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New England Division

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Northwestern Division

R. REX ROBERTS ................. W7CEY
327 Park Hill Drive, Billings, Mont.

Vice-Director: Harold W. Johnston, W7PN
327 Wilson Drive, Billings, Mont.

Pacific Division

HARRY M. ENGLEHARDT ...... W6EHC
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Vice-Director: Ronald G. Martin, W6EFS
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Roanoke Division

P. LANIER ANDERSON, JR .......... W4MIW
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Vice-Director: Joseph P. Abernethy, W4AKC
701 Colonial Drive, Rock Hill, S. C.

Rocky Mountain Division

CLAUDE M. MATEL, JR. ......... W9IC
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Vice-Director: John H. Salmonson, W9DOX
3010 Mount Olive Drive, Denver, Colorado

Southeastern Division

JAMES P. BORN, JR. ................. W4ZD
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Vice-Director: Thomas M. Mos, W4XWY
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Southwestern Division

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1178 Longhorn Way, Monterey Park, Calif.

West Gulf Division

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3109 Linden St., Bellaire, Texas

Vice-Director: Robert D. Boek, W5KQ
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General Counsel .................. PAUL M. SEGAL
816 Connecticut Ave., Washington 6, D. C.
THOSE MAIL-ORDER EXAMS

Many members have mentioned to us, in letters, over the air and at club meetings, their feeling that large numbers of hams and would-be hams are cheating on exams-by-mail. Some point the finger at ham families: "You can’t tell me any man would dare to give his wife a failing grade, or any son would flunk his father." Others have told us they’ve heard "there is a certain amateur who charges $10 for a Technician license; no exam necessary!" Another avers that some people in large cities use a mail address outside the 75-mile limit, take a Conditional Class License, then modify their license to show a "change of address" back to their city location.

That there is a little of this sort of thing going on, there is no doubt. FCC has revoked or suspended several licenses in the past year or so for this sort of shenanigans (e.g., see page 76, this issue). That there is any substantial amount of cheating, we don’t believe for a minute. Even in a group as large as our 200,000, certainly there can be only a very few hams so dishonest and so thoughtless of the consequences, to them personally and to the fraternity as a whole, as to help an unqualified lid get a license. But these rumors — and rumors we must classify most of them, since almost no complainers seem willing or able to give us names — these rumors are not doing our hobby any good.

Several hams have asked us to "do something" about the cheating, most of these suggesting that all amateurs be given the exam only by FCC personnel. We tried that, in 1956. The Board of Directors voted to have the General Manager petition FCC to return to the old 125-mile radius from quarterly examining points, within which all prospective amateurs of all classes would have to appear before FCC for the tests. The FCC turned the petition down, on the grounds that it did not have sufficient personnel to administer all the exams, and that the present system, while possibly subject to some abuse, was working adequately.

This leaves cooperative action by all amateurs qualified to administer the tests as the only solution. Whether one feels that the problem is actual cheating, or rumors of cheating, or the potential for cheating, it seems to us the answer lies in tightening voluntarily our procedures for giving the examinations.

As we have said before, in this column, we feel that the best system is for an examination team to be elected by each club. As members of a club, we should refer all potential hams to the team, rather than volunteer to give the test ourselves. We know that we ourselves will stick to the letter of the regulations, but rumors still could get around. The rumors are less likely when the club’s best-respected members have joint responsibility and more than one member of the team is present.

In the very large cities it may be difficult for a ham to refer a candidate to a conveniently-located club. In the smaller communities there may not be a club. Then it is up to the individual General, Advanced or Extra class licensee to give the test to the applicant. Again, just to hold down the possibilities of future reflections on his own integrity or that of the applicant, if it can be avoided an amateur should not administer an exam for a member of his own family (or his boss!). If an amateur must supervise a test for a relative, then he should have another person, preferably a ham (and a Novice, Technician or Conditional would do in this case) present just to rule out any talk of dishonesty.

Further, we might paraphrase the instructions on the back of Government checks: Know your examinee. If he is a stranger to you, get some reasonable proof of his identity and of his residence address. Then administer the test as it was administered to you by the FCC engineer.

Certainly, you should give the applicant every consideration consistent with the regs. The accommodations should be reasonably comfortable and the room quiet. The code oscillator should have a clear tone and should be loud enough for the candidate to copy it with no strain. It is permissible to send a short warm-up run so the candidate can get used to your fist, and so you can stabilize your speed.

The Novice and Technician code test consists of 125 letters (no numbers or punctuation symbols) in reasonably-common English words. Every letter of the alphabet should be used at least once. When the FCC engineers gave the 5-word test, prior to 1954, most of them used five-letter words; at any rate, it is best to avoid sentences in which a missing word can be readily guessed at by the test-taker.

(Plenty turn the page)
The Conditional Class code test should have all numbers and letters, the period, question-mark, comma, break-sign (double dash) and fraction bar (slant bar) in each minute of copy. Q signals and call signs or tube-type numbers should also appear each minute.

Once the test starts, you should be "all business." The requirement is for the applicant to copy correctly one minute without error of a five minute test. No matter how close he comes, if he does not have 25 consecutive letters at 5 w.p.m., or 65 letters at 13 w.p.m. he fails! You cannot repeat the test, nor can you give the applicant time to correct obvious errors.

As to the sending test, remember you may have to copy the guy's fist on the air! At least one minute of code must be sent with no uncorrected errors. Any errors must be corrected by the 8-bit error sign and the last correct word must be retransmitted; no extension of time is permitted, of course.

Only a few words are necessary in connection with the written exam. The examiner should, of course, read the instructions on the test envelope, and see that the applicant does too. The examiner should keep the test-taker in sight. The examiner should not answer any questions, no matter how obliquely, nor should he permit the candidate to look anything up or consult notes.

We certainly hope we haven't discouraged any exam-givers with this editorial. On the contrary, if you know how to administer the exams, and steer clear of the few pitfalls we've mentioned here, you can go ahead knowing that no one will be speculating on your lack of honesty behind your back, and all of us will have the assurance that none gets on the air who is not well and truly qualified to do so.

MICHIGAN STATE CONVENTION

Grand Rapids, Michigan — April 9

The Michigan State Convention at Grand Rapids is to be held Saturday, April 9 at the Manger (Rowe) Hotel. This will be the 13th Annual Convention sponsored by the Grand Rapids Amateur Radio Association. Pre-convention registration is $1.50 ($1.75 at the door). Convention registrations and information requests may be sent to the Grand Rapids Radio Association, P. O. Box 333, Grand Rapids, Michigan.

OREGON STATE CONVENTION

Portland, Oregon — April 30-May 1

The 1960 Oregon State Convention, sponsored by the Council of Affiliated Amateur Radio Clubs, Inc., will be held at the armory, 109 N.W. 10th Avenue, Portland, on April 30 and May 1. Pre-registration for licensed amateurs is $7.50; $8.50 after April 20. Fees for non-amateurs are $3.50 and $4.50. Registrations and hotel reservations should be sent to Oregon Amateur Radio Association, Post Office Box 1335, Portland 7.

NEW ENGLAND DIVISION CONVENTION

Swampscott, Massachusetts — May 1

The New Ocean House Hotel in Swampscott is the site of the 1960 New England Division ARRL Convention, Sunday, May 1, sponsored by the Federation of Eastern Mass. Amateur Radio Assns. Speakers will include Francis H. Griswold, K2DVC, L. General, USAF, of the Strategic Air Command, and the Rev. Daniel Linehan, W1HK, of the Weston Observatory. Mobile hunts on 10, 6 and 2 meters, net meetings, FCC exams, YL meetings, and an antique radio exhibit are planned. Early-bird registrants will receive free a plastic lapel pin with their call letters engraved. Early-bird registration is $3.00 ($3.50 at the door, no badge). Banquet tickets are $5.00 and include a full-course roast beef dinner served in the hotel dining room. Early-birds must mail their ticket requests before April 18 to Radio Convention, 15 MacArthur Blvd., Danvers, Mass. Persons planning to stay overnight should make reservations directly with the New Ocean House.
75 Watts Input, with Modulator and Power Supply Built In

BY EDMUND C. HARRINGTON,* W1JEL

A Complete Six-Meter V.F.O. Transmitter

The transmitter to be described was built to satisfy the need for a flexible rig of moderate power for the 6-meter band. It has a v.f.o., two fixed-tuned doublers, and a final amplifier that operates at an input of 65 to 75 watts. The entire 50-Mc. band is covered. The v.f.o. has proven itself satisfactory for both c.w. and a.m. use. The note is clean, there are no troublesome key clicks, and drift is negligible. On a.m., unsolicited reports on the modulation have been uniformly complimentary.

Circuit Features

The oscillator uses the familiar Clapp circuit, operating between 0.25 and 6.75 Mc. The oscillator plate circuit is tuned to the second harmonic. The cathode, control grid and screen comprise the oscillating circuit, and output is taken from the tank in the plate circuit. The cathode is grounded, to avoid hum modulation of the oscillator. The tube socket, coil forms, tuning capacitor and anystandoffs used in the oscillator circuits are ceramic-insulated, and long leads and unnecessary stray capacitance are avoided. The oscillator coil is of high-Q design, and is solidly mounted to prevent vibration.

These precautions are important in achieving stability in the v.f.o., which must be of a high order if the resultant signal on 50 Mc. is to be of acceptable quality. With 8 times frequency multiplication, any slight mechanical instability or hum modulation of the oscillator will show up very markedly on 50 Mc., as anyone who has listened critically to most of the current crop of v.f.o. rigs on 6 knows all too well.

The two frequency doublers work into over-coupled tuned circuits similar to those used in variable-selectivity receiver i.f. stages. These provide close to optimum coupling efficiency, yet with sufficient bandwidth to permit operation across the entire band without retuning. Their adjustment is quite simple, requiring no special test equipment if the recommended metering is provided and instructions are followed. Although 12BY7 tubes are shown, 6CL6s would probably work equally well. Low-impedance capacitive coupling is used between stages and the coil spacing is not critical, as long as a minimum of one inch is maintained between coupled coils.

The amplifier is a 6146 tube, with a conventional pi-network output circuit. A fair amount of the band can be covered without retuning this circuit. For frequency setting in practice, the v.f.o. is switched on, temporarily receiving its 150 volts, regulated, from the receiver (through J1) for spotting purposes. It is then zeroed in on the desired frequency, and the transmitter is thrown on. If the change in frequency has been a large one, the final plate circuit may be trimmed up while calling, if necessary.

The modulator section has a 12AX7 into a

* Harrington Electronics, Box 189, Topsfield, Mass.
The r.f. section and the modulation-power supply are built in two chassis as separate units, allowing easy replacement of the two chassis.

April 1960

The diagram and parts information for the 50-Mc receiver (Fig. 1) is as follows:

- **C1**: 5-μuf., 1-μuf. zero temperature-coefficient ceramic.
- **C2**: 15-μuf., 10 per cent zero temperature-coefficient ceramic.
- **C3**: 19.6-μuf. miniature variable (Johnson 160-110).
- **C4**: Hammarlund HP-15X, with 2 stator and 1 rotor plate removed.
- **C5**: 820-μuf., 5 per cent, silver mica.
- **C6**: 620-μuf., 5 per cent, silver mica.
- **C7**: 100-μuf., zero temperature-coefficient ceramic.
- **C8**: 1-μuf. Like C2, but 5 per cent.
- **C9**: 5-μuf. 6.5-μuf. ceramic trimmer.
- **C10**: 27-μuf. variable (Johnson 167-2, 251L1).
- **C11**: 140-μuf. variable (Hammarlund MC-140M).
- **J1**: Closed-circuit jack.
- **J2**: Microphone connector.
- **J3**: Coaxial fitting, SO-239.
- **J4**: Female chassis fitting, any type.
- **J5**: 115-volt chassis fitting, female. Supplies a.c. for external antenna relay.
- **L1**: 17-μh. coil having Q of 220 or better. 50 turns No. 24 tinned, 1/16 inches long on 3/4-inch ceramic form (Complete coil assembly: Harrington Electronics X-1).
- **L2**: 2.2-μh. 40 turns No. 26 enamel. L2 through L6 are close wound on 3/4-inch slug-tuned forms (Harrington Electronics type ST).
- **L3**: 6-μh., 30 turns No. 28 enamel.
- **L4**: 3.5-μh., 28 turns No. 28 enamel.
- **L5**: 1.65-μh., 19 turns No. 26 enamel, 1 inch long.
- **L6**: 0.7-μh., 11 turns No. 22 enamel, 3/8-inch long.
- **L7**: 1 turn No. 20 tinned, 1/8-inch diam.
- **L8**: 6 turns No. 18 tinned, 1/8-inch long on 3/4-inch form.
- **Complete set of r.f. chokes and coils available as Harrington Electronics XR-6.
- **L9**: B.by, 250-μa. filter choke (Stancor C-2308).
- **P1**: 115-volt plug.
- **R1**: 1-megohm potentiometer with switch.
- **R2**: 20,000-ohm wire wound, 25 watts, slider type. Adjust so that slider is 15,000 ohms above ground.
- **RFC1, RFC2, RFC3**: 50-μh. r.f. choke (Harrington Electronics XP-50).
- **RFC4**: 65 turns No. 26 enamel close wound on 3/4-inch diam. ceramic form.
- **RFC5**: 10-μh. r.f. choke (Harrington Electronics XP-10).
- **RFC6**: 1-μh. r.f. choke (Harrington Electronics XP-1).
- **S1**: Switch on R1.
- **S2**: Double-pole double-throw toggle switch. (One half shown. Other controls receiver standby.)
- **T1**: Power transformer to give 500 volts d.c. at 250 ma. through filter (Stancor PC-8503).
- **T2**: Drive transformer, single triode to p.p. grids (Triad A-83X).
- **T3**: Modulation transformer, 30 watts (Stancor A-3892).
- **T4**: Filament transformer, 5 v. c.t., 6.3 v. c.t., both 6 amp. (Stancor P-4022).
is usually difficult unless a visual sweep method is used. However, the addition of the 0.001-mf. capacitor reduces the coupling below the critical point, and the circuits can then be tuned for peak. Since detuning will result when the capacitor is removed and $C_5$ and $C_{10}$ appear in series with the tuned circuits, the coils are purposely resonated at 51 Mc., below the band center frequency.

Now switch the meter to the third position and set the v.f.o. for 50.5 Mc. Adjust $L_5$ and $L_6$ for maximum reading. Roughly repeat the procedure that was outlined for the previous stage, bearing in mind that readjustment of $L_6$ will be required when the amplifier screen resistor is reconnected. The check is made now only to determine that no wiring errors have been made. Reconnect the amplifier screen resistor and attach a dummy load to the output coax connector, $J_5$. Tune the v.f.o. to the low end of the band, and switch the meter to the fourth position. Set $C_{14}$ to the fully-meshed position. Turn the transmitter on, and tune $C_{13}$ for minimum reading on the meter. Adjust $C_{14}$ slowly until the meter reads 130 ma., readjusting $C_{13}$ for minimum plate current as this is done. Check the grid drive by turning the meter switch back to position 3. Repeat this procedure every 500 kc., 50 to 54 Mc., recording the readings in the No. 3 meter position. It will be noted that the grid drive will fall off at the high-frequency end of the band. With the transmitter at the high end, readjust $L_6$ slightly to obtain more drive. Recheck the drive at 50 Mc., and repeat this adjustment until drive is equal at 50 and 54 Mc. It should follow the curve 2B fairly closely.

