W6OWP, W6DEF and W6-YZE. PAM W6ZLO reports a new OPS, WA6CLT. We also have a new OO, W6TFH. Section net certificates were issued to W6DEF, W6RFF, K6YKG and W6YZE upon recommendation of RM W6QMO. K6GID has moved his operating position inside. W6YBV has thermally insulated his shack. K6JJV was burned out of his shack but luckily was covered by insurance. We welcome W6STY back to S.C.V., where he started in 1940. K6ULA says thanks to K6GZ for helping with the Novice and Technician Class tickets. K6YKG's jr. operator copped the prize at the West Valley Club but the XYL appropriated it—a 10-minute minder for *real* hard boiled eggs. W6YZE is readying the generator for the SCARS' Field Day. W6YHM rode hers on PAN while W6YHM was in the hospital. K6HGV/6 has a new 150-watt emergency rig. K6OSX reports on an active 6-meter net in Santa Cruz. W6MVL is chairman of the ARCS committee to put on the 1959 Pacific Division Convention in San Jose

(Continued on page 134)

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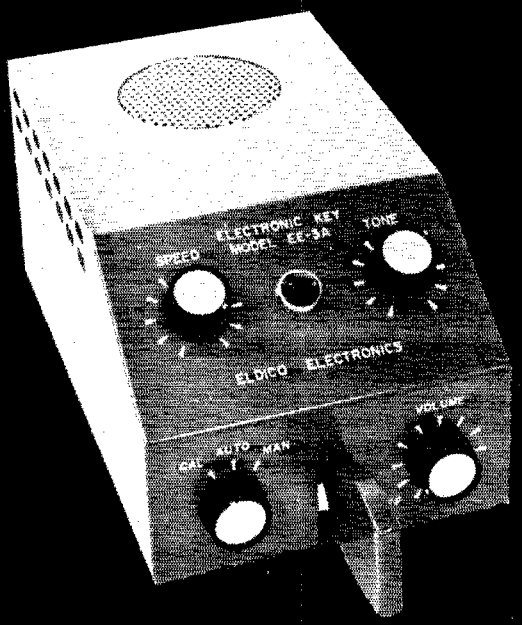

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July 3, 4 and 5. Traffic: (Jan.) K6DYX 394, W6BPT 360, K6GZ 340, K6EWY 325, W6QMO 104, W6YHM 97, W6YBV 92, W6HC 83, W6AIT 79, K6GID 62, K6HGV/6 49, W6YZE 33, W6ZLO 32, W6DEF 28, K6OSX 27, W6RFF 23, W6FON 22, W6OH 17, K6YKG 13, W6PLG 8. (Dec.) K6OSX 46, W6STY 12, W6FON 6.

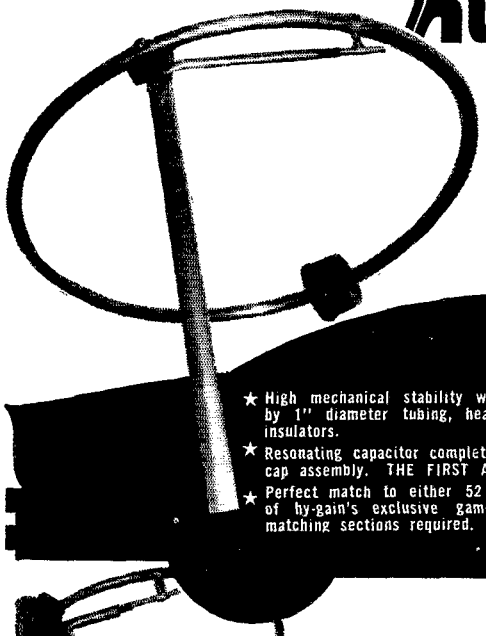
EAST BAY—SCM, B. W. Southwell, W6OJW—Asst. SCM: Mary E. Lorenz, W6PIR. SEC: W6CAN. ECs: W6LGW, W6ZZF, W6IUZ, K6EDN, K6JNW and K6QZG. WA6AGA has a ten-element beam on 144 Mc. and a new Heath 'scope. K6OSO was in the 6th MARS QSO Party. The CCRC held its Jan. meeting at HAMS clubroom in San Francisco. The members heard about radar speed equipment at their January meeting. W6HBF is on 80, 40 and 20 meters with 40 watts from W1-Land and is looking for the East Bay gang. K6EPC will be back from a year's stay in G-Land by the time you read this. W6HBF/1 is president of the M.I.T. Radio Society. WV6DOV, WV6DOY and WV6DTR are new Novices and WA6BUE is a new General Class licensee in the Walnut Creek Area. K6MFA has a new jr. OM operator. K6YXU is v.f.o. on 50 Mc. K6VLH sold his S-36 receiver to a W9. K6RPY has a new DX-100. W6PIR now has a DX-35 built by K6JAY. K6ILH won the 2nd Semi-Annual E.B. V.H.F. Sweepstakes. The Contra Costa AREC Net meets on 3900 kc. at 10:30 A.M. Sun. W6IIF is working portable 7 in Washington. K6RDD and WA6BYR lost their antennas in a windstorm. The 1959 officers of the HARC are K6TKL, pres.; K6QLF, vice-pres.; W6IPY, secy.; K6SWY, treas. W6DKE/KH6 is on 15 meters and looking for the Hayward gang. K6UFH and KN6UGV are new members of the HARC. The Southern Alameda County Emergency Net meets on 3980 kc. Sun. nights. John Reinartz, K6BJ, was guest speaker at the January HARC meeting. The NCDXC and SCDXC held their annual get-together in Fresno Jan. 24 and 25 and it was well attended. W6TI has a DX total of 272/270, and is stepping down as W6/K6 QSL Manager after 24 years. An FB job, Horace. Thanks from us all. W6DJD has a Viking mobile, a v.f.o. and a G-66 in a suitcase portable. The HARC has a net on 50.250 Mc. at 2100 PST Sun. and had 31 check-ins. K6GDG has a new Ranger. K6-OKK is back from Arkansas. K6BLN steamed up his Valiant after a one-year lay-off. W6IPW is on the NCN Net. K6CPQ is the new manager of NCN. K6GK was busy with traffic skeds and made BPL. W6ASJ is putting out Official Bulletins. K6OSO worked phone and c.w. in the CD Party. K6SRD and W6LGE are new AREC members. Welcome. Traffic: (Jan.) K6GK 506, K6DMW 103, W6JOH 64, W6ASJ 20, K6OSO 12. (Dec.) K6OSO 151, WA6AGA 3.

SAN FRANCISCO—SCM, Fred H. Laubscher, W6-OPL—Asst. SCM: Edwin L. Olmstead, K6LCF. The Tamalpais Amateur Radio Club of Marin County held its Installation Dinner Jan. 24. Officers for the year are W6MQQ, pres.; W6TBF, vice-pres.; W6ZQK, secy.-treas.; K6HIP, master at arms. Fifty-one members and their wives attended. Fast action on the part of W6-MIY/M and K6BAQ/M resulted in averting a major traffic tie-up in the Waldo Tunnel approach to the Golden Gate Bridge. In contact while commuting MIY reported the accident to BAQ, who in turn called the California Highway Patrol. An excellent job well done. K6EKC reports the Tri-County Emergency Net is now one year old and growing rapidly. W6GQY is back in business again. K6LRN, Asst. EC San Francisco, reports the gang was active in the big mobile competition held in San Luis Obispo in March, with mobiles coming from Los Angeles and the Bay Area. K6SKH has worked out a formula to allow high and low power to compete on an even basis. A nice trick if you can do it. K6LRN also reports the Band Spanners ARC is celebrating its first year of ARRL affiliation. New officers are K6LRN, pres.; K6AES, vice-pres.; WA6ATC, secy.; K6OHJ, treas.; K6ANP, acting mgr. A further report from K6-OHJ on the mobile gathering states that the most efficient station will receive a gold-plated six-foot whip. K6KTM has been elected Coffee Maker of the Bandspanners. W6YOM, from Fortuna, reports rig troubles, a new keyer and two new Novices, WV6BPF and WV6-CNQ. Babs, K6PQG/6, has been working rare DX with her little peanut whistle (15 watts) from Windsor. It is a pleasure to welcome Babs to the San Francisco section. W6CQA, our outstanding OO, is well on the road to his OO/WAS. Al has now heard Georgia for his 35th state on Novice harmonics. We knew Jeri couldn't stay away. We are pleased to report that W6QMO has returned. We receive her with open arms and great plans for the future. Jeri reports that K6QJB is temporarily off the air because lighting hit his receiver. K6SRZ, W6ZBJ, W6FAX and K6PQG are active on NCN; W6YOM, NCS-NCN on Thurs. and liaison to RN6 on Tue. Rose, of Golden Garbage Can fame, reports that the San Francisco YLRL has a new name "The BAYLARCS" (The Bay Area Young Ladies Amateur Radio Club Society). Officers are Esther Givens, pres.;

(Continued on page 136)

Outstanding New VHF Mobile Systems

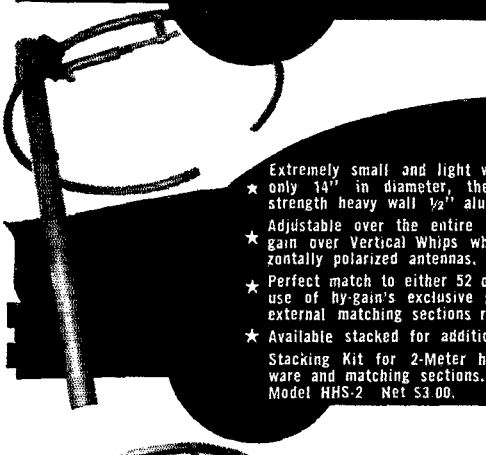
THE NEW hy-gain halo



for 6 meters
Model HH-6

- ★ High mechanical stability with minimum wind resistance made possible by 1" diameter tubing, heavy duty hardware, and high impact styron insulators.
- ★ Resonating capacitor completely weather-sealed in polyethylene cover and cap assembly. THE FIRST ALL-WEATHER PROTECTED HALO.
- ★ Perfect match to either 52 or 72 ohm coax made possible through use of hy-gain's exclusive gammaxial gamma match system. No external matching sections required.

$12.95 Net



or for 2 meters
Model HH-2

- ★ Extremely small and light weight, weighing less than 1 lb., and only 14" in diameter, the 2M Halo is constructed of high strength heavy wall ½" aluminum tubing.
- ★ Adjustable over the entire 2M Band and providing up to 15 db gain over Vertical Whips when working other stations using horizontally polarized antennas.
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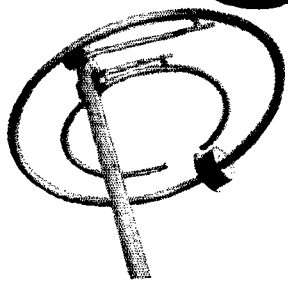
- ★ Available stacked for additional 3 db gain.

Stacking Kit for 2-Meter hy-gain Halo, complete with all hardware and matching sections. (Order two model HH-2 Halos). Model HHS-2 Net $3.00.

$5.95 Net



Unique hy-gain development permits combination of both 6 and 2 meter Halos to form high efficiency Duo-Bander Halo for operating either band with a single feedline and low SWR. Order both HH2 and HH6. Come complete with simplified instructions for assembly.

Eight ft. telescoping aluminum mounting mast complete with threaded stud for any standard mobile mount. For use with either 6M or 2M hy-gain Halo, stacked or single.

Model HM Net **$4.95**

In Stock at All Leading Distributors

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hy-gain antenna products

LINCOLN NEBRASKA

Joyce Harrington, vice-pres.; Kay MacGillivray, secy.; Lee Fisher, treas. W6FEA is rapidly learning the ropes as SEC, while OM W6WJF, our PAM, lends moral support. Congratulations to the many hams who offered donations at the Blood Bank for little Joey Visalli. Many thanks from the parents and grandparents and commendation from the rest of us. Traffic: W6SG 65, W6YOM 64, K6PQG 40, W6OPL 15, W6FEA 11, K6SRZ 9, W6BIP 8, W6GGC 6, K6LCF 6, W6ZQK 4, K6BAQ 2, W6GQA 2, W6MIY 2.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—This is my final report as SCM of the Sacramento Valley section. I would like to take this opportunity to thank each and every one of you for your FB reports and splendid cooperation of the past two years. I sincerely hope that I have, in some small way, contributed something to amateur radio. My successor is a young "live-wire." He is experienced, capable and most worthy of the office he is assuming. I trust he will enjoy the same unqualified support which I have received. Best wishes to Jay O'Brien, W6GDO, our new SCM. Heartfelt thanks to all official appointees and especially the Official Observers who have worked so diligently in behalf of our fraternity. Some of the unappreciative members of the fraternity do not seem to realize the significance of cooperative reports from OOs. They are not trying to "crack the whip" or even show one iota of authority—as their cards so plainly state. They are only a friendly reminder of possible FCC infractions; strictly in the interest of amateur radio. The Chico Club has a couple of idle code machines. How about warming 'em up? W6WLI is as snug as a bug in a rug, having just finished his 6' × 8' ham shack. He says the kw. rig heats the shack beautifully! A cordial welcome to K5RPB and K5ROU, who are operating portable in Sacramento. W6AF has 94 countries confirmed—plenty of DX too. You have never heard of such "overnight success." The local RTTY group in Sacramento is terrific. Thanks goes to an outstanding MARS group and a lot of hard work. Traffic: K6YBV 1001, W6ODV 112, K6SXX 8.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—The Tuolumne Amateur Radio Society has elected the following officers: W6EBL, pres.; W6RAF, secy.; K6YDX, treas.; W6WEB, public relations. K6RPK received an Apache from the XYL. The TARS assisted in a cross-country motorcycle race serving as checkpoint relays with good results. WV6BUH and WV6BSN both worked KC4USB on 15 meters. W6GIW is teaching code to the Boy Scouts and prospective Novices on 1978 kc. Mon. through Fri. K6DMH is teaching theory at night at Downey High School. W6ADB is improving from arthritis. The new officers of the Downey High School Radio Club are K6PFA, pres.; K6UVI, vice-pres.; W6USV, secy-treas. K6AZL is running a pair of 4X150s on all bands s.s.b. W6AXI has a pair of 811s in GG on s.s.b. K6BKZ is running a pair of 837s in GG on 75- and 20-meter s.s.b. W6NCG is building some new 6-meter gear for his new car. The new officers of the Stockton Radio Club are W6NNG, pres.; K6BFX, vice-pres.; K6RBB, secy.; K6LNZ, sgt. at arms. The Stockton Radio Club is having troubles that are similar to the Fresno Radio Club regarding the communications trailer. W6AYQ and W6USV have a Mosley Tribander. K6GOX is waiting for N.S. openings to work at KL7. W6JPS is rebuilding his mobile gear to fit his new station wagon. W6UBK got his standing waves down to normal on his rhombic. Traffic: K6CPQ 147, K6RLX 110, W6ADB 98, W6NQM 87, W6USV 14, K6SNA 2.

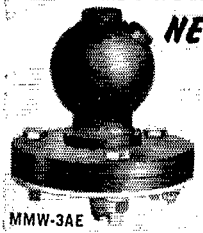
ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL, PAM: DRC, V.H.F, PAM: ACY. The following is reported by the SEC: We have a total of 502 AREC members, 412 full members, 90 supporting members. There are 112 official mobile units, 68 emergency units and 19 local emergency nets that held 49 AREC drills and tests during the reporting month. All AREC nets are tied to one or more long-haul traffic nets. Most of the local nets are on the over-populated band, 75 meters. Next high on the list is 10 meters with only two on 2 meters and one on 6 meters. I wish more AREC nets could be located on 2 meters. District 8-A is using 2 meters, as is District 9-C. District 10-A has just converted to 2 meters. Each of these districts report excellent results. There must be more if we could only get the information. AJT, District 7-A, reports activity in his district with ACY offering a prize of $100.00 for the best *home-brew* 2-meter rig. VSJ reports reactivation Mon. evening at 2100 on 3895 kc. of the Northeastern North Carolina Amateur Radio Club. Officers are VSJ, pres.; K4PVJ, vice-pres.; K4SAJ, secy.; NRN, treas.; WLQ, custodian. The club is publishing a bulletin. GXR reports the Early Bird Net handled 10,005 pieces of traffic in

(Continued on page 138)

HEAVY DUTY
MOBILE BASE MOUNTS

NEW!

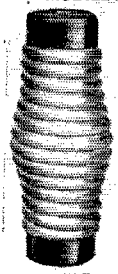


MMW-3AE

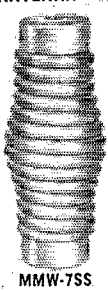
MMW-3APS

Ebony Finish $6.95 Polished Finish $7.95
Ebony Finish, S. S. Hardware.....$8.95
Polished Finish. S. S. Hardware.....$9.25

PROTECTS YOUR MOBILE ANTENNA



MMW-7



MMW-7SS

NEW HEAVY DUTY
MOBILE SPRINGS

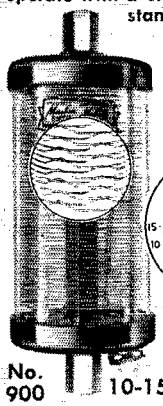
MMW-7 Cad. plated, black painted ends $4.50

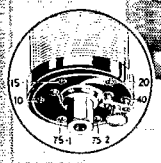
MMW-7HC Heavy Cad. plated–Ex Protection $5.50

MMW-7SS Deluxe Stain. Steel..$8.95

NEW MULTI-BAND ANTENNA COILS

New *Plug-In* type coils for the Ham, designed to operate with a standard 3' base section and standard 5' whip





No. 999
10-15-20 METERS
YOUR CHOICE
$14.95

No. 900 10-15-20-40-75 METERS

- Rigidly tested & engineered—found to have "Q" of 525
- Handles 500 Watts input
- Operates into a 52-ohm cable
- Positive contact—noisefree, troublefree operation
- Weathersealed
- Factory pre-tuned—no adjustments needed

NEW! SLIM-JIM
ALL-BAND BASE LOADING ANTENNA COIL

96" WHIP

FOR 10, 11, 12, 15, 20, 40, 80 METERS

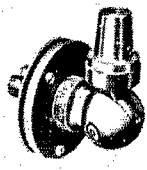
SIZE 1⅜"x 19"

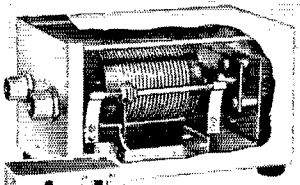
NO. B-1080

Positive action, just slide whip in or out to loading point and lock nut into position.
$17.95

Leaders in the Design and Manufacturing of
Mobile Communication Equipment & Antennas

No. 321 BODY MOUNT $7.95

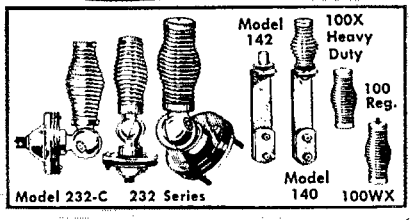




Automatically tunes the entire band from the drivers seat!

MASTER MATCHER & FIELD STRENGTH METER

6 or 12 volt models **$24.95**



MASTER-MAGIC WAND

New easy-to-install, single band, top-loaded plastic covered fiber glass mobile antenna provides maximum performance at the most useful radiation frequencies.

10 Met–5 Ft. L.$12.95
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NEW CITIZENS BAND
27.255 mc . . . $12.95

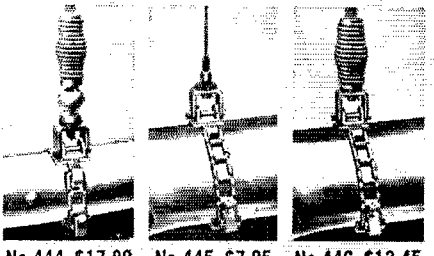
FIBRE-GLAS WHIPS

The Feather-Weight Antenna with Spring-Steel Strength!

The completely weatherproof, breakproof antenna with special flexibility that prevents accidental shorting-out against overhead obstructions which sometimes cause loss of signal or serious damage to your equipment.

FG-60 60" . . $4.95
FG-72 72" . . $4.95
FG-84 84" . . $5.15
FG-96 96" . . $5.20

BUMPER MOUNTS
WITH NEW X-HEAVY DUTY CHAINS



No.444 $17.80 No.445 $7.95 No.446 $13.45

Adjustable to any bumper. No holes to drill, easy to attach. High-polished Chrome Plated ⅜"-24 thread, to fit all antennas. Precision engineered.

SUPER HY-GAIN CITIZEN BAND

Citizen band mobile stacked coaxial antenna provides 5 to 6 DB gain. 42" high from ground plane. Furn. with 12" extension for bumper mount. **$21.95**

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1306 BOND STREET • LOS ANGELES 15, CALIF.

AT LEADING RADIO JOBBERS EVERYWHERE

1958—GXR 468, K4DNW 87, BAW 37, DSO 340, ZWF 8, BBZ 4. Traffic: W4GXR 468, DSO 340, K4DNW 87.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE. RM: K4AVU. We all regret that W4YOS is retiring as PAM after his appointment runs out because of the pressure of his work. The following were reendorsed as ORS; CJD, DAW, AKC, CHD, PED, K4BVX, GAT. Newly appointed ORSs are K4IVI and PIA. The new editor of *Scarab* is K4BVX; the business manager K4PIK. At an SCN meeting in Columbia Jan. 18, K4AVU was announced as RM and K4GAT was appointed net manager. PED was congratulated on a fine job as manager for 1958 with a traffic total on SCN of 3339 messages. The master of ceremonies at the above meeting was AKC, vice-director and retiring RM. Short talks were given by GQV on the coordination of nets, ZRH on RACES and ANK on MARS. K4EGI, manager of the South Carolina S.S.B. Net, states that TWW conducted a 16-way round table to W4FFH on the occasion of his recent hospitalization. K4ANI and ALM are leaving for a foreign military assignment. K4TQN and JFN have new daughters. HDR is now a "grandpappy." Traffic: (Jan.) K4BVX 379, WCZ 357, GAT 276, AVU 120, W4DAW 76, AKC 68, K4HQK 62, W4CJD 56, FFH 50, K4BLF 47, HJK 28, W4CHD 23, K4PJE 23, IIE 18, W4KED 17, HDR 13, BHR 12, KVF 6, CNZ 4, K4IVI 4, PIK 2. (Dec.) W4BHR 10.

VIRGINIA—SCM, John Carl Morgan, W4KX—The Richmond ARC has started planning for the fall Roanoke Division Convention. BYZ says the City Fathers may give the Danville Club quarters at the airport. The Blue Ridge ARS (Roanoke) is holding code and theory classes. New officers of the Old Dominion ARC (South Boston), in the usual order, are K4EAS, K4IIP and K4SGP. BGP reports formation of the Tech. Inst. ARC at Wm. & Mary, Norfolk Div., with BGP as prex and LTB as trustee. OOL reports that UGX demonstrated ham radio to Berryville Boy Scouts, with BCT and OOL assisting on 2 meters. Shenandoah Valley hams, with the assitance of West Virginia and Maryland participants within a radius of 140 miles, assisted in providing communications for the March of Dimes Telethon on WSVA-TV. PVA furnished emergency communications (by way of 8GDQ in Ohio) to Warrenton when radio WPRW in Manassas lost power. SBA received the 1958 "Sun Echo" award for his voluntary contributions to Fairfax County schools. K4MJZ and K4MXF were sworn in by Arlington C.D. to serve on the planning committee. MJZ is moving to Fairfax. 7VAH/4 reports that SGV and ZEY are sparking the surge of 6-meter activity in the Norfolk Area. The 6-Meter C.D. Net meets M-W-Sat. on 50,460 kc. at 2000 EST. K4SSA is using 6 meters for chess games with the Washington Area boys. THM assures us he is still alive but has no antenna room at the new QTH. We welcome to Virginia W9QNI/4, now at Cape Charles, and W3MGL/4, in Norfolk. K4MSG wants to hear from Virginians interested in microwave radiotelescopes and 500-600 Mc. transmissions. K4AET is whetting the Rettysnitch to use on deliberate QRMers. Traffic: (Jan.) K4QES 690, ELG 519, EZL 429, W4QDY 334, K4JKK 300, KNP 247, AET 196, W4SHJ 170, K4QER 132, W4SNH 78, BYZ 73, BZE 51, W3MGL/4 43, K4IIP 29, W4OOL 26, KX 22, BGP 16, AAD 14, K4JRE 9, W9QNI/4 9, W4ATQ 8, K4MJZ 8, MSG 8, HTA 6, W4LW 3, K4RZJ 3, W4WBC3, LW1 (Dec.) W4PFC 520, K4MJZ 22.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: HZA. PAM: GAD. V.H.F. PAM: K8IYU. RMs: GBF, FNI, PBO and VYR. The Dayton Hamvention will be held May 9 at the Dayton Biltmore Hotel. The chairman of the awards committee of the Dayton Club has asked that names of hams who have done the most in the public interest for the states of West Virginia, Ohio, Kentucky, Indiana and Michigan be submitted to Dayton Hamvention, 4209 N. Hyland Dr., Dayton 24, Ohio. We are all sorry to learn that K8HRO is moving to Florida. K8DFO won the last V.H.F. Contest for West Virginia. VA is on 6 meters. IHY was home from school during the Christmas holidays. New stations on 6 meters are K8MOR, K8NHM, K8EYS, K8EKZ, K8GGG and BVL. The V.H.F. Net is becoming an important net for emergency use. K8HPL needs Vermont and Wyoming for WAS. GBF, PZT SSA and K4CQA/8 participated in the last ARRL F.M.T. PZT had an error of zero parts per million for only one measurement. 5A2FF visited IRN and PQQ on his way home to Kentucky. The 8RN Traffic Net is now operating 7 days per week. Extra traffic-handlers are needed. TVO is a new OO. PBO renewed ORS appointment. K8JLF made BPL for two consecutive months. K8GGG is a new OES. K8DDB has a 20-A and a v.f.o. K8KFK is the son of UDB. IOF is new OES and is conducting antenna polarization experiments. K8BLR assisted Marietta, Ohio, hams during the recent high water as did many other West Virginia amateurs. What can be done to start a net on 6 meters? Traffic: (Jan.) K8JLF 285, KFK 138, HID 106, W8FNI

(Continued on page 140)

Transistor Power Supplies* and Components

*Complete Units

D SERIES (Standard)

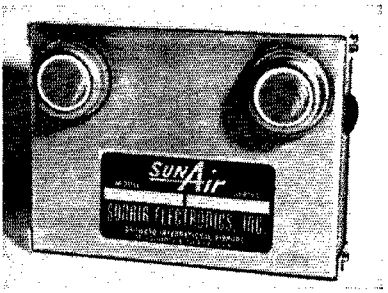
Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at ½ selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**

DA SERIES

Continuous operation at 45 watts. 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA; 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 14 oz 12-V Input: **$57.50** 24-V Input: **$79.50**



Toroid Transformers for Transistor Power Supply Application

H SERIES

H-6-450-1 Input: 6-VDC. Output: 450-VAC center tapped...450 and 225 VDC from bridge rectifier...45 watts.