If drive falls off too much at the band edges, decrease the value of $C_{12}$ slightly. If the dip in the middle of the band is too deep, increase $C_{13}$ slightly to reduce the coupling. Care should be exercised to keep the final stage resonated, and loaded to about 140 ma. during this process, to prevent damage to the 6146 by its having been allowed to draw too much or too little current for extended periods. It is a simple matter to switch frequently between positions 3 and 4 during the alignment procedure. When ready for on-the-air operation, the 6146 can be loaded to 160 ma. for c.w. use.

With the microphone connected to the input of the speech amplifier, advance the gain control until normal speech gives 100 per cent modulation. If a scope is not available for modulation checks, full modulation should be obtained when the meter swings to about 100 ma. on peaks (Meter position 5.) Idling current should be about 75 ma.

If the rig is to be used only as an exciter for a higher-powered amplifier, or as a c.w. transmitter, the modulator can be eliminated, and the power supply made smaller to effect a saving in components. The oscillator should be protected from vibration due to blowers, power transformers and chokes. It has quite good voltage and temperature stability, but it will tolerate only a limited amount of vibration and shock.

Some may wonder about the separate fixed capacitors, $C_4$ and $C_5$, in the oscillator circuit, since they are the same type. The original intention was to use a temperature-compensating capacitor for $C_4$, but it was determined experimentally that best stability resulted when a zero temperature-coefficient type was used. Should drift lower in frequency occur in another model, $C_1$ should be made negative 80, 220 or 330 p.p.m., depending on the compensation required.

No special precautions were taken to prevent TVI, and actually none was found in operating the transmitter in the Boston area. The usual TVI treatments found in the ARRL Handbook can be applied, if TVI is a problem in other circumstances.

Bottom view of the 50-Mc. transmitter. Oscillator components are in the upper left. Firm mounting of the oscillator coil is important, if mechanical stability is to be achieved. Note that it is wound on a grooved ceramic form.
The 5A Special quad requires only one spreader—and it’s horizontal instead of vertical. This view is from off one of the rear (reflector) corners.

The mechanical instability associated with the customary quad antenna has long been a deterrent to popular acceptance. This objection is largely overcome by the unique design employed here. The unorthodox arrangement of elements appears to have negligible electrical disadvantage.

**Modified Quad for 10 and 15**

**BY FRED VITRINGA,** S5ATO

The 5A Special Antenna

The antenna shown in the photographs and sketches which follow is the result of a desire to secure the advantages of a two-band quad without also suffering some of its disadvantages. The disadvantages that were of immediate concern were the characteristic flimsiness of construction and the need for some materials that were not easily obtainable in Libya. The cost of the antenna as shown was about three dollars, exclusive of the mast and feed line. The structure is mechanically stable in rough weather, and the beam has given surprisingly good results. With a transmitter power of 140 watts, 215 countries, all states, and 39 zones (phone) were worked in the course of 15 months at S5ATO.

**Element Arrangement**

Since it may be a little difficult to separate the sheep from the goats in the photograph, it may help to say that the quad elements are in the form of vertical diamonds. The driven elements are fed at the lower points of the diamonds. See Fig. 1. The reflectors are similar but have tuning stubs at both top and bottom points of the diamonds. This is also indicated in Fig. 1.

The side points of the diamonds are supported on a horizontal “X” spreader centered on the supporting mast. See Fig. 2. The upper and lower halves of the diamonds are slanted backward toward the mast and are guyed to it. No vertical guysing for the spreader is required, since the quad elements themselves serve the purpose.

Horizontal spacing between the legs of the “X” spreader is maintained by rope cords at the ends of the “X” and at points about halfway out on the legs.

**Spreader**

The spreader is made of four lengths of 1-inch wood dowel, 8 feet 7 inches long. The inner ends

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* P. O. Box 105, Highriver, Alberta, Canada.

Fig. 1—A front view of the driven elements of the 5A Special antenna. Reflectors are similar but are fitted at top and bottom with tuning stubs as shown at the right.
are fastened to the mast by means of shelf brackets or hardware-store iron angles. Adjacent pairs of arms on the framework are not at exact right angles, but are positioned on the mast so that the tips of the arms on the element sides of the mast are 13 feet 2 inches apart. See Fig. 2. The spreader is mounted on the mast at a point 14 feet below the top anchor point of the 21-Mc. elements.

**Dimensions**

Driven and parasitic elements (reflectors) have the same dimensions. The 15-meter elements are 11 feet 11 inches per leg (23 feet 10 inches per side). The 10-meter elements measure 8 feet 5 inches on each leg (16 feet 10 inches per side). The center points of the 15-meter elements are attached to the outer ends of the spreader legs where the separation is 13 feet 2 inches, as mentioned above. The center points of the 10-meter elements are anchored to the spreader at intermediate points where the separation is 9 feet. This should make the separation between the centers of the 15-meter driven element and reflector 10 feet 11 inches, and between 10-meter elements 7 feet 7 inches. These dimensions should be followed closely.

The wire for the elements may be No. 14 or larger, solid or stranded. Small egg-type insulators are used at the tops and bottoms, and small stand-off insulators at the sides where the spreader supports the wire. The top and bottom points are brought under moderate tension by ropes attached near the top and bottom of the mast.

The upper tuning stub of the 15-meter reflector is 8 inches long, and the bottom one 1 foot 2 inches long, while both 10-meter stubs are 1 foot long. When adjustment is complete, the lengths of the bottom stubs should be somewhat shorter.

**Feed**

A single 72-ohm coax line feeds both driven elements. The coax line is connected directly to the 15-meter driven element, and the feed point of the 10-meter driven element is connected in parallel through a section of 300-ohm ribbon 2 feet 4 inches long. See Fig. 1.

Turning the beam requires rotation of the entire structure including the mast. This can be accomplished if a guy-ring bearing is used at the top of the mast, although an inverted tin can over the top served the purpose satisfactorily for several months. At 5A5TO, the rotator was mounted on the roof and the base of the mast was simply set in the rotator coupling. The structure is light, and no slightest trouble was experienced with this arrangement.

**Reflector Adjustment**

The usual tuning method works well. Set up a 15-meter dipole as far away from the antenna as practicable (at least two wavelengths) at the same level as the center of the quad. Feed the dipole with the transmitter set to about 21.25 Mc. and turn the quad away from the dipole. Connect a crystal diode in series with the center conductor at the station end of the quad coax line to a high-resistance voltmeter, making sure to bypass the meter with a noninductive 0.01-microfarad capacitor. See Fig. 4. Tune the bottom stub of the 15-meter reflector for minimum reading on the meter, increasing the sensitivity (using a lower-voltage scale) of the voltmeter if necessary, until a definite minimum with a rise on either side is found.

The 10-meter reflector should be adjusted in the same manner, using a frequency near the

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center of the desired operating range. When the adjustment is complete, the pattern will show a strong center lobe, two deep notches about 50 degrees either side of the front, and then a minor lobe on either side.

The notches are useful in rejecting signals near the direction in which you want to work. According to reports, the front-to-back ratio is about 25 db. No gain measurements were attempted but results speak for themselves. My measurements on 10 meters showed an S.W.R. of about 1.5 to 1, and a little better than this on 15.

The writer would like to acknowledge the help and enthusiasm of 5A5TM, 5A17U and 5A3TF in making this antenna possible.

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**New Apparatus**

**Eddystone Slow-Motion Drive**

Anyone who has ever seriously considered the home design and construction of a high-quality communications receiver knows that one of the biggest obstacles is the complete absence in this country of a really good drive and dial. (To save your writing, one of the other obstacles is the lack of a suitable tuning-capacitor gang.) The domestic products either combine provision for calibration with insufficient reduction and over-abundant backlash or they combine suitable drive with no provision for direct calibration.

The English have finally come to our rescue by exporting the Eddystone Slow-Motion Drive. This truly delightful drive has everything one might ask for except a ready-cut hole in the panel; the purchaser has to provide that himself; and this only means a few minutes with a backsaw and file if he's working with aluminum or a month and a half if he's stuck with a steel panel. The Eddystone drive uses a heavy lead flywheel on the same shaft as the tuning knob, for smooth tuning and a little "spinning" ability if the operator is so inclined. Through a pinion drive this shaft turns a metal disk that in turn drives the main shaft through spring-loaded gears. The front face of the disk is numbered 0 through 90 and is visible through a small window, to provide a logging scale (more about this later). The pointer on a 7-inch long scale is string-driven behind a clear plastic window; five lines are provided here for direct frequency calibration. The logging scale is supplemented by a linear 0-500 scale marked at the hundreds; if the pointer is between 100 and 200 on the main dial face and the number in the window shows 62, you know the logging scale reads 162.

We were unable to detect any backlash in either of the two samples we examined, and this is very important in a drive with a tuning rate of 3.27 degrees per knob revolution! That's right, sidebanders and high-selectivity e.w. men; it takes 55 revolutions of the knob to turn the main shaft 180 degrees. This means one can build a receiver or v.f.o. that at 10 meters has a tuning rate of 31 kc. per knob revolution, without breaking up the band into smaller segments and switching from one to another.

The drive is distributed by British Radio Electronics, Ltd., 1833 Jefferson Place, N.W., Washington 6, D.C.

— B. G

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**Strays**

The U.S. Department of Commerce, Maritime Administration, has a vacancy for an Electronic Engineer GS-13, $10,130 per year, in the Division of Engineering, Office of Ship Construction, Washington, D.C. Necessary qualifications include a B.S. degree in Electrical Engineering (or equivalent experience), plus at least four years of progressively more responsible engineering experience in the field of electronic engineering.


The Rensselaer Polytechnic Institute Radio Club and the RPI debating team issue a challenge to any other college in the United States to a debate by amateur radio. They have already conducted one debate on 6 meters with Union College. If any college is interested, contact the RPI Radio Club, 82 Sunset Terrace, Troy, N.Y.

WV2EFN overheard K4AMY and W7AMY QRMing each other on 15 meters.
Using a Broadcast Set for Amateur-Band Reception

Newcomers often wonder whether a broadcast receiver can be used as a communications receiver, reasoning that by simply changing a “coil or something else” they might be able to listen to ham signals. The answer is that converting such a receiver into a communications-type setup poses some fairly difficult technical problems. Only a skilled technician could attempt such a job.

But it is possible to use the typical a.c.-d.c. broadcast receiver to receive short-wave signals—and without making any modifications in the b.c. set. All that is required is a simple one-tube “converter” to go ahead of the receiver.

The simple converter described in this article will tune from approximately 3000 to 5000 kilocycles, in the amateur 80- and 40-meter bands. The system to be described has much to offer the newcomer because the converter is easy to build and will provide him with an inexpensive method for listening to code signals as well as short-wave signals of all kinds.

What It Is and How It Works

The unit shown in Fig. 1 and in the photographs is a tunable converter designed to work into a broadcast receiver tuned to approximately 1000 kilocycles. The single tube used in the converter is a GUSA, which is actually two tubes, a triode and a pentode, in one envelope. One section of the tube functions as a mixer and the other section as an oscillator.

Let’s first see how the converter makes it possible to hear short-wave signals. Fig. 2 is a block diagram of the converter-receiver combination. Suppose that the antenna picks up a signal on 3500 kilocycles and feeds it into the mixer stage of the converter. The output of the oscillator is also fed to the mixer. If the oscillator is generating a 4500-ke. signal it and the 3500-ke. signal will “beat” with each other, producing a new signal at the difference between 3500 ke. and 4500 ke.—that is, at 1000 ke. This process of producing a third signal is called “mixing” or “heterodyning.”

If the signal generated by the oscillator is constant and unmodulated, the signal at 1000 ke. will be an exact reproduction of the one at 3500 ke. So any information contained in the signal coming in on the antenna will be reproduced in the signal coming out of the mixer.

The 1000-ke. signal from the mixer goes into a coil, L₁, at the end of a twisted pair of wires, and when this coil is placed near the broadcast receiver there will be enough coupling between the two so that the 1000-ke. signal will be picked up by the b.c. set and amplified—assuming, of course, that the set is tuned to 1000 ke.

One more thing is needed for receiving code

The completed converter ready for use. At the lower right on the panel is the power switch, S₁, and above it is the tuning knob for C₁. At the lower left corner of the panel is the control knob for the bandsel capacitor, Cₛ, Lₛ, the Vari-loopstick, is to the left of the chassis. The dial is on C₁, the bandspread capacitor.

QST for
signals. You’ve no doubt listened to a broadcast station when it didn’t have any modulation on its signal; this doesn’t happen very often but occasionally the station will be silent momentarily between programs. If you happened to tune through the station at such a time you would have noticed a change in the background noise, but that is all. Now imagine that the station turned its carrier on and off during such a “silent” period, sending Morse code characters. You would hear the change in background noise but it would be very difficult to copy the code, even if you knew Morse.

In short, to hear a code signal properly it would have to be modulated, and the easiest way to make an unmodulated signal audible is to cause it to be modulated in the receiver. This is done by mixing frequencies again, only this time the two frequencies are very close together so that the difference between them will be an audible tone. Again we need an oscillator to generate the steady, unmodulated signal, and if this new signal is placed, say, 1000 cycles away from the incoming signal the two will beat together to produce a 1000-cycle tone. In communications receivers the signal introduced at the receiver is generated by the “beat-frequency oscillator” (b.f.o.) and it is this device that permits us to copy code signals.

In the setup described here it isn’t necessary to provide one because any weak broadcast signal near 1000 kc. will serve as a ready-made b.f.o. As you tune the oscillator in the converter, the signals fed from the converter into the b.c. set will beat against the broadcast signal to which you are tuned, becoming audible as “whistles.” If a code signal is stronger than the broadcast signal the modulation on the b.c. station will be “washed out” and you’ll hear only the code. Even if the code signal is weak the modulation on the broadcast station won’t be a serious handicap, so far as copying the code is concerned.

If you want to listen to phone signals in the ham bands you simply tune the broadcast set to some clear spot near 1000 kc. and leave it there. Without a broadcast station to make a beat, there won’t be any whistles.

**Tuned Circuits**

In Fig. 1, $L_0C_1$ in the mixer signal-grid circuit must be tuned to the actual frequency of the signal being received. To cover both the 3500-ke. (80-meter) and 7000-ke. (40-meter) amateur bands we need a total tuning range of about 3000 to 8000 kc. in this circuit. This range is covered by rotating $C_f$ from maximum to minimum capacitance.

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The oscillator must operate 1000 kc. higher than the signal frequency, so \( L_6C_6C_4 \) must cover approximately 4000 to 9000 kc. This complete range is tuned by \( C_3 \), making its adjustment quite critical. Therefore this capacitor is used principally for selecting the portion of the range where it is desired to receive—i.e., it is the "band-setting" capacitor. Actual tuning is done with the much smaller capacitor \( C_4 \), which spreads out the signals on the dial and confines the tuning to a small portion of the total range. \( C_4 \) is therefore called the "band-spread" capacitor.

**Construction**

The converter is built on a 2 × 5 × 7-inch aluminum chassis and the panel, also aluminum, is 5 by 7 inches. However, neither the chassis size nor the placement of components is critical.

The 6USA socket is mounted approximately in the center of the chassis. \( C_6 \), the bandspread capacitor, and \( C_4 \), the mixer tuning capacitor, are mounted on top of the chassis, as is also the power transformer, \( T_1 \). The remainder of the components are mounted below chassis. On the panel and front edge of the chassis are \( S_1 \) and \( C_5 \), and also the vernier knob for the dial. The dial and drive mechanism for the National type K dial come with a drilling template so there should be no problem in mounting them.