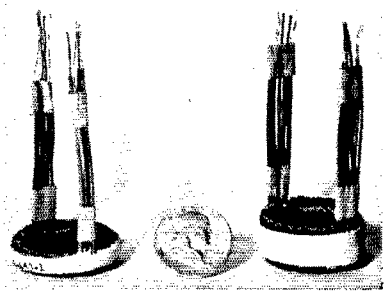
H-14-450-12 Input: 12/14-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...55 watts.

H-28-450-15 Input: 24/28-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...65 watts.

H-6-100-125-150-D Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

H-12-100-125-150-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

H-24-100-125-150-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.



Without Encapsulation (2 ozs.). 1-10 units: **$16.00 ea.** With Encapsulation (3 ozs.). 1-10 units: **$18.50 ea.**

HD SERIES — 2000 CPS

HD-14-225-300-2-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

HD-28-225-300-2-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$18.50 ea.**
With Encapsulation (4½ ozs.). 1-10 units: **$21.50 ea.**

HDS SERIES — 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

HDS-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$21.50 ea.**
With Encapsulation (4½ ozs.). 1-10 units: **$24.50 ea.**

400 CYCLE SERIES

14-115-1.5-400 Input: 12/14-VDC. Output: 115-V at 1.5 amp.

24-115-1.5-400 Input: 24/28-VDC. Output: 115-V at 1.5 amp.

Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.). With Encapsulation (16 ozs.). Per Unit: **$76.00.**

Matched Pair HD Transistors:
12/14-V operation—**$11.00** per pr.
24/28-V operation—**$21.00** per pr.

OEM *Prices on Request*

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75, PBO 56, BWK 54, SNP 31, DFC 30, K8BRM 21, W8NYH 16, K8HRO 14, GWV 7, W8QWE 5, K8IYU 3, CSG 1, DDB 1. (Dec.) K8KFK 83, IYU 10, W8QWE 9.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML—SEC: NIT. PAMs: IJR and CXW. OOs: OTR and RRV. OBS: KØBTU. The El Paso Radio Club now meets at the American Red Cross Building, 1600 North Cascade Ave. KØLZF and KØCEN attended the Denver Radio Club meeting. A new ham in Indian Hills is KNØSQM, running a Globe Chief and an NC-300. According to *Splatter Chatter* QAR has sold his DX-20. Hans, jr, is constructing an electron microscope. KTX took his semi-annual vacation during the holidays. According to KØEVG, the LCL-YL Net is issuing certificates for ten contacts not on the regular Mon. schedules. JBI, UPD and EPD are officers of the Electron Club. EHE has been in the hospital. KØPGU and KØPGM have new tickets. KØRRS has a new Technician Class license on the shack wall. The Denver Radio Club has 197 paying members. IJR has a new home. K4VQK, ex-KØAQR, recently was heard from. KØBTV was guest speaker at the Denver Radio Club meeting. Her topic was on quartz crystals. KØICF has moved to Colorado Springs. BWJ and PLG are both airline pilots as well as amateurs. LVI is working at Martin. Phyllis, the XYL of KØHPF, has completed a three-month course in Washington. KN5RNE/Ø is a student at Abbey School, Canon City. Traffic: WØIA 1351, KQD 557, ANA 157, BEN 115, KØDXF 103, EDK 73, ALH 67, EDH 64, WØDQN 54, TVI 46, ENA 41, QOT 32, CBI 17, NIT 10.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 7OCX. SEC: FSC. PAM: BBN. RM: JBV. Besides his numerous other duties OCX has taken the job as net manager for the Beehive Net. YPC, RSE and K7s BHE, CLS and AUM have now qualified for a net certificate. BLE is working on 420-Mc. equipment and still is trying to get a 40-meter beam up. VEO has a nice signal with his new 811 linear amplifier. QWH is working on an all-band 10-watt mobile transmitter. FND, IBO and VEO have been appointed as Emergency Coordinators in Tooele, Davis and Utah Counties. BAJ has been working all bands and heard Europe on 40 meters. The Beehive Net has nearly thirty members. NHX is now on 10-meter mobile. ZBL is operating portable from the University of Utah. Traffic: (Jan.) W7OCX 153, BLE 5, BAJ 2, QWH 2. (Dec.) W7-JBV 418.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. The NMEPN meets each Sun. at 0730 MST on 3838, Tue. and Thurs. at 1800 MST on 3838 kc. The Breakfast Club meets Mon. through Sat. at 0700 on 3838 kc. TWN meets Mon. through Fri. at 1900 MST on 3570 kc. Check in on as many of these nets as you can. You are needed. K5GOJ, of Albuquerque, is the proud papa of a new baby boy. FPB is going great guns as V.H.F. PAM. He had 8 nets during January with a total of 59 check-ins. ZU, Roswell PAM, now has all his NCSs lined up and working very smoothly. WNU entered Bataan Hospital Jan. 30. We hope to hear him back on the air very soon. We have a new EC on Los Alamos, K5IPK. Have had several QSOs with KP4AQL, formerly K5CEV of Carlsbad. He works 10 meters and would like to have a lot of Stateside stations to talk to. TWN now meets every day at 1900 MST on 3570 kc. Traffic: (Jan.) W5DWB 491, K5DAB 18, W5HJF 6, KWR 6, K5DAA 4, W5GD 4, K5GYZ 4, W5VC 4, BQC 2, ZU 2. (Dec.) K5FHU 1284, ESN 5.

WYOMING—SCM, Lial D. Branson, W7AMU—The Pony Express Net meets Sun. at 0830 MST on 3920 kc. The YO Net, on Mon., Wed. and Fri. at 1830 MST on 3610 kc., is a c.w. net. The Wyoming Jackalope Net meets Mon. through Fri. at 1200 MST on 7255 kc. for traffic. AHO left for Mexico on vacation. AXG was in the hospital with flu. HX passed away Feb. 2 at the age of 85. CMF has gone to Billings for 6 weeks. DTD has a new quad antenna. YXM has been appointed EC for Natrona County. BEL has been appointed EC for Johnson Co. CQL is doing a nice job as SEC. BHH's vertical antenna blew down. The Wyoming amateur call audo license plate bill passed the Senate and House and is up for the Governor's signature. K7AUI and QPV, at Cheyenne, did a wonderful job with the License Plate Bill through Legislature. Traffic: W7DXV 43, IDO 14, BXS 12, AMU 7, EKQ 6, CQL 4, DTD 4, UZR 4, ZTK 4, YXM 3.

SOUTHEASTERN DIVISION

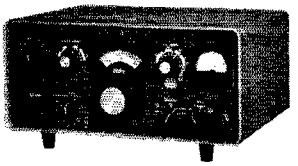
ALABAMA—SCM, Clarke A. Simms, jr., W4HKK—PAMs; DGH and K4BTO. RM: RLG. Traffic reports for Alabama nets for January are as follows: AENP

(Continued on page 142)

HARVEY has it!

The Completely New S/Line from Collins. The Latest addition to its distinguished single sideband series of amateur radio systems.

THE COLLINS 32S-1 TRANSMITTER $590.00



The 32S-1 is an SSB or CW transmitter with a nominal output of 100 watts for operation on all amateur bands between 3.5 and 29.7 mc. Input power is 175 watts PEP on SSB or 160 watts on CW.

Frequency Range: 80, 40, 20, 15, and 10 meter amateur bands. Easily retuned to frequencies between amateur bands by using different crystals.

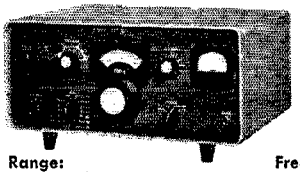
Output impedance: 50 ohms.

Frequency stability: After warm-up over-all stability due to temperature, humidity, pressure and voltage variation is 100 cps.

Calibration accuracy: 1 kc.

Oscillators: Double conversion circuit is used with CR-18/U crystals in the HF oscillator. A VFO tuning 2.500 to 2.700 mc, provides 200 kc bands. A crystal oscillator operating on either side of the Mechanical Filter passband provides carrier for SSB generation and choice of upper or lower sideband.

THE COLLINS 75S-1 RECEIVER $495.00



The 75S-1 provides SSB, CW and AM reception on all amateur bands between 3.5 and 29.7 mc. It is capable of coverage of the entire HF spectrum between 3.5 and 20 mc by selection of the appropriate high frequency beating crystals.

Frequency Range:
80 meters—3.4 to 4.0 mc.
40 meters—7.0 to 7.4 mc.
20 meters—14.0 to 14.4 mc.
WWV—14.8 to 15.0 mc.
15 meters—21.0 to 21.6 mc.

Choice of three 200-kc portions of 10 meters: 28.5 to 28.7 furnished.

Overtravel—7.5 kc on all bands.

Frequency Stability: After warm-up, over-all stability due to temperature, humidity, pressure, and voltage variation: 100 cps.
Calibration accuracy: 1 kc.

Visual Dial Accuracy: 200 cps all bands.

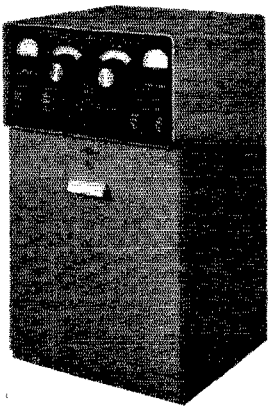
Electrical Dial Accuracy: (after calibration): 300 cps all bands.

Backlash: Less than 50 cps.

Sensitivity: The CW sensitivity is better than 1 microvolt (with a 50-ohm dummy antenna) for a 10 db single-plus-noise-to-noise-ratio.

Selectivity: 2.1 kc Mechanical Filter for SSB; 0.5 ks. Mechanical Filter (not supplied) for CW; 4.0 kc IF transformer passband for AM.

THE COLLINS 30S-1 LINEAR AMPLIFIER



The 30S-1 Linear Amplifier rounds out the S/Line to make a single, complete, high powered amateur SSB station.

Frequency Ranges: 3.5—4.0 mc; 7.0—7.3; 14.0—14.4; 21.0—21.45; 28.0—29.7. Covers entire spectrum from 3.5 to 30 mc by retuning cathode circuit.
Output Impedance: 50 ohms.
Input Impedance: 50 ohms unbalanced.
Power Input: SSB-1 kw average, CW-1 kw.
Power Output: SSB: 1000 watts PEP with 40 db signal to distortion ratio; 1300 watts PEP with 35 db signal to distortion ratio.
CW: 600 watts with 1 kw input.
Controls: Band Change, Multimeter, Filament, H.V., Bias Control, Tuning, Loading.

Harvey is completely equipped to supply you with the latest ham gear available today.

Our staff of 'hams' is at your service to discuss and advise you on your equipment needs and any other communication problems you may have. They are always ready to talk 'shop' with our customers with the friendly and reliable advice you expect from another ham. Not only do we have a complete stock of everything you may need at Harvey, but we also have an organization geared to ship your order immediately, whether received by phone, mail, or in person.

ACCESSORIES:

312B-4 SPEAKER CONSOLE integrates the 32S-1, 75S-1 and accessories into an operating system. $185.00

312B-3 SPEAKER contains a 5"x7" speaker and connecting cable. $27.50

516F-2 AC POWER SUPPLY operates from 115V AC, 50-60 cps to provide all voltages for the 32S-1. $105.00

516E-1 DC POWER SUPPLY operates from 12V DC to provide all operating voltages for the 32S-1 and 75S-1 for mobile or portable operation. $262.00

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182 in 61 sessions, AENB 141 in 31 sessions, AENO 10 in 10 sessions, AENT 27 in 32 sessions. Congratulations to EFF upon his election as net manager of AENO; also the new Technicians in Northport, K4CGL and CBK. K4PHH has a new receiver and K4YGQ a new transmitter. The gremlins must have CIU; everything was broken but his antenna. Selma is holding transmitter hunts on 10 meters every Sun. afternoon. AEM has moved to Ft. Payne and is active on 6 meters. It is with deep regret that I advise you of the loss to Silent Keys of Ethel L. Stewart, K4TWN, Jan. 10 and S. D. Christian, W4EBD, Jan. 29. As you know Cris was our SEC. ZSJ has a new 500-B and K4UJH is hearing with a new NC-303. Make your plans now for the Birmingham Hamfest to be held May 3. Traffic: W4RLG 232, KTX 86, PVG 81, OKQ 58, YRO 51, K4BTO 43, JDA 27, W4CIU 25, DGH 21, K4AOZ 20, GOW 14, W4MI 14, WAZ 14, K4JSP 11, SAV 10, W4CEF 9, K4KQN 9, IPF 8, KJD 8, W4CXC 6, RNX 6, K4YEN 6, W4HKK 4, K4PHH 3, KAK 2, KN4CTB 2.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: K4SJH. PAMs: TAS and RMU. Newly-elected officers of the JARS are HRC, pres.; NKC, vice-pres.; K4ETK, treas.; RMU, secy.; K4DSN, act. mgr. A new net in the Jacksonville Area is on 50.1 Mc. K4VEJ has a new twin five beam on 2 meters. K4UGE is on with a new Heath Apache. DPD reports his new home-brew 22-tube receiver for 2 meters is really hot. K4PAD is on with a new DX-100B and an RAX-1. Zone 2 (Hialeah) has received its new base station equipment. The BARC held its annual auction at the Ft. Lauderdale Armory Feb. 14. K4OYR, K4IWC, K4CRU, K4IQS and ALF participated in the C.P. Telethon at Hollywood and collected $600. K4RZQ is giving on-the-air code practice in cooperation with SDR. K4ILB has acquired a BC-221 frequency meter. GOG has a new 75S-1 and 32S-1. New officers of the Key West Club are GAH, pres.; K4SDC, vice-pres.; MLR, secy.-treas. The new net manager for FMTN is K4ODS. K4MBB is the new Collier County EC. The new net manager for FN is K4RZQ. Fellows let's all watch our language a little closer while transmitting on the air. You never know who may be listening and we need all the good publicity we can get. Don't forget the big hamtest to be held in Sanlando Springs in April sponsored by the Orlando Radio Club. Thanks for the reports you have been sending in. Keep up the good work. CU at Sanlando. Traffic: (Jan.) K4SJH 659, ILB 287, KDN 281, RZQ 196, W4IYT 173, K4QLG 152, W4HTH 122, K4OYR 87, W4AHZ 86, K4BNE 65, LCD 64, W4FJE 62, K4LCF 61, BY 59, AKQ 58, COO 47, ODS 40, AHW 39, YOQ 39, BR 33, BLM 32, GPI 30, RNS 21, W4TAS 20, K4PAD 16, VEJ 14, W4DPD 12, IET 8, K4IWT 8, MTP 8, W4LMT 7, SJZ 6, K4MBB 5, W4MBO 5, K4ANJ 4. (Dec.) W4FFF 568, K4ODS 131, KUZ 129, W4AZJ 63, K4VEJ 36, W4LMT 34, K4ANJ 18, W4FFZ 9.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: AXP and BVE. Steinhatchee: UZB is a new ham in Taylor County. Tallahassee: K4PVU reports YUU, CHZ and BKV are interested in parametric amplifiers for v.h.f. Port St. Joe: K4RZM, EC, plans regular c.d. drills for the last Mon. of each month, 8 P.M., 3840 kc. BGO is EC for Gadsden County and W8RTC/4 is EC for Washington Co. 8RTC reports he and EQK are the only hams in that county; RGO and EKY are the only hams in Gadsden Co. Fort Walton: K4QVL traded for a new HQ-160. BPJ has a new G-77A and has moved to a new QTH in Shalimar. BVE, NWFN mgr., reports the net handled over 1100 messages in January. K4UBR, WKQ, AXP and JLW were active in the C.D. Party. WKQ got over 100,000 points. MFY, *Bandspread* editor for the Eglin Radio Society, has published two FB newsletters. The EARS held an auction and had a transmitter hunt organized by BLQ, act. mgr. Pensacola: The PARC furnished communications for another sports car rally. MS and AGM got endorsements on IGY certificates for 50-Mc. work. MS is active on 20-meter s.s.b. HBK is improving OO capability. The V.H.F. Club sponsored a booth at the U.S.O. hobby show. DTO, QAC and YAU are new hams in town. ZII is now General Class. Traffic: K4UBR 790, W4SRK 378, BVE 181, K4OID 119, PVU 96, W4MS 14.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: PMJ. PAMs: LXE and ACH. RM: PIM. The GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0800 on Sun.; ATLCW, 7150 kc. 2100 EST Sun.; GSN, Mon. through Sun. 1900 EST on 3595 kc., PIM as NC; 75-Meter Mobile Phone Net, each Sun. at 1330 EST on 3995 kc., MV as NC; Atl. Ten-Meter Phone Net, each Sun. at 2200 EST on 29.6 Mc., KWC as NC; GTAN, Sat. at 1000 EST on 7290 kc.; GPYL Net Thurs. on 7260 kc. at 0900 EST., K4CYV as NC; GAN, 7105 kc. at 1800 EST Mon. through Fri., K4KZP as net mgr. The Atlanta Teen-Age Club is growing with new active members. Georgia Military College at Milledgeville is organizing a club. Col. Schyler is doing a wonderful job

(Continued on page 144)

BIG NEWS FROM MARK

THANK YOU!

For your wonderful acceptance of our Mobile HELI-WHIP Antennas. Experience plus expanded production facilities enables us now to bring you these advanced designs at lower cost. To satisfy demand we also present a complete series of fixed station HELI-WHIP Dipole Antennas.

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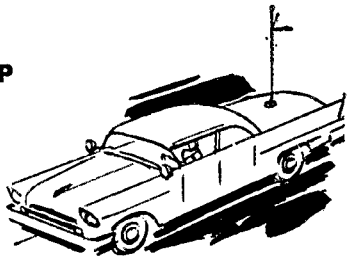

Cover 10-15-20 meters without antenna adjustments! No traps. Mobile DX'ers are working the world with this beautifully engineered antenna. Use with the HWM-1 Mount or any standard type.

HELI-WHIP* MOBILE ANTENNAS†

HELI-WHIPS will greatly improve the performance of your mobile rig not only in effective radiated power but also in reception. HELI-WHIPS match 52 ohm coax without traps or adjustments. Very low v.s.w.r. across the band. Extremely durable plastic coated fibre-glass construction—*the original* and by far the best of its type.

NEW LOW PRICES

HW-10	10M HELI-WHIP	$9.95
HW-15	15M "	"
HW- 6	6M "	"
HW-11	11M (27Mc Citizens)	"
HW-20	20M HELI-WHIP	10.95
HW-40	40M "	"
HW-80	80M "	"
HW-815	15M *Special 8' long*	18.00
HW-820	20M " "	"
HW-840	40M " "	"
HW-880	80M " "	"
HWM-1	Base Insulator Mount for above	7.50

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NEW HELI-WHIP DIPOLES FOR YOUR FIXED STATION

The famous radiation and matching characteristics of HELI-WHIP mobile antennas are now available for your home station. The HWD Dipoles are extremely simple to install in areas that otherwise would present problems because of lack of space. They are supplied with a type SO-239 connector for RG-8/U or RG-58/U

HWD-10	10M HELI-WHIP Dipole	8'	$22.50
HWD-15	15M " "	12'	24.00
HWD-20	20M " "	12'	27.00
HWD-40	40M " "	16'	29.95
HWD-80	80M " "	20'	36.00

CITIZENS BAND: 27MC DIPOLE AVAILABLE

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Please send data on HELI-WHIP supplier ☐ Mobile HELI-WHIPS ☐ Fixed Station HELI-WHIPS ☐ Please send the name of my nearest

Please ship the following: (My ☐ Check ☐ *Money Order is enclosed*)

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CITY_____ ZONE_____ STATE_____

with this club. KN4EJM and KN4EJI are new hams in Columbus. CHC and BAB have dropped the "N." K4VGI is now Technician Class and is the chief engineer for K4BAI. K4AUM and OKL did an FB job reworking the transmitter and antennas at ZOA. The South Ga. Rag Chewers is getting ready for a big hamfest in Thomasville May 9-10. Augusta will have its big hamfest May 16-17. Don't miss either or you will be sorry. The Georgia State Net now meets seven days a week on 3595 kc. at 1900 EST. K4CZR and CFJ had a wonderful visit with K4LVE and ETD on Feb. 1. ETD is putting up an antenna farm at the new location in Warner Robbins. Terry is doing a wonderful job as Air Force MARS new director. K4VGO has a new DX-100 and new Super-Pro receiver. KØETT visited the hams in Douglas during January. K4LEM is back in Tech, grinding away on lessons. K4HOU still is QRT while the attic is being rebuilt for air-conditioning. The teen-age net handled 27 messages in January. Traffic: W4DDY 85, K4BAI 73, LVE 48, VGO 28, HJZ 16, OQY 14, W4ZWT 6, BXV 1, LEM 1.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: AAA. KD renewed ORS appointment. AQL ex-K5CEV, is active from Ponce using a Viking I, an HQ-100, a triband beam and trap-doublets. AET, AFL and AQL are new stations reporting to the 3925 kc. Net Wed. RA has a new QTH on a farm outside of Arecibo. RA's son-in-law, K4BSN, visited here during the holidays. DJ put up a 10-meter beam and chased a 66-Mc. parasitic out of the 813 final. WT once again monitors 3925 kc. from 7 A.M. to 10 P.M. since AGO repaired her BC-454 receiver. Grandmother WT now has 13 grandchildren. CC built s.s.b. equipment and is heard on 7 Mc. EC AAM is on 15-meter phone with a ground-plane antenna. EC, ex-K4FHR, joined Silent Keys. KD is up to 84 countries on phone and worked CEØZA on 21-Mc. c.w. and CEØZB on 28-Mc. phone. KD applied for part 4 of the DUF certificate. Kroonstad (ZS4) Award, VQ Award and Belgian "Diploma Back Country" and received his DXCC-230 sticker. APW and his XYL, APX, are living near International Airport. AJZ and his XYL, AKJ, are now in San Angelo, Tex. JM has a 458-20A-6OOL and a Telrex Christmas tree array 6 through 20 meters. KL7CQL visited KP4-Land and wants a sked on 10 and 20 meters from the Dew-line. KP4ANT/-KG1CK, at Thule Air Base, Greenland, wants a sked with KP4 on 21,045 kc. between 1500 and 0200 EST. WP4AQK is on 21 Mc. with Globe Scout and an SX-28. AJG now is located in Battle Creek, Mich. AMU is on 28-Mc. c.w. with a Ranger. AMG assembled an Apache transmitter. HZ assembled a Mohawk receiver. JZ also completed an Apache and s.s.b. generator. WN moved to KV4-Land. WLU moved to HP-Land. YT ordered a Valiant. W1OEB visited KP4-Land. ACH, AMN, AAB, AHQ, AHX, AHM, AHP and ALX participated in the ARRL V.H.F. Contest on 6 meters. CO2GX, CO2RV and CO2ZX are on 50 Mc. ABN received an ARRL V.H.F. Contest certificate. ACH QSOed Maderia Island and he and AMJ QSOed Switzerland on 50 Mc. JM uses a 6N2 on 50 Mc. Traffic: (Jan.) KP4WT 48. (Dec.) KP4WT 36, AAM 6.