The two coil assemblies are cut from a single length of coil stock. These assemblies are mounted on bakelite four-terminal tie points as shown in Fig. 3. A simple method for cutting the coil stock is to slice through the polystyrene support bars with a heated razor blade. If you attempt to cut the support bars with a hack saw you may ruin the coil. Make the coils as specified in Fig. 3 and mount them on the tie points before installing them on the chassis.

The power-supply rectifier, \( CR_1 \), and the dual 20-\( \mu \)F filter capacitor are mounted near the rear of the chassis.

In doing the wiring be sure to use rosin-core solder. Use an iron that delivers plenty of heat, and make certain that the connections be soldered are clean and bright. There is no rule about what should be soldered first, but many hams start off with the power and heater connections. The selenium rectifier has a plus mark on one side or near one terminal, and the terminal so marked (the cathode) should be connected to the junction of the 1000-ohm resistor and one section of the dual 20-\( \mu \)F electrolytic capacitor. Be careful to connect the negative side of the electrolytic capacitors to the chassis.

There is nothing critical about the wiring, but with one exception it is a good idea to keep all leads as short as possible. The exception is the wiring to \( L_5 \). \( L_5 \) must be placed near the antenna on the broadcast set, and to make this possible it is necessary to use long leads from \( L_5 \) to \( C_{10} \) and the chassis. In the unit shown here the leads are made from two 18-inch lengths of insulated wire. The Vari-loop is furnished with a metal mounting bracket; install the loopstick on the bracket as it will be easier to adjust the slug with the loopstick so mounted.

**Making It Work**

Connect an antenna to Terminal 1. The antenna wire should be at least 30 feet long and, if possible, 100 feet or so. Install its far end as high as possible above ground. If you have a ground connection handy, such as a radiator or water pipe, connect it to Terminal 2; however, the converter will work without a ground connection. Next, place the loopstick close to the antenna of the broadcast set. If the receiver has a built-in loop antenna just lay the loopstick alongside the back of the receiver. If the set has antenna terminals connect a short length of insulated wire, about 10 inches long, to the one marked "antenna" and wrap a couple of turns of the wire around the loopstick.

Turn on the converter and receiver and let

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1 If this is your first wiring job it is suggested you read McCoy, "How To Solder," QST, September, 1936.

This photograph shows the component arrangement underneath the chassis. The variable capacitor of the upper left is \( C_5 \). Immediately below and to the right are \( L_5 \) and \( L_6 \). \( L_5 \) and \( L_6 \) are to the right of the tube socket. The selenium rectifier and electrolytic capacitor are mounted toward the rear of the chassis.

*QST* for
them warm up. Next, tune the broadcast set to about 1000 kc. Set \( C_3 \) so that the plates are fully meshed and then tune \( C_1 \) to the point where the background noise from the receiver is maximum. Then tune \( C_4 \) until you hear a signal. Peak the signal for maximum strength by adjusting \( C_4 \), and then adjust the slug in the loopstick for maximum loudness. Hold the loopstick by the bracket and keep it in one spot in relation to the broadcast-receiver antenna while making this adjustment.

The next step is to calibrate the converter so you’ll know where the two amateur bands are in relation to the settings of \( C_3 \) and \( C_4 \). With \( C_3 \) at maximum, tune \( C_4 \) through its range, listening to each signal. On the 3500- to 4000-ke. amateur band, the phone stations operate between 3800 and 4000 kc. These should be easy to identify because it is probable that they will be talking about their stations or some other facet of ham radio. If you hear someone calling “CQ 75” you’re all set, because this station will be in the 3800- to 4000-ke. region (this section of the band is referred to as the “75-meter phone band”). Incidentally, if you make this check during the daylight hours it may be difficult to find ham stations as there may not be much activity during the day on 75 phone. But at night the band is very crowded and you shouldn’t have any trouble in locating stations. If you don’t find a ham station in the tuning range of \( C_4 \), slightly decrease the capacitance of \( C_4 \) and try again with \( C_4 \). By going through the range of \( C_4 \) in this way you will eventually cover 3000 to 4000 kc. Once you find the 75-meter band, mark the dial setting of \( C_3 \) so you can return to the same spot.

Follow the same procedure for locating the 7000- to 7300-ke. (40-meter) band. The phone stations in this band are between 7200 and 7300 kc. A good “marker” station is CHU, a Canadian station on 7335 kc. that transmits time signals continuously. These signals consist of a tone or “beep” every second, and the station identifies itself by a voice announcement every minute. The amateur phone stations can be identified by their “CQ 40” calls.

The Novice code bands are 3700-3750 kc. and 7150-7200 kc., just on the low-frequency sides of the phone bands. To copy code signals tune the broadcast set to a weak broadcast signal anywhere between 950 and 1050 kc., and tune the converter so that code signals are heard. You’ll have to experiment a little to find the best broadcast signal for good code reception.

The tuning range of \( C_4 \) provides plenty of bandspread. In fact, five different settings of \( C_3 \) are required for completely covering the 3500- to 4000-ke. band with \( C_4 \). Two such settings are needed for the 40-meter band. This is an advantage because it makes tuning easier.

There are plenty of stations transmitting slow-speed code, so it should be easy to get lots of code practice. If you address a postcard to the Communications Department, ARRL, West Hartford, Conn., requesting code practice information, you will be sent free of charge the operating schedule of W1AW, the Headquarters station, together with a list of stations transmitting scheduled code practice.

Although the converter-b.c. set combination naturally can’t be expected to compare with the higher-priced communications receivers, it is in many ways a much more satisfactory “first” receiver — particularly in having good bandspread and stability — than many of the low-priced commercial receivers. At the very least, it will permit you to get started and get the “feel” of ham radio. Clubs interested in getting newcomers started in amateur radio might also find it a good construction project for a beginners’ class.

Fig. 3 — Coil construction and mounting. These coils are made from a single length of coil stock, 32 turns per inch, 1-inch diameter, No. 24 tinned wire. The separation between \( L_1 \) and \( L_2 \), and also \( L_4 \) and \( L_6 \), is one turn.

In this back view of the converter all the parts above chassis are clearly visible. At the left on the panel is \( C_1 \), and \( C_1 \) is in the center. The two terminals on the rear are for the antenna. The Vari-loopstick with its mounting bracket is also visible in this view.

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Here's an easy way to get rid of your carrier if you want to mingle with the "sidebanders." Using the modulator output of your present transmitter, it puts just the same power into sidebands as a.m. does, but without the carrier that causes the heterodyne howls and squawks.

Many fellows who are operating on a.m. would like to take a fling at "sideband" but in many cases the economic situation prevents it. The method proposed here allows the use of the present plate modulator, and uses the final stage of the existing transmitter as a driver for an adapter unit for carrierless double-sideband transmission. Transmitters such as the Viking Ranger, Globe Champion, Vikings 1 and 2, Lettine, DX-100 and Valiant can easily be adapted to this method of communication.

In double sideband without carrier, both the "positive" and "negative" parts of the modulation envelope are filled out with r.f. of high amplitude as shown in Fig. 1. The secret of the conversion to d.s.b. is to shift the phase of the r.f. 180 degrees on the negative voice swings. Thus the positive voice peaks give an envelope which is of one r.f. phase and the negative half cycles give an envelope in the r.f. which is 180 degrees out of phase. At the receiving end, a carrier is injected (from the b.f.o.) to replace the carrier that is not transmitted. If this injected carrier is in phase with the original suppressed carrier, the r.f. pulses representing the positive swing of modulation will add to the injected carrier, giving an increase in detector output. The r.f. pulses that are 180 degrees out of phase will subtract from the injected carrier, decreasing the detector output. Thus, the phasing of the r.f. pulses causes exactly the same effect at the detector as the positive and negative swings of the modulation envelope of an a.m. signal, providing carrier injection is used at the receiving end.1

Both a.s.b. and d.s.b. use balanced modulators to accomplish the phase shift, along with carrier suppression. In addition, the a.s.b. generator uses filters or additional phasing networks to eliminate one sideband.

Double sideband can be generated at a low level and amplified through linear amplifiers. However, there is no reason why it cannot be generated at any desired power level.

**General Method**

One method of generating d.s.b. is to use a pair of tetrodes or pentodes in a balanced modulator with the modulating voltage applied in push-pull to the screens. This method uses a fixed plate-supply voltage and varies the plate efficiency and plate input at an audio rate.

The method to be described, on the other hand, uses the output of an a.m. modulator to supply audio-frequency plate voltage to a high-level balanced modulator. No d.c. plate supply is used and the power output of the audio amplifier is the factor that determines the input to the final stage. A modulator that is capable of modulating a Class C stage input of 200 watts will have a rated average power output of 100 watts on a

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1The requirement that the carrier injected at the receiver be in phase with the carrier suppressed at the transmitter is a severe one, and a highly specialized detection system is necessary for meeting it. However, if one of the received sidebands is rejected in the receiver so that the incoming signal is converted to s.s.b., ordinary s.s.b. reception will suffice. See "Suppressed-Carrier A.M.," Technical Topics, QST, March, 1957. — Editor.

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A practical adapter circuit, in this case built to utilize the audio output of the modulator in a Viking Ranger. Other types of tubes may be substituted in the balanced modulator, if desired, the principal requirement being that they be capable of handling the average power output of the modulator without overloadings. A safe figure for average output of the modulator is one-half the d.c. input to the modulated stage in the transmitter in which the modulator is incorporated.

Capacitances in the figure are in μuf, either ceramic or mica bypass capacitors of suitable voltage rating may be used (see text for peak-voltage data). \( L_1 \) and \( C_1 \) comprise a push-pull tank circuit that should meet ordinary standards for \( Q \) on the particular band used. Suitable components are suggested in the text.

The 300-volt supply is used only for tune-up; the voltage is not critical. \( S_I \) may be a s.p.d.t. toggle at voltages up to 500 or so.

A balanced modulator always requires push-pull audio, and modulation transformers do not often have center-tapped secondaries. This difficulty can be overcome by using auxiliary rectifiers arranged, with the balanced-modulator tubes, in what is essentially a bridge circuit so that both the positive and negative voice peaks will cause positive audio voltage to be applied to the balanced-modulator plates. Referring to the practical circuit diagram of Fig. 2, when the top end of the secondary of the modulation transformer, \( T_1 \), goes positive, the plate of \( V_1 \) is driven positive, with the ground return circuit through rectifiers \( CR_3 CR_4 \). On negative voice peaks (bottom terminal of the transformer secondary positive with respect to the center tap between the rectifiers) the plate of \( V_2 \) is driven positive, with the return through \( CR_1 CR_2 \). Thus positive voice peaks supply the power for \( V_1 \) and negative voice peaks supply the power for \( V_2 \).

If \( V_1 \) and \( V_2 \) are driven at r.f. with their grids in parallel and their plates in push-pull, as shown in Fig. 2, we have a balanced modulator. Both grids are driven in the same r.f. phase, but the plate outputs of the two tubes are in opposite phase because of the push-pull output connection. (If plate voltage is applied to the two simultaneously, the output at the frequency applied to the grids is zero because of this opposite phasing. This eliminates the carrier at the output.) However, when the audio voltage is alternately applied to the plates of \( V_1 \) and \( V_2 \) the resulting alternate outputs have opposite r.f. phase, giving the type of envelope shown in the lower drawing of Fig. 1. Because the power supply is at audio frequency and because of the bridge system, only one final tube can work at a time.

No special neutralization is necessary with this method of operation because the nonfiring tube is in effect a neutralizing capacitor for the tube in operation. Thus triodes, tetrodes or pentodes can be used in the same basic circuit, the only difference being in the driving requirements.

**A Typical Adapter**

The adapter shown in the photograph, using the circuit of Fig. 2, was built to be used with a Viking Ranger, \( T_1 \) being the modulation transformer in the Ranger. However, the same general method can be used with any transmitter having plate modulation. The choice of tubes to use in the balanced modulator will depend on the capabilities of the modulation system. Most of the popular transmitters use beam tetrodes as the modulator tubes, and as a general rule, the same type tubes can be used in the final as are used in the modulator. Thus, if the modulator uses type 6L6 or 6H414 tubes, then the balanced modulator can also use 6L6s or 6H414s. If 6L6s are used in the modulator, the same type tubes can be used in the adapter.
The screen and plate are modulated simultaneously with this method. The screen resistors are selected to cause higher plate current than with regular a.m. operation. Thus, if a screen resistor of 30,000 ohms is used in an a.m. rig having a 6146 final, a resistor of about 15,000 ohms would be used with this method. This offers a heavier load to the modulator, but will not harm the tubes because of the low duty cycle, which cannot exceed 50 per cent for either tube in the final amplifier.

**Audio Rectifiers**

A number of concerns are offering germanium and small silicon rectifiers having an inverse peak voltage rating of about 400 volts. In the bridge circuit of Fig. 2 the peak inverse voltage across the rectifiers in one leg is equal to the peak voltage developed in the secondary of $T_1$. This peak voltage will at least equal the d.c. voltage applied to the modulated r.f. amplifier in the original transmitter. Thus if the plate voltage on the Class C final is 600 volts, the inverse peak voltage will also be 600 volts and two 400-volt p.i.v. rectifiers should be used in series in each leg. If the d.c. voltage on the modulated final is between 800 and 1200 volts it will be necessary to use three rectifiers in series in each leg.

The current rating required of an individual rectifier can be taken to be equal to one-half the d.c. plate current of the modulated Class C stage in the transmitter. If the modulated final takes 150 ma., for instance, the individual rectifiers need only have a current rating of 75 ma.

Tube rectifiers could also be used for this type of service but the semiconductor rectifiers eliminate the need for filament transformers and have proved to be very efficient.

**Tank Circuit**

The unit shown has been used on all bands from 160 down through 6 meters. If you want to operate on only the higher-frequency bands, a dual 35-µfd. capacitor will do for $C_1$. If you want to cover 80 through 10, then a dual 100-µfd. unit should be used. With only 500 volts developed on peaks, even the spacing used in broadcast capacitors can be used. Standard 25-watt plug-in push-pull type coils such as the B & W MCL series can be used for the tank coils.

**Metering**

If you want to measure both grid current and plate current you can build the meters into the adapter. The grid-current meter can be connected between the top of the 1000-ohm resistor in the grid circuit and ground. A plate meter could either be inserted in the 300-volt test lead or inserted between the rectifier center tap and ground. If you have some sort of r.f. output indicator, such as an s.w.r. meter, permanent meters are not necessary. All that is needed is to tune the Rango (or other type transmitter) for proper grid current in the adapter and then tune the plate circuit $L_1 C_1$ for maximum output as indicated on the s.w.r. meter. A common multimeter can be used to measure the grid current.

**Using the Adapter**

Connect a length of coax from the output terminals of your present rig to this adapter. Since the driving power required is quite small, the tube or tubes in the final of your present rig will be loading. Adjust the output coupling so that you get a grid current of about 1 to 2 ma. in the adapter. At this point, the plate current of the final in your present rig will be close to maximum. Excessive drive gives no more output and does not allow as much carrier suppression because of stray feed-through, which will be proportional to drive.

The double-throw switch $S_4$, is used for tune-up purposes. After you have obtained a milliamperes or so of grid current, throw the switch to the “Tune” position, which supplies 300 volts to only one of the tubes, and adjust $C_1$ for maximum output. This indication should be on some form of r.f. output meter, for ease of tuning. (Note: Be sure to turn $S_4$ to the “Operate” position before shutting off the r.f. drive; this will prevent burning up the screen in the
tube.) With the switch in the “Operate” position, taking into the microphone will cause audio voltage to be supplied to your adapter and you are on double sideband.

Reports have indicated that the voice quality and carrier suppression of this little rig are excellent. Tests have shown that the peak-envelope output on 75 meters is about 40 watts when used with the Viking Ranger. The output of an adapter using 6146 tubes with a Valiant should be about 300 watts peak.

One note of caution: if you do not have an extra-stable v.f.o., use crystal control. By keeping your frequency extremely stable you are giving the fellow at the receiving end an extra break.

A club has been formed for employees of the Santa Fe Railroad who are amateurs. There are 110 members in 12 states at this present time. Anyone else who is interested should contact the secretary: W. L. Courtney, WAGBGI, 1169 Crestview Ave., San Bernardino, Calif.

Silent Keys

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

W1AOX, John Frazier Austin, West Falmouth, Mass.
W1AVF, William A. Fowles, Rutland, Vt.
K1BNT, Charles Leiper, Hartford, Conn.
W1FGC, Alfred T. Du Hamel, Methuen, Mass.
K1KUE, James Bacon, Jr., North Dighton, Mass.
W1MSB, Henry S. Kelly, Hamden, Conn.
W7TD, Ray H. McKenzie, West Haven, Conn.
W7FF, John E. Deming, Lynn, Mass.
K2CNI, Frank G. Dreyer, East Orange, N. J.
W2IKS, Florian O. Permentier, East Paterson, N. J.
W2HFO, Clifford B. Mellenish, Binghamton, N. Y.
KNNR5V, William G. Deane, Rochester, N. Y.
W3AWA, Major E. Burton, Glenolden, Pa.
W38BG, Earl C. Roberts, Baltimore, Md.
K30BX, Albert M. Stubrich, Schuykill Haven, Pa.
W3YNF, Edward A. McFadden, East McKeesport, Pa.
W3PRL, John W. Gore, Baltimore, Md.
W4BB, John S. Bell, Ansonville, Tn.
W4CXY, John B. Smith, Belmont, N. C.
W4ELV, Roy E. Kolo, Ft. Thomas, Newport, Ky.
K5MSE, Virgil L. Embree, Perry, Okla.
W5KSL, Lawrence R. Mas, Fort Worth, Texas.
K5MKN, W. J. Chevalier, Jr., East Hamlin, Texas.
W5TOE, Dr. William S. Wilson, Jr., Carrizo Springs, Texas.
K6HP, Jack J. Bless, South San Francisco, Calif.
W6GZX, Lester Graham Love, Lakewood, Calif.
W6VD1, Virgil W. Burlison, San Bernardino, Calif.
W7QZ, Truman M. Elliott, Tucson, Ariz.
W8RNU, Ralph A. Hinkley, Bay City, Mich.
W98BE, Robert E. Huddie, Mundelein, Ill.
W9BVV, Earl R. Word, Park Forest, Ill.
ex-W9PFA, Otto M. Erickson, Chicago, Ill.
W9NLI, Robert Duncan, Bloomington, Ind.
K0BBK, James T. Truettell, Wabashburg, Colo.
W9NDK, David L. Brown, Grand Junction, Iowa.
VE1ZL, Ronald E. Keddy, Dartmouth, Nova Scotia.
ex-4ADA, Dr. Facundo Bueso, San Juan, Puerto Rico.

COMING A.R.R.L. CONVENTIONS
June 18-19 — West Gulf Division, Dallas, Texas.
July 30-31 — North Dakota State, Minot.
September 10-11 — Central Division, Indianapolis, Indiana.
September 16-17 — Quebec Province, Montreal.
(See also P. 10, this issue)

OUR COVER

Our cover this month shows a number of the reasons why W8AEU received the 1959 Edison Award, as related on pages 32 and 31 of this issue. At the upper left, W8AEU (second from the left) talks over some equipment with KS6KO, e.d. radio officer W6BUQ, and police lieutenant KS6KJ.

Left center is W8AEU demonstrating a hand-carried portable, while at the lower left W8AEU looks on as KS6KJ demonstrates the use of ham radio in traffic control work. In the right-hand column, at the top, W8AEU (standing) and W8LHI check a weather map at the airport weather office before transmitting a storm warning. Right center, W8AEU’s crew demonstrates some of the equipment (radio and marine) used to rescue 16 families during a Cuyahoga River flood in January, 1959. Standing in the boat is KS6KO, while the two boys are among those who were rescued. W8AEU’s emergency corps also provided communications for parades and for sports car events. At the bottom right W8AEU uses the mobile transmitter mounted in K5QPH’s Triumph.

Sgt. Don Germain, ex-W9YWIL, was attending the television show “It Could Be You” in Hollywood when he was suddenly called from the audience to help Bill Leyden, star of the show, tune in a signal through heavy QRM pouting out of a beat-up old receiver.

As Don played with the dials, a voice boomed through: “W9YWIL, W9YWIL, this is W6RIIM calling. Come in please, Don Germain, It Could Be You!” Don had been chosen as a subject for the show because of the way he had given his time night after night during four years overseas to help servicemen send messages back home. Don was hospitalized for five months a year ago and had to sell his old homebrew rig to get over the financial hump. So, Bill Leyden presented him with a complete ham station, compliments of the show and the Heath Company. Don had operated from Japan as K2A2G and from Germany as DL4ZQ.
Most Field Day groups are familiar with the problem created by poor voltage regulation from small gas-driven generators. Often when one of several operating units is removed from the line, the line voltage will soar to a point that will endanger the equipment still operating from the line. After some sad experience, W4LEN has devised a simple system that automatically switches in an artificial load before the line voltage can reach the danger point.

The Field Day Tranquilizer

The sight of the first robin of the season not only heralds the approach of Spring, but also directs the minds of ham clubs all over the country toward plans for Field Day: "This year's Field Day is going to be the biggest, the best, we've ever had!" And by the time the echo of the last CQ FD has died, so have a number of F.D. activities managers. In our club, the mere mention of F.D. would send the previous-year's manager (bald and gray) into orbit. This year, however, things were different. Our manager for last year (smiling and serene) actually volunteered to serve again.

The secret of this difference in attitudes is simple. It lies in the tranquilizing effect of two small gadgets any teen-ager can build from the usual old-timer's junk box in an evening, or the skilled E.E. with unlimited credit at the local parts distributor can undoubtedly improve upon. However, the gadget herewith disclosed does work, as evidenced by our bill for damaged parts this year which was $0.00 as against $87.37 for the preceding year. For some reason, most manufactured equipment seems to perform poorly when operated from an a.c. power source when the output varies between 62 and 167 volts. (I can never figure what gets into a normally

Fig. 1—Over-voltage circuit. As the line voltage increases, the current through the VR-tube branch also increases. The relay will close when the current reaches the preset value.

same man who, at 3:00 A.M., decides to make adjustments, without notice, to a smoothly running generator supplying four transmitters and receivers.)

Basic Circuit

A quick check of prices for over-voltage and under-voltage relays suitable for automatic vol-

An a.c. voltmeter and ammeter and indicator lamps are mounted on one face of the box enclosing relays and VR tubes. The toggle is used to reset the under-voltage relay

QST for
Fig. 2—Complete over-voltage protective circuit. $K_1$ is an under-voltage relay that opens the load circuit if the line voltage falls below a set minimum level. Momentary contact switch $S_1$ is used to reset $K_1$ when the line voltage returns to normal. $K_2$ performs as described in Fig. 1, its contacts throwing in an artificial load to keep the load on the generator constant. A second stage, including $K_3$, may be added as described in the text.

Voltage control quickly led to the junk box and evolution of the circuit shown in Fig. 1. You will recall that gaseous regulator tubes, such as the VR-90, VR-105, and others, maintain a practically constant voltage drop across their elements. This is accomplished by variations in the current flow through the conducting gases. A variation in current of between 5 and 40 ma. is effected by a variation of only a few volts in drop across the tube.

Relays

This principle is used to activate a relay utilizing the current flow through a conducting VR tube as reference. After a little judicious juggling of spring tension and spacing, we found that a surplus 24-volt relay would pull in at a current of 32 ma. and drop out at 11 ma. This represented a line-voltage change from 105 to 96 volts with a VR-90 (OB3) as reference. With a VR-105 (OC3) as reference, the relay pulled in at a line voltage of 123 volts and dropped out at 116 volts. By slight alterations of spring tension and spacing, an additional stage pulling in at 125 volts and dropping out at 120 volts may be constructed.

With suitable connections on relay contacts, arrangements may be made to remove all power when the line voltage drops below 96 volts. When the line voltage goes above 123 volts, an auxiliary load of 250 to 500 watts is added to the generator load; this load will stay on until line voltage drops to 116 volts. For the cautious type, the second over-voltage stage could be used to add an additional 500 to 750 watts of load at 125 volts, dropping this load at 120 volts.

A Step 1 Tranquilizer was built as shown in Fig. 2 and the photographs. The relays on hand and used were designed for operation on 115 volts a.c. However, with very minor adjustments of spacing and spring tension they performed equally as well as d.c. relays. It was necessary to provide an additional 20-µf. capacitor and a momentary-contact switch, $S_1$, to permit closing the under-voltage relay. However, a better operating range is obtained with the additional capacitor switched out after the VR tube ignites because the output voltage of the supply becomes more of a direct function of the input a.c. voltage.

Depending on the regulation of the generator and the variation in the connected load, it may be necessary to connect a 10-µf. 50-volt electrolytic across the coil of the over-voltage relays to prevent relay chattering due to transient loads from modulation or keying. A 10-µf. capacitor permitted action in 1 to 2 seconds. It is recommended that a silicon rectifier be used so that the power supply will be as stiff as possible. Series resistances in over-voltage relay circuits should be kept to a minimum so as to keep the operating range as narrow as possible. Almost any relay that has contacts of suitable current capacity and whose armature will pull in at less than 40 ma. (maximum VR current) will prove satisfactory.

Rear face of the "Tranquilizer" box embraces outlets for equipment [center] and auxiliary loads [right]. Main power switch is at left.

April 1960
about right for a 100-watt phone rig. In Fig. 3 the auxiliary load is switched by a normally-closed relay whose coil is connected in parallel across an antenna relay. Fig. 4 is a somewhat similar circuit using a send-receive switch in the transmitter.

In operation during the 24 hours of last Field Day, the line voltage was not observed out of the range of 115 to 122 volts. This was with a 3000-watt generator supplying four positions and quite a few lights. Oh yes, if you use light bulbs for the auxiliary loads, the flashing lights and the sound of the relays clicking tend to lull the nocturnal generator fiendish back to sleep.

Be looking for you Field Day, and peace to all activities managers.

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Strays

K6BX, Box 385, Bonita, Calif., who is maintaining a file of overseas hams who would benefit from your discarded Call Books, asks that you request the name of some deserving overseas ham only if your Call Book is no older than three years, and please let him know what issue the Call Book is when you write him. (See the Stray on page 63 of the February issue.)

W7EZD discovered that the student sitting next to him in a college class was named D.C. Klick.

W7WXC and W7CXX were both high school classmates of W7EZD.

There was a Novice named Peter, Who was a 100% cheater. He thought he'd have fun On 144.1 But the FCC had a frequency meter.

— Jamaicca (NY) U.H.F. Club Grid Leaks

There's a new radioteletype club in St. Louis—SLATS. If you are interested in joining the St. Louis Amateur Teletype Society, contact its president, W9IBZ.

Philip R. Coursey, British radio pioneer who was of great assistance to Paul Godley during the League's second transatlantic tests in 1922, died recently at the age of 67.

28 QST
PATCH PANEL

The patch panel shown in Fig. 1 does away with most of the nuisance involved in jumping bands or changing modes of operation. Four rows of coax fittings make up the connectors for the panel. The common fittings (antenna, receiver, and transmitter) are in the top row while the bottom three rows connect to the various receivers, transmitters and antennas. Several patch cords are needed to connect the desired antennas to the proper receivers and transmitters. These cords are lengths of coax with fittings at each end that will mate with the connectors on the board.

Fig. 1—Block diagram of K5JXF’s antenna patch panel.

The unit shown in the photograph was constructed in a cabinet measuring 12 X 7 X 8 inches. This chassis provides considerably larger space than needed for the panel alone, but offers convenient housing for the t.r. switch and s.w.r. bridge. A low-pass filter and the s.w.r. bridge indicating meter can probably also be housed in the cabinet.

— James C. Pine, K5JXF

TREATING BAMBOO QUAD ELEMENTS

The quad antenna is currently enjoying a wave of popularity. However, many quad builders and prospective builders have been discouraged by the fact that bamboo elements deteriorate so rapidly. Here are a few suggestions from W9SID that will help preserve them. Choose bamboo poles with great care, watching out for splits or weak points. Give the poles two or three coats of good spar varnish. Wind them full length with masking tape, being careful not to leave any bamboo exposed. After covering with tape, give the poles two more coats of spar varnish. Plug the small open ends of the poles with rubber stoppers to keep out moisture.

— Donald A. Grant, W2DY

THREE-BAND ROTARY ANTENNA

The sketch in Fig. 2 shows a three-band antenna for use on 10, 15, and 20 meters. On 15 and 20 the antenna operates primarily as a dipole, but on 10 the outboard element acts as a director. The antenna is fed with 300-ohm or 70-ohm feed line. If possible, the feed line should be 38 feet 5 inches, 60 feet 4 inches, or 77 feet 5 inches long for optimum performance. The elements can be made of dural, aluminum or steel tubing and are insulated from the supporting structure with stand-off insulators. The boom and element supports can be made of wood or aluminum.

— Jose Luis S. V. Marinar, PY2BBP

GUY ANCHORS

Guy anchors can be made from discarded automobile wheels. When buried a few feet they have a remarkable pull-out resistance, even in soft sand. When you’re placing the wheel in the hole be sure to position it at right angles to the guy wire.

— Francis LeBaron, W1TZQ
**Technical Correspondence**

**TOWER STRESS**

330 Solano Drive, NE  
Albuquerque, New Mexico

Technical Editor, QST:

Mr. Edward A. Stanley's article, "Some Considerations in the Selection of an Antenna Tower," in the December, 1959, issue of QST brings up some very pertinent points, especially if one is considering the use of a tower not specially designed to support a beam. However, the computations given for the stress in the tower leg are incomplete, erroneous, and very misleading. Following the same computations in analyzing a tower having a base width differing from the 1:40" used in the example would produce serious error.

Without going into all the details involved in the analysis of a structure such as the tower shown, the following fundamental facts should be emphasized:

1. The top of the wind acting on the tower and beam is approximately 827 pounds. This force must be resisted by an equal force acting in the opposite direction at the base of the tower; otherwise the tower would slide off its foundation. If the tower were not stiffened by the usual guy devices at the tower base, the resisting force and the wind force together form a "couple," whose moment is 11,308 pounds as was computed in the article. This couple tends to overturn the tower and must be overcome by an equal and opposite moment produced by a couple at the tower base. In the worst case, with the wind blowing at right angles to one side of the tower, the resisting couple is provided by an upward force acting on the leeward leg, and an equal downward force divided equally between the two windward legs.

2. The moment of the couple must also be equal to 11,308 foot pounds. The magnitude of each of the two equal forces forming this couple is

\[ \frac{11,308 \text{ ft. lbs.}}{2} = \frac{11,308}{2} \text{ ft. lbs. approx.} \]

The quantity 0.869 foot is the perpendicular distance from the leeward leg to the line joining the two windward legs, and is the moment arm of the couple. Hence, due only to the horizontal wind force, there is a compressive force of 11,309 pounds in the leeward leg and 5659 pounds tension in each of the two windward legs.