CANAL ZONE—SCM, Ralph E. Harvey, KZ5RV—UJ is working on a new cubical quad and from all reports it is going to be the quad to end all quads. DB lost his quad in a heavy wind and now has a new Mosley Junior and a new tower. AH has received his new Apache and at present is in the counting stage. BL has finished constructing his new Apache and has it on the air. It sounds real fine at this QTH. Ex-KZ5BE is now W5RXW, in El Paso, Tex. Ex-KZ5DN is now K5SPW and is in Abilene, Tex. JJ's wife is in Indianapolis, Ind., going to school and Jim has nightly schedules with her. LC reports that he worked 200 stations in the January CD Party. Traffic: KZ5JJ 66, WA 51, KA 33, DB 23, RM 15, VR 10, HO 9, LC 9, RV 9.

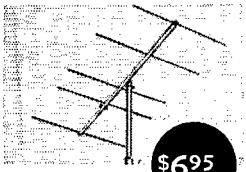
SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP. RMs: W6BHG, K6HLR. PAMs: K6BWD, W6ORS. The following stations earned BPL: W6GYH, K6HLR and K6LVR. I think W6GYH has a record, 36 consecutive BPLs. Congrats, Cavi, on a fine job! K6LVR is now a TCC station. K6COP is working some fine DX between classes. K6OJV reports the Teen-Age Net is active on 3940 kc. at 2200 PST Sat. WA6DWP is the new call of W1LKP. K6PZM was appointed Asst. NCS of the SoCal 6 Net. WA6BAQ has a new trap vertical up. W6SRE put up a twin 5 2-meter beam. K6PLW has a new "Slim-Jim" mobile antenna. W6ORZ put in a new operating console. W6AM added rhombic No. 13 to the antenna farm. K6OZJ now is on 220 Mc. K6GKX reports that the 220-Mc. gang is going to horizontal polarization. W6LDG is the new chairman of the Whittier Radio 50 Club. A new reporter this month is

(Continued on page 146)

HERE ARE THE GREAT hy-gain VHF YAGI'S FOR 2M, 1¼M & ¾M OPERATION

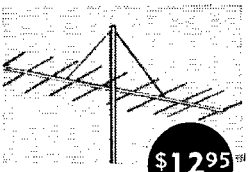
9 db GAIN



Model No. 25
2M, 5 Element

$6.95

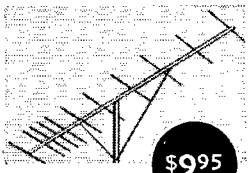
13.4 db GAIN



Model No. 210
2M, 10 Element

$12.95

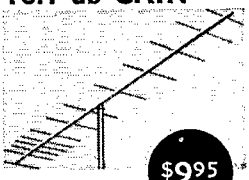
14.2 db GAIN



Model No. 111
1¼M, 11 Element

$9.95

16.1 db GAIN



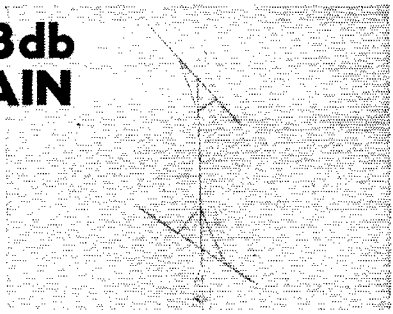
Model No. 313
¾M, 13 Element

$9.95

These Hy-Gain VHF Antennas are OPTIMUM SPACED for maximum forward gain. Parasitic elements are constructed from solid 6061T6 alloy aluminum rod for High Q, resulting in tremendous efficiency. The booms are large diameter heavy wall aluminum tubing. All hardware is hot dipped galvanized iridite treated for maximum weather ability. Guaranteed for 1 full year.

Now Available! COMPLETE STACKING KITS & MOUNTING FRAMES for Construction of Extremely HIGH GAIN Dual & Quad Stacked Arrays!

+ 3db GAIN



Stacking two of any of the above hy-gain VHF beams results in an additional 3 db gain with considerable reduction in vertical beam width, concentrating maximum power at low vertical angles which are so important in VHF propagation. Stacking kits include all phasing lines, matching transformers, all necessary hardware (less mast), and complete assembly instructions.

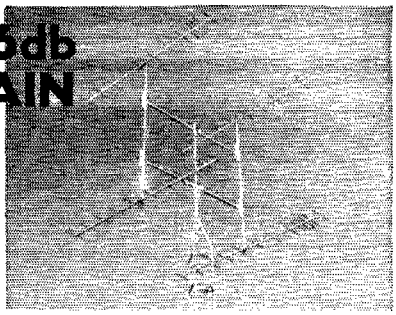
Complete Stacking Kit for any two Hy-Gain VHF Yagi's

Order by Model No.

25S	(for 2-2M, 5 Element Beams)	$4.95 Net.
210S	(for 2-2M, 10 Element Beams)	
111S	(for 2-1¼M, 11 Element Beams)	
313S	(for 2-¾M, 13 Element Beams)	

All kits complete with detailed instruction manuals. For use with most types of transmission lines. Completely factory pre-tuned.

+ 6db GAIN



Stacking four of any of the above hy-gain VHF beams results in an additional 6db forward gain, together with the all important reduction in both vertical and horizontal beam width. The quad stack arrangement results in the maximum concentration of radio frequency energies within the mechanical limitations of most Amateur installations. Stacking kits include all phasing lines, matching transformers, all necessary hardware (less mast), and complete assembly instructions. Stacking frame assemblies (SF) include all necessary heavy duty steel and aluminum tubing specially designed positive grip brackets and hardware (less main mast).

Complete Stacking Kit for any four Hy-Gain VHF Yagi's

Order by Model No.

25QS	(for 4-2M, 5 Element Beams)	$15.95 Net.
210QS	(for stacking 4-2M, 10 Element Beams)	
111QS	(for 4-1¼M, 11 Element Beams)	
313QS	(for stacking 4-¾M, 13 Element Beams)	

Stacking Frames for use with any of the above. Quad Stacking Kits, $59.50

Order by Model No.

25SF	(stacking frame for the 4-2M, 5 Element Beams)
210SF	(stacking frame for the 4-2M, 10 Element Beams)
111SF	(stacking frame for the 4-1¼M, 11 Element Beams)
313SF	(stacking frame for the 4-¾M, 13 Element Beams)

W6QR. Glad to have you, Gil! W6CMN has the new Hy-Gain all-band vertical going. New officers of the Hughes Amateur Radio Club are K6VTQ, pres.; K6IGB, vice-pres.; K6LFO, secy.; K6VTH, treas. K6QMK is building a new shack. W6BES is sporting a new KWS-1. The repeater station, K6MYP, is now operating on 145.18 Mc. K6TJG made WAS on 15-meter phone with his DX running 75 watts to a beam. He received a Viking II and an SX-96 for Christmas. Our new Director, W6MLZ, has really been touring the division from Tucson, Ariz., north. Nice going, Ray! W6HAL made DXCC. Congrats Leon! Support your section nets—phone, SoCal 6 Net, 50.4 Mc. at 1930 PST; c.w., Southern California Net, 3600 kc. at 1930 PST daily. Traffic: (Jan.) W6GYH 928, K6HLR 814, K6LVR 539, K6OZJ 432, WA6BAQ 340, K6PQM 186, K6EA 124, W6BHG 123, K6OJV 114, W6QR 108, K6GKX 60, K6TPL 46, K6PZM 27, K6GGS 23, K6GLS 11, W6ORZ 9, K6PLW 9, K6TJG 9, K6GCC 8, W6USY 8, W6CIS 4, W6BUK 2, K6COP 2, W6JQB 2, W6 SRE 2, W6CMN 1. (Dec.) W6ZJB 1914, K6MCA 1738, K6LVR 1385, K6EA 337, K6PZM 126, K6OQD 114, K6QMK 73, K6TPL 63.

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. PAM CSN 3880 kc.: FMZ. NLR has a new shack and is modifying some h.f. gear for it. The AARC held its Jan. picnic in South Mountain Park. The transmitter hunt was won by CF and FMZ. Our Director, 6MLZ, spoke to a joint meeting of clubs in Tucson and also the Ft. Huachuca Club. He reached Phoenix on a Saturday night and visited with the Board of Directors of the AARC. Don't forget that the Northern Arizona Hamfest will be held at White Horse Lake near Williams this year. As usual it will be over Memorial Day week end. There will be more details later. Traffic: W7PLR 73, FMZ 11, K7EBP 10, W7OIF 5.

SAN DIEGO—SCM, Don Stansifer, W6LRU—W7AHV is active in El Cajon operating from the trailer in which he and his wife live. We are happy to welcome ELQ back, in San Diego this time. Ed is now ORS and very active. K6BTO has moved, but still is active on 430 Mc. from National City. K6ZCR, in Fullerton, is an ORS. She is active on all bands, c.w. and phone. RCD, on both a.m. and s.s.b., was very active during the ARRL DX Phone Test from San Diego. K6IPV is up to 46 countries on phone, and now has a new DSB rig on. LRU got a Heath Apache for Christmas with an SB-10 s.s.b. adapter. IQY spoke on sideband at the February Helix Club meeting. Any who missed FO8AT, and worked him, can secure cards from W6KSM with the usual envelope ready to go. The February meeting of the San Diego DX Club was held at the home of FFD in La Jolla. New officers of the DX Club are CAE, pres.; ZVQ, vice-pres.; CHV, secy.-treas. New officers of the San Diego Council of Amateur Radio Organizations are K6EC, chairman; K6DBJ, vice-chairman; K6GGX, secy.; K6BPL, treas. K6ZVI is active from Imperial Beach on 6 meters. Recent endorsements in this section include LYF as SEC; EOT as RM; JVA as OBS; K6BTO as OES; WNN and ZVQ as OOs; CHV as OPS; EOT, ISQ, LYF and K6EQL as ORSs. Traffic: W6EOT 551, K6ZCR 129, W6ELQ 87, K6BPI 71, W7YKN/6 38, ISQ 2.

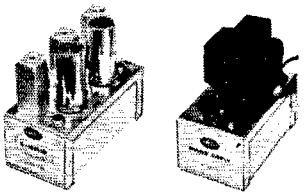
SANTA BARBARA—SCM, Robert A. Hemke, K6CVR—The Atascadero Radio Club elected K6JGY, pres.; K6GNM, vice-pres.; K6JHA, secy. Visitors from Arroyo Grande, W6IHD, OUL, MWA and YCE, attended the meeting. Recently K6EJV gave a talk on RACES at a combined meeting of the Paso Robles and Atascadero Radio Clubs in Paso Robles. DTY wonders who would be interested in a slow-speed traffic net in this section. Anyone who desires to have such a net should advise either W6DTY of K6CVR. W6BE recently received his Extra Class license. Congratulations. W6BPY has some very interesting results with a triband quad. From what I hear the results are very, very good. A surprise birthday party was given in honor of K6SJF and K6SJC at the QTH of W6JPP. Traffic: W6YCF 17, W7AHV/W6 4, W6FYW 4, W6AMD 2, W6DTY 2.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—Asst. SCM: E. C. Pool, NFO. SEC: K5AEX. PAMs: BOO and IWQ. RM: ACK. K5ILL reports a March of Dimes Telethon sponsored by KLTV, Tyler, Tex. with more than $16,000 being raised. The following took part in the operation: K5GZA, BSY, DFT, MET, ILL, KKM, POP, KFC, AAG, DNQ, DFR, DGP, GIX, HUC, ICA, IHF, IMD, KOY, LUB, QJA, SBY, SOW, GZA, W5WKK, ALL, COM, BJ, BUJ, FET, FKE, NYN, KBT. W5GY, in a one-hour contact with GZU, discovered that they had worked land-line telegraph duplex circuit, Port Arthur and Houston, 35 years ago. GY, a long-time c.w. operator is going on phone. K5ILL has a

(Continued on page 148)

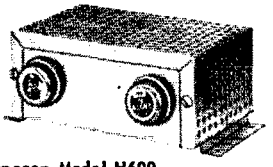
It's Mobile Time At ARROW!



Amaco 6-Meter Converter And Power Supply

Crystal controlled. 6BZ7 cascode RF amplifier and 6U8A mixer-oscillator. Special Pi-net output coil with taps allows converter to have any output frequency for hookup to any receiver. IF rejection: Over 100 db. Noise figure: Better than 4 db. Power gain: 20 db. Attractive 2-piece brushed copper chassis. The Power Supply can deliver 50 ma at 117 volts DC and 2A at 6.3 volts AC and may be used to supply power to many accessories around the ham shack. 6-meter Converter comes complete with tubes & crystal for 7-11 MC or 14-18 MC.

Model CB-6K (Kit) **$19.95**
Model CB-6W (Wired & tested) **$27.50**
Kit or wired model for any other output frequency ..... **$1.00 extra**
Model PS-1 Power Supply (Kit) **$10.50**
(Wired & tested) **$11.50**

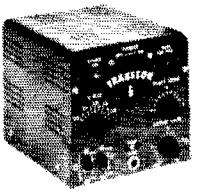


Transcon Model H600 Transistorized Mobile Power Supply

Continuous duty output 120 W. Single output 600 VDC at 200 MA. Dual output (Simultaneous) 600 VDC at 100 MA and 300 VDC at 200 MA. Perfect for Elmac AF67 and many other mobile xmitters.
Amateur Net (Kit) **$59.95**
Amateur Net (Wired & tested)... **$68.95**

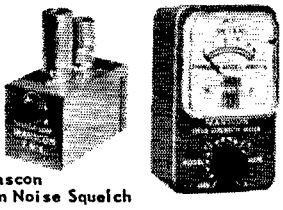
NEW

Transcon MARK II



6 or 10 Meter VFO or Xtal Xmitter & Xtal Controlled Broad Band Converter

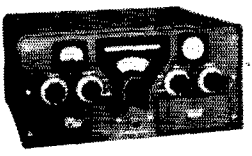
Improved model. Phone or CW. Push-to-talk operation. Carbon or xtal mic. Constant modulation indicator. TVI suppressed. Quick switch to B.C. Up to 4 watts using auto radio or home station receiver for power supply — 12 watts with external supply. Compact: 5" x 5" x 7". 6 volt and 12 volt operation. 6 or 10 meter models. Switch on rear panel to demodulate Final & supply audio drive for Transpower or any other higher power amplifier.
Amateur Net **$99.50**



Transcon Twin Noise Squelch

Can be installed in any car radio rapidly. Tubes: 6AK5 & 12AX7. DC power input: 150 V. DC to 225 V. DC. Filament: 6 or 12 V. Noise Level Attenuator: S2. Size: 2¼" x 2½" x 4".
Amateur Net **$12.95**

Field Strength Meter. For both mobile or fixed station use **$11.95**

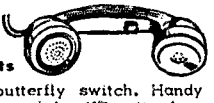


Central Electronics 100V Exciter-Transmitter

NO TUNING (except VFO), uses famous CE BROADBAND system. PRECISION LINEAR VFO — 1 kc calibration. Single knob bandswitch 80 thru 10. SSB—DSB—AM—PM—CW and FSK. RF output adjustable 10 to 100 watts PEP. Meter reads Watts Input, Amps Output and Carrier Suppression. 2" RF *scope. Speech level & load mismatch* indicators. Audio filter — Inverse feedback — 50 db Carrier and Sideband Suppression.
Amateur Net **$595.00**

"Wonder Bar" 10 Meter Antenna

As featured in Nov. 1956 QST. Complete with B & W 3013 Miniductor. Only 8 ft. long for 10 meters.
Amateur Net **$7.85**



TS-13 Handsets

Push-to-talk butterfly switch. Handy *units for use in mobile, CD units, ham* use, etc. Complete with rubber covered cable and plugs. Shpg. wt. 3 lbs.
Amateur Net **$4.95**

Sub-Miniature 0-200 Microampere Meter

A high quality instrument made by International Instrument Co. (Model 100). Only 1" in diam. Ideal for limited space applications & transistorized circuits. A natural for transistorized grid dip oscillator as described in June '58 QST.
Amateur Net $3.95 ea. **2 for $7.50**

2" round 0-500 microamperes. Bakelite case. Made by G.E. and Dejur.
Amateur Net $2.95 ea. **2 for $5.50**

Weston 2" 0-4 amp RF meter Model 507. A giveaway at **$2.95 ea.** **2 for $5.50**

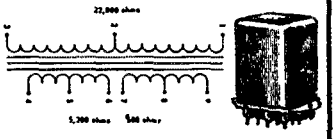
1½" sq. (ruggedized) 0-100 microamps. **$3.95 each** **2 for $7.00**

6 Volt Dynamotor

Rated output: 425 volts DC at 375 ma. High efficiency, compact. 4" diameter, 7½" long. Shpg. wt. 13 lbs. Worth 2 to 3 times this low price **$12.95**

12 Volt Dynamotor

Rated output: 625 volts DC at 225 ma. High efficiency; compact; no battery strain; latest design. Brand new, recent military production. 5" diameter, 9" long. Shpg. wt. 16 lbs. Worth two to three times this low price **$13.95**



Versatile Miniature Transformer

Same as used in W2EWL SSB Rig — March '56 QST. 3 sets of CT windings for a combination of impedances: 600 ohms, 5200 ohms, 22,000 ohms. (By using the centertaps the impedances are quartered). The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, high impedance choke, line to grid or plate, etc. Size only 2" h. x ¾" w. x ¾" d. Brand new. Fully shielded.
Amateur Net, each **$1.39**
3 for **$3.49** 10 for **$10.75**

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new HT-32A and an HT-33A. K5ILL and K5KBH made BPL for January. RVI made WAC running 40 watts. MBB has a new Communicator on 6 meters. VEZ is a new OO. EPO has a new Tri-bander on a 50-ft. tower and is working plenty of DX. SJZ, Convair ARC, keeps a daily sked with K5MYE/KL7. This schedule helps to keep the special mission group in contact with families and friends back home. The Terry County ARC will hold surprise emergency drills this summer. No one will know when the call will come but all are expected to be ready. HGR and AAO will be on s.s.b. soon. Many swapfests are planned for West Texas in the coming months—Snyder Apr. 11, Abilene May 3 and Amarillo sometime in August. Traffic: W5SMK 369, GY 214, K5ILL 204, KBH 173, PXV 173, W5BKH 158, K5IDZ 126, JSN 122, W5BOO 74, K5HGL 48, W5BTH 44, K5LEZ 41, DNQ 40, IBB 24, LR 19, IJN 18, SQY 11, W5MBR 6, RVI 1.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC —SEC: K5KFS. RMs: JXM and K5JGZ. PAMs: DRZ and MFX. A new OBS appointee is KUC. K5OPK finished a DX-100B and is now on the air from Vinita. K5BNQ and IWL have been inactive as hams but very active social wise. SWJ renewed his ORS appointment. A new ORS appointee is K5DUJ. K5EJC is sweating out a DXCC. The new EC for Comanche County is HFN. 7MOV is now K5TQV. PAA received its new KWS-1 and 75A-4. VLW received his A-1 operator certificate. Everyone should have his plans all worked out for a successful Field Day. Let's all pitch in and help the inveterate Field Dayers have fun. IER renewed his OPS appointment. K5CVU earned an OLZ/SSZ Net certificate. K5JGZ is a new RM. He will help with the increased work and traffic on the c.w. nets. JXM is very busy getting a higher education. FKL took an engineering job on the East Coast. Dutch will be missed greatly. Oklahoma's Ham of the Month: K5MBK for his fine traffic work both c.w. and phone on the ham bands and MARS frequencies. Traffic: K5CAY 312, W5DXI 160, DRZ 154, KUC 145, K5MBK 141, USA 117, JGZ 106, W5VVQ 51, CCK 41, VLW 37, K5CBA 30, W5MGK 27, FEC 24, K5INC 24, W5PNG 23, K5BAT 22, DIV 18, CVU 16, BPV 15, W5MFX 14, ADC 11, K5BNQ 9, W5UCT 8, BBA 7, EZM 6, EHC 3, IWL 3, WAF 3, IER 2.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. PAM: ZIN. RM: K5BSZ. YJB is s.s.b. with a new Collins 32S-1 and a 75S-1. OOE is looking for a place to take his new XYL. New officers of the Austin Amateur Radio Club are ECB, pres.; Joe Fooshe (no call), vice-pres.; YWK, secy.; K5KNA, treas.; K5CPJ, act. mgr. K5OQN is moving back to W8-Land. He will be missed on 6 meters. A new club in El Paso is the Sun Valley Radio Club. The Satsuma Valley members are busy constructing 6-meter transmitters and receivers for emergency short-haul work. ZTB and CWS are already on 6-meter. The members of the Corpus Christi Amateur Radio Club participated in the March of Dimes Telethon. They operated on two frequencies on 2 meters and one on 75 meters at headquarters, with mobiles in the field. The 7290 Net had 40 sessions, 491 messages and 1355 check-ins. KN5SBT and KN5SBS are new calls at Port Aransas. It is good to hear KHN back on the air after an extended absence. QKF and QEM visited with the Austin Club. Congratulations to the XYL of K5OEA on winning the YLRL Novice Contest. I am sorry, but I don't have her call. The STS C.W. Traffic Net had 27 sessions, 112 stations and 131 messages. I would like to compliment K5BSZ on the excellent job he is doing with this net. A c.w. traffic station is badly needed in San Antonio and El Paso. YJB is the new EC in Austin. K5LZD is a new OO at Rockdale. BDK is the new EC at Georgetown. Traffic: K5OEA 440, FGF 418, JCC 247, BSZ 131, W5LVC 72, HKE 68, ZIN 67, DYV 37, K5MWH 23, W5FCX 14, K5LLJ 11, KBD 10, W5QLT 2.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WR—Asst. SCMs: A. A. Solomon, OC and H. C. Hillyard, VO1CZ. SEC: BL. New appointments include VO1EN, VO1EK, VO1EF and VO1FA as PAMs; YP and US as ECs. Congratulations to all members of the Sydney Club on the completion of their fine club house. The official opening was held on Feb. 6 with civic dignitaries in attendance. Congratulations poured in via the club station, AEP, from many points in the Maritimes. The highlight of these contacts was the chat between BZ, Lieutenant-Governor of P.E.I. and the Mayor of Sydney. A new magazine, *The Canadian Amateurs*, recently published its first issue. The address is 10328 Trans-Canada Highway, North Surrey, B.C. SU reports he contacted VEØNA (HMCS *Iroquois*, operators VE1PX and VE2PY) while the ship was at Bermuda and received a good

(Continued on page 150)

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WESTERN RADIO

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FOR OVER 25 YEARS ONE OF THE WEST'S OLDEST AND LARGEST FIRMS DEVOTED EXCLUSIVELY TO AMATEUR AND ELECTRONIC EQUIPMENT.

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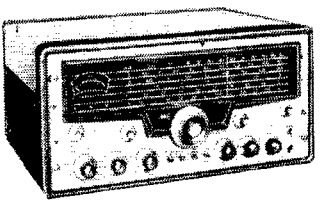
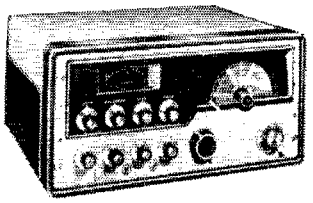


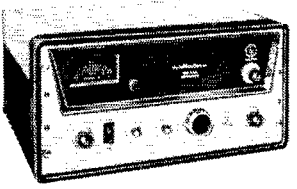
SX101 MARK III—IT'S ALL AMATEUR—Has full ham coverage: 80-10 meters. Has full gear drive from tuning knob to gang condenser with slide rule dial with 40:1 tuning knob ratio. Built-in 100 kc. crystal calibrator and precision temperature compensation with heat cycling for lowest drift, with second conversion oscillators being crystal controlled. The sensitivity is one μv or less. Has exclusive upper-lower sideband selection with dual conversion and 5 steps of selectivity—5 kc. to 500 cycles at 6 db down. Heterodyne reduction controlled by tee-notch filter. Satin black or light gray finish.

NET, less speaker.....**$399.50**

HT32A—SSB-AM AND CW XMTR—Coverage 80-10 meters. Gear driven VFO with vernier calibration—200 cycles all bands, plus crystal controlled high freq. heterodyne oscillator. 5 mc. crystal filter suppresses unwanted sideband 50 db or more. Transmits both sidebands on AM and has built-in voice control system as well. Full TVI suppression, control circuits and AC power line filtering. Two 6146 final output tubes 144 watts input, P.E.P., 52 ohm pi network output (provisions for RTTY); 20" w. x 10½" h. x 17" d. Shpg. Wt. 86 lbs.

NET.....**$695.00**





HT33A LINEAR AMPLIFIER—This is conservatively rated at 1 kw. and is great for HT-32 companion unit. Excellent stability is given by a PL-172 pentode operating Class AB1 with greater capacity for overload and higher efficiency. The 50-75 ohm resistive input does not require any tuning or neutralizing. Has one knob for bandswitching 80 thru 10 meters. The metered circuits are grid, screen, cathode current-plate voltage, R.F. output tuning indicator. Has variable pi network output. Size: 10½" h. x 20" w. x 17" d., and shpg. wt. 130 lbs.