In addition to the forces caused by the wind, there is the downward force on each leg caused by the weight of the beam and the tower itself. Since this weight is normally solid equally between all the legs, each leg must support one third of 500 pounds, or 167 pounds. The total compressive force on the leeward leg is then

\[ 11,309 + 167 = 11,476 \text{ pounds, approx.} \]

Note that foot pounds moment and pounds force cannot be treated together as was done in the article. Also note that the moment arms of the resisting couple at the base of the tower enter the computations as a very major factor in determining the total stress in the tower leg.

This latter point can be illustrated by considering two hypothetical towers, each the same height, the same weight, having the same horizontal wind force and carrying the same beam load as the tower used in the example, but one tower being 21 inches wide on a side, and the other 6 inches. The total compressive force on the leg of the 21-inch tower is approximately 6700 pounds, while that in the leg of the 6-inch tower is 25,000 pounds. Quite a difference exists in these three towers.

Now, in the more northerly climates, icing of the beam and tower occurs. This not only increases the weights of these items, but also greatly increases the areas, and hence the wind loads imposed.

1. "editor's note: "Structures when fully loaded shall be designed for ... horizontal wind pressures ... on the surfaces without lee sections. lee sections are not specifically stated as being seldom occurs simultaneously with maximum wind loading."" - EIA RS-222, Structural Standards for Steel Transmitting Antennas, Supporting Steel Towers.

2. W. H. Plag, Jr., 1959, Ex-W9A7I. [Correspondence of similar nature from D. E. Handdood, W4GWC, is acknowledged.]

**PHASING EXCITATION ADJUSTMENT**

130 Douglas Shand Ave.,  
Pointe Claire  
Quebec, Canada

Technical Editor, QST:

Since many of the boys are having difficulty in obtaining good sideband suppression with passive-type s.s.h.b. exciters, it might be helpful to pass along some information on the subject. The system development of both methods described in Kehlhat's article in November, 1936, QST, which described the scope and receiver methods of alignment.

Basically, the signal is fed through the receiver and displayed on the scope. The test setup is quite simple: The last i.f. stage is coupled to the vertical amplifier of the scope through a 50- or 100-m.a. capacitor and the affected stage resonated. The receiver is set in the most-selective position (clear crystal filter), and only sufficient antenna height is used to prevent overloading. The l.f., m.c., and a.c. should be turned off.

The exciter should not be checked on the fundamental (9 Mhz, in the case of the "Cheney and Easy" unit used here), as direct pickup from the crystal oscillator will be troublesome. Tune in the signal and identify the carrier frequency. A pattern will appear which will decrease in height as the carrier is milked to zero. Make note of the resulting pattern at the fully set coupling. Now inject the audio tone into the exciter. The normal overloading precautions should be taken. It is now possible to tune the receiver across the frequency spectrum and observe both sidebands and spurious products. Carefully center the receiver on the sideband producing the larger pattern, which will be called sideband "A." Throw the sideband selector switch to sideband "B," and without disturbing the receiver adjust the audio phasing pots to bring the remaining pattern to zero. Now carefully shift the receiver to sideband "A" and throw the sideband selector switch to the "A" position. If you're lucky, very little pattern should be showing. Note the position of the audio phasing and balance pots, then return them to zero, and note how much difference exists between the two settings for optimum suppression on both sidebands.

If it is difficult to obtain good suppression on both sidebands the fault usually lies with the r.f. phasing coil adjustments, and the clue is the position of the carrier null pots when the carrier is zeroed. The null pots should be near the center third of their range. By adjusting the r.f. phasing coils the carrier-suppression pots can be brought into their proper positions. Redo the suppression on both sidebands, and by careful adjustment equal suppression can be obtained without further adjustment of the audio phasing control. On the setup used here pattern heights of 5 inches and zero were obtained on a 0.5-second basis for the desired and suppressed sidebands, respectively. Reports on the air are excellent and run in the order of 33 db.

The receiver need not be an elaborate job. A BC-318 was used in one instance however, careful alignment of the i.f. stages to the crystal frequency was required.

- H. Roth, W6QJ, ex-V64DF

**NEW STANDARDS ON IGNITION-NOISE RADIATION**

Automobile Manufacturers  
Association, Inc.  
320 New Center Bldg.  
Detroit 2, Michigan

Technical Editor, QST:

In the middle '30s the American automobile manufacturers became aware of the radio interference problem. A number of meetings were held by a Society of Automotive Engineers subcommittee, and at these meetings the various sources of noise were studied and ways of eliminating the resulting interference were sought.

During the war our knowledge in this field was greatly expanded due to the rather rigid requirements of our Armed Forces. After the end of the war it was decided that we would attempt to suppress all vehicles to a reasonable level. A meeting was held at which members of the Society of Automotive Engineers subcommittee convened to deter-
mine acceptable limits. At this meeting a tentative specification was set up which would limit the undesirable radiations to 35 microvolts per meter at a distance of 50 feet from the side of the vehicle. These limits were to be measured on the only noise meter available, in the range between 30 and 150 megacycles.

In order to reach the 35-microvolt limit specified, it was assumed to be necessary to install suppressor resistors in the ignition system. There was a question in the minds of some of the motor engineers as to the effect of suppressors upon engine cough and engine performance. At that time, 1946, the Board of Directors of the Automobile Manufacturers Association recommended that all U. S. vehicle manufacturers do everything necessary to their vehicles to effect compliance with this specification as soon as it was determined that the suppressors had no detrimental effect.

Each of the car manufacturers began working toward that end. It became apparent that some vehicles required excessive suppression equipment while others required no suppression equipment. When trained engineers examined the two types of vehicles there was no outstanding difference between them. A meeting of the Society of Automotive Engineers subcommittee was held to review the reasons for the great discrepancies in suppression requirements. It was found that the difference existed in the meters being used, and not in the vehicles. These meters measured so-called quad-peak emissions in terms of microvolts per meter. Since the instrumentation was so poor the American automotive industry did not feel that it was ready to supply suppression across the board on all vehicles until the quantities could be measured with reasonable accuracy.

For some years the Society of Automotive Engineers group concentrated on testing different radio interference measuring instruments. By 1955 two instruments had been developed in the United States that would give consistent readings on our types of interference. These meters read true peak and operate on the principle of using the receiver part of the instrument as a transfer device, to compare the interference against the output of a "white-noise" type pulse generator.

During the summer of 1957 the Society of Automotive Engineers group met with a group of representatives from the television industry. The television people supplied a number of receivers of advanced design. The television receiver which was found most susceptible to interference was used as a standard. Using this receiver as a basis, new permissible limits were determined. The use of a TV receiver was based on previous tests which indicated that television was probably more susceptible to electrical interference than any of the other communications, and that if sufficient suppression was provided to protect television, other services would be automatically protected.

The new limits, which are now incorporated in the SAE Standard "Measurement of Vehicle Radio Interference (30 to 400 megacycles)", are: from 30 to 88 megacycles the tolerable interference must not exceed 2 microvolts per meter per kilocycle of band width; from 88 to 400 megacycles the interference is allowed to increase to 8 decibels above 1 microvolt per meter per kilocycle of band width.

The above limits are, of course, those which the AMA Board of Directors has recommended to all of our member companies.

--- A. C. Detty, Jr., K5CUP, Engineering & Technical Dept.

**ACTUAL VS. APPARENT S.W.R.**

1107 W. Albion Ave.
Chicago 26, Illinois

Technical Editor, QST:
The following is an easy way of getting the true s.w.r. at the load. This information can be gotten from the Smith Chart, but the method below is easier.

\[
S/WR = \text{Standing-wave ratio} \quad \text{at transmitter}
\]

\[
S/WR = \frac{1}{K'}
\]

For \( K' \) see the accompanying graph.

Graph used in determining the relationship between s.w.r. measured at the transmitter and true s.w.r. at the load, when line losses are appreciable (W9GBD).

Example: Matched line loss = 2 db, and \( S/WR = 3 \)

\[
K' = \frac{3 - 1}{3 + 1} = 0.5
\]

From the graph, \( K' = 1.6 \) \( (K' = 0.5) = 0.8 \).

\[
S/WR_{tr} = \frac{1 + 0.8}{1 - 0.8} = 1.8
\]

The value at which \( K' = 1 \) corresponds to the s.w.r. (read at the transmitter) with line shorted. Values of \( K' \) greater than 1 have no meaning, since higher readings are not possible.

--- Bob Gold, W9GBD

**Simplified Audio Clipper**

3357 Pelham Road
Orlando, Florida

Technical Editor, QST:
With regard to Mr. McCoy's audio clipper (p. 44, January QST) I permit me to comment that such a clipper is indeed a useful device and is often the difference between the quick "uh-oh, etc." and exchange and an enjoyable QSO.

I should like to point out that a simplification of the device is possible, in that it requires no power source at all, other than the audio power of the receiver itself. This can be realized if four silicon diodes are used in place of the two germanium diodes in McCoy's circuit. The schematic then appears as shown in the accompanying drawing.

Simplified audio clipper using the conduction delay of silicon diodes to eliminate biasing batteries. Suitable diode types are mentioned in the letter from W9IRA.

The silicon diode requires considerably more forward bias before it conducts significantly; in particular, common silicon diodes must be biased forward to about 0.6 volt before conduction takes place. This potential bias is regularly used in transistor biasing schemes employed in computer work. By putting two such diodes in series this threshold voltage is raised to 1.2 volts, which is just about the right level for headphone volume. Further, the silicon diodes suggested herein have a much lower dynamic impedance than the IN34, permitting a reduction in the series resistance in the clipper circuit and thus delivering more audio to the headphones for a given volume control setting (below threshold).

Since only one resistor and four diodes are required, the entire device may be housed in the headphone plug itself.

Suggested silicon diodes are the IN402, IN4087, IN1092, and in the very useful silicon "rectifier" class the IN300, the Pacific Semiconductors PS-506, the International Rectifier RD-01A, and Marxer-Tarossil K-200. All of the mentioned diodes are in most large jobber's stocks.

--- Thomas A. Pickering, W9LRA/4

April 1960 31
Edison Award to W8AEU

WALTER EMERIE, Sr., W8AEU, recently received the 1959 annual Edison award for his work in organizing radio amateurs for emergency communications preparedness in the Cleveland, Ohio, area. W8AEU was selected from among more than 30 candidates as having performed the most outstanding public service during 1959. He organized and directed a 300-man voluntary radio communications corps which served the city on 23 occasions during 1959.

The principal speaker at the award ceremonies was Major General Earle F. Cook, W4FZ, the Army's Deputy Chief Signal Officer. We can't reproduce the general's remarks in toto, but the excerpts below are appropriate.

"... It is most significant that the Edison Radio Amateur Award for Outstanding Public Service during 1959 should go to one whose activities have resulted in the provision of a 300-man voluntary emergency communications corps. The mission of such a corps might well be defined in the same terms as that of our military services: "to provide, for the common defense, to promote the general welfare..." What this emergency communications service means to the Cleveland community, or might mean in times of disaster or other circumstance, does not need elaboration for this audience.

"We, in the military services, appreciate, with you the meaning of emergencies. Emergencies, and preparation for them, are our business. We hold amateur radio operators in such high esteem because they are in a sense, fellow soldiers — fellow soldiers with comparable missions, with essentially the same precepts, the same high ideals of service, and the same devotion to duty.

"My congratulations and warmest personal wishes to Mr. Walter Ermer, W8AEU, the 1959 Edison Award winner, for the accomplishments which have brought him this distinguished recognition. I also congratulate the recipients of the special citations for their meritorious performances. The three of these citations should be for service in providing emergency communications, one for the promotion of international good will, and one for service performed in relaying messages for military personnel everywhere, as fine testimony to the caliber of man and women you find in that group known by that seemingly inexact but enduring term — 'ham.'

"... Apart from our common bond of interest in radio, our esteem for the amateur is also that which one holds for a prime national reserve asset. Amateur radio operators are an invaluable and indispensable American source of operational and technical skills in time of war or other emergency need. Under various sponsors they also provide auxiliary systems or means of communication which can be made available to military commanders as required..."


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. All you have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4 1/2 by 9 1/2 inches in size, with your name and address in the usual place on the front of the envelope and you will 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 Ass'n, Box 55, Arlington, N. J.
W3, K3 — Jesse Biehman, W3KRT, P.O. Box 400, Mahanoy City, Pa.
W4, K4 — Thomas M. Moss, W4HYW, Box 844, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Bud A. Beard, W5ADZ, P.O. Box 25472, Houston, Texas.
W6, K6 — San Diego DX Club, Box 10006, San Diego 18, Calif.
W7, K7 — Salem Amateur Radio Club, P.O. Box 61, Salem, Oregon.
W8, K8 — Walter E. Musgrave, W8NGW, 1215 E. 187th St., Cleveland 10, Ohio.
W9, K9 — J. C. Oberlin, W9DSSO, 2601 Gordon Drive, Florence, Ill.
W6, K6 — Alva A. Smith, W0DMA, 238 East Main St., Sycamore, Minn.
VE1 — L. J. Fader, VE1FQ, P.O. Box 663, Halifax, N. S.
VE2 — George C. Goode, VE2YA, 186 Lakeview Avenue, Pointe Claire, Quebec.

VE3 — Leslie A. Whelihan, VE3AQ, 32 Sylvia Crescent, Hamilton, Ont.
VE4 — Leon C. Wood, VE4LC, 236 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 299 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savare, VE6EO, 833 10th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HUR, 1684 Freeman Rd., Victoria, B. C.
VE8 — Earl W. Smith, VE8AT, P.O. Box 534, Whitehorse, Y. T.
VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John’s, N. B.
KM1 — W. W. Mayer, KP1KD, Box 1001, San Juan, P. R.
KM1 — Andy H. Fuchikami, K10BD, 2544 Nainu Dr., Honolulu, Hawaii.
KL7 — KLC7P, 310-10th Ave., Anchorage, Alaska.
KZS — Catherine Howe, KZ5KA, Box 407, Balboa, U. Z.

IS YOURS ON FILE WITH YOUR QSL MGR?

YOUR OWN NAME, IS YOUR ST.?
YOUR HOME TOWN, IS YOUR U.S.A.

QST for
A lightweight support for a beam antenna. The supporting member is a section of aluminum irrigation pipe. Four guy wires are attached near the top.

Light-Weight Low-Cost Beam Support

*WIWF shows an easy way of getting 40 feet or more of height for a small beam antenna. Most of the components are standard fittings requiring no modification.

BY WILLARD BRIDGHAM,* WIWF

Forty Feet Without Climbing (Much)

The mast described here is the result of an effort to come up with something that would support a 15-meter beam and yet be light enough so that it could be put up and taken down by not more than two men, with a minimum of climbing. (At my age the top of a step-ladder is about the limit on altitude!) The mast as finally evolved is light enough to be mounted on the side of a house, giving some height that doesn't cost anything. The total cost will be something less than KGJKE's "Sixty Cents a Foot," depending upon how high on the house you can mount it. In addition, the rotator, supporting some of the weight of the beam, is mounted at the bottom, making cold-weather servicing (i.e., in the middle of the SS) easy. The long drive shaft between the rotor and the beam acts as a shock absorber, allowing the use of a TV rotator. There is only one special part required, the rest being standard TV and general hardware.

Mast Material

Construction of the mast is detailed in the photos and in the sketch of Fig. 1. The main mast element is a piece of 4-inch aluminum irrigation tubing 30 feet long. This is a smooth, round, seamless, thin-walled tubing. It is obtainable from Sears under their catalogue No. 42-HR-M-5978 and is listed in their 1959 Farm Equipment, Fencing & Suburban Catalogue at $15.90. Transportation costs amounted to about a dollar, but this, of course, will vary with your

Fig. 1—Sketch showing details of the drive-shaft bearing at the top of the mast. The eyebolt should be duplicated for 3 or 4 guys.