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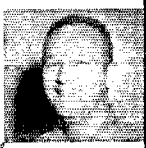

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report. Ken was using a one-watt transmitter at the time! VE6NI is the call of HMCS *St. Laurent*. Congrats to HT and his XYL on the arrival of a new YL. DD is active and working DX with a KWM-1. LZ is chairman of the HARC Convention Committee. Newly-elected officers of the Goose Bay Club are VO2AH, pres.; UA, vice-pres.; NA, sec'y.-treas. Traffic: VE1VN 48, ABJ 34, ADH 31, OM 14, VO2NA 11.

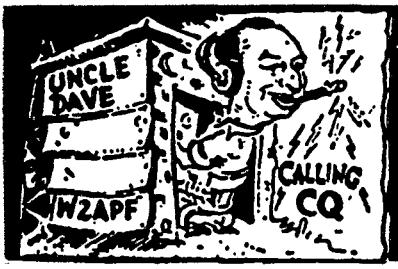
ONTARIO—SCM, Richard W. Roberts, VE3NG—NF was guest speaker at the Quinte club. DTO has returned from KH6-Land. The *Canadian Amateur Magazine* was received 100 per cent in Ontario. Good luck, 7JB. RW is the new OBS for 75 meters. The v.h.f. group held an FB meeting at Oakville in spite of a snowstorm. LY visited Toronto hams. Check to see if your license was paid up last year. If not, you will be minus a call in '59. Ontario PAMs are fed up with the carrier on the net frequency each evening. All are asked to help get rid of this pest. Let the local DOT inspector know as soon as you have information. OOs, also keep watch. Certificates are to be issued by your SCM for Field Day winners in their respective groups for last year's efforts. Nortown of Toronto won the Marconi Award for the highest Ontario score. NW is rebuilding. RR is going s.s.b. EIH is going high power. Your SCM has visits planned for St. Kitts, Belleville, London, Windsor, Hamilton and possibly Ottawa. The Nortown, Scarboro and Oshawa Clubs will hold annual dinners soon. DFW is active on 6 meters. DID is on 10 meters. BSA put out an FB bulletin for the Niagara RC. The St. Clair Valley RC had an FB banquet. AQM is a new-comer. DCX and RW do an FB liaison job between the c.w. and phone nets. DSX is rebuilding. DQL has a new Apache. PCD is the call of the Porcupine Civil Defense station, operator DCX. CFR is the new control on the Ontario Phone Net. He also is a new OPS. TL is going to Paris, London and Rome for a ham vacation. Hi. Traffic: (Jan.) VE3BUR 91, DPO 89, NG 85, EII 76, NO 65, AUU 60, AML 52, BZB 52, CFR 49, DCX 46, EIH 42, GI 42, EIK 39, AUS 33, CJF 29, DUU 27, DWN 21, KM 20, DH 15, CLF 12, ADN 10, CE 7, DLC 7, BXJ 6. (Dec.) VE3AUU 58.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—More activity is requested on c.w. net OQN, daily at 1900 on 3535 kc. The Quebec 1 hour Net on 3780 kc. at 1845 has good attendance. New club officers of the Montreal ARC are MW, pres.; TA, vice-pres.; AFM, 2nd vice-pres.; GZ, treas.; HI, secy.; QQ, VV, NB, AKT and DB, directors. The South Shore ARC elected IK, pres.; AGM, vice-pres.; ATT, secy.; NY, treas.; AEW, act.; Jack Snowball, social; KG, editor of *Skyware*. It was a pleasure for your SCM to talk to the members of this club recently. The annual BERU Test proved popular. Heard were AKQ, AIO, ATU, BK, CP, DR, II, IJ, LI, NV, PZ, WA, WW and YU. NI, at the University of Toronto, operated VE3UOT and rolled up a creditable score. We regret to learn that PX, recently arrived from VE7, again is pulling up stakes and will sign VE3 shortly. ZG returned after 5 years' silence. EC says it's easy to become an EC. AUH, AOL and VI joined the AREC. Phyllis, CA's well-known XYL, is resting after a recent illness. OK sports a brand-new Collins S-line station. Recent heavy storms played havoc with beams. BK was one of the sufferers. QJ is on s.s.b. with home-brew gear. IQ also is expected on s.s.b. with a new rig. ACU soon will be heard from a new "shack" at Baie d'Urfee. Ex-3ACN may apply for a VE2 call. APR, Sherbrooke EC, is active with a 500-watter on 80 meters and reports ADE is a new ham in that city. Traffic: VE2DR 81, EC 39, APR 17.

ALBERTA—SCM, Gordon W. Hollingshead, VE6VM—Amateur radio courses are springing up all over. The Lethbridge Club reports an enrollment of 65, the Calgary Club 30 and Red Deer 60. CA, TG, HM and DJ recently returned from a c.d. course in Arnprior. CE is handling much Dewline traffic. NX is on s.s.b. and AK now is in the RTTY ranks. VM is active on 80 meters with a DX-100B, so activity reports should now perk up in this column. TG has been appointed as communications office manager for Lethbridge C.D. Executives of the Red Deer Club are PD, pres.; RP secy.; UI, treas. Traffic: VE6HM 96, YE 38, TT 25, OD 23, SE 11, TG 9, IP 7, PS 7, PV 7, MJ 6, SS 5, SF 3, BL 2, CO 2, UK 2.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—SEC: KX. At the time of writing I have not seen the second issue of JB's new publication but from the comments heard via the ham bands its reception was very favorable, not only in Canada but W and DX lands. The BCEN C.W. Net has just passed its first year of operation and is gradually growing in stature. All we need now are some good outlets in VE6- and VE5-Land (VE5 & 6 SCMs and RMs, please note) and an all-Canadian c.w. net from coast to coast to tie into all the re-

(Contined on page 152)



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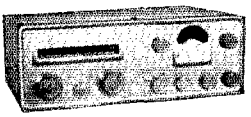

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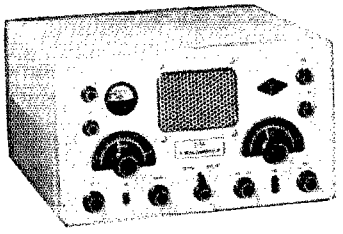

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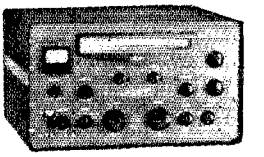
National NC-98	119.50
Hallicrafters S-85	95.00
Hallicrafters SX-99	114.95
Hammarlund HQ-140X	195.00



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SSB Linear Amplifier. Grounded grid; rated 1000 w peak input power. Designed to operate with xmitters supplying 75-100 w peak power drive. Includes power supply, pi-network, antenna changeover relay. Bandswitch operation on 80, 40, 20, 15, 11 and 10 meters.

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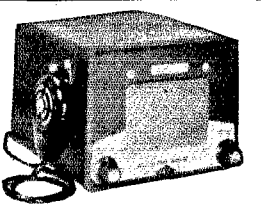

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gional nets of the NTS. The BCARA is doing good work with its TVI Committee under the capable guidance of BQ. A new Greater Vancouver Amateur Telephone Index, under the sponsorship of the Point Grey Radio Club, is in the process of being completed. After a year's good work as net manager of the BCEN AD retired and the new net manager is AOT. MG is staying in Vancouver for the present. The Chilliwack Radio Club is back in operation on Thurs. with AOS, pres.; RS, vice-pres.; and Jack Dobell, an operator for the RCMP, treas. AFA conducts the club's code and theory classes. The VARC code and theory classes, under ALW and XW, have 30 students. The same type of classes at New Westminster are conducted by the NWARC with FY as chief. Traffic: VE7AAF 112, TF 108, AOT 73, AMW 35.

MANITOBA—SCM, James A. Elliott, VE4IF—The 1959 season of the ARLM got underway with a good start and a good turnout. An increase in activities is expected this year. WS and his XYL are having a good time in ZL- and VK-Land. KL and LO are working transistor TX around town. CJ has moved to a new QTH and is back on the air. PE's AR2 was stolen from his car. SA has a Viking II and is enjoying lots of DX. Welcome back to VE4-Land to 3GD, ex-4AB. Ted Davidson, ex-4DE, ex-7DQ, is back on Winnipeg. IF received a DX-40 for Christmas which is being used to drive a 4-250 final on all bands. AN is now an Official Bulletin Station running a B.W. 5100. Active VE4 single-sidebanders are NI, QI, CP, JD, JS, GQ, WR and PU. Congrats to EG on the phone ticket. It's nice to hear that rag-chewers are active again. We still are looking for 20-meter hams who will handle northern traffic for Winnipeg. Traffic: VE4JY 39, GE 35, KN 25, IF 18, EF 12, HS 12, IW 11, MW 11, SL 11, QD 10, EG 8, AN 6, MN 3, NW 3, KK 2, RF 2, TE 2, MH 1.

How's Dx?

(Continued from page 78)

cessful contact. Scoring for our side is determined by multiplying total QSO points by total band-parishes (36 possible). To rate a shot at an airline ticket to Bermuda plus a week's sojourn for two at one of the islands' leading hotels, or a certificate of merit for top score in your call area signed by Bermuda's governor, file your GMT log transcript and calculated score with the Contest Committee, RSB, P. O. Box 275, Hamilton, Bermuda, no later than June 15, 1959, together with a signed statement that all rules and regulations have been observed. Good luck! . . . . . KZ5LC (ex-WØDEA) opines, "Working DX from the C.Z. is by no means a fish-in-a-barrel setup, simply because the Ws and Ks won't let you." Len is aggrieved by the utter disregard of directional CQs demonstrated by the North American mob. KZ5LC's Balboa QTH was afflicted by 25-cycle a.c. mains until last year; since that time Len has built up quite a bulge toward DXCC . . . . . W1MIJ (ex-W9MUB) gets good results with the "old-fashioned" technique of steering clear of DX stations' frequencies. "The pack doesn't seem to realize that the majority of DX ops employ receivers that are not designed to separate 75 or 100 (conservative estimate) stations calling over a 2- or 3-kc. spread." . . . . . W6ZZ occasionally rests his DX wings by roosting in the 75-meter local s.s.b. nets . . . . . W2JBL reports the locals going from three- to four-element beams to keep up with, of get ahead of, the Joneses. "Oh, for the good old days when kids rode bicycles instead of kilowatts and the bands were free and clear — ha!" . . . . . K6OQT finds that extra back-issues of *QST* make a big hit with overseas DX friends not in positions to gain associate ARRL membership . . . . . W7RGL passed an eight-day mumps quarantine by saturating himself with DX on 20 c.w. "Hamming *is* fun, but eight straight days is quite enough at one sitting!" Good for the countries total, though . . . . . In late January VP2VB's round-the-world DXpeditionary marathon struck a snag on Union Island in the Grenadines when *Yasme II* became rockbound en route Grenada. Dan retrieved his radio gear and sustained painful lacerations in the excitement. W8YIN has VP2VB's possible Pacific itinerary as including the Galapagos, Clipperton, Cocos (TI9), the Marquesas, Pitcairn, the Kermadecs, Tonga, Nauru and Samoa when the situation is shipshape once more . . . . . From XE1CV: "LMIRE members XE1YJ, others and myself contemplate a DXpedition to the Revillagigedos (XE4) in April or June. Transmissions will be a.m. and s.s.b. on 10 through 40 meters, c.w also if a good code operator joins the group." . . . . . W9s EVI GXA JUV and LBH pooled talents and vigor toward putting Serrana Bank on the ham bands for the first time. KS4s BA and BB were the calls issued to Mac & Co. for Roncador Cay and Serrana, respectively, low land lying off Nicaragua and jointly controlled by the U.S. and Colombia . . . . . VE8s CI NH RS and TG take turns manning the same KWS-1, 75A-4 and

(Continued on page 154)

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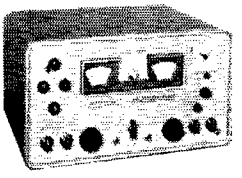

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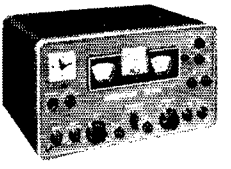

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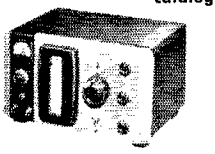

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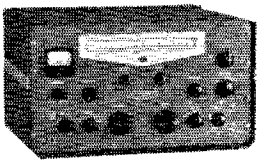

GONSET GSB-100 TRANSMITTER—A completely new self-contained, single-band transmitter for operation on amateur 80-40-20-15 & 10 meter bands. GSB-100 is one of the hottest new side-band units on the market today!
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Telrex rotary 'way up on the DEW line, 10, 15 and 20 preferred . . . . . K9BFK tells us that club station KL7AIZ now is multioperated with a sweep of renewed interest that keeps the B-plus on for 10 and 12 hours daily. Collins gear predominates at this Adak co-op and the antennae include a rhombic. "In addition to a.m., s.s.b. and c.w. work on our favorites, 15 and 20 meters, a portion of each day is set aside to work the Novice boys on 7 Mc." . . . . . W9s KXK and UXO report reaching the "DXCC 2" circle, the first Nines to record tentative claims . . . . . DX and DXers soon will be receiving s.w.l. cards with a new "WPE" prefix imprinted thereon, the outcome of a registration service inaugurated for listeners by Mr. Tom Kneitel of the *Popular Electronics* staff . . . . . W1TS observes that TG9IIB (HB9PL) has difficulty avoiding W/K/VEs on 10 and 15 c.w. . . . . K7AEJ periodically enjoys mobile DX work while signing XE0AEJ south of the border . . . . . W6KG finds that KG1LJ is former KR6LJ, KL7AGM, W4WRL, Ks 1CPQ 0CDF and WA6CEJ. Lloyd also understands that W8OLJ begins a 'round-the-globe trip by air this month with hopes of operating in several rare areas . . . . . Those interested in WACC should keep an ear out for W6DIX/6 next month. W6KG advises that "KD" will be hamming from especially hard-to-hook California counties . . . . . Help! W1MIJ needs scoop on HH2KVU (1958); W2PUX seeks dope on OD5RA ('58); K2GFQ wants data re ZC6s AA and DC (current); W4LHT looks for VQ6LQ QSL-route info; K4RSD requires VQ9AX (Jan. '59, 21 Mc.) details; K6EWY asks for BV1USB QSL hints for QSOs prior to October 19, 1958; and W0CVZ would welcome word on FP8AL ('58) QSL possibilities . . . . . From W2BVN: VP8EP will be back home a year from now but meanwhile faces a minus-50° winter at Halley Bay, Antarctica. Dennis has a cool 14-Mc. rhombic beamed on the United Kingdom . . . . . PZ1AH describes his new QTH to W8KX: "Zandery is the only big airport in Surinam but we are located in the middle of the jungle with no shops, no post office and expensive facilities." PZ1AH keeps in touch with the DX world via a 40-watter, SX-28 and various antennas. He has a new 2-element twirler for 28 Mc. and hopes to enjoy extensive phone work on ten . . . . . WGDXC DX Ranger certificate No. 240 went to PY2CK. Overseas DX can check with W5GNG for details on this diploma. Other WGDXC dispatches from the local DX front: VP5CB expects to remain on Grand Turk till August. . . . PY1CK hints of another Trindade trip before mid-July. . . . Delectable HK0AI hopes to extend his San Andres activity to 7, 21 and 28 Mc. by summer. . . . Cocos Island (TI9) may be radio-activated again by VE3MR and Costa Rica colleagues this month or next . . . . . OVARA and other sources point out the Third Annual W0-DXCC Dinner Meeting slated for the 25th of this month as sponsored by the DX Club of St. Louis. A jumbo program is in the works — check with W0IJW for details.

Ten Years Ago in "How's DX?" — An informal on-the-air get-together of DXCC members is scheduled for a week end in May, 1949 . . . . . Gosh, eighty c.w. keeps rollin' right along and W4BRB reports passing the postwar 3.5-Mc. 55-country mark. EK1AA, FA8BG, GC8OK, HA4EA, JAs 2KG 3AA, KG6DI, KH6VP/VR4, OX3MG, VP2s AJ LA, ZC8PM and ZK1AM are there to snare . . . . . AR8XA, D5AA, FM8AD, roving Ws 1LBW/C1 3CHH/KG6 8SIR/KG6, ZC6s UNJ and UNT top the crop on 40 . . . . . Twenty's c.w. sharpies shoot for AG2AG, C1JH, FN8CT, LU1ZA, MD4BPC/VQ6, OY3BS, TA3s AA GVU, Ws 6ZNT/KW6 9HWI/KS6 0MCF/C3, ZC6s RE RO, ZD9AA and ZM6AI. Choice voice boys: AR8AB, C3s EA RA, EK1AD, ET3AD, FQ8SN, HI6EC and MI3SI . . . . . Ten's men tackle phones MF2AA, MI3LZ, MT2FU, OY3G, ST2AM, Ws 4DFM/Iwo 5NRT/KS4 6WVJ/KW6 and ZC6XY. C.w. 28-Mc. stoppers include AP5Z, FU8AA and YK1AF . . . . . XE1A once again mystifies many an OM with his special DX Test *nom de guerre*, XF1A . . . . . Old reliable VK3MH is reported to have chalked up his 120,000th QSO . . . . . Recently relaxed Spanish regs should soon boost EA activity . . . . . Four (4) Tonga VR5s now are workable on DX ranges . . . . . Jeeves is de-rigged by the finance company; photos of DX favorites KZ5XJ and 8M4-UW deck out your April '49 DX digest.

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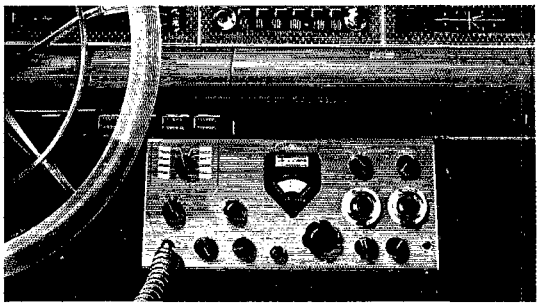

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FIRST Mobile SSB **TRANSCEIVER**—175 watts PEP input, 14-30 mc. Excellent frequency stability. Use as mobile or fixed station without modification. Break-in CW using VOX circuits, side tone for monitoring CW. Ten 100 kc. bands available anywhere in the 14-30 mc. range.....Net **$820.00**

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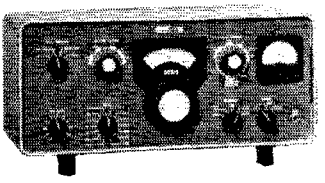
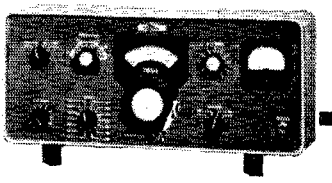


32S-1 **TRANSMITTER**—SSB or CW transmitter with nominal output of 100 watts. Operates all amateur bands between 3.5 and 29.7 mc. Input power is 175 watts PEP on SSB or 160 watts on CW. Unit incorporates many of the time-proven features of the famous KWS-1 and KWM-1—built throughout to the highest standards of excellence.

32S-1.....Net **$590.00**



75S-1 **RECEIVER**—Provides SSB, CW, and AM reception on all amateur bands between 3.5 and 29.7 mc. Unit has dual conversion with crystal-controlled first beating oscillator, bandpass first IF, Mechanical Filter, permeability-tuned VFO, and excellent AVC characteristics for SSB reception. Loaded with advanced, new features for top performance.

75S-1.....Net **$495.00**

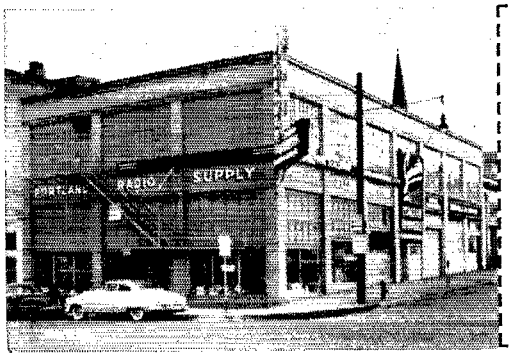
COLLINS 30S-1 LINEAR AVAILABLE SOON!

Ask About Our Easy Payment Plan

DROP IN OR WRITE — BILL LUCAS, W7AEF

PORTLAND RADIO SUPPLY

1234 S. W. STARK ST., PORTLAND 5, OREGON



PORTLAND RADIO SUPPLY
1234 S.W. Stark St.
Portland 5, Oregon
Attn: Bill Lucas, W7AEF

Dear OM:

Please send me information about the New Collins SSB Equipment. ☐ **S/Line** ☐ **KWM-1**

Name.....Call.....

Address.....

City.....Zone.....

State.....

The Groundpole Antenna

(Continued from page 41)

wire feedline. The distance from ground to the feed point is almost exactly one-half wavelength at 7 Mc. As measured at the end of 70 feet of feedline, the antenna impedance was resistive, and about 200 ohms on both 7 and 14 Mc. Impedance was not sharply dependent upon frequency. The first night this antenna was used on 14 Mc., WAC was made in a little over two hours with the following reports: HK4, 569; ON4, 579; K1, 599; KB6, 599; ZD1, 589; JA2, 589. On 7 Mc., consistent 599 reports were received from the East Coast. The antenna is oriented with the horizontal wire running north and south. Feeder currents are balanced, and very little r.f. is observed at the base of each vertical, even though no radials were added. (Underground conduit for the electrical wiring to the floodlamps probably helps the ground connection, however.) The antenna performs well in about any direction on both 7 Mc. and 14 Mc. With it, second place nationally was won in the July CD Party (see *QST*, Oct., 1958, p. 96). It has not yet been tested on 21 and 28 Mc., although it should perform on these two bands also. A grid-dip meter indicates resonance in the vicinity of these bands.

Many thanks are due to Mr. Fred D. Clapp, W6DSZ, of the University of California Antenna Laboratory, for his extremely helpful comments and suggestions in connection with this article. The author would appreciate having comments and suggestions from amateurs who try the antenna in the various configurations.

Viking Ranger

(Continued from page 34)

any station you're going to work.

Tuning is similar to that on other bands with the Ranger, except that the final stage will tune very sharply. Set the auxiliary coupling to position 7 and the coupling to about 2 o'clock for 50-ohm load. Final adjustment of the loading should allow the 6146 to draw about 120 ma. at resonance.

Crystals in the 6- or 8-Mc. ranges can be used in place of the v.f.o. if you desire. Keying of the transmitter is done in the same manner as for lower bands.

MEMBERSHIP CHANGES OF ADDRESS

Four week's notice is required to effect change of address. When notifying, please give old as well as new address. Advise promptly so that you will receive every issue of *QST* without interruption.

The Audofil

(Continued from page 17)

in performance was observed between the breadboarded and the completed version.

If this is your first construction job, there are a couple of things you should be careful about. Always be sure that correct polarity is observed when connecting electrolytic capacitors into the circuit. Such capacitors are shown in Fig. 1 with + and − marks. The selenium rectifier CR_1 must also be connected correctly. You'll find a + (or red) mark on one side of the rectifier, and this terminal should be connected to the junction of C_7 and the 1000-ohm resistor.

Mount the parts and wiring parallel to the chassis sides. This gives a much neater appearance than just a helter-skelter arrangement of wiring and components. (It may not work any better, but you won't be ashamed to show the wiring to a visitor!)

Switch S_1 is a single-pole, 4-position unit with an a.c. switch S_2 mounted on the back. In the first position the Audofil is turned off. When the switch is advanced to the next position the filter is turned on and ready to be used. The *next* terminal is grounded and in order to switch the filter out the switch must be advanced to the fourth position. The third terminal is grounded to reduce any capacitive coupling *around* the filter, which would reduce the selectivity.

Using the Audofil

When the unit is completed, plug in the line cord, turn on S_1 and allow a minute or two for the tube to warm up. Plug P_1 into the headphone jack on your receiver and your phones into J_1. Adjust the audio and r.f. gains in your receiver to a comfortable level and tune across a c.w. signal. You'll notice as you tune across the signal that it peaks up somewhere near 700 cycles.

If you want to see just how good the filter is, switch it out (position 4 of S_1) and find two signals that are close together. Not zero beat with each other, but about 1000 cycles apart. Now switch in the filter and tune across the signals. You'll probably find that you can hear but one signal at a time. If you do hear both signals, one will be much weaker. Get accustomed to using the filter, and you will be very pleased with the results. It should make for many "solid" QSOs that weren't possible before. QST

Correspondence

(*Continued from page 79*)

Post Office Department" Sec. 157.3a: "No charge is made for forwarding first-class mail, including postal and post cards, when postage has been fully prepaid by the sender . . ." Therefore a QSL card can be forwarded as many times as the Post Offices have forwarding addresses of the addressee. The cards are never returned unless return postage is guaranteed by sender.

QSL cards are often wasted because the addressee has not taken time to file a "Change of Address" card at the Post Office of last address.