* 82 Noblehurst Ave., Pittsfield, Mass.
* Sutherland, "Sixty Cents Per Foot," QST, June, 1959.
The mast is secured against the side of the house on brackets made of standard fittings.

The rotator drives a shaft made up of sections of TV mast.

location. Don’t let the size of the piece scare you. It weighs only a little over 20 pounds and can be carried home easily on a car-top rack (I used my ski rack), although I would try to avoid as much traffic as possible. Do not have it delivered to your home, but rather to your nearest Sears store, with the stipulation that you will not accept it if it is dented. Incidentally, this tubing also comes in 2-, 3-, 5- and 6-inch diameters.

**Drive Shaft**

The drive shaft for the beam consists of four 10-foot lengths of standard 1 1/4-inch TV mast which goes inside the 4-inch tubing. The mast extends above the tubing to carry the beam, and below to take the rotator.

The one special piece referred to above is the bushing in the top of the mast. This piece serves both as a bearing for the drive shaft and as an anchor for the guy eye bolts. It is made of 1 1/4-inch thick aluminum and is turned down to make a good fit with the inside diameter of the mast. The hole in the center is made a loose fit — at least 0.050 inch — around the 1 1/4-inch TV mast. Any tighter fit risks having the bearing freeze if it should get water in it and then turn cold. The bushing is inserted in the mast and the assembly drilled and tapped for the eye bolts to take the guys, as shown in the sketch. Although mine is aluminum, I see no reason why this bushing couldn’t be made of paraffin-treated hard-wood, if you find 1 1/2-inch aluminum plate hard to come by. In such an event, screw eyes, such as are used to hold up clothesline, could be substituted for the eye bolts.

The four pieces of TV mast are assembled and fastened with self-tapping screws (four 1/4-10 screws per joint). Use short screws to leave room inside the drive shaft for the coax feedline to the beam. The resulting monstrosity is then inserted into the aluminum tubing with about 2 feet of the shaft left protruding beyond the bushing in the top of the mast. A standard TV mast collar is then fitted on the drive shaft next to the bushing. About 4 feet of the TV mast is left extending from the bottom; the rest is cut off to be used later. (Efficient, hey?)

**Mast Mounting**

The mounting brackets on the side of the house are assembled using a pipe flange, a close nipple, an elbow and a 2-inch nipple, all 1 1/4-inch steel, as shown in Fig. 2. The open end is closed with a cork. The mast is attached to these brackets with clamps such as are used to mount a TV mast to a 4-inch vent pipe. The brackets are lagged into the side of the house at a stud by opening the holes in the pipe flanges to 1/4 inch and using 1/2 X 2-inch lag screws.

To erect the mast, the method used here was to push the TV mast drive shaft up until it is no longer projected from the bottom and raise the

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Rotator Mounting

The rotator assembly and mounting are shown in the picture. Standard TV wall brackets and the piece of TV mast that we so craftily saved are used. The wall brackets, which were a little too long, were mounted enough to one side of the center so that the rotator might be swung into line with the center of the mast. In the final tightening up, the TV mast is raised up enough so that the rotator assembly is carrying most of the weight.

The total weight of the mast, less the beam and rotator, is less than 50 pounds, and yet it has withstood two rugged New England winters, with winds that were strong enough to blow one half an element clean off the beam and carry it more than 200 feet before it finally hit the ground. Repairs are very easy; two men can get the beam down, make a half-hour repair and have it back up in about two hours. By throwing a rope over the roof and attaching it to one of the guys, I can do it alone in not much more than three hours, and only once (to get at the top clamp) do I have to get over step ladder height. It’s light. In case the sharp-eyed are curious, the speaker on the side of the house is used to call in the harmonies from their play.

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FEEDBACK

In describing the High Efficiency 2-Meter Kilowatt built by W1DXE, February QST, page 30, the statement is made that the 1½-inch tubing of the plate line fits over the anode of the 4CX300A. Actually the anode and the tubing are the sameoutside diameter. The tubing butts against the top of the anode, and the stainless steel hose clamp holds the two together, clamping to both surfaces.

HBR-16 NOTES

Ted Crosby, W6TC, sends in a few afterthoughts on his HBR-16 (QST, October, 1959) that should be of interest to those who have built or are building the receiver. The principal suggestion is that the 6663 cathode resistor be changed to 330 ohms and that its No. 3 grid resistor be changed to 180,000 ohms; the tube runs cooler and is quieter with these values. It has also been found beneficial to reduce the a.v.c. time constant somewhat, this being done by changing the 0.5-µf capacitors in the a.v.c. line to 0.2 µf each; 200-volt d.c. rating is sufficient. Ted also says that the specifications for C7 and C8 should be transposed in the caption for Fig. 1, to agree with the text under “Circuit Pointers” on page 17.

The author's mail concerning the receiver has been heavy, as might be expected, since the HBR-16 has been equally as popular as its predecessor, the HBR-14. Which reminds us that when writing to any QST author to get additional information the least you can do is to enclose a self-addressed stamped envelope for his reply. It’s only good manners to do so.

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W0ETX sends in a newspaper item which read as follows: “A Hamline university professor recently set himself up as an amateur radio operator. He was probing the airways the other evening when he picked up another ham station sending Morse code too fast for our boy to follow. The prof laboriously ticked out, ‘I am a university professor, what are you?’ The reply was another virtuoso blur of dots and dashes. The prof requested slower transmission and the other ham obliged with all deliberate speed, ‘I am a seventh grader.’”

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For keeping a bug from skidding around on the operating table W30Y recommends the use of Curan, a material ordinarily used under scatter rugs. It is ⅜ inch thick and is manufactured by Curtis Wright.

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Feeders going up the wall,
Please don’t radiate at all!
If you do, then by and by
I'll be plagued with TVI.

— Jamaica (NY) V.H.F. Club

Grid Leaks

April 1960 35
Slow-Scan Image Transmission: A Progress Report

The successful transmission of slow-scan images from the U.S.A. to England on 10 meters again makes this mode of transmission a topic for discussion among amateurs. The loss to U.S. hams of 11 meters, the only low-frequency band permitting facsimile operation, did much to dampen the enthusiasm with which the original QST articles on the subject were received. A number of equipment projects, begun by U.S. amateurs, never got beyond the first stages. There was interest in other parts of the world, however. Early experiments by members of the British Amateur Television Club in recording TV on tape had introduced slow-scan to that group, and the prospect of world-wide visual communication on the ham bands set several members to building equipment. In Argentina, the publication Revista Telegrafica Electronica printed a Spanish translation of the QST articles.

Since most of the slow-scan activity is among BATC members, a word about that organization is perhaps in order here. Close to 600 members in about 20 countries comprise the membership of the BATC. Activity is primarily in the fields of 420 Mc. TV transmission and closed-circuit work, although color TV and now slow-scan have captured the attention of some. Information is spread via CQ-TV, the club magazine, and by tape recordings between individuals and club groups. Actually, it is the prospect of sending tape-recorded images that is responsible for much of the present slow-scan interest among members. Bill Stapleton of Dublin successfully recorded slow-scan on tape some three years ago. John Plowman, G3AST, and C. Grant Dixon, chairman of the BATC, have slow-scan monitors in operation; many others have equipment under construction. At the Radio Hobbies Exhibition held in London last November, the BATC had a slow-scan display in which a tape recorded by WA2BCW was played back through G3AST’s monitor. Approximately 1500 information sheets on the subject of slow-scan were given out to visitors, and a great deal of interest was aroused.

Transatlantic Tests

Since no serious long-distance tests of the slow-scan system had been made, and since G3AST had a monitor in operation on the other side of the Atlantic, the FCC was requested to permit a series of tests on 10 meters. Permission was granted and one-way transmissions were made on week ends from November 21, 1959, through December 20, on 29.500 Mc. The bandwidth of the emissions was limited to 6 kc, as required in the FCC authorization. The transmitter at WA2BCW was a much modified BC-458 running

As reported in March QST, the first successful picture transmission across the ocean by amateur radio was achieved toward the end of 1959. The narrow-band system used was that devised by Cophthorne MacDonald and described by him in QST a little over a year ago. This is the story of what has been happening with “slow-scan” in the interim.

BY COPTHORNE MACDONALD*
WA2BCW

*81 Winstead Circle, Elmira, New York.
25 watts input. The antenna was a three-element beam, about 25 feet high, pointed toward England. The slow-scan equipment used throughout the tests by WA2BCW was that described in the original QST articles, and the output of the unit was fed into a conventional plate modulator which modulated the transmitter 100 per cent during sync pulses. Picture black level was set at 50 per cent of sync level, and white level was set at zero. A test pattern with call letters and resolution wedges was transmitted, and a voice announcement was made at ten-minute intervals. W1AW publicized the tests, but with such low power at WA2BCW and with the antenna pointing in the wrong direction for good reception in this country, it is doubtful if many U.S. amateurs were able to receive the slow-scan signals.

At the receiving end in Yeovil, England, G3AST used an Eddystone 8640 receiver (one r.f. stage, two i.f. stages) with a dipole antenna. The headset output of the receiver was fed into a home-built tape recorder. Reception was attempted on seven days of the test period, but the slow-scan signal was audible on only two of these days, November 22 and December 20. Coincidentally, these were the only two test dates when the WWV North Atlantic propagation forecast rose as high as "7", a propagation forecast of "Good" conditions. November 22 was the first day that a picture was resolved, and the picture made from John Plowman's tape appeared in March QST. He says of conditions that day, "... Reception on the 10-meter band was average or a little below. Characteristic heterodynes were apparent and fading was rather heavy ... . The signal level at approximately 3 P.M. was yielding a recognizable picture." Since there was no two-way communication during the tests it was impossible to avoid QRM by shifting frequency, and heterodyne interference proved to be a primary cause of picture degradation.

G3AST described conditions on December 20 as, "... easily the best in the whole period ...", and pictures of quite acceptable quality were reproduced from G3AST's tape. The bearing seen in the picture as it appeared on G3AST's monitor is a result of the sensitivity of his biased diode sync separator to variations in sync pulse amplitude. A test on the QST equipment revealed that the input level could vary over a 26-db. range without losing sync, providing the rate of change did not exceed a few db. per second. A variation of about 9 db. occurred during the frame photographed, and this was more than could be handled by the biased diode. This experimental use of different circuits is a good thing since it reduces the time required for the "optimum" circuit to come to light.

The transatlantic tests were certainly a success since they showed that slow-scan can be transmitted over long distances via ionospheric propagation with little picture degradation. Heterodyne interference and signal fading seem to be the two major problems, but even the simplest equipment was shown to be capable of producing satisfactory pictures during periods when these conditions are not severe. Application of the past 20 years of TV experience in the design of sync and a.g.c. circuits, and possibly the use of subcarrier frequency modulation (s.c.f.m.) instead of the present subcarrier amplitude modulation (s.c.a.m.), should lead to equipment capable of producing usable pictures even under adverse conditions.

Equipment

The QST equipment has been in use for the past two years with no component failures; this included eight-hour periods of continuous operation during the transatlantic tests. One modification has been made: this was the installation of a black-level limiter so that the black level would not have to be reset with a scope after each slide was changed.

The conventional cathode-ray tube with P7
phosphor remains the most popular slow-scan display device. Tubes such as the 3FP7 and 5CP7 are still available on the U.S. surplus market at low prices. Those tubes provide adequate brightness and persistence characteristics when used with a viewing hood or in a dimly-lit room, and have good gray-scale rendition. A greenish-yellow filter such as the Wratten 15G is to be preferred over the dark orange usually used with P7 tubes in radar applications. The orange filters unfortunately remove part of the useful long persistence brightness in the process of eliminating the blue flash. The 5FP7 was used by Grant Dixon in his monitor. This tube permits the use of 10 kv, or so to gain brightness, but has the disadvantage that magnetic deflection is required. The usual low-impedance TV yokes require up to an ampere or so of current for full deflection, and since transformer coupling is not practical at very low sweep rates, this high current must be obtained directly from tubes or power transistors. Grant Dixon is using a transformer to drive the horizontal coils by using an output transformer with a "large core" (high inductance, good low-frequency response) a.c.-coupled to a 6V6. The current for the high-impedance (750 ohms) vertical yoke winding is obtained from a 6V6 cathode follower.

The amateur slow-scan display device of the future is apt to be the direct-view storage tube, but unfortunately for the amateur these tubes have kilo$ price tags today. A slow-scan receiver was built around one of these tubes by WA2BCW, and the tube's performance was evaluated in slow-scan operation. Among the tube's advantages are a bright image with a persistence which can be adjusted from a fraction of a second up to a minute or so. It is also possible to improve the signal-to-noise ratio in the received picture by taking several frames to "write" the picture. (The signal adds coherently since the light and dark portions of the picture occur in the same place each scan, while the noise, being random, does not add coherently.) On the debit side is the equipment complication: an erase pulse generator and an additional high-voltage power supply are necessary, and the tubes have relatively poor gray-scale rendition.

The flying-spot scanner continues to be the most popular image pickup device for slow-scan use since it provides good image quality at low cost. Two basic scanner configurations are shown in Fig. 1. The version in use at WA2BCW uses a photographic negative placed between the scanner c.r.t. and the photomultiplier tube. The version planned by the British slow-scanners is more versatile, even if slightly more complicated. In this unit the master on the c.r.t. is focussed by a lens onto an opaque picture. The light reflected by the light and dark areas as they are scanned is picked up by the photomultiplier tubes. Two photomultipliers are used to give uniform output as the whole area is scanned. A big advantage of this configuration is that it permits the transmission of sketches, for example, seconds after they are drawn. The P7 c.r.t. does double duty in Britain as it is also used as a flying-spot scanner tube. A blue filter is not usually used since the long-persistence yellow component is not as bright as the short-persistence blue component, and is a poorer spectral match for the 3S1-A photomultiplier.

The ultimate slow-scan pickup device is probably the WL-7290 slow-scan Vidicon. The price will keep it out of most ham shack, but its performance characteristics are worthy of mention. The tube gives excellent low light level performance when continuously exposed, but its ability to operate with intermittent exposure is parti-
larity interesting. Since the target has a much higher resistivity than that of a conventional Vidicon, the electrical image pattern produced on the target by a momentary exposure to light will remain for many seconds unless removed by the scanning beam. In this mode of operation, then, the tube can be exposed for a fraction of a second during the retrace period and scanned while dark, thus effectively freezing any motion. A moving object would be presented as a series of
“stills.”

Conventional Vidicons have also been used in slow-scan operation although they require continuous exposure to a still scene because their low-resistivity targets makes the storage time very short. It is of interest that BATC members are able to obtain reject Vidicons of the conventional variety, complete with scanning coils, for only 25 pounds (about $75), and export from Britain to all but Iron Curtain countries is possible. The Vidicons are sold with the understanding that they will never find their way into commercial use. A slow-scan Vidicon camera has been built by WA2BCW, and control circuits are “in the works.”

Regulations

Slow-scan’s natural home is the region below 30 Mc, where ionospheric propagation makes regular DX transmission of pictures possible. The loss of 11 meters left the U.S. without a low-frequency facsimile assignment, but FCC docket 12012, inquiring into the status of the Extra Class license, created an opportunity to suggest a possible method for obtaining low-frequency slow-scan authorization. The author’s proposal to the FCC in response to its request for Extra Class license suggestions recommended that Extra Class licensees be permitted to use slow-scan and conventional facsimile in all phone bands, pointing out that if the bandwidth of the emission was restricted to that of a phone signal, it should not cause objectionable interference to other amateurs; furthermore, the Extra Class licensee has demonstrated a high level of technical ability, and should be capable of seeing that his bandwidth is kept within the prescribed limits.