— *David B. Blalock*

3322 West 17th St.
Davenport, Iowa

Editor, *QST:*

Best way to get a reaction is to misquote something. For some time now we have attempted to draw up a list of Post Office hams for the express purpose of starting a net of these people to ready ourselves in event of any movement to re-location site, and furnish communication under emergency.

My letter published in *QST* deliberately misquoting regs is really bringing results. The letters and cards are pouring in. It is my opinion that no magazine gets the careful scrutiny that *QST* does.

I sincerely hope the letters keep pouring in. I have self-addressed cards all ready to send to any PO ham that writes me, requesting his opinion on starting a c.w. net.

— *David David, KØAGJ*

MORE 599

54 Allendale Road
Rotherham, Yorkshire, England

Editor, *QST:*

I'm afraid I can't let s.w.l. Robert's letter (January *QST*) pass without comment. He's completely up the pole.

Bill appears to assume that all W and K signals are T9, whilst we foreigners (I prefer "overseas stations") automatically have S7-T7 signals. Baloney, Bill — absolute baloney! As for being "sharp operators" and *knowing* we have poor notes — that takes the cake! Collecting QSLs is only a minor offshoot of our hobby, and giving a dishonest report in order to obtain a QSL is something I find difficult to understand.

I'll cede one point — some poor notes do come from the minor Iron Curtain countries, notably YU and SP, but I understand that large value smoothing capacitors are hard to come by in those countries, and when are available, cost the earth. Perhaps we may excuse them on that count.

Getting back to signal strengths, Bill, the station doesn't require a kilowatt, a super beam, and be two blocks away to pin your S-meter to the stop. I run 35 watts (T9X of course) to a long wire on 20 meters, and have put many an American S-meter right over (I'm sure they weren't being dishonest just to obtain another G3 card!) It's just a question of efficiency and design — with a 150 watts maximum, we just *have* to be efficient. No use having a kilowatt and a poor antenna, you may as well load your power into the fall pipe.

Think again Bill, you have T7 and chirpy notes in the good old United States too you know: I've worked 'em — and given them T7. They're often only S5 as well! (Funny things, distance and conditions!)

Best wishes to the editor and staff of *QST*. It's my favorite radio monthly.

— *H. N. Kirk, G8JDK*

ALL THAT'S COMING TO ME

5207 So. Atlanta Place
Tulsa 5, Oklahoma

Editor, *QST:*

Is there a way we can get the manufacturers of S meters to expand the scale by starting S9 where S0 is and calibrate the whole scale in 2 db. units to 100 or 150 db. over S9? Over half the scale is now wasted. No one nowadays gets less than S9 + 20. I have received some fantastic reports of 60-70 and once 85 db. over S9. This I like, but I want all that's coming to me and the way the meters are calibrated

(*Continued on page 162*)

the units above S9 are not closer than 10 and some 20 db. marks.

I'm afraid some of these super receivers that I work are interpolating the report as 50 db. over S9 while with closer calibrations it could be 52 or 54 db. over S9.

An improvement for 1960 could be a circular meter so it will wind around a couple of times to keep from pinning the needle.

— *Norman Smith, W5EYK*

CALL LETTER PLATES

156 Liberty St.
Braintree 84, Massachusetts

Editor, *QST:*

With reference to the "Stray" on page 172 of February *QST*, may I point out that an Ohio plate with a W6 call is not surprising. Last year I wrote my home state, Tennessee, requesting call letter plates, and went to considerable length to explain why I wanted K1CRB on a Tennessee plate. I am in the Army, and maintain my car registration in my official home, but as you know, the FCC issues calls based on the actual location of the station.

While on leave some two weeks later, I picked up my plates in Nashville and met the official in charge. He said that he had not been disturbed by the request for a K1 call letter plate — Tennessee has issued plates for a W9, W6 and even a KP4! Somewhere in Puerto Rico there is a Tennessee license plate with KP4 call letters on it.

Incidentally, Tennessee has an excellent method of handling call-letter plates. The initial request must be accompanied by a photostat of the FCC license. After that, the license is made up annually until the expiration date of the license — so the purchaser simply goes to the proper office and asks for his plates. The charge is $1 for manufacturing, in addition to the regular license fee, and an additional dollar for first time, for a change in "class."

— *Robert E. Wallace, K1CRB*

RST AGAIN

113 Tulip Ave.
Dorval, Quebec, Canada

Editor, *QST:*

I read with interest W2MQB's letter in February's issue wherein he gave his suggested example of a new much-needed, up-to-date RST system.

His views reminded me of when I preached the same theme back in March 1949 when I had my suggestions published in the Canadian ham magazine "*XTAL*." The following month I sent the same data into *QST* but no publication of it resulted.

To revive my original cause in support of W2MQB's views, I would like to quote my RST list from my letter to *QST* of April 6, 1949:

	1. Nil.
	2. Slight.
Readability	3. Considerably difficult.
	4. Slightly difficult.
	5. Perfect.
	1. Faint.
	2. Fair
Strength	3. Good.
	4. Strong.
	5. Very Strong.
	1. Rough broad a.c., bad clicks.
	2. Clicks, d.c.
Tone	3. Chirpy d.c.
	4. Ripple d.c.
	5. Pure d.c.

Our present system is far too cumbersome for quick interpretation. In my version above I have used reduced wording, retained the original five R steps, but have reduced the former S and T steps from nine to five.

Perhaps a combination of our two suggestions might form the basis for further "batting around" by the gang. Anyway, count me in for a change so that if we hear a really punk signal we can give the guy the RST (Really-Sounds-Terrible) quickly and surely, 'cause the way it is now we're taking the easy way out with the rubber-stamp 579!

— *Floyd G. Gribben, VE2XR*

(Continued on page 164)

67 Russell Avenue
Rahway, New Jersey

Editor, *QST:*

With reference to Don Miller, W2MQB, and his note regarding a revised RST system, I disagree — 100%. The standard RST system now in use was carefully planned before being put into operation. To an interested amateur, this system offers a good measurement of how his signals are being received. I have given many reports of 355 or so and without hesitation.

When we think of amateurs, we usually think of an honest group of fellows. Then why don't we give each other honest signal reports? We must not take the easy way out through a 3-point RST, but strive to uphold what we have. I feel that most active amateurs will agree with me in this.

— *R. M. Brown, K2ZSQ*

Editor, *QST:*

A new RST reporting system as presented by Don Miller in the February issue of *QST* certainly seems to be a more efficient and probably a more accurate form of reporting than our present system which is being misused. Let's adopt this new form now! — *W9OCP*. . . . Think W2MQB has a very sensible idea. I am for it! — *W7TJS*. . . . Hurrah for W2MQB and his comments on the antiquated RST system. I have felt since the beginning that this system was cumbersome. In wanting to give accurate sig. reports, I have often been confused as to the difference between an S-7 & 8 signal. — *KN0RXQ*. . . . Don Miller's suggestion of the 123 report makes sense. I have always considered the RST report a waste of time. It was started with good intentions but any operator today knows the report is meaningless. I have noticed that old timers are reluctant to give the childish "579" — *K6DV*. . . . Very few of us actually give true reports because of the complicated points under our present system. In W2MQB's system you can give an honest report and the other station knows exactly what his signal is. We need a simple RST system with the ever-increasing QRM. — *K6SDR*. . . . When I hear members of the fraternity splitting it up into kindling with S-5/6 and similar fractional numbers (somewhere between 5 and 6 in this case), then I am sure that we need to simplify the whole structure of signal reports. The nuances of particular cases can easily be clarified in the continuing QSO. 99 cases out of a 100 would find the simplified report completely adequate. I hope something comes of this but I have my doubts, and we will continue from here on out to give meaningless reports. — *W7OMO*. . . . Couldn't we get enough of the boys behind this to adopt it as standard ARRL procedure? With this we wouldn't have to spend so much time trying to choose the right report. I disagree, though, on one point. It seems to me as though the standard signal report is "ur rst is 579." — *KN4VSV*. . . . I have grown apathetic toward giving a true report. I gave one station an RST 463 report and suggested he leave the air to correct the trouble. He said "okay" and signed. Within two minutes he was calling "CQ" on a different frequency with the SAME signal, T3! However, I'm for the new RST list as submitted, and stand ready to change over to it as soon as made official. — *W0FTD*. . . . We of the Hampton Roads Radio Club agree with W2MQB that the present RST system is outmoded. We feel that the system described by W2MQB would be an improvement and would like to see a change in that general direction. — *W4PRO*

[See "Operating News," page 80 this issue for further discussion, and also turn to "How's DX?", page 73, for a report (!) on this same problem in ancient Greece. — Ed.]

Technical Correspondence

(Continued from page 47)

legality from the FCC in 1956.

In *A.R.T.S. Bulletin No. 52, Series 1*, for October 30, 1947, it is mentioned that this system was employed prior to this early date (by over a dozen amateur RTTYers) using, in place of the latching relay, the solenoid motor reverser from Lionel Toy locomotives, obtained for 90 cents at that time. The toy-train reversers differ, not only in being cheaper than the standard latching relays, but also in that they require two taps of the bell key on the teletypewriter instead of one, to switch the distant machine from "receive" to "send." This eliminates the possibility, with weak and

(Continued on page 166)

(Continued from page 47)

fading signals, of a noise pulse simulating a bona-fide "bell" character and unintentionally causing the bell-break changeover. It is highly improbable that any combination of noise impulses could duplicate *two* bell signals in rapid succession. These reversers, used in the locomotives of many manufacturers' train sets, are equivalent to a single-pole double-throw ratchet-advanced switch with one "dead" position between each active (forward and reverse) position. Two rapid taps of the "bell" key on the teleprinter keyboard require about ⅛ second to accomplish, so doubling the time of transmission of the changeover signal should not be a serious matter.

It is not known, by the way, whether this system was originated by W2BFD or whether he merely published the account of it in 1947.

— *Arthur M. Fleming, Asst. Secy.,*

CARTER MODULATION

Box 71
Brunswick, Maine

Technical Editor, *QST:*

The modulator circuit shown in December 1958 *QST* — "Two-Tube Mobile Transmitter" — is the same as W6NTU's "Carter Modulation," as published in December, 1950, in the *Bay Area Mobileer.*

W6NTU applied for a patent but the writer doesn't know of the results.

— *Don Johnson, W6AAQ/1*

World Above 50 Mc.

(Continued from page 62)

and areas not part of the United States. For Canadian entries we list hereafter only the leading claimant from each VE call area.

We've also weeded out a few of the calls from the 144-Mc. record. This had to be done in a somewhat arbitrary fashion, but we've tried to keep in the most active calls, as well as those of operators whose records are in any way outstanding. Please help us to keep these listings meaningful by sending in your latest record. Be sure to supply information for all three columns of the box.

Meteor-scatter work on 144 Mc. is no longer an American monopoly. SM6BTT, Göteborg, Sweden, worked HB9RG on Dec. 14, and repeated on the 15th. On Jan. 4, Len worked OE1WJ, and was heard by YU2IIK and I1ACT. SM6BTT's 50-Mc. total is now 28 states, with many others heard, but with too few of our 6-meter men able to use the code effectively Len has missed out on a lot of possible QSOs. He has worked 27 1s, 23 2s, 13 3s, 124 4s, 40 5s, 26 8s, 24 9s, and 7 0s. Len observes that the Northeast is nearly always weak, while the Gulf area comes through with an S9-plus wallop.

A major fall event on the calendar of v.h.f. enthusiasts in W1, 2 and 3 is the annual V.H.F. Roundup, sponsored by the Syracuse V.H.F. Club. This year's party is to be Oct. 10. More details later, but we thought you might like to reserve the date. Last year there was some conflict with the Hudson Division Convention, held the same day, but this year the Syracuse gang certainly have set their date in advance of anything else we know of.

How good is a 416B? Is it really better than a 417A, and is any real improvement over either one possible with a parametric amplifier? These are not easy questions to answer. Accurate measurement of noise figure is not readily done by amateur methods, especially when you get into the region near 1 db., and there is some doubt whether noise figures below 4 or 5 db. actually produce anything useful in the way of weak-signal reception at 144 Mc., anyway.

Some work done recently by W2CXY and W2AZL sheds some light on the first of these questions, at least. A cascode converter using a 416B-417A combination was tested against another having two 417As. No attempt was made to convert the noise diode current readings to noise figure in db.; the work was strictly comparative. Several 416Bs were tested in a number of ways. First the plate current they drew with 200 volts on the plate and no cathode resist-

(Continued on page 168)

ance was measured. One admittedly used tube showed 25 ma. Two other tubes supposedly "new" drew, 32 and 34 ma. One really new tube went off scale on a 50-ma. meter.

Indications with the noise generator were clearly related to these plate current readings. The indicated diode current needed to double the noise power was .25 ma. with the best of several tubes known to be used. Some went to much higher values, indicating that these 416Bs were useless for low-noise front ends. The two tubes that were advertised as "new" showed about .20 ma. The one positively new 416B showed .18 ma. The 417A-417A converter showed .23 ma. Best noise figure was obtained with the 416Bs running at 300 volts on the plate, with cathode resistance adjusted for 20 ma. plate current, not the 30 ma. permissible for the tube.

In-the-air tests in reception of the weak scatter signal of W8KAY, the best of the 416Bs showed a perceptible improvement in a signal-to-noise ratio over the 417A converter. There is some question in your conductor's mind whether this can be translated into an improvement in the minimum detectable signal, or in the readability of a signal that is actually buried in the noise. It has been our continuing experience that converters having noise figures around 2.5 db. are incapable of detecting anything that is not audible on a converter with a 5-db. noise figure. We'd be happy to be proven wrong, however, and we suspect that the way to do this may be to follow the r.f. stage adjustment procedure prescribed by WSWXV in *QST* for July, 1958, page 44. We'll have more along this line soon from W2AZL, in a 2-meter converter article now set in type.

The real worth of the parametric amplifier should show on 220 Mc. and higher bands, rather than on 144 Mc. External noise drops rapidly between 144 and 220 Mc., yet the parametric (or reactance) amplifier provides essentially the same noise figure on either band. With the sharper and higher-gain arrays that can be built within the limits of amateur construction techniques on 220 Mc., the band is beginning to draw attention for its moonbounce possibilities, now that good r.f. amplifiers are possible at this frequency. K9ETD, Hudson, Wis., says that he will go the limit on either 144 or 220 in moonbounce work with anyone who will do the same. Any takers?

While on the 220 line, we pass along the information that a 220-Mc. contest will be sponsored in Southern California in June by the Intercounty Net. K6GKX tells us that this may be in conjunction with the ARRL June V.H.F. Party, though the date has not been decided on definitely as yet. Purpose of this contest, other than to promote 220-Mc. interest, will be to publicize the changeover from vertical to horizontal polarization by 220-Mc. stations from Bakersfield to San Diego. More details are promised later by K6GKX.

A 220-Mc. station that should be heard from when there is DX to be worked is W4ZXI, Greensboro, N. C. Rus has a 4X250B final and a 416B converter, and a big antenna system is in the works. He has done outstanding work on 144 Mc. during auroral sessions, and will be looking for similar opportunities on 220. Frequency: 220.32 Mc. W4ZXI also has gear for 432 and 1296 Mc. under construction.

U.H.F. and Microwaves

Activity on 432 Mc. has developed as a regular thing across the Great Lakes area. W8HCC, Sandusky, Ohio, reports that he has worked W8DMR and W8TYY in Columbus, W8RQI W8JLQ W8UST W8VCO and W8VOZ in the Toledo area, and W8RMH W8DX and K8AIY around Detroit, all with fair regularity. Stations as far away as W9GAB, Beloit, Wis., have been worked when conditions are good. Mike hopes that eastern stations will be on 432 Mc. regularly enough to catch good tropospheric openings when they develop during the warm months.

W8JLQ, Toledo, sent us photographs of two of the TV stations operating in the 420-Mc. band in Columbus and vicinity. There is more TV activity on the Toledo-Columbus-Detroit circuit than we've heard about in any other area. How about others actually on the air with amateur TV sending us information on your work? We're not interested if you simply have a closed-circuit setup, or if you're working on TV gear. We want details of stations actually on the air.

Probably the only practical way to get started in amateur microwave communication is to make use of gear available on the surplus market, to at least some extent. Trouble is that equipment usable for amateur purposes is hard to

(*Continued on page 170*)

identify, and even harder to figure out. W6VHS, Van Nuys, Cal., lists inexpensive publications available from the Superintendent of Documents, Washington 25, D. C., that may be helpful. These include:

Radar Electronic Fundamentals, Navships 900,016 — $1.25

Radar System Fundamentals, Navships 900,017 — $1.25

Microwave Techniques, Navships 900,028 — $.55

Price list 82, *Radio, Electronics, Radar and Communications*, (no charge) lists these and other publications that may be of interest. QST

—···—

HIGH CLAIMED SCORES
1959 V.H.F. SWEEPSTAKES

Growth in interest in the V.H.F. SS has been meteoric. From the first holding in 1948 through 1953, the logs received hovered between 300 and 400. Then the boom began. In 1954, there were 610 and the figure held around 750 the next two years. By 1957 it reached 837, only to be followed by a giant 41 per cent increase to nearly 1200 logs in 1958.

Both in amount and complexity, the checking at ARRL has risen apace. Contact totals in the hundreds are registered and duplicate QSOs on a given v.h.f. band must be removed. The higher claimed section multipliers need attention. More mathematical errors occur which must be corrected. Every effort must be made to guarantee that the right individual wins the award.

The V.H.F. SS is firmly established as a major contest. This, coupled with the later scheduling (January 10 and 11 this year), requires a new reporting system. While we await the final standings, which we can't get ready by April *QST* deadline, let's examine some high *claimed* scores.

Single operator: W1RFU 15,530, W1HOY 13,216, W1RJA 12,420, W1HDQ 16,830, W2BLV 17,264, K2HLA 13,344, W2PAU 12,848, W2BV 12,528, W3TYX 18,032, W3HYJ 16,140, W3KKN 16,107, W3TDF 13,286, K4HZO 6900, W4RMU 5022, K5MJW 8086, K5RCZ 5658, K6TYW 9520, K6MZN 7781, K6RNQ 7130, W6BAZ 7098, W7RT 6672, W8RLT 10,014, W8LPD 9072, W8NRM 8832, K8BPC 7560, K9DOE 13,920, W9ROS 13,332, K9CSI 12,012, K9GFQ 10,000, W9JCI 8700.

Multiple operator: W1MHL/1 19,343, K1CRQ 11,400, W1HPM 8418, K2ITP 36,001, W2ADE 23,764, W2PEZ 14,444, W3KWH 14,280, W4ZZ/4 5450, K5STI 12,903, W6SDW/6 13,328, WA6CID 11,308, K6TJL/6 7946, K6SLQ/6 7614, K9KGI 6300, KØQQC 5040.

Dozens of other excellent totals were run up around the U. S. and Canada. We'll tell you about these, identify all Novice, Technician, club and ARRL Section winners, and present a full list of all entries in *QST* as soon as the sorting and checking is completed. Figures on participation are not yet available but, man, what a stack of logs! QST

Happenings

(Continued from page 65)

14 copies of all statements, briefs, or comments filed shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION

MARY JANE MORRIS

Released: February 20, 1959 *Secretary*

APPENDIX

IT IS PROPOSED TO AMEND PART 12 OF THE COMMISSION'S RULES AS FOLLOWS:

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. and 14,300 to 14,350 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.

QS-59

(Continued from page 69)

with automatic antenna-coupling control that provides the best match regardless of the antenna characteristics.

Although the price of the QS-59 has not yet been definitely fixed by the manufacturer, we suspect that it will sell for around $40,000. For further information on how to get one, see your banker or bookmaker. — *L. E. R.* QST

"It Seems to Us..."

(Continued from page 9)

be required of a civil defense communications system during modern warfare. As a result it was agreed that holders of FCC commercial operator licenses, except the very lowest grades, would also be permitted to operate RACES installations. The League insisted on safeguards in this connection, however: (1) the lower grades of license, including Novices in the amateur field, were not to be permitted any equipment adjustments; they could operate, period; even in operating they are restricted to duly authorized RACES drills. Still more important (2) *station* licenses would be issued only to holders of *amateur* station licenses other than Novice or Technician. In effect, this puts complete control of the RACES system in amateur hands.

A few instances have come to our attention where amateurs have enrolled in RACES and, perhaps with an exaggerated sense of their importance in the civil-defense system, have tended unduly to subordinate amateurs to civil defense. In any group of 185,000 people such as we have in ham radio, such instances are bound to occur. But, to quote a modern version of Aesop, that shouldn't prompt us to "throw the baby out with the bath water."

RACES is the amateurs' baby. We asked for it, because we wanted to be able to perform an essential service for our country in the event of another war. Minor aspects of the rules might not be wholly to our liking and there is no doubt there have been some abuses by civil defense people; but the overall picture is what counts, and that is certainly satisfactory to us.

If we hams want to decide we'll have no part of making our self-acquired skills available to the national defense interest, let's pull out and get RACES abolished. But if an overwhelming majority of amateurs want, as we believe, to be prepared should there be another war, let's stop this sniping, get down to business and support RACES.

As a matter of fact, why not join up yourself?

Strays

K6HV says that the stunt of connecting a key up to your auto horn (See March *QST*, p. 18) was tried way back in about 1932 by W5IQ (who is now W4FPD). During the course of a Delta hamfest in Pine Bluff, Ark., W5IQ drove up and down the main streets of town in the wee small hours carrying on a QSO with another ham, and was eventually pulled in by the local gendarmes for disturbing the peace. K6HV suggests Navy type blinkers, instead. Well, at least they're quieter!

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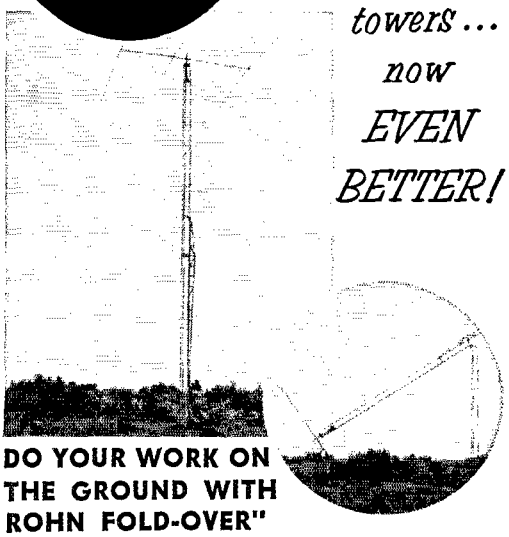

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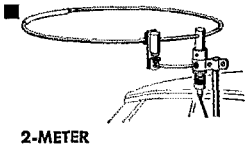
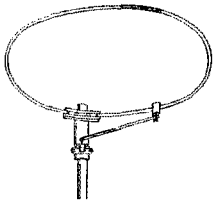
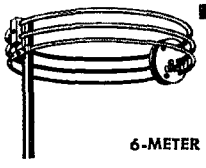


2-METER



6-METER

HALO ANTENNAS



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QST	$4.00 per year*	Lightning Calculators:	
The Radio Amateur's Handbook	$3.50**	a. Radio (Type A)	$1.25
The log	50c	b. Ohm's Law (Type B)	$1.25
How to Become a Radio Amateur	50c	A.R.R.L. Antenna Book	$2.00
The Radio Amateur's License Manual	50c	The Minilog	30c
Hints & Kinks for the Radio Amateur	$1.00	Learning the Radiotelegraph Code	50c
Single Sideband for the Radio Amateur	$1.50	A Course in Radio Fundamentals	$1.00

The Mobile Manual for Radio Amateurs $2.50

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ALL THE WAY - IT'S EZ WAY

See Page 118

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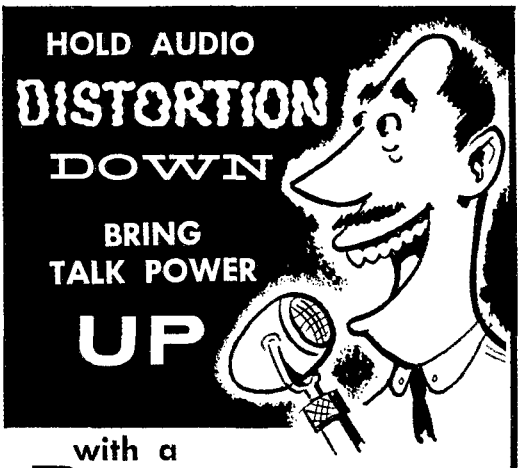

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If you are interested in what either of these "Little Grey Boxes" can do for your phone signal . . . Or what smooth, instantaneous, non-blasting phone and CW reception you can get from that older model receiver with a P&H compressor in the speaker line . . . See your dealer, or drop a card to DEPT. R-11.

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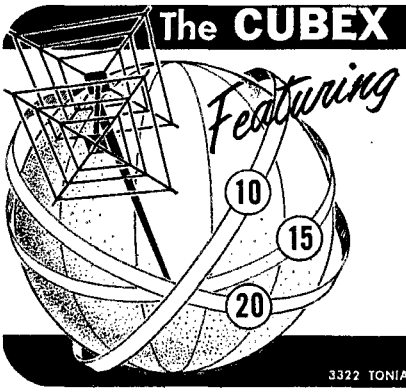

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(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(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. No Box Reply service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

(5) Closing date for Ham-Ads is the 20th 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 noncommercial in nature.** 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, takes the 7¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified 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 copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(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 except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

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WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT/ARN7, BC610E, ARN6, BC788S, ARC3, BC342. Highest prices possible paid. FOR Action we will buy immediately for cash all types amateur equipment or trade against new amateur gear. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, $85.00. Good condition, H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

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BARGAINS: Reconditioned & guaranteed. 32V-2, $349, 32V-3, $495. B & W 5100, $299, Viking I, $145, Ranger, $199.50; HQ-129X, $159; HQ-140XA, $199.95; HQ-100C, $159.50; HQ-110C, $215, SX-96, $199, NC-300, $319.50; NC-125, $139; NC-173, $39.50; NC-109 w/calibrator, $179.95. Write for complete list. We trade. Complete stock of new gear. Terms with only 10% down. Write Ken, W0ZCN or Glen, W0ZKD for deal. Ken-Els Radio Supply Co., 428 Central Ave., Fort Dodge, Iowa.

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304TL transmitting tubes needed. Contact W2KUW, 64 Grand Place, Arlington, N. J.

WANTED: Battery receivers of 1920s, Erla, Acme, Radiola, Grebe, etc. Also UV199 thru UV206 tubes for electrical test. Buy or borrow. Grote Reber, Green Bank, West Virginia.

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PICTURE QSL cards of your shack, home, etc. Made from your photograph. 1000 for $12.00. Raum's, 4154 Fifth St., Phila. 40, Penna.

QSLS "Brownie." W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢ with catalogue, 25¢.

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QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

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QSLS. Samples, dime. Printer, Corwith, Iowa.

COLOR Glamor, scenic & nature. Custom sketch and photo. Samples 25¢ refunded. K4LFZ QSLS, Summerfield, Fla.

DISTINCTIVE QSLS-SWLS. Custom and standard. Samples, dime. Walter Burkhard, KN3ESU, 92 West Main St., Northeast, Penna.

QSLS: 4 colors, glossy, 100, $3.00. Samples 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Mich.

QSLS-SWLS. Samples free. W4BKT Press, McKenzie, Tenn.

QSLS. Reasonable. 3 weeks delivery. Catalog dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

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QSLS, Outstanding, original, fast service, Reasonable prices. Samples 10¢. Super quality. Quantity, 25¢. Refundable. VYS QSLS, 1704 Hale, Ft. Wayne, Ind.

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QSLS Samples dime, sims, 3227 Missouri Ave., St. Louis 18, Mo.

QSLS-SWLS. High quality, reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSLS, SWL's VHF's XYL-OM's. (Sample assortment approximately 9x4). Covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fabulous, DX-attracting, prototypal, snazzy, unparazoned, cards. Rogers, K0AAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!).

QSLS-SWLS, 100 $2.50. Samples 10¢. QSO File cards, $1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS, Taprint, Union, Miss.

QSL-SWL samples free. Bartinoski W2CVE Press, Williamstown, New Jersey.

QSLS: Send 25¢ (refundable) for samples. W6CMN, Schuch, 6707 Beck Ave., No. Hollywood, Calif.

QSLS. Plain or fancy, samples dime. QSL printing, Box 12351, Houston 17, Texas.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

QSL-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLs? SWLs? In '59 try mine! Samples 25¢ deductible. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLs, 3-color glossy, 100 — $4.50. Rutgers Varl-Typing Service, 7 Fairfield Rd., New Brunswick, N. J.

QSLS samples, quarter. Spicer, 4615 Rosedale, Austin 5, Texas.

QSLS, High gloss, 2 colors, samples 10¢. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

QSLS, Lapel pins, samples dime. Kephart W2SPV, 1309 Willis, Merchantville, N. J.

QSLS Neat. Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

COMPLETE File *QST*s, 1915–1951 for sale. Landa, Clayton 2, Georgia.

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HAM Licenses, resident courses, 3 evenings weekly. Prepare for Novice Class in 4 weeks. General Class in 2 months. Delehanty Institute, 117 East 11th St., New York 3, GR-3-6900.

SAVE time, Save money! DX QSL's forwarded. 2¢ each after membership. Free flyer, "DX QSL Co-op," Box 5938, Kansas City 11, Mo.

AUTHORIZED factory distributors for Adjustavolt, B&W, Elmac, Geloso, General Electronics, Gias-Line, Gonset, Hammarlund, Hexacon, Johnson, National, Penta, TMC, Tobe & Vocaline. Wanted: xmttg. and special-purpose tubes and lab equipment. Trade-ins accepted. Open Monday through Saturday. Barry Electronics Corp., 512 Broadway, N. Y. 12, N. Y. Phone WAlker 5-7000.

FIRST Boston Area Convention in over ten years, ARRL Mass. State. New Ocean House, Swampscott, Mass., May 17.

KWM-1, AC and DC power supplies, car mounting with cables, 15 and 20 meter Hellwhips with mount, $1200. Also DX-100, $175. Jack Karp, R.F.D. #1, Millville, N. J.

TORIODS: Uncased 88 mhy like new. Dollar each. Five, $4.00 P.P. DaPaul, 101 Starview, San Francisco.

TUBES: 829B, $10.00; 4X150A, $25.00; 4X500A, $75.00, used 200 hrs. I have two of each. R. N. LaPlante, 827 Gross Court, Green Bay, Wis.

EARLY issues *QST* with complete indices, buckram bindings, new condition, R. H. Winchester, ex-8BNY, 196 Rosemont Ave., Trenton, N. J.

WANTED: Coil set "A" for HRO-50T. W7MMC, 575 Superior Sq., Salem, Oregon.

TREASURE. Privateer Jean LaFitte buried his treasure on Galveston Island south of the Republic of Texas. Treasure hunters will gather on June 19. Data and information available Box 73, Rte 1, Galveston.

CLEANING house! 1KW rig, ½ KW rig, 6 and 1¼ meter converters, modulator, dynamotor. All items cheap! Local sale (Chicago area) only. Call A. R. Martin, HI 6-4506.

ELDICO SSB100A 150W Exciter/Transmitter. Most versatile equipment on the air. A complete all Band AM SSB Transmitter, only $425.00 F.o.b. New York. In perfect condition. K2MQO, 130 East End Ave., N. Y. C. 28.

FOR Sale: Globe Chief, 50 watt Modulator, W.R.L. VFO, SX-24. Sell separately or all for $145. Wanted: 3 filament xfmrs for 866A's, 400 mmf 3kv Variable, 300-300 mmf 2kv Dual variable. K4ODC, Linda Lane, Madison, Tenn

COLLINS KW1 for sale. In exc. condx, $2295. R. Gumm, 770 7th, West Bend, Wis.

TRANSFORMERS, tubes, chokes, command transmitters, variable inductors, 4D32, 813 Millen GDO. Send stamp for list. W5SZB, W5SZB, Box 330, Edinburg, Texas.

SELL: 25-44 mc used FM Receivers 25 to 42 mc, $16.00 each with 13 tubes and power supply. Have hard to get 12 volt low voltage input brushes for DM 34 DM 35. DY 88 12 volt Dynamotors. Ralph Villers, P.O. Box 1, Steubenville, Ohio.

HIGH Fidelity components at rock-bottom prices. Brand new, fully guaranteed. All ma or makes, Amplifiers, tuners, speakers, etc. Our prices can't be beat! Write for quotations. The Ham's Exchange, 228 Stephen St., Levittown, N. Y.

DISC Tuning and neutralizing capacitors, and heat radiating plate caps; any size. W4UCH, Richardson, Sterling, Va.

HAM TV Equipment bought, sold, traded. Al Denson, W1BYX, Rockville, Conn.

OOPS! IN my February Ham-Ad unfortunate error occurred: 813 TX exact duplicate of *QST* 54, *not* 45. Should have read as 813 TX *exact duplicate QST 54 complete but no outer shielding, never used* parts, $85. F.o.b. Rockville, Md. W3AAZ, Glen Road, L. H. Vydra.

CLEANING House! NC183D, spkr, NFM 83, $250; Telrad T18 $15. Loads of parts, tubes resistors, capacitors, etc. List available, send stamp. M. Marshall, 455 Washington Ave., Dumont, N. J.

VIKING Valiant, new condx, make offer; DX-40 with VFO, $70; Six meter converter, $12. 1400V CT 400 Ma plate xfrmr with 10 hy choke, $12, f.o.b. K8JIE, Box 113, Bay Village, Ohio.

FOR Sale: Viking II, SX-100, Viking Matchbox and model EX Meissner signal shifter. Best offer takes these units in perfect condition. W9PNB, 128 Berteau Ave., Elmhurst, Ill.

SELL: Johnson Matchstick antenna, complete with c'poise, $65; Meissner 150-B 250 watt QM-CW transmitter, pi-network output, $70. R. Russell, 814 Bath Ave., Niagara Falls, N. Y.

THORDARSON T15C41 and T15C50 CRT series chokes wanted. R. Yeager, 1455 Wilson Ave., Chicago 40, Ill.

FOR Sale: Heathkit AR-3 with cabinet, good condition, 6 months old, $20. Leonard Robbins WV1AZZ, 304 E. 49th St., Brooklyn 3, N. Y. Tel PR 3-8016.

CAPACITORS: 4 μfd, 2000V, oil filled. Used but individually tested, $4.50. Postpaid, K4LVP, 318 2nd Ave., Indialantic, Fla.

WANTED: Hallicrafters S-106 receiver. State price and condition in first letter. Mario Quiles, KP4AJK, P. O. Box 19, Puerto Rico.

W8JS Moving, spring house-cleaning. Write Rich, 3425 Middleton Ave., Cincinnati 20, Ohio.

SELL: Gonset G-66B perfect condition with 3-way power supply. All inquiries answered. Mike, K2GMV, 119 E. 38th St., N. Y. 16, N. Y.

CLEAN B&W 5100S xmttr and SX-101 Mark III recvr, $295 each, both for $575, Heathkit voice control, wired $20, 3-el. 10-M beam, $12. Gordon Edwards, Box 254, Rt. 2, Springfield, Va.

LOOK! Hallicrafters S-38 receiver, in gud condx, only $25. Jackie Edwards, 220 Luckie St., Cartersville, Ga.

WANTED: Crosby 67B SSB converter. H. T. Cervantes, Mt. Kisco, N. Y.

FOR Sale: 5-tube 2 meter cascode converter with PS, $45, DX-35, $35; Turner 33D mike, $7.00 and heavy aluminum mike stand (blue), 7" high, $15. W2PQU, Richard Mehner, Jr., Lot E4, Grip's Trailer Park, Camden 4, N. J.

HALLICRAFTERS S-27, UHF receiver, 28 to 148 Mc, covering 10-6-2 meters, FM-88-108 Mc; has S-meter, BFO, ANL, AVC, RF-AF gain, less speaker, $95; Vibroplex Bug "Presentation" model, like new condx, $26; pair new 6146s, $5; Hallicrafters S-20R receiver, fair condition, $35; priced F.o.b. W9WFT, 2029 Bradley, Chicago 18, Ill.

DELUXE contest Kilowatt station: Ranger exciter; 75A-2, xtal cal., speaker, product detector, 15:1 knob; R-9'er, 10/15/20 coils, power supply; 3el 20/15 — 4el 10 Tri-band beam on 24' boom, 40' steel tower, prop-pitch rotator; 2el 7mc phased array; Custom console, with monitor 'scope, CW monitor, ph monitor, SWR monitor, beam control, antenna switching, control circuits, 24hr clock, lite, etc. Many misc. items. Station designed and built for DX and contest competition. Prefer personal inspection by interested parties. Will sell and ship individually, except tower and transmitter racks. Full details and pictures on request. Priced for quick sale. W4NBV — Knoxville, Tennessee.

VIKING II and matching VFO. Both units factory wired and in excellent condx. Manuals. W1DFA, N. J. Carney, 132 Winding Lane, East Hartford, Conn. JA 8-6909.

TRADE or sell: Teleplex code machine, mounted in cabinet with oscillator, excellent tapes. This machine also punches tapes from your key. Blank tapes furnished, $39; HRO5 coil 7 to 14.4 megacycles, $8.50; Antenna tuner, p. 42 November 1958 *QST*, $19; set of 4 RC610 coils, $5. Don Maxwell, 110 Fayette St., Charleston, West Virginia.

HAM TV Equipment bought, sold, traded. Al Denson, W1BYX, Rockville, Conn.

FOR Sale: G-E Selsyn motors, $25 per pair; type 2JA33BB1, ½ h.p., 60 cyc, 110/55 V., torque 20 oz. ft. Never used. In original factory cartons. Limited quantity available. Shipped express collect from New York warehouse. Altec Service Co., 161 Sixth Ave., New York 13, N. Y.

CANADIANS! Selling out 150 watts c.w. xmitter, 80-10 meters, VFO, Hammond power supply. Asking $75. Write to A. LaFontaine, VE2AKF, % C. P. Ryls, Abbotsford, Quebec P., Canada.

FOR Sale: Telrex Triband beam, in vy gud condx, $100. F.o.b. K2LGN, 32 Morton Place, North Arlington, N. J.

SELL: QSTs. October 1919 thru July 1920; August 1923 thru December 1958, complete run. 42 extra copies from 1924. Stamped self-addressed envelope for details. Best offer. K4GSS, 9 Felton Place, Hampton, Va.

DX-100 with push-to-talk set up. Also has the DX-100B loading refinement. Was used as exciter at low power for KW final and also as barefoot transmitter. $175 f.o.b. Levittown, N. Y., K2KTU, Watson F. Motley, Persing 5-1546.

ELMAC AF-67 in excellent working condition, $100; Gonset Super Six converter 'continuous 80-10), $30; 6 v. dynamotor with the AF-67, Gonset 12 volt Communicator IIb, three crystals, Kreco 2 Meter ground plane, $110. Everything plus Philco 100 watt RF amplifier, 80-40-20 needing some work, for $210. Will ship anywhere in the USA for $10 more each item. S. D. Sinkler, W3WWC, Crum Creek Farm, Berwyn, Penna.

BEST Offer: Thordarson plate transformer 3000, 4800, 6000 volts; choke 7500 volts 10 henries .50 amps; 2 G-E Pyranol condensers 4000 v 2 μfd, Kenyon filament transformer 5 volts 60 amps; Elmac 304TL, 2-3C24s, Triplet meters 0-1 amps; 0-100, 0-250, 0-75 ma.; 0-10 AC volts; Weston 0-100 thermo-galvanometer; Baldwin headphones Type C; Electro Specialty motor generator, 110V ac 400v .25 amps, D.C.; Abbott TR4B transmitter-receiver 144-48 Mc with pwr supp. Arthur Lukach, 295 Fifth Ave., New York City, N. Y.

SELLING Out: Going overseas. Late model Pacemaker, recently *modified by factory. Perfect, in orig. carton with instrux manual* $400; Factory-wired Thunderbolt, original carton and instruction book, perf., $500; HQ-150 plus speaker, perf. with orig. carton & instrx book, $230; Hy-Gain Triband vertical, $20; Bud low pass filter, $10; Carter 6 volt dynamotor 500 v. at 200 mills), $15. Can finance. Will ship, you pay freight. J. R. Gore, K4KCY/6, 1113 Holly Ave., Imperial Beach, Calif.

BEST Offer takes one or all: SX-62A, one year old, like new, less speaker; pair Vocaline JRC-400 transceivers with remote antennas; Gonset 1.6 to 6.0 Mc converter. Bob Oakes, 401 Church Ave., Verona, Wis.

WANTED: 75A4, first-class condition. Prefer 500 cycle and 2.1 Kc mechanical filters. Also Vernier Dial. Will consider all others. Give details and price in your first letter. Nelson Foley, Rte. 3, Box 160, Little Rock, Ark.

CANADIANS: DX100 original, $230.00 BC312F with speaker, power supply, $75.00; Gonset Super Six, $50; Heath Q-multiplier, $9.00; Heath Grid Dip, $20; Johnson low-pass, $15; Johnson SWR Bridge, $9. All in exc. condx. VE2ARA, Alain LePage, 64A 8th Ave., Iberville, Que. P., Canada.

SELL: Leece-Neville 12 volt, 100 amp. system, alternator, reg. rectifier, ammeter, in gud condx, $75.00. W2EDE, 373 Clover St., Rochester 10, N. Y.

FOR Sale: Lysco 600 S-35 watt phone-c.w. VFO transmitter, $55. Paul Graves, W1JJF, 34 Grove St., Augusta, Me.

SIDEBAND Slicer, Central Electronics, Model A, $30, in like-nu condx, w/cables & factory instrux mnl. W9OKB, 8267 Wisner, Niles 48, Ill.

COLLECTORS Item Radiola-III, make offer. Thermador C85664 xfrmr, 110-220 primary delivers 2500v d.c. 1.7A and 1000V DC 1A, $65; new RCA 813, 100TH, $6.00 each; choke 5 h. 1A, $7; power supply delivers 2500V DC 1A only $50. Hy-Lite 3-el. 10-M beam, new, $20. W5MAM, 5935 Southville, Houston 21, Texas.

SELL IRE Proceedings 1956, 1957 and 1958. Best offer. W2EC, 169 Buckingham Rd., West Hempstead, L. I., N. Y.

SELL 2 Amertran 6200C c.t. 700 Ma. xfrmrs, $50 each; 2 Amertran 5V c.t. 60 amp., $10 each; two 5V c.t. 30 amp. rectifier xfrmrs, $5 each; one B&W CX49A xmttg. butterfly condenser, $10; one RCA 600 watt modulation xfrmr $10. Shipped express or freight collect. J. Kersten, W0BGK, 717 Crest Ave., Ft. Dodge, Iowa.

VF-1, $20. K2OGN.

CANADIANS! January 1954 *QST*, 813 rig, modulator and power supplies enclosed in a 5 ft. steel rack, $160; crystal calibrator, $15; 10 meter converter, $20. Clayton Dean, VE3AUC, Niagara-On-The-Lake, Ont., Canada.

FOR Sale: Viking Ranger, push-to-talk, operating manual. Am going SSB. Price $185 f.o.b. Art Rauch, W2DID, 30 E. Smith St., Central Islip, L. I., N. Y. Tel. CE 4-8544.

FOR Sale: SX-100 receiver, clean, $200. New condx Tecraft 2-meter converter, CC5-144 with pwr/supp, $30. Frank Pauer, 151 Vreeland Ave., Rutherford, N. J.

SELL: Best offer! SX-28 recvr, in gud condx, with manual. K2AWQ, 67-10 108 St., Forest Hills, L. I. 75, N. Y. BO 3-2599.

COMPLETE Two Meter Communications gear! Two Springfield transceivers in like-new condx. Cost over $40 new. Only $25 with new batteries. Write W2BAC, 4 Bayard St., Larchmont, N. Y.

FOR Sale: Hallicrafters S-107 guaranteed. Brand new, in original *carton, price, $70. Charles W. Ehlers, 319 Union St., Jersey City 4,* N. J.

TRANSCEIVER 50W RTTY, CW, AM. Never used. 40, 80M, VFO; Dynamotor power supply, $60.00. K2KJV, Lester, 2241 Creston Ave., Bronx 53, N. Y. FO 5-1294.

FOR Sale, Johnson Pacemaker factory modified. Not quite year old. Like new condx. W3VDA. Box 1225, Harrisburg, Penna.

TRADE Two 4" Weston Mod. 1221 thermometers 50 to 500 degrees Fahrenheit for ¾ pipe; two Boyiston Fig. 205 air gas steam pressure regulators, 2" flanged, one 250# crane, two and one-half inch flanged angle valve new or like new for DX-100, parts, 20A, etc. Warren Schreiner, RFD #1, Pella, Iowa.

KILOWATT Transmitter, $325. Bart, K4MYY, 2504 Edgewood Ave., Anderson, S. C.

WANTED: Sideband (single or double) converter for DX-100. Willing to trade 840-A or S-meter or QF-1 or buy or combination of both money and equipment. All answers considered. K2RDK, Michael Muntner, 68-37 Yellowstone Blvd., Forest Hills 75, L. I., N. Y.

SELL: S38D xcllnt condx, $35. KN4BYO, 119 Dixie Ave., Cartersville, Ga.

CLEANING out all odds and ends: SCR522, complete, used $30; BC-645, new, originally priced $30; General Electric YRS-1, new, originally $50; Collins 32RA transmitter, used, $50. Many other items! Transmitters, National parts, odds and ends. Send for list. W2EUZ, 721 Carroll, Teaneck, N. J.

LOCAL Sale, New York City area. Complete rig: Viking I TVI suppressed with Johnson VFO. Comes with spare 4D32, Cardax microphone and commercial hi-fi preamplifier to give extra quality audio. See and hear it in operation at home station. $175 takes all. Al Feder, K2CUI, 336 Central Park West, New York City, Phone ACademy 2-7309.

SELL: DX-100. $125. Call Michael Otten, Tel. 4503, New York City.

SALE: RME HF10-20 converter, in exc. condx, $40; two Sonar XE-10 FM exciters, $7.50 each; Par-Metal enclosed 6 ft. rack, $20; Heath G-multiplier, $7.50. W2MES, Middle Village, L. I., N. Y. DA 6-3279.

WANTED: Panadaptor, 3 inch or larger, rack-mounting only surplus or otherwise; send description, price. Also Collins 310-B1 or 310-B3 mint condition. Send description and price. W2BIB.

WANT: DC 'scope, reasonably priced. N. K. Thompson, W1LWV, 99 Water, Millinocket, Me.

SELL: 3 Federal Tele. & Radio 150 Mc., 30 watt FM mobile units with cables, control heads, mikes and crystals for 147.3, $40 each; 1 FTR 30 watt FM base station with control panel, mike and crystals for 147.3 $60. Richard Weaver, W4JZC, Harrisonburg, Va.

SELL: Marmax MT-52, 50 watt mobile xmittr, $50 postpaid or trade for DX-35; DX-40; Tapetone or Tecraft converter. K6SBE, 934 W. Harvard Pl., Ontario, Calif.

GONSET Communicator III, 2 meters, like new, 2 months old. First money order $195. F.o.b. W2MPT, Gordon, 115 Clinton Place, New Shrewsbury, N. J.

GLOBE-KING — Last of 400 Series, push-to-talk, built-in change-over relay, 80-40-20-15 and 10 M coils; new condx w/manuals; WRL 755 VFO, new, $350 cash; BC-348 built-in 110 supply, nice and above average, $50; Plate trans. 3100V ea. side center tap at 1,000 mil with matching swinging chokes, 8 to 22 henries, light gray, $50; 1 pr. 500 mil 6 henry chokes, light gray; 2 two mfk cond., 4000 v., $10. Will ship all the above — you pay freight. 1 Par-Metal 5 ft. Deluxe cabinet with raised top, chrome stripped, $30 cash. Pick-up deal only. G. B. Sample, 3894 St. Johns Ave., Jacksonville, Fla.

SELLING Out, complete station. 75A4 receiver HT-32, HT-33, and KW Matchbox. Positively no trades. No reasonable offer refused. Prefer pick-up deal. Bill Harper, W9BWM, 4037 Eddy St., Chicago 41, Ill.

HARVEY-WELLS Deluxe Bandmaster xmttr, complete with matching VFO and pwr supp., in vy gud condx; $100. W2ZPQ, Queens Village, 65-33 78th St., Middle Village, N. Y. Tel. HO-8-3878.

FOR Sale: Globe Scout 680-A, in excellent condx, $89; 840-B, works perfectly, $69. Will ship. I need information on BC-611. Philip Shearrer, KØLGT, Patterson, Mo.

SELL: Viking I, exc. condx, $100; Collins 70E8 PTO unit, $25. G. DeBard, 840 Reeves Ave., Reno, Nev.

FOR Sale: Viking Valiant A-1 condx, factory-wired with electronic break-in built in, $315; NC-300 with spkr and xtal calibrator, $295. You pay freight or will deliver within 100 miles. James E. Munroe, Jr., W1JPJ, 73 High St., North Attleboro, Mass.

300 WATT transmitter: 813 final with VFO, $250. Also 100 watt transmitter and Meissner signal shifter, $95. No mkes. WØMBW.

COMPLETE mobile rig! Elmac AF-67, PMR6-A receiver, Elmac PSR-12 power supply, PE101C dynamotor, relays, Master Mobile coil with chrome extension, heavy duty bumper mount, whip, Shure reluctance mike. First $250 takes all. Bob Kennedy, K5KXS, 4121 Tuam, Houston 4, Texas.

WIRE Your kits (Amateur, Hi-Fi, Test Instruments, etc.). Reasonable. Write for details. Bracket-Lee Enterprises, 2143 North Clarkson, Fremont, Nebraska.

FIRE Extinguishers, 20-year guarantee, $5.00 each. Erwood, K9AAU, 2823 W. Lyndale, Chicago 47, Ill.

NC183DT, like new, used infrequently, only one year old, $325. Paul Damal, 24 Detroit St., Calumet City, Ill.