The British situation is also in a state of suspension awaiting a decision; in this case by the British General Post Office, on C1AST’s request to use slow-scan on 2 and 10 meters, with a proviso that consideration also be given to authorizing slow-scan in other bands below 20 Mc.

The regulatory picture world-wide is not known to this writer, but it is possible that the rules of some countries already permit this mode of operation on the lower frequencies.

Standardization

The standardization question has two sides to it. On the one hand, the man who is thinking of building equipment wants a measure of assurance that his equipment will not be obsolete as soon as it is built. On the other hand, in the long-range picture it would be a shame to settle on less than the best possible system, the “best” in this case being an optimum compromise between many factors. At this early stage in the development of amateur slow-scan it would be unwise to set up rigid standards, since there has been insufficient experimentation to determine a “best” system. There are certain guiding principles which can be stated at this time, however.

1) A system should utilize the transmitting and receiving apparatus in the amateur station, and should not require any modification of this equipment.

2) A system should permit the use of simple equipment using low-cost, readily-available components.

3) The system performance should be good, even with simple equipment, when conditions are good, and by using more sophisticated equipment it should be possible to get satisfactory results under poor conditions.

4) The system should be compatible with both 50- and 60-cycle power frequencies to permit world-wide operation.

Fortunately, the basic elements — a long-persistence cathode-ray tube, sweep amplifiers, a flying-spot scanner, and power supplies — are common to all slow-scan systems. It is with the method of modulation and demodulation, sweep rates, sync, and a.g.c. that variations are apt to occur. The builder may want to make these circuits flexible since they are apt to change as the “best” system develops. Actually these circuits represent a relatively small fraction of the total investment, and their modification should involve no great expense.

The “on-the-air” work so far has been with the system outlined in August, 1958, QST. Operation with these sweep frequencies and other parameters will bring one in line with current practice.
There is some doubt about whether an s.c.a.m. system, such as that now in use, can ever be as free from the effects of fading as s.c.f.m., regardless of the type of a.g.c. employed, and WA2BCW is readying equipment to perform tests on an s.c.f.m. system similar to that used successfully in commercial facsimile practice. F.m. systems with small deviation are more susceptible to heterodyne interference than a.m., however, and care must be used in establishing parameters to insure that immunity to fading is not traded for a poor signal-to-interference ratio. Amateurs interested in participating in further slow-scan tests may contact WA2BCW.

Two systems will probably emerge. The first will be a system for the amateur bands. The maximum frequency involved will be 3 kc. or less, and the picture will contain about 120 lines. A second system, having a higher-resolution picture and requiring greater bandwidth, will be used for tape recording images when it is not necessary to transmit the image over the air.

Thanks are extended to John Plowman, G3AST, C. Grant Dixon, and John Tanner, G3NDT/T, for much of the material used in this article, and for additional interesting material on British TV activities, which, from space considerations, was not included. If QST readers show interest, certainly there will be more articles on TV and slow-scan in the future.

Amateurs interested in WA2BCW’s slow-scan transmission system (see article above) will have an opportunity to copy some experimental transmissions over the First Army MARS SSB Technical Net on March 16, March 30, April 6, and April 13 on the net frequency of 4030 kc. The transmission will follow the regular technical program, which usually ends between 2200 and 2230 EST. The test signal will first be sent on s.s.b. and then repeated on a.m. The signal can be recorded on magnetic tape for later transcription. WA2BCW will transcribe for you if you send him your tape.

Charles White of 6024 Rock Road, S.E., Washington 22, D.C., writes: Our electrical hero, unable to resist symmetrical neatly-drawn circuit diagrams, tried to find the output voltage, $E_{out}$, by forming the product of $(i_1 - i_2)$ times one ohm. He had difficulty. How about you?

April 1938

... The April, 1935, issue featured articles on transmitter construction. Don Mix led off with an explanation of how to get a kilowatt from a high-power band-switching 204-A mudder requiring only 50 watts for excitation.

... Other technical articles explained how to step up the output of the high-stability 56-kic. transmitter ... construction of a compact 200-watt transmitter ... practical operation of transmitting antennas ... modernization of a popular low-power 1929 transmitter ... and construction of an RX-20 Tri-tet transmitter for three-band operation.

... This was the issue that carried one of the best fiction pieces in QST history — W4VT's tale of little Jim.

... Op News debunked the idea that "73" originated as a salute to Andrew Carnegie at a banquet celebrating his 73rd birthday in 1898. Not so, said the note — 73 was one of 92 expressions worked out in 1859 by telegraph people trying to save line time. Most of those figures have fallen into complete disuse after 100 years, but 73 is still going strong.

QST Quiz

The black-box problem of last month requires the help of one resistor from the junk box. All our hero has to do is to connect (momentarily) the box as shown below. No meter reading indicates the absence of the 1-ohm resistor; a meter reading of 1 to 0.1 ma. (depending upon the series resistor) proves the presence of the 1-ohm resistor.

Charles White of 6024 Rock Road, S.E., Washington 22, D.C., writes: Our electrical hero, unable to resist symmetrical neatly-drawn circuit diagrams, tried to find the output voltage, $E_{out}$, by forming the product of $(i_1 - i_2)$ times one ohm. He had difficulty. How about you?

40 QST for
An appropriate title for the units pictured would be a “cubic-foot QSO” — the receiver-transmitter combination offers v.f.o. control and 80-through 10-meter operation, yet the total volume occupied by both units is a mere cubic foot. The transmitter and receiver, although primarily designed to be used mobile, also comprise a very compact and flexible home station. The manufacturer, more than likely having this in mind, makes available two different types of power supplies: one a conventional 115-volt a.c. supply for home installations and the other a 12-volt d.c. transistorized supply for mobile operation.

Comanche Mobile Receiver

The Heathkit MR-1 mobile receiver is a single-conversion amateur-band superheterodyne using a bandpass crystal filter in its 3-Mc. i.f. amplifier. It is designed for reception of a.m., c.w. and s.s.b. signals on all amateur frequencies from 3.5 to 30 Mc. The block diagram of the receiver is shown in Fig. 1. The front end uses a 6BZ6 r.f. amplifier, and this stage is followed by a 6EAB, the pentode section of which is the mixer and the triode section the high-frequency oscillator. The high-frequency oscillator and mixer tuned circuits are tracked to give an i.f. output frequency of 3 Mc.

The complete Heathkit mobile installation, including receiver, transmitter, speaker, microphone, and transistorized power supply. The mounting rack, bolted to the back of the receiver and transmitter, is partially visible at the top of the receiver-transmitter assembly.

The output of the mixer goes into the 3-Mc. crystal filter, which has a bandpass characteristic 3 kc. wide at 6 db. down and a maximum width of 10 kc. at 60 db. down. The crystal filter contributes the receiver’s adjacent-channel selectivity and the high intermediate frequency takes care of image rejection. After the crystal filter,

Fig. 1 — Block diagram of the Comanche receiver.
Top view of the Comanche receiver chassis. Tubes from panel to rear and from right to left in this view are: front row, the 6T8 first audio-noise limiter-a.m. detector, 6BE6 product detector, and 6AQ5 audio output; second row, 6EA8 second i.f. amplifier—S meter amplifier, 6BZ6 first i.f. amplifier, 0A2 voltage regulator; third row, 6EA8 mixer—h.f. oscillator, 6BZ6 r.f. amplifier. The i.f. coils, in small shield cans, are at the upper right. The crystal filter is at the center.

Another 6BZ6 is used as the first i.f. amplifier, and the output of this stage is impedance-coupled to the second i.f. amplifier, the pentode section of a 6EA8. The output of this tube is impedance-coupled to the detectors. Automatic gain control is applied to the r.f. stage and both i.f. stages when the a.v.c. switch is in the “on” position. With the a.v.c. “off,” both i.f. stages are operated at maximum gain, with the manual r.f. gain control operative only on the r.f. stage. The triode section of the 6EA8, with the a.g.c. voltage applied to its grid, is used to drive the S meter.

A choice of detectors is available. A 6T8 is used as a conventional diode detector for a.m., as a series noise limiter, and as the first audio amplifier. A 6BE6 product detector is used for c.w. or s.s.b. reception, generating its own b.f.o. signal with a circuit resembling the type used for frequency conversion, as shown in Fig. 2. The audio output of the detector in use goes to the first audio amplifier, the 6T8 triode section, and thence to the 6AQ5 output stage. The 6AQ5 is transformer-coupled to an external 8-ohm permanent-magnet speaker.

An 0A2 regulator is incorporated to supply a constant voltage to the high-frequency oscillator and other critical circuits.

As shown in the bottom view of the receiver, the tuning mechanism uses five gears. The tuning capacitor drive gear is spring loaded to prevent backlash. Band calibrations are on a plastic cylinder which rotates into proper position behind the rectangular Lucite window in the panel when the band switch is turned. The dial drum is string driven from the band selector switch. The slide-rule dial pointer is also string driven from a large pulley located on one of the gear shafts. The dial scale is approximately five inches long, and thirteen rotations of the tuning knob are required for covering each band. The dial is calibrated every 20 kc. on 10 meters and at 10-ke. intervals on the rest of the bands. If more accurate frequency interpolation is desired, the flat dial pointer can be given a half twist at the time of assembly, so that its edge is perpendicular to the dial drum.

Assembling a kit of this sort is definitely not an undertaking for the beginner or inexperienced constructor. However, anyone who has previous kit-building experience under his belt and is willing to follow the well-laid-out and detailed construction manual can come up with a very satisfying finished product. Wiring of the r.f., high-frequency oscillator and mixer coils in the front end must be completed before the band switch is installed, since the coils become fairly inaccessible afterward. Because of the confined quarters, use of a pencil-type iron is highly recommended.

Alignment of the finished receiver requires an accurate signal generator, or a frequency meter such as the LM or BC surplus series. Included with the kit is the required alignment tool and a soft plastic nut starter which is an invaluable aid in starting nuts on screws in tight spots.

In the unit this reviewer constructed, the r.f. stage was slightly regenerative at maximum gain setting; however, this was readily cured by...
buffer stage is untuned on 80 meters, slug-tuned to 40 meters for operation on 40, 20, and 15, and slug-tuned to 20 meters for final output on 10 meters. The driver is straight-through on 80 and 40, doubles to 20, triples to 15, and doubles to 10 meters. Pi-network interstage coupling is employed between the driver and the final stage, and the correct coil tap is selected by the exciter-section wafer of the band switch. The final amplifier tank is a pi network, shunt-fed through a 2.5-mh. r.f. choke. For c.w. operation the buffer and v.f.o. run continuously, with the final amplifier and driver cathode-keyed. The metering circuit in the transmitter can measure either final amplifier grid current or final amplifier cathode current.

The modulation system is similar to that in the DX-35 and DX-10 transmitters, using a triode as a series screen modulator. The modulator tube in the Cheyenne is the “heavy” triode section of the 8DE7. As in the earlier transmitters, the modulator’s average plate current is adjusted, by means of a control tube which responds to the average speech level, to vary the r.f. carrier level to correspond to the modulating level. The “light” section of the 8DE7 is used for this purpose. The speech amplifier preceding the modulator and control tube is a cascade resistance-coupled affair using a 12AX7.

Many of the mechanical details in the Cheyenne are similar to or identical with those in the Comanche mobile receiver. Both the dial drive arrangement and front panel are alike. The dial length and frequency calibration are also the same—that is, 20 kc. per division on 25 Mc.

Cheyenne Mobile Transmitter

The Heathkit MT-1 mobile transmitter is a v.f.o.-controlled all-band (80 to 10 meters, inclusive) rig with a built-in controlled-carrier modulator. Referring to the block diagram, Fig. 3, it can be seen that the r.f. tube lineup is fairly conventional, with a 6AU6 v.f.o., 6CL6 buffer, 5763 driver, and 6146 final. The audio section has a 12AX7 speech amplifier and 6DE7 screen modulator. The controlled-carrier screen modulation system permits peak-envelope inputs up to 90 watts, which should result in an effective maximum carrier output of about 30 watts at 100 per cent modulation.

The v.f.o. is a series-tuned Colpitts circuit with output on either 1.75 or 7 Mc., the proper range being internally selected depending on the setting of the transmitter band switch. A spotting switch arrangement allows the v.f.o. to be turned on for frequency checking prior to putting the transmitter on the air. The v.f.o. screen and plate voltages are regulated by an 0.2 tube. The
and 10 kc. per division on all other bands.

The v.f.o. is completely shielded, and power connections are brought out through feed-through bypass capacitors. The buffer, driver and amplifier stages are isolated from one another by rectangular shield plates, minimizing stray coupling between stages which could result in instability. The plate tuning capacitor, mounted above the chassis beside the 6J146, is driven by a right-angle gear arrangement. The loading capacitor, underneath the chassis at the rear, is also driven by a set of right-angle gears.

All control switching, including antenna changeover from receive to transmit, is handled by an internal relay. Power input and output receptacles are mounted at the back of the chassis, and are wired for the compatible Heathkit power supplies (MP-1 and UT-1) and Comanche receiver. Included with the transmitter is a ceramic-type push-to-talk microphone.

Power requirements for the Cheyenne are 300 volts d.c. at 100 milliamperes, 500 to 600 volts d.c. at 150 ma., and either 12 volts at 2.35 amperes or 6.3 volts at 4.7 amperes. The finished unit weighs 15½ pounds and measures 6½ inches high, 12½ inches wide, and 915/16 inches deep. Total construction time in our case was approximately 28 hours.

Transistorized Mobile Power Supply

The Heathkit MP-1 transistorized power supply was designed primarily to furnish all the necessary power to the Heathkit mobile transmitter and receiver units. This supply is the usual transistor type having a feed-back winding on the power transformer to set the transistors into oscillatory switching, as has been described several times in recent issues of QST. However, the rectifier-filter arrangement differs from most of those previously described in using a full-wave voltage doubler circuit rather than a center-tap or bridge rectifier. This is apparently a matter of economics, primarily; the doubler circuit requires only half the number of semiconductor rectifiers that would be needed with either the center-tap or bridge circuits to deliver the same output voltages. (This is because the peak inverse voltage on each rectifier group is twice as great with either of the latter rectifier circuits.) The circuit is shown in Fig. 4. The 100-ohm resistors between the first and second filter capacitors in each leg add considerably to the ripple attenuation since they represent about 20 times the impedance of the 40-µf output capacitance at the 800-cycle ripple frequency.

The pilot lamp across the 20-ohm resistor serves as a current indicator, lighting up to about normal brilliance at the maximum permissible current drain on the supply. A 1000-µf electrolytic capacitor is connected directly across the battery at the primary input side of the supply to bypass the battery circuit and prevent the 400-cycle hash from feeding back into the transmitter and receiver. There is also a self-contained control relay for turning on
the supply, operated by the auxiliary control circuits in the mobile transmitter and receiver. A manual toggle switch on the chassis offers an alternative means for turning on the supply. The 12-volt primary circuit is protected by a 15-ampere fuse.

After constructing the power supply unit it would be wise to check the relay contacts with an ohmmeter before applying power. In the unit constructed here these contacts were covered by some type of insulating coating which had to be cleaned off before the supply would function.