COLLEGE Cash needed! DX-40, ant., B&W baluns, key, xtals, all in new condx, $73. Boyd Nelson, 1055 Pennington Rd., Trenton 8, N. J.

FOR Sale: Special prices for immediate sale on HT-32, $500; SX-101 Mark III, $300 and Globe VHF-62, $125. All units A-1, not a scratch. You pay shipping. R. D. Corbett, 46 Prospect St., Torrington, Conn.

FOR Sale: Brand new Millen grid dip meter and coils. Need 8003, 805, 813 tubes. K1DVO, Glenbrook, Conn.

WANTED: Prop-pitch rotator, also Collins speaker. Have 3 HP Wagner 110–220 volt 60 cycle motor, like new. Any offers? VE3BNV, C. Landers, Waterford, Ont., Canada.

WANTED: Prop pitch motor. State price and condition in your first letter. Edward Josefow, W1JSU, Welgold Rd., Torrington, Conn.

RUBBER Stamps for hams, sample impressions, W9UNY, Hamm, 542 North 93rd, Milwaukee, Wisconsin.

4X150A tubes, $6.00 each, postpaid. New, surplus, and guaranteed. H & C Sales, Box 1603, Pittsburgh 30 Penna.

TRANSMITTER BC-191-F in brand-new condx 100 watts input. 12 V.A.C. and 1000 V.D.C. needed. Complete with tubes and tubing unit for 75–80 meters. Only $50 F.o.b. Ironton, Ohio. Irving Craiger, K8GPI, R.F.D. #1, Box 032.

FOR Sale: G66 with Universal power supply, W2EWL special with 110 AC and 6V DC power supplies, whip and coil for 20 M; mobile ant. mount, ART-13. Best offer takes all or part. W1MVU, Box 577, Conway, Mass.

S.S.B. xfrmrs, exact set of 3 (hermetically sealed) for W2EWL Special, brand new, $3.00 postpaid. New compact G-E 100-watt modulation xfrmr, multi-impedance (10 lbs), $6.25; new Elmac vacuum condenser, 12 μμfd at 32 kilovolts, $5.50; G-E Pyranols, 20 μfd at 1000 v.d.c. (330 vac) plus min. 4 for $7.50; 6 μfd at 2000 v.d.c. (660 vac) -min. 4 for $5.50; 4 μfd at 1000 v.d.c. (330 vac) -min. 4 for $3.50. Please include postage, no c.o.d.'s. S. Tucker, W2HLT, 51-10 Little Neck Parkway, Little Neck 62, N. Y.

SELL: Two Ballentine (AE-103) dynamotors, $10 each; one Johnson dynamotor base, kit $6.00, one Master Mobile Mounts #444, $5.00. You pay all postage. Hattaway, 515 West Main, Houma, La.

SELL: Viking I with TVI suppression and VFO, $175 or your best offer; Magnatape Twin-Trax tape-recorder with mike, $55. Local sale preferred. William Peet, W3DIY/2, 601 Woodland Rd., West Allenhurst, N. J.

DX-100, $175, perfect; HQ-129X, $135, new tubes, xfrmr; DX-20, $25, used only 4 months; AR-3, $28, exc. condx; DB-23, like new, $28. Bill Monk, 1804 Palma Plaza, Austin, Texas.

HAMMARLUND HC-10 Sideband converter. Used for short time only. In vy fine condx. Complete, $125. W3EHA, Cy Jones, 840 Terrace, North Hagerstown, Md.

FOR Sale: Old QSTs going back to 1921, 25¢ each. SASE brings list. W4GRP, 210 Elm St., Vienna, Va.

CANADIANS DX35, clean keying, TVI suppressed, sell cheap, $50. VE3EGG. Ernie Crump, 64 Barrie St., Galt, Ont., Canada.

CQ All Hams! Have any parts you don't need? I like to get on the air but can't afford to buy transmitter. Would like to build one, anything received, greatly appreciated. Tnx. VE2AWO, G. N. Muscat, 1038 Cr. Albanal, Duvernay Que. P., Canada.

WANTED: Regency ATC-1 amateur band converter. Sell brand new unopened Tapetone XC-50C4 six-meter converter for Collins 75A-4, $50. Larry Kleber, K9LKA, Belvidere, Ill.

BURGLAR Car Alarm! No more stolen transmitters, receivers; best protection against auto thieves. Guaranteed, postpaid $10. Mandel, 1701 Albemarle Road, Brooklyn, N. Y.

TRADE For Communicator III — late model receiver or deal for $225 cash; VM750A black consolet stereo tape-recorder and 165 speaker amplifier, both have black legs, W8NYA, J. Lafferty, J-2 100 Western Ave., Kalamazoo, Mich.

SELL: Eldico TRITV and VFO, 300W. AM/CW. 125A final, $250; Globe LA-1, $95; perfect HT-30, $275; PE103, $15. Harry Taubin, W2GCW, 731 Gerard Ave., Bronx 51, N. Y.

SELL: Collins 70E8A VFO, $25; Instructograph $10; Kenyon multimatch pr. 90 watts, new, $12; will be willing to trade all above and cash for HRO50. Howard E. Wachtrieb, Corfu, N. Y.

SPECIAL: 813 Handbook xmttr, 350 watt A.M./C.W. Heath VFO in control panel with relays, etc. TVI-suppressed. All band. Must sacrifice! $200. Bill Cate, 108 Stadium, Fayetteville, Ark.

CALIFORNIA Bound! Must sell: Chambers six-band 813 xmttr, $85; 2000 volt supply, $35; 400 volt supply, $10; HBR-14 receiver, $50; NO2MK19 transceiver (40-80 meters), $15; Dynamotor 12 to 350 and 550 volts $20. Want: mobile xmttr. Roy Herzil, K2RGA, 37 Glen Ave., Scotia, N. Y.

FOR Sale: New 4D32, $10. Want 3-el. 20-meter Minibeam. W4KGR, 2333 Elizabeth Ave., Winston-Salem, N. C.

WANTED: Lampkin 105-B, Measurements mod. 80, and gud wattmeter. Also used Communications equipment. Give me full descriptions, and your lowest price. George Tate, W4AIS, Taylors, S. C.

SX-100 Receiver, brand new condx. Rarely used, $200. Ship anywhere. Ralph Freda, KN2SCF, 131-71 231 St., Laurelton 13, N. Y. LA 8-6601.

CANADIANS! For Sale! National NC-57B receiver with S-Meter, $90. In excellent condition. Gar Redman, VE2AGY, 147 Jacques Cartier St., St. Johns, Quebec P., Canada.

COLLINS ART-13 transmitter, like new, with book, $45 or will be willing to trade for what have you? Need a 40 ft. tower. W8LIU, 20277 Avon, Detroit 19, Mich.

FOR Sale: One completely equipped radio and TV mobile shop, A-1 condition, Chevrolet factory body. Send 25¢ for px and info. Ken Jenkins, Jenkins Radio & TV Sales & Service, P.O. Box 301, Big Stone Gap, Va.

CANADIANS! For sale, one complete Hallicrafters HT-14 xmttr, commercial BC-610, in exc. condx w/2 new spare modulator tubes, $400 or will be willing to trade for smaller commercial rig. All inquiries will be answered promptly. VE2AOJ, Box 1542, Seven Islands, Que. P., Canada.

SACRIFICE! NC-125 with speaker, exc. condx, $120. Pick up at East Orange, N. J. J. C. Collins, 88 N. 15th, Tel. OR-6-0943.

20 FT. Plated Steel Tower; Telrex 10-meter 3-element beam, #1030S. Will take any reasonable offer. W1PWF, 117 Hawthorne St., Manchester, Conn.

WANTED: 15 meter bandspread coils for HRO-50T1. Ralph Williams, 2236 Parkway Dr., Winston-Salem, N. C.

SELL: Excellent, complete run *QST* 1926–1958. Will not break up. Hart Beebe, Missouri Valley, Iowa.

MOBILE Hams! Battery troubles? Les Hay, W7JWD, Rt. 1, Winlock, Washington, has the answer to your battery troubles. This is genuine. No gimmix!

WANTED: Hallicrafters SP-44 Panadaptor. Write stating price and condx. William Szymko, 1006 Jay St., Utica 3, N. Y. W2KDE.

RECENT Lab-aligned SX-71 with speaker, $149. TVI-suppressed; Harvey-Wells TBS-50D, with VFO and A.C. power supp., $98. Better offer with check or money-order or first one gets it. F.o.b. QTH. S. Spielman, K2QZU, 834 Far Rockaway Blvd., Far Rockaway 91, L. I., N. Y.

NATIONAL NC-300 receiver, 15 months old but looks and works like new, $235.00; delivery charges collect. W3FPD, 2012 Cascade Road, Silver Spring, Md.

FOR Sale: Globe Champion, 300, $300; NC-100 w/spkr, $40; National precision units: PW2L, 2 sec. left, $6; PW3L, 2 sec. left 1 sec. right, $8; 5 amp. Variac $10; Deluxe Signal Shifter, $10; dynamotors 6V inp; 300V-100 Ma. filtered, $5, 260 V-60 Ma. filtered, $4, 180V-155 Ma., $3.00. Wanted: Guthman U50 receiver. "A member," Henry Mohr, W3NCX, 1005 Wyoming St., Allentown, Penna.

HQ-129X with speaker and calibrator, $130; Knight VFO, $25; Heath LG-1, $25; Viking FF75R-LP, RP6A, 20 reels tape, $125. F.o.b., WØMLK, 306 North Cascade, Colorado Springs, Colorado.

FOR Sale: Conservatively rated 500w phone rig. Pair of 813s final, pair 81 As modulators, complete with power supplies. Rack mounted. Fully metered. $115.00. Will consider trades. W9VBV, 2015 Greenwood, Wilmette, Ill.

SELL: Johnson Viking II, 180 watts c.w., 120 watts phone, $175. W2LPC, 51 Elmira St., Hicksville, L. I., N. Y.

SELL: CQ complete run 1947 thru 1953. Some 1945 and 1946 issues. QST 1933 through 1953, complete, except for six issues. Pair 4CX300 with sockets. Want rotator. W9MZP, Niles 48, Illinois.

CE 20A exciter, $175.00; Gonset 500W linear, $165.00, both like new. Triband beam, $60. Viking II, $175. W2DTD, 29 Charles, Merrick, N. Y.

FOR Sale: Non-surplus rack model Super Pro .54 to 20 Mc., $100 picked up only deal. Ralph Sieloff, W2WKR, 64 S. Cottage St., Valley Stream, L. I., N. Y.

FOR Sale: Viking Ranger, coax relay, excellent condition, $160. 2320 Salisbury Blvd., Winter Park, Fla. KP4AGO.

FOR Sale: Gonset Communicator III, 6 meters with manual, in original box, in new condx, complete with mike and crystals, $225. HQ-140X, also in new condition with manual, $180. Ray Barker, W3EBB, 435 Old Ft. Road, King of Prussia, Penna.

FOR Sale: Millen Grid Dip Meter, perfect, $45; homebrew 3 band beam, $45; KW rig in an enclosed rack, all tubes new, must be seen to be appreciated, $300.00; miscellaneous transformers, HDUL base and coils for 80, 40 and 10, $10. William Madigan, W1UGE.

FOR Sale: You carry away! HQ-140X, $110.00; Collins 310B with commercial pi-network output, $100; Collins 70E-8 original carton, $50; B&W 850A & Jennings UCS300 variable vacuum original cartons, both $70; Tryion 10-ft roof tripod tower with CDR rotator and Telrex 20-M beam, complete, $75; considerable miscellaneous at low price to those buying listed equipment. W2UNR, 8 Bronson Ave., Scarsdale, N. Y.

TRADE: Senior Voltohmyst WV98A and Sylvania #400 oscilloscope for any amateur station equipment of equal value. Send list of items to W3SIW, 223 Hillock Lane, Pittsburgh 36, Penna.

WANTED: Vibroplex Champion and Astatic JT-30 microphone. Albert Johnson, KN1IIK, Newport, N. H. Tel. 114-M.

LAST Chance to send in your dollars! Howe Radio, Box 71, Fresh Meadows 65, N. Y.

RC779 Super Pros guaranteed to perform. $74.50 each. Gizmos & Such, Still River, Mass.

NOVICES! Adventurer in gud condx with six (6) Novice xtals, $55. A. Gardner, 325 Mt. Hope St., Attleboro Falls, Mass.

SELL: Globe Chief 90 with screen modulator; Heath VF-1; NC-98 REC; Heath QF-1, $150 or will sell these items individually. Ralph Carito, 43-17 54th St., Woodside, L. I., N. Y. Tel. TW 9-5229.

FOR Sale: Heath voice control Model VX-1, $21. Thomas Kloss, 115 Sibley Ave., Taylor, Penna. K3ABD.

FOR Sale: 32V1, two extra 4D32s and D104 mike, $315; HRO5OT — 50Kc to 54MGC, speaker, 1000-100 Kc Standard, Universal Service plug-in SSB Adaptor, instrux book and coils A, B, C, D, AA, AB, AC, AD, E, F, G, H, J, $450. I will consider selling coils or units separately. Wells Chapin, 942 Arden Lane, Birmingham, Michigan. Telephone: MIdwest 6-1703.

HQ129X receiver, in gud oprtg and physcl condx; built-in xtal calibrator, matching spkr, will sell all for $130. Worked DXCC and WAZ using this recvr. F.o.b. Glens Falls, N. Y. K2BU, Ken Caswell, 10 Cunningham Avenue.

SELL: SX-101 Mark III and matching spkr, both less than six months old. Must sacrifice due to an emergency. Need cash badly. First $260 gets it. Joan Silver, 155-11 89th St., Howard Beach 14, N. Y.

SALE: Power supply parts, new: 2-836s w/sockets 1 2000v 1 μfd condsr, 2 chks, res., switch chassis, all for $8; Thordarson audio reactor (chk) 15h, 500 mils 1000v, $6; RCA mod. mon, Mod. 66, $35; UTC xfrmr PA238X interst., $4; 12V dynamotor 515/1030V at 215/260 m, $8; 28V dyn., 375v at 150m, $1.50; variable condsr Johnson 50C1D110, dual sec., 50MM per sec., $6; Harvey-Wells Bandmaster Deluxe FBS-50D, $60; fil. xfrmr 110v pri 7¼v c.t. sec. 2 coils 15a ea., $3. Thordarson Mlutitap xfrmr 110v inp. outp. 5v. at 3A and 150v to 275v inp. 25v steps at 110 watts. For grid bias, etc., $3. F.o.b. Louisville. Bob Goodman, W4EKI, 2131 Woodford Place, Louisville, Ky.

FOR Sale: NC-183D, in top working condx, $275; Central Electronics 10B factory-wired w/QT1 coils 80-40-20, $125. First check gets 'em. Phil, K2IRK, 7715 18th Ave., Brooklyn 14, N. Y. Tel. CL 9-1414.

CONNECTICUT Hams Surplus Store. Receivers, Transmitters. Parts. Hi-Mu Electronics, 135 Hamilton St., New Haven, Conn.

QSLS, glossy cards, brilliant sparkling inks. 4 colors. 100 for $3.00. Samples, 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Mich.

COMMUNICATOR III 2 mtrs, 9 xtals, xtal desk mike and mobile hand mike, $175; RME-100 Speech Clipper, $22.50; Jones 261 Micro-Match and 262 indicator, $18.50; all with instrux and all only a few months old. 50 ft. heavy self-standing triangular section mast in 10-ft. sections with Telrex 2M-15C 2-meter 15-element optimum spaced yagi and prop-pitch rotator with selsyn direction indicator. You take it down $25.00 complete. Sry, no shipping! Pick up deal. W1AXW, Homer H. Richardson, 17 Whittier St., Dover, N. H.

FOR Sale: 32V-2 spare tubes, $275 HQ-140X, $175 (both $400). Willing to deliver within 150 miles. Positively no shipping. W2BZR, P.O. Box 273, Chatham, N. J.

CANADIANS! Selling out my ham station: Hammarlund HQ-129X recvr, $180; Viking II xmttr, $190; RME DB23A Preselector, $39; Hammond 3-el. 10-meter beam, $30. All of the foregoing equipment in exc. condx. Contact: H. G. Mitchell, VE5CT, Moosomin, Sask. P., Canada.

FOR Sale: HQ129X, $100; HC-10, $125; Morrow MBR5, best offer over $135; Viking II, $195; WRL VFO, $35. Dominic Bruno, W1URM, 65 Garden St., Torrington, Conn.

WANTED: Coils for National SW3; 40 and 20 meters. C. H. Schueler, Columbia, Ill.

SELL Johnson Viking Mobile, speech clipping, VFO, $85; 12V. 50A. Leece-Neville alternator system, complete, $65; PE-103A, $14. W7FBN, 4228 E. Hazelwood, Phoenix, Arizona.

SELL: T-12 International xmttr, tubes, xtal (3825), $10; FCV-1 International 6M converter, tubes, xtal, $6; B&W balun coils mounted, $5; Hy-Gain 6M. beam, $8; home brew 6M transmitter, $15. Want: Gonset Superceiver and Commander. Wm. R. Gierhart, K5CCO, Box 119, Sapulpa, Okla.

WANTED: Collins KWS-1 and 75A4. Please be sure to give full details on condition and price. W9BAG, Frank Smolek, 1023 N. Marion St., Oak Park, Ill.

WANTED: Viking Ranger, late model, factory-wired, with time-sequence keying. Please be sure to state price, condition and serial number. C. Brooner, P.O. Box 261, Morton, Ill. All replies answered.

GOING To V.H.F.! Sell: SX-100, perf., $195; speaker, $7.50; Heath SB-10 Sideband adapter, $90 with electronically regulated PS, $110; WACO 6 meter mobile transmitter w/tubes, like, xtals, $28; Central Electronics MM1 RF analyzer, $75; KW Sideband or AM linear amplifier in 6 ft. rack, pr 8078, AB1 drive 6C21 GG, bandswitching fully metered, Variac controlled 3100v hi-capacity PS. Can't ship, $175; 6C21 tubes, $10, pr 8138, $15, unused Elmac 4-250s, $22; BC453 w/x-controlled 80 meter converter and PS, $15; Geloso Mod. 4/104 6-band VFO factory-wired, Bud cabinet, dial and reg. PS, $32. Other parts, meters. All f.o.b. Steelton, Penn. E. F. Archer, 625 Pine.

FOR Sale: NC-98, $85; Globe Chief with screen modulator, $40. W4HBK, 1000 N. Reus, Pensacola, Fla.

HAMVENTION Day at Dayton, Ohio. May 9, 1959. Be there?

SELL Central Electronic 20A in perfect condx with QT1. Prefer local deal or you pay freight: $150. M. Samuels, W2MTX, Miller Place, L. I., N. Y.

FOR Sale: Heath AR-3 receiver, factory-tested, complete with case. Elmore O. Johnsrud, Dahlen, N. Dak.

FOR Sale: National SW-54, $47.00; NC-188, $125.00. Both in factory sealed cartons. Central Electronics 20A, like new, $225.00. Clyde Crosby, K4JOQ, Williston, S. C.

SELL: Collins 32V3 transmitter, original owner, excellent condx, $425; DSB-100 xmttr with VOX and QT units, factory-wired and tested. Used only two hours, $130. W2ADB, 27 Grayson Place, Teaneck, N. J. Telephone TE 7-2004.

HALLICRAFTERS S40 recvr, vy gud condx, $50; 24-hr. clock, new model T generator, send for complete list. Blum, 396 E. Whittier St., Columbus 6, Ohio.

SELL: HRO6OT with matching speaker. Mint condx and in orig. cartons: A, B, C, D coils and 100/100 Kc xtal calibrator, $450. M. W. Roscoe, 1880 18th St., East Moline, Ill.

NEW KWM-1 with 516F-1 AC pwr, $620, or swap for car. W6FFD, 5528 Linda Rosa, La Jolla, Calif.

BARGAINS — New Guarantee: Rotobrake $49.50; Gonset 30-40 mc AM tuner $39.50; P-H LA400 linear $99.50; P400GG linear $159.00; BC610 with tuner $425.00; Gonset 500W linear $199.50; Elenco 77 SSB $375.00; Elenco PA400 linear $99.00; KWM-1 demo $775.00; James C1450 $49.50; DX-35 $52.50; Scout 680 $84.50; HA-1 linear $89.95; NC183D $319.00; NC300 $299.00; S53A $69.95; NC98 $119.00; Globe Chief 90 $44.50; Globe Champ 300A $399.00; King 500 $425.00; HT33 linear new Demo $595.00; HT31 linear $289.00, Morrow MAH-B $399.00, "Q" Multipliers $8.95, test and audio equipment, inquire. Trial, Terms. Write Leo, WØGFQ, Box 811, World Radio Laboratories, Co. Bluffs, Iowa.

20A Exciter for sale, complete with VFO, QT-1 and 10 meter conversion, $200; Central Electronics 600L amplifier, $300; Mon-Key, $12.50; Z-Match, $50. Les Galloway, 249 — 173rd Pl., Hammond, Ind.

HI-POWER Plate transformer: Pri: 220 v/50-60 cy, Sec: 3800 vet/2.7A mp/ 6,340 VA, Wt: 300 lbs. Size 12½" x 10½" x 18½". Use in half-wave or bridge for 3800 volts at 1.35 amp, $69.50; matching filter choke, swinging, 0.4-3 henries, 3.2A-500 Ma., 3.2 ohms, 10 KV test, $24.50; Collins ART-13, 2,000-18,000 Kc., $45; APA-38 Panadapter, 30 Mc inpt., 10 Mc bandwidth, with 60-cycle trans., conversion data, and instruction book, $22.50. Communcations, 343 Canal St., N. Y. 13, N. Y.

SX-42 Clean, $120; 10M "Wonder Bar," new, $4.50. F.o.b. New Orleans, La., W5FTW, 5811 Elysian Fields Avenue.

LATE Model Pacemaker, factory-wired, perf, condx. Johnson T-R switch. Must sell, make an offer. W2HQH, Ivanhoe 1-1875.

FOR Sale: Collins 51J3 with vernier knob, in mint condx, $750; Central Mod. B slicer, $79; Mod. MM2 FR analyzer, $90; Johnson Kilowatt w/desk, new, never used, $1350; Pacemaker, $350; Ranger, $195; Simpson Mod. 479, T.V.F.M., signal generator, new, $195; Mosley VFA 20-3 (20-meter Shortbeam), $25; Tecraft 2-Meter converter w/preamp, and pwr supp, $27; Gonset 2-meter Communicator III, $205. Sidney Gogel, 1096 Laux Place, No. Bellmore, L. I., N. Y. Tel. BUnset 5-6876.

NC-88: in good condition, $75. John Cliburn, Rte. 2, Scottsville, Ky.

FOR Sale: DX-100; ten months old, not a scratch! Hot on all bands! $175; Hy-Gain 5-band trap dipole for fone band, $15. W6WEB, Box 594, Sonora, Calif.

SELL NC-98, in gud condx, $98; HQ-100C, in mint condx, $165. W4DSY, 198 Jackson, Titusville, Fla.

KNIGHT VFO for sale, $28, like new condx, only 6 mos. old. W7HVR, Jerry Schoepflin, Milo, Oregon.

FOR Sale: General Radio 916A. R. F. Impedance bridge. Covers 400 Kc to 50 Mc. J. Christy, 14553 Dickens St., Sherman Oaks, Calif.

SALE: Two surplus 304TLs, never used! Only $16 each plus postage, and no c.o.d.'s. Earl Ensign, RR 4, Box 94-C, Bowling Green, Ohio.

SELL: DX-35 with VFO, $50. Also complete 2E26 VHF rig, 6 and 2 meters with VFO, $40. Bernie Woltzer, K2TCQ, 282 W. 23rd, Deer Park, L. I., N. Y.

SALE! BC-221, A.C. powered, calibration book, shopworn but in exc. condx, f.o.b. Winter Park, Fla. Ken Gennett, W4ME, 311 Lake Sue Ave. $60.00.

SELL: KWM-1 mobile mount, D.C. power supply, 516F1 A.C. power supply 10 hrs use only, in new condx, late serial number. Everything for $960. F.o.b. Murray Hill, N. J. Will be willing to ship or you pick up. New Gonset model 3 two meter Communicator, in orig. carton, $210. Joseph DiLiberti, K2IQZ, 206 Central Ave.

SELL: Elmac 4-65A, unused, $5.50 each, 3 for $15.00. Alan Crist, KIHEB, Lot #7, Lakeside Trailer Park, North Billerica, Mass.

SELL: Heath AR-3 with cabinet and Q-multiplier, $25 plus 20# shipping. K8HCZ, George Griebe, Jr., 3220 Harrison, Rochester, Mich.

FOR Sale: Late Globe Scout 680, $85; Knight VFO, $25; both in like *new condx. Must clean out shack*, bargain list of crystals, speakers, antennas, transformers, potentiometers, tubes and much more, on request. Roy Rosner, K2KHR, 843 East 48th St., Brooklyn 3, N. Y.

NEW Boats, Mercury outboards. Will take ham gear on trade. Write: Boyd Reter, K0IMO, Boyd's Marine Shop, Clinton, Iowa.

RG-59/U coax cable, 5¢ per ft., minimum 100 ft; 1N69 xtal diodes, 3 for $1.00 postpaid. New one-inch meters, 0–200 UA or 0–1 Ma., $4.95 ea. J-48 key with plug-in cord, $1.50; H562/U headset with boom mike, 600 ohms, $4.95; resistor kit, $1.00; ceramic condenser kit, $1.00; minimum orders, $3.00. Lee Industrial Surplus, 28180 Van Born, Inkster, Mich.

RECEIVERS, New! All Hallicrafters. Hammarlund, used: NC-188, $125. Trades. Jim, W3VGZ, J. V. Stout Co., 4640 York Road, Baltimore 12, Md.

SELL Or trade for amateur radio equipment. Dark room equipment, enlarger, printer, developing equipment, etc. $1800 worth of equipment. Roy Tooman, RR #5, Muscatine, Iowa.

SELL: Viking Ranger xmttr, $180; SX-96 revr, $175; Harvey-Wells Z match coupler, $60; National SW-54 revr, $30. All in like-new shape. H. M. Ash, K2KPH, 443 Eastgate Rd., Ridgewood, N. J.

WANTED: Bunnell Sideswiper or equivalent. C. Doty, W8CXM, 3028 Kinmont St., Cincinnati 8, Ohio.

6 METER International FCV-2 converter, 7–11 Mc., factory-wired, $12. Rev. J. F. O'Reilly, W9UFL, St. John's Hospital, Springfield, Ill.

FOR Sale: Johnson Viking Mobile with tubes and mobile 6-volt supply, 300 volt 100 ml. Best offer over $60 gets it. Bob Jones, Campbell Ave., Leechburg, Penna.

FOR Sale: Meissner Signal Shifter, $15; 750 volt, 200 Ma. power supply, $20; DM-35D dynamotor, $10; 2 μfd 1,000 volt cond. (6), 50¢ ea. KW final, T55s, plug-in coils, all bands, $35. F.o.b. Stoningtton, Conn. Brendan J. Millikin, W1WAZ.

HALLICRAFTERS SX-71 with R-46 matching spkr, in exc. condx, $150 or best offer. W9UIK, 1860 Cedar, Homewood, Ill. SYeamore 8-8423.

SACRIFICE Sale! New: HQ-100, $120; Tapetone XC-50 with power supply, $50; Telrex 3-el 6-meter beam, $10; used very little: Alliance T-12 rotator with cable, $14; Astatic D-104 mike with stand, $11; LW-50 15-watt 6-meter xmttr w/pwr supp. and coaxial relay, $25; Heathkit GD-1B with 2 extra coils, $14.00. Satisfaction guaranteed, K2OOG, David Herskowitz, 1835 East 52nd St., Brooklyn 34, N. Y.

WANTED: Jennings type UCS 300 $\mu\mu$fd vacuum variable condenser. George Lewis, K4GAL, 1863 Glenview, Memphis 14, Tenn.

WANTED: Good heavy-duty ham rotator with brake and indicator, also 100 ft. Belden or Amphenol RG-8/U coax, lowest possible price. Dave Manning, K8IMB, Box 563, Riverside, Mich.

NC-300, In exc. condx. First $275 money-order or check takes it• Walter Tilleman, D14WG, K5IDD, Bendix Depot, 501st TACON-WG, APO 12, N. Y., N. Y.

SELL: 80–40 transmitter, key, crystal, 25W. $15. K8HKT, 1431 Blackpond Drive, Copley, Ohio.

SELL: Oil filled capacitors with mtg. brackets: 10 at 2 μfd, 7500V DC, $10 each: 14 at 2 μfd, 4000V DC, $4.50 each. Brush 6 pen recorder, DiAcro Bender No. 2. Need SK600 sockets. K2UGP, Sid Tallman, Genoa, N. Y.

SELL: 32V3, nu condx, W2BHZ, George Hudson, $400. Rte. #2, Pine City, N. Y.

ROTO-BRAKE for sale, hardly used, $35. Also AR-22 CDR rotator, $12; both in gud condx. A. E. Keel, K5STO, 2806 Little John Dr., San Antonio 9, Texas.

DX-100, $145; SX-25 spkr, $70; Big, $8; AR3, $18. JT30, $5. K8GHY.

BARGAINS: Reconditioned and guaranteed. Shipped on trial. National SW54 $35.00; NC57 $59.00; NC300 $279.00; HROs; Hallicrafters S38 $29.00; S40B $69.00; S85 $89.00; SX99 $119.00; SX71; SX96; SX100; SX101; Hammarlund HQ100 $139.00; HQ129X $159.00; HQ110 $189.00; HQ140; HQ150; HQ160; HQ170; Johnson Ranger $179.00; Viking II; Valiant; Thunderbolt; Pacemaker; Collins 75A1; 75A2; 75A3; 75A4; 32Vs; KWM1; KWS1; Globe; Gonset; Heath; Elmac; complete stock of reconditioned and new gear. Write for list. Henry Radio, Butler, Missouri.

FOR Sale: Heathkit DX-35, wired but never used, $45. William Rothman, formerly KN2QZD, 297 Lenox Road, Brooklyn 26, N. Y. Phone BUckminster 2-8052.

SUCCESSFUL Two-Way radio Service Center for sale. Servicing about 150 mobiles and 25 base stations. Excellent location. W4RQO, Radionics, Inc., Box 1349, Cocoa, Fla.

WANTED: Eldico 1000F amplifier. CDR Ham-R rotor. Sell: 6 Ke 75A4 filter, $25. W4CPQ, 1351 Bolling, Norfolk, Va.

NC-300 For sale, in A-1 condx, $299.00. Cliff Apple, K8BUG, 3721 Mengel Dr., Kettering 29, Ohio.

SELL: Gonset Super Six (12v) with noise-limiter, steering post mounts, $40; Heath DX-20, $30; Heath AR-2, $20; Elco 1000 ohm per volt VOM, $12; new Fairchild tone arm, $30. Hammarlund HQ-100, vy cln, $145. T. J. Jones, K2MWY/9, 9501 Bataan St., St. Louis 21, Mo.

SELL: 1955 Chevrolet (11,000 miles), with complete Johnson Viking and Gonset mobile installation for all bands, or just the ham equipment. Retired and no need for two cars. R. W. Woodward, W1VW, 41 Middlefield Dr., West Hartford 7, Conn.

SELL OR Swap: Complete all band, 160 to 2 meters, xmttr, 6146 final, VFO AN power supply; mobile or fixed, like nu condx; best offer to start with $115; 500 watt 813 rig; 100 PL-68 plugs and cables, new; 100 PL-48 plugs and cables, new, new 500 ft. rolls mike cable and 72 ohm twin lead; Raytheon voltage stabilizer, 500 VA.; 4-1000A3s, 4-125As, 4E27As, 829Bs, 902A 1" 'scope tubes, T-40s, 860s, 806s, etc.; H.P. chokes, mod. plate and fil. xfrmrs; 250 No. 57 lamps in boxes; BC-645 new, all reasonable. Write to Mike Raymond, 4046 Iroquois St., New Orleans 26, La.

ALUMINUM for every ham need. Write to Dick's, Cherry Ave., Route 1, Tiffin, Ohio, for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits.

SELL: All like new condx, Hickok TV generators 690, 691, 695, $860 value. Will take best offer over $350; Heathkit audio generator AG-8, $20; GM-1 Q meter, $20; RCA Micrometer WV-84A, $60; surplus PE-103, $15; SCR-625, $25. Need: Frequency meter, accurate AM generator, 51J4 Collins receiver. Robert Ireland, Pleasant Valley, N. Y.

WANTED: 3 KC filter conversion kit for 75A-2. Eugene Tobaben, W5RQC, Rt. #4, Shawnee, Okla.

SELL: HQ-150 w/Hallicrafters R-47 ssb spkr, $195; Ship collect; first certified check or money order. Ray Calhoun, W5ZGZ/Ø, Box 373, Hiawatha, Iowa.

KWM-1 owners. Build a simple accessory to use that receiver on 75 and 40. One dollar brings the dope. Hetro-Verter Products, Box 575, New York 8, N. Y.

HQ-100. Jack on front panel. $115. Spkr. $9; RME Preselector, $30; Heath VFO, new, not fully calibrated, $19. All f.o.b. Gotham V80, $10. Sorry, can't ship. Richard Weaver, K4TCW, 2234 Darlington Dr., Augusta, Ga.

NATIONAL NTE-B exciter-speech amplifier 10, 20, 40, 80 meter output, $45; with VFO, $58. Converted BC-624, 2 meter receiver in grey metal cabinet complete with power supply, $15. All excellent buys. Want crystal calibrator and converter units for NC-300. Karl Krech, 1012 Wilde Ave., Drexel Hill, Penna.

S38, $25; AF67, $125; Supersix, $35; 3-el. 20 M Hy-Lite, $25; Super Pro pwr supp, $15; 81 fone rig, w/pwr, mod. bandswitching Meissner exciter, $75: CIRE RDO TV course, offer; two 2C39A, new, $3 each. Art Ford, W2HAE, 85 Franklin St., Northport, L. I., N. Y. Tel. ANdrew 1-8474.

FOR Sale: HT-30, $350; DX-100, $175; G66 with 3-way supply, $175, AF-67 with rack, $130, Heath television alignment generator TS-2, $20, as is; Heath tube-checker w/case, $25; Johnson loading coil, $12.50; 600 watt modulation transformer, $30; G-E choke 8 henries, 750 Ma., $8; FM Pilotuner, $20; fil. transformer 10v 13 amp., $5, 6 volt dynamotor, 500V 375 Ma. relays and filter, $10. K4GAX, Frank Wakefield, Franklin, Kentucky.

HAM TV. Complete, $90, or iconoscope only $45 (5527); S-27 revr (2–6–10) meters. Both work well. Goodman, 152 Alta Mesa Rd., Woodside, Calif.

WANTED: SX-25 receiver in gud condx. Pair new 813s. W9QFZ, 2318 Second Ave., Council Bluffs, Iowa.

SELL RCA WA-44A used three months, $50; UTC PA303 plate transformer, in orig. carton, $25; metal rack, deluxe mod. 42 x 22 x 17, $25; other misc. Prefer local deal. K2HGG, 259 Diamond Hill Rd., Berkeley Heights, N. J.

NC-300 matching speaker, $290; G66B 3-way powr supply, $195; Elmac AF67 xmttr $130; Telecom transistor PS 500V 250 Ma., $45; Globe King 275 complete set of coils; needs exciter repaired, $95. Write for list. All equipment except GK275 in exc. condx. F.o.b. deal. K8EYI, Roger Wolfe, Rte. #3, Athens, Ohio.

SELL: 75A3, less speaker. Factory re-aligned in the fall of 1957; 3 Ke filter, $300; Globe Champion, 300 xmttr, factory built and factory modified to A model Oct. 1958, $320. Both are in exc. oprtg. condx. Fr. D. O'Neill, K2GBN, 174 Ramsey St., Paterson 1, N. J.

SELL: Kilowatt single ended 4-400A pi-net, husky power supply, 300 watt AM plate modulator PP 811As, modified Super Pro BC-1004 revr, all in a 6 ft. rack; plus "Matchstick" radiator, VFO, exciter. $200. F.o.b. Portsmouth, Va. Navy TCS 160/80/40 fone/c.w. xmttr 50 watts, xtal, built-in VFO and AC pwr supp. $40; PE-101 12/400 dynamotor, $5; 10-meter mobile xmttr and converter, $10; pp new 813s, $8; pp new 811As, $6; new 4X150A, $12, used 4-125A, $7; free delivery in the Tidewater area. C. E. Donaldson III, W4VXD, 112 Lynn Drive, Portsmouth, Va. Tel. EXport 3-5446.

SELL: Thunderbolt, never turned on, $530; Bud 66" rack, $40; WRL Speech Booster, $12; BC-458, new, $5; Aristocrat Enclosure, $50; E-V mobile mike, $10; D-104 mike with G stand, $10; midget tape recorder with extra reels and carrying case, $150. Dr. R. R. Lamb, 1219 Yardley Road, Morrisville, Penna.

ELMAC AF67, mounting rack, Super Six 12V, steering mount, noise clipper, Dow 12V relay, PE135AX dynamotor 500 at 250; Master Mobile 75M antn. Shure 505C mike, all cables for complete mobile installation. Cost over $300, all for only $200. 20M Telrex 520B Super Minibeam, $25; 5DOW ant. coupler, $15; Bud xtal calibrator, $10; Timex magnetic recorder. Needs only small repairs. $15. No shipping! K2QQQ. Tel. EL 6-5960.

SELL: Globe Champion 300. Factory-built, and in perf. condx. You must see it in operation. Best offer $300 or better. Mosley beam, 20M VP A-20-3 like new condx. Make an offer! C. Lane, W1ZGD, 233 Pratt Ave., Somerset, Mass. Tel. OS 3-6821.

COLLINS 32V3, new condx, asking $450. W1HHW, John DeYoung, 8 Royalston Ave., Winchester, Mass.

SELL: Viking Pacemaker, in excellent condx, $300. You pay shipping. Tasker, W1ZTT, Harwinton Heights, Harwinton, Conn.

COMPLETE Amateur radio station: Heathkit DX-40, $63; Heathkit AR-3, $20 and WRL VFO Mod. 755, $45. It was lined up at WRL factory. All three for $117 with instrux manuals. Getting larger station. Write to Gordon Laubach, K3DOX, 416 Oakwood Dr., Fullerton, Penna.

HAMFEST June 7th Southwest from Ottawa, Illinois on Illinois Route 71 at the LaSalle County 4-H Home and Picnic Area. Same place as last year. Advance registrations accepted if in our hands before May 28th. Advance registration $1.00, at the gate, $1.50. A nice all-day affair for Midwest hams and their families sponsored by the Starved Rock Radio Club. Contact W9MKS, G. E. Keith, Secretary, RFD #1, Box 171, Oglesby, Ill.

RME 4350. In fine condx, not a scratch! $180 or best offer. W1FGF % ARRL.

FOR Sale: SX-43 receiver, NC-57, S40B and 10 tube W8UD complete with speakers. HT9 with coils and EX model Meissner signal shifter; Knight 50 watt xmttr w/4 xtals, key and 40-meter doublet; two hundred radio magazines and numerous parts. Write for list. Lew, W8MF, 67 Webber St., Battle Creek, Mich.

WANTED: Amateur Radio Call Book for 1927. Write publication date, condition and price to W7UH, 419 W. 13th Ave., Spokane, Wash.

MUST Sell new, $149; Hallicrafters SX-99 recvr with matching $18 spkr, less than 5 hours total use. Absolutely perf. condx. Looks like the day it was bought. Have the original shipping boxes. For best offer over $125. Write Charles Reed, West Hill Road A, RD 1, Elmira, N. Y.

WANTED: Single Sideband exciter and suitable tubes for KW final. R. M. Jones, W4WR, 1604 No. 17th St., Birmingham 4, Ala.

CLEANING House! Transformer, tubes, condensers, old *QST* and *CQ* Magazines, etc. Lots of stuff at bargain prices. Write for list. A. B. Johnson, K2POA, 29 Boone St., Bethpage, N. Y.

Index to Advertisers

MARS Broadcasts in April Feature Talks by Philco Engineers

MARS Network to carry interesting Technical Talks from **AF3H1X** on 3295KC, 7540KC and 15,715KC.

The regular Sunday afternoon Educational Broadcasts of Headquarters U.S.A.F. Military Affiliate Radio System will carry talks of topical interest by Philco Corporation executives on all four scheduled Sunday broadcasts in April.

The topics of the talks are all currently of interest, embracing such subjects as: Analog and Digital Computers, Transistorized Computers, Radio Teletype and the Effect of Air Ionization.

Each speaker is an expert in his respective field. Hams should find the talks interesting and informative.

Question and Answer Period to follow talks

Following each talk, the MARS Network will be open for a Question and Answer period, with the speaker of the day on hand to answer questions from MARS members tuned in to the broadcast. Non-members can ask questions by mail, with answers provided on the broadcast the following Sunday.

Philco Club has own Ham Station

Philco employees have formed their own ham group, the Mike Farad Radio Club, W3YDX, and are active on all bands. Philco's TechRep Division, one of the world's largest electronics field engineering organizations, provides space in their headquarter laboratories for the Mike Farad Club's ham shack.

Sunday, April 5, 1959
2-4 P.M. E.S.T.

COMPARISON OF ANALOG AND DIGITAL COMPUTERS

by H. W. Merrihew,
Supervisor of Course Preparation The Philco Technological Center

Merrihew has prepared numerous computer courses. His talk covers operation and application.

Sunday, April 12, 1959
2-4 P.M. E.S.T.

CHARACTERISTICS OF A TRANSISTORIZED DIGITAL COMPUTER

by J. L. Maddox,
Engineering Section Manager, Computer Laboratory, Philco Corp.

Active in research and development, Maddox talks on one of the newest fields of electronics.

Sunday, April 19, 1959
2-4 P.M. E.S.T.

INSTALLATION AND MAINTENANCE OF RADIO TELETYPE

by R. M. Clemick,
Chief Instructor, Radio Communications Section, Philco Technological Center

Clemick's talk provides information to help MARS station operators in organizing a RTTY Net.

Sunday, April 26, 1959
2-4 P.M. E.S.T.

PHYSIOLOGICAL AND PSYCHOLOGICAL EFFECTS OF AIR IONIZATION

by F. P. Speicher,
Chief Biologist, Advanced Study Group, Philco Corporation

Speicher presents a most interesting talk on a most unusual application of electronics.

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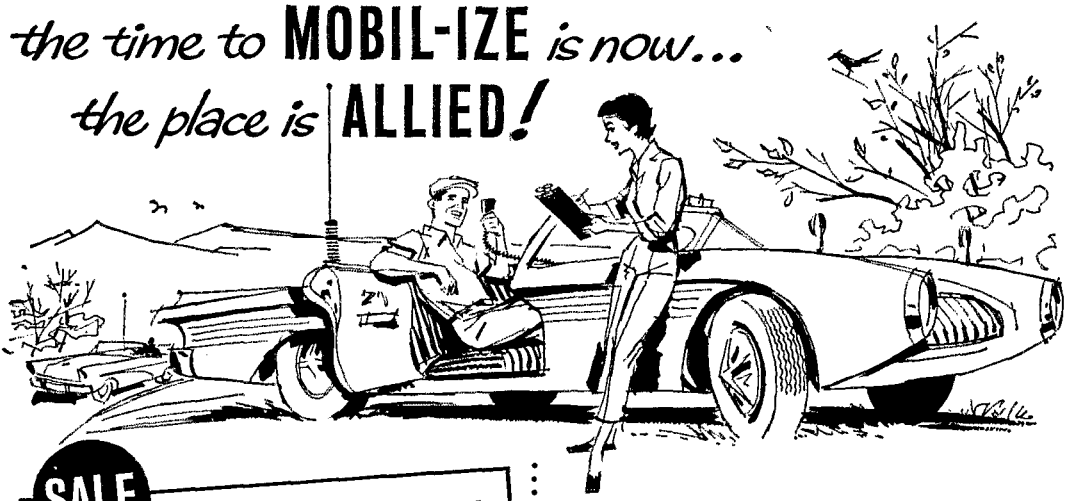

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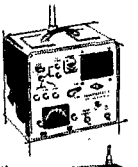

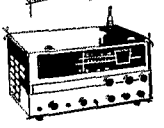

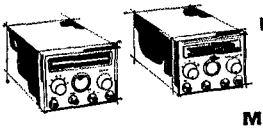

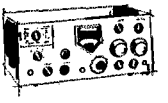

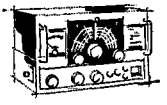

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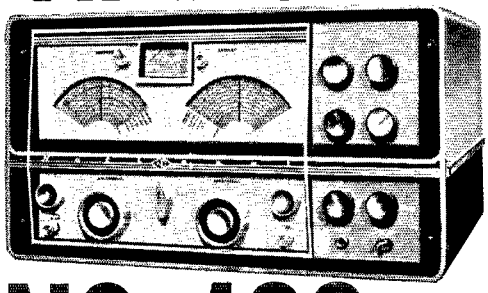

NC-400

The Most Versatile Communications Receiver Ever Designed

National

NATIONAL COMPANY, INC.,
MALDEN 48, MASSACHUSETTS

BURTON BROWNE New York

The NC-400 is a modern, multiple purpose, general coverage receiver. Tuning range is 540 kc to 31 mc in 7 bands, with dual conversion on all frequencies above 7 mc. Its unique design provides maximum flexibility of operation to satisfy a wide variety of communications requirements.

The NC-400 may be used as a self-contained unit, either manually tuned or crystal controlled on pre-selected frequencies. In addition, external master oscillator provisions make possible use of modern synthesizer techniques for applications where extreme frequency stability is required. It may be operated in space or frequency diversity applications. Provisions are made for interconnection of any required outputs or for feed to external loads or combiners. All frequency determining circuits may be internally or externally controlled. The NC-400 also provides optimum versatility of bandwidth, either through the use of internal IF circuits or the use of optional mechanical filters.

FREQUENCY RANGE:	GENERAL COVERAGE
Band 1	.54— 1.1 MC
Band 2	1.1 — 2.1 MC
Band 3	2.1 — 4.1 MC
Band 4	4.1 — 7.0 MC
Band 5	6.9 —12.2 MC
Band 6	11.8 —20.4 MC
Band 7	19.6 —31.0 MC

NOTE: Bandspread dial provided with 0-100 logging scale and calibrated for 80, 40, 20, 15 and 10 meter amateur bands.

FREQUENCY STABILITY: Long term stability after warm-up —.002%

SENSITIVITY: 1 microvolt for 10 db signal/noise ratio

SELECTIVITY: 4, 8 and 16 kc positions provided with 6 tuned circuits. 3.5 kc wide upper and lower sideband positions provided with 14 tuned circuits. 3.5 kc sharp position activates plug-in crystal filter providing 5 additional degrees of selectivity below 3 kc plus phasing notch. Plug-in accessory available which will provide front panel selection of three mechanical filters without modification of receiver. Proper choice of filters will enable selection of bandwidths from 500 cycles to 16 kc, or will enable filter type of sideband selection from front panel.

SSB PROVISIONS: Separate SSB heterodyne detector uses pentagrid converter and separate beat oscillator. Beat oscillator may be crystal controlled. Special "fast-attack-slow release" AGC circuit. Sideband selection accomplished by exclusive, new National passband switching techniques. In the event of commercial-type SSB reception, single sideband mechanical filters may be installed and switched from front panel.

FIXED CHANNEL OPERATION: HF oscillator has 5 crystal sockets for use in fixed channel operation. Channels may be selected by front panel switch. In addition, HF oscillator may be controlled from external master oscillator selected by front panel switch. "S" meter "Tune" position permits rapid tuning of receiver to crystal controlled channel.

DIVERSITY PROVISIONS: Basic receiver may be operated from master oscillator as noted above. An accessory Diversity Modification Kit (NC-400 DMK) allows choice of internal or external control of all oscillators. Rear panel selector provisions make possible use of any receiver either as master control, or slave fed from other oscillator sources. IF, detector and AGC outputs available for feed to external loads or combiners.

POWER REQUIREMENTS: 110-220 volts, 50-60 cycles AC

MANUFACTURER'S SUGGESTED LIST PRICE: $895.

OPTIONAL ACCESSORIES:

1. XCU-400 crystal calibrator. Output frequencies of 100 kc and 1 mc.
2. NTS-2 matching speaker
3. NC-400 DMK diversity modification kit
4. NC-400 FH mechanical filter housing

*Manufacturer's suggested list price. Sold only by National Co. Franchised Distributors

In Canada by Canadian Marconi Inc., 830 Bayview Ave., Toronto, Ontario

Export by Ad Aurlema, Inc., 80 Broad St., New York City.

Typical RCA High-Perveance Power Triodes (Max. Amateur Ratings, Class C Telegraphy)

RCA No.	DC Plate Input (Watts)	DC Plate Volts	Max. Freq. (Mc)	Amplification Factor
810	750	2500	30	36
811A	260	1500	30	160
812A	260	1500	30	29
833A	1000	3300	30	35
8000	750	2500	30	16.5
8005	300	1500	60	20

...for high power with low plate voltage

For the man who prefers power triodes, RCA offers a choice of world-famous and time-proved types to meet every amateur power-input requirement, up to the legal limit.

Known for conservative ratings and great reserve of filament emission, these RCA high-perveance power triodes deliver high power output at low plate voltages. Benefits: You can (1) use more reasonable values of pi-network components, (2) design with lower voltage-rated plate transformers and filter capacitors, (3) use lower voltage-rated tank circuits.

RCA High-Perveance Power Triodes are available at all RCA Industrial Tube Distributors.

For technical bulletin on any of these six RCA Power Triode types listed in the chart, write RCA Commercial Engineering, Section D-37-M, Harrison, N. J.

RADIO CORPORATION OF AMERICA
Electron Tube Division — *Harrison, N. J.*

For the name of your nearest RCA Industrial Tube Distributor, call Western Union by 'phone number and ask for me, Operator 25.