Power specifications of the supply are as follows: Input voltage 12 to 14 volts; input current, 4.5 to 15 amperes (varies with load); maximum output power, 120 watts. This maximum power may be taken from either tap alone or distributed as desired between the two taps. In the transmitter-receiver combination the distribution is 90 watts from the high tap (600 volts at 150 ma.) and 30 watts from the low tap (300 volts at 100 ma.). Over-all dimensions are 9 3/16 by 4 3/4 by 5 1/6 inches. The total weight is 5 lb. 8 oz. Total construction time was approximately 6 hours.

Mobile Accessories

Optional accessories styled to match the receiver, transmitter and power-supply units include a 5-inch speaker (AK-7) to be used in conjunction with the receiver, and a mobile mounting base (AK-6) which is designed for mounting of the mobile transmitter and receiver on the transmission hump of the car floor. Also available is an all-band mobile antenna (KM-1). The manufacturer is the Heath Company, Benton Harbor, Michigan.

K. C. L.

#Strays#

Hams interested in good-paying jobs with generous vacation, sick leave and retirement should investigate the civilian positions of electronic inspectors for the U. S. Navy. Write to Executive Secretary, Board of U. S. Civil Service Examiners, 17 Brief Avenue, Upper Darby, Pa., for application form 5000-AB. Applicants are graded on written examinations plus experience.

A couple of novel QSOs. On aurora the other night K1IJK worked K8III and W8MMM, both of whom are in Novelty, Ohio.

W6TKV gave a call on 80 c.w. the other night and who should answer but W7TKV from Boulder City, Nev., who said he used to be W6TKV back before World War II. The present W6TKV uses a ten-meter dipole for an antenna.

W9DBO's post office box number is 73!
Design and Construction of Transistor Power Converters

There has been a growing interest in transistorized power converters for mobile operation, because they are more efficient, more reliable, and can have less noise and ripple than either a vibrator type or a dynamotor. Over the past two years many articles on transistorized power converters with emphasis on the theory of operation have been published. This paper is primarily intended to facilitate both calculations and construction. The following is a collection of design approximations and formulas suitable for an initial design. The major problems considered are core selection, transformer design and winding, feedback and bias design, and heat dissipation.

Core Selection

The first problem to consider in designing a power converter is the selection of a transformer core. The selection of the core is controlled by several related variables, namely: saturation flux density, core area, available winding space and frequency. For a high-power converter—100 watts—all of these must be considered but among them, available winding space is most important. Both the primary and secondary windings occupy a substantial volume; the primary has few turns of large wire and the secondary has many turns of small wire. The author has used successfully a toroidal core which has an inside diameter of 1.25 inches for a 100-watt converter. Any one of a variety of core materials which have

\[ N_p = \frac{V_i \times 10^5}{12.9fA} \text{ turns} \]

Secondary: \[ N_s = \frac{N_pE_o}{2V_i} \text{ turns} \]

where: \( N_p \) = total turns in primary winding
\( A \) = cross-sectional area of core in square inches
\( V_i \) = d.c. input voltage
\( f \) = operating frequency in cycles per second
\( B_s \) = saturation flux of core in gausses
\( N_s \) = secondary turns
\( E_o \) = peak-to-peak output voltage required from transformer

A practical procedure for determining the number of primary turns is to work experimentally, using the formula as a check. First choose a wire size that will handle the current (see wire table in The Radio Amateur’s Handbook). Then wind the maximum number of turns that will fill the inside circumference of the core following the
The transformer is not visible in this view, being mounted on the other side of the phenolic board that holds the silicon rectifiers and the bias resistors. The high-voltage bleeder resistors are at the lower left, between the filter capacitors and the output socket. The control relay is in the upper right corner.

Fig. 1—Transformer winding details.

The procedure described below. Next, the formula may be used to find the expected frequency. This frequency should not be so high that the transistor switching times are an appreciable part of the cycle nor should it be too low since this will cause excessive copper losses. A frequency of about 1000 c.p.s. is optimum for most power transistors. If the calculated frequency is very much different from this the number of primary turns should be changed.

To protect the first layer of the winding, first wrap the core with Scotch electrical tape (acetate cloth) overlapping each turn about half the width of the tape on the inside surface of the core. Wind the primary first (Fig. 1). This winding must be bifilar to effectively eliminate spiking. To start, bend a 90-degree angle approximately 3 inches back from the ends of a pair of No. 14 Formvar wires. Insulate the two leads up to the first bend to protect against mechanical damage. Tie the two leads snugly to the core (Fig. 1). Proceed to wind the primary by keeping the wires tight, and square off the turns around the core. Finish the windings the same as they were started — i.e., the same insulation, tying, and so on. It is necessary to distribute the winding evenly around the inside circumference of the core for further suppression of spiking. Cover the entire primary winding with 1/2-inch wide crepe-paper tape.

To wind the secondary, a shuttle must be made. A Popsicle stick with a V cut in both ends makes an excellent shuttle. The shuttle will not hold enough wire to wind the complete secondary, so splices will have to be made. The supply can be made more versatile by making use of the splice points for output taps. For the first three or four times around the core, the secondary turns will lie between the primary wires on the outside circumference of the core. After that, the core should take a smooth doughnut shape. Finish by covering the windings with 1/2-inch crepe-paper tape.

Feedback and Bias

Feedback and bias are very closely interrelated. Fig. 2 shows a simplified feed-back and bias network for the common-emitter configuration. Note that $R_1$ and $R_2$ form a voltage divider that lowers base bias to enable oscillations to start. Note also that $R_1$ is in series with the feedback windings. To compute the number of turns in the feed-back winding and the values of $R_1$ and $R_2$, proceed as follows: First choose the ratio...
of feedback to primary-winding turns. A good approximation is \( \frac{1}{2} \) to \( \frac{1}{6} \). Then, for example, if \( N_p = 36 \) turns,

\[
N_{AA'} = \frac{1}{6} \times 36 \quad \text{(where } N_{AA'} = \frac{1}{2} \text{ total feedback turns)}
\]

\[
= 7 \text{ turns, approximately}
\]

\[
V_{AA'} = \frac{N_{AA'} \times 2 V_a}{N_p}
\]

\[
= \frac{7 \times 24}{36}
\]

\[
= 4.7 \text{ volts}
\]

To continue the calculation, it is necessary to know the base voltage vs. collector current and base current vs. collector current characteristics of the transistor (Fig. 3), which may be obtained from the transistor manufacturer. From these curves we obtain the base voltage and current required for the desired power output. For a Deleo 2N441, assuming a collector current of 12 amperes to get the required 100-watt output,

\[
V_B \text{ required } = 1.1 \text{ volt}
\]

\[
I_B \text{ required } = 1.1 \text{ amp.}
\]

Therefore

\[
V_{R1} = V_{AA'} - V_B \text{ req.}
\]

\[
= 4.7 - 1.1
\]

\[
= 3.6 \text{ volts.}
\]

\[
R_1 = \frac{V_{R1}}{I_{R1} + I_{R2}}
\]

where \( I_{R2} = \frac{1 - I_B}{10} \)

for proper cold starting. Therefore

\[
R_1 = \frac{3.6}{1.1 + 0.1}
\]

\[
= 3 \text{ ohms}
\]

\[
R_2 = \frac{V_a - V_{R1}}{I_{R2}}
\]

\[
= \frac{12 - 3.6}{0.1}
\]

\[
= 84 \text{ ohms}
\]

A resistance of 100 ohms would be satisfactory, since the value of \( R_2 \) is not highly critical.

**Temperature and Heat Sinks**

It is necessary to provide a heat sink of the proper size to dissipate the heat developed at the collector junction. The chassis itself may be used for this purpose. The collector junction power, the maximum rated junction temperature, the thermal gradient, and the temperature drop from mounting base to heat sink (see Fig. 4)

![Fig. 4—Schematic representation of heat dissipation of transistor on heat sink.](image)

must be obtained from the manufacturer's data for calculating heat-sink area. The procedure is as follows:

1) **Thermal Gradient (Deleo 2N441)**

   Gradient from junction to mounting base (\( R_2 \))

   \[
   = 1.2^\circ \text{C.}/\text{watt}
   \]

   From base to mounting \( = 0.2^\circ \text{C.}/\text{watt} \)

   Through mica washer \( = 0.5^\circ \text{C.}/\text{watt} \)

   Therefore the total thermal gradient

   \[
   = 1.9^\circ \text{C.}/\text{watt.}
   \]

2) **Collector Power**

   The measured power dissipated in one transistor while turned on was measured to be 8.5 watts (0.7 volt at 12 amp.). Because each transistor works half the time, this is also the average power for both transistors.
3) The temperature drop from collector junction to heat sink is therefore:

\[ 1.0^\circ\text{C.}/\text{watt} \times 8.5 \text{ watts} = 10^\circ\text{C}. \]

4) If the maximum rated junction temperature is 85 degrees C., then the thermal resistance required of the heat-sink area is

\[ \text{coll. temp. drop - temp. drop - air temp. of heat sink} \]

\[ \text{collector power to be dissipated} \]

\[ 85^\circ\text{C.} - 10^\circ\text{C.} - 45^\circ\text{C.} \]

\[ 8.5 \text{ watts} \]

\[ = 2.8 \text{ deg. C.}/\text{watt}. \]

The heat-sink area may now be determined from a curve of temperature vs. area (Fig. 5)

---

**Fig. 5—Thermal resistance of 3/32-inch aluminum sheet.**

---

**A 120-Watt Converter**

Fig. 6 shows the circuit diagram of a converter designed to deliver 120 watts output, ICAS rating. Output power vs. efficiency and voltage are shown in Fig. 7. One method of checking the performance is to take a load curve. If all components—transistors, primary wire, secondary wire, and rectifiers—are within their maximum current ratings there should be no significant drop in efficiency at high power levels. If the efficiency curve begins to drop off at or near the power that the converter is expected to deliver, an optimum design has not been achieved and a dangerous heating condition may exist: the transistors are not driven into complete saturation and are absorbing an excessive portion of the input power. A decrease in the value of \( R_1 \) usually will correct this condition.

---

**Fig. 6 — Circuit of 120-watt power supply.** Resistances are in ohms.

- **CR₁, CR₅, inc.**—Silicon rectifier, 500 ma, 400 volts inverse peak (Sarkes Tarzian M-500).
- **J₁, J₅—Contact male chassis-mounting connector (Jones).**
- **J₂—Chassis-mounting connector, female, 4 or more contacts (Jones).**
- **K₁—S.p.s.t. relay, 12-volt coil, 15-20 amp. contacts** (Potter & Brumfield MB series).
- **Q₁, Q₂—P-n-p power transistors, 13 amp, 40-volt breakdown (2N441).**
- **R₁—3 ohms, 10 watts.**
- **S₁—Rotary, 1 section, 1 pole, 6 positions.**
- **T₁—Wound as described in text on core shown above.**
  - Primary, 36 turns No. 14 Formvar, center-tapped; secondary, 900 turns No. 26 Formvar, tapped at 400, 500, 600, 700, and 800 turns; feed-back winding, 15 turns No. 26 Formvar, center-tapped.
Fig. 7—Power output, output voltage, and supply efficiency of the transistor power-supply circuit shown in Fig. 6.

Because of the bifilar winding of the primary, no spike transients occurred in the design during the turn-off and turn-on of the transistors. This enabled good performance to be obtained with transistors having a 40-volt breakdown rating. Construction of power converters would be an excellent club project. Items such as the acetate tape, crepe-paper tape and wire could be used more efficiently. Transistors, cores and diodes can be bought in volume much more cheaply, thus making the cost of such a project well below commercial prices.

**Strays**

K4EEU has had numerous inquiries concerning his Phasing-Type Sidebander (November, 1959, QST, p. 15), especially about the round object circling T1. This is a magnetic shield constructed from a piece of pipe, and was eliminated in a second model merely by moving the bias power transformer T1 a few inches further toward the rear of the chassis. K4EEU will furnish a ¼-scale layout print of the front panel and chassis, at his cost of $1.00, which clarifies some of the constructional details. With this print he also includes some mimeographed data on typical r.f. voltage readings.

Referring to the first Stray on page 63 of February QST, W9QGV now tells us that the two tapes he donated to the Voicereportent Club cannot be copied for non-members of the Club, sightless or otherwise. But, W9QGV will try to arrange for the sightless to get free copies of these two tapes if they will contact him first by tape or letter. Don’t send any more inquiries direct to the Mr. Griffith mentioned in the original Stray. That gentleman was swamped with requests.

Have any old political campaign buttons or badges, or other souvenirs of presidential election campaigns in the United States? Contact K2TMIJ, who has a prize-winning collection.

K1JFF had been working toward WAS, WAVE, and WAC for two years, and still needed two states, a VE7, and an Asian. On three successive nights he worked the two missing states, the VE7, and a KR6, and it was the first time he had even heard any of these prefixes!

The Army’s Deputy Chief Signal Officer, Earle F. Cook, W4FZ, was recently promoted to the rank of major general.

The Franklin Technical Institute Radio Club has learned that there is a Santa Claus, WINWO has just donated to the Club his entire station, consisting of a.m./s.s.b. kilowatt transmitter and 75A-4 receiver. Incidentally, the Club gives code and theory classes each week, and further information on these could be obtained by contacting W1QZF.

Thirty-five years service was the record rung up by Communications Manager F. E. Handy, W1BDI, on February 20 of this year, it having been that number of years since he first reported to the Headquarters as Acting Traffic Manager.

QST for
Announcing the formation of

LARSEN E. ENTERPRISES, INC.

"Servicing the amateur from coast to coast"

To borrow a slogan from our favorite radio magazine, we are "devoted entirely to amateur radio." We will not sell to anyone who is not a licensed radio amateur, except at list prices. As the authorized dealer for every manufacturer in the world, we stock only the finest equipment in every price range.

You are invited to park your car free in our spacious lot at the rear of the west wing, just off Route 128. If you fly in, avail yourself of the facilities on the landing strip, and our smiling pilot will be pleased to bring you without delay to our heliport on the roof. However you travel, a short escalator ride brings you to our SHACK OF TOMORROW, where the latest in new transmitters and receivers are on display and ready for your personal tests and comparisons. Any normal questions you may have will be cheerfully answered by our college-trained hostesses; sticky questions of a highly technical nature will be referred to the proper Resident Field Engineer. Ask to see the revolutionary QS-59 receiver, which O.S.T. calls "one of the best-kept secrets of the radio industry" (April, 1959, page 67).

The budget-conscious amateur is invited to use the Family Entrance to our GIVEAWAY SALON, where we feature the finest in slightly-used equipment. Every transmitter, receiver, beam and tower on display in this department has been brought to better-than-new perfection by our graduate engineers, and only factory-authorized parts and test procedures are used for the purpose.

The do-it-yourself amateur will find a wide variety of kits on display in the KIT CABIN in the east wing. We include free with each kit purchase the full use of our WONDER WORKSHOP, with tools, free solder, air conditioning and helpful advice by the KIT COUN-

SELOR. If you don't have the time to assemble the entire kit yourself, one of our engineers will be glad to do it for you, just for the pleasure it gives him. No tipping, please.

When you have made your selection, one of our constant attendants will be pleased to introduce you to our CREDIT CHAIRMAN, who is also president of the local chapter of the Optimist's Club. He will be happy to arrange time payments like you have never seen before.

In the basement the OLD TIMER is in charge of the PROVERBIAL JUNK BOX, where the discriminating buyer may purchase individual parts for experimentation and replacement. We suggest you telephone first (be our guest — reverse the charges) to insure that we have your component in stock, to avoid disappointment on your part and embarrassment on ours. Sorry, but all JUNK BOX sales are strictly cash.

No visit would be complete without a stroll through the PRINT SHOPPE. Here you will find exciting authentic reproductions of the rarest QSL cards in the world, many at fairly reasonable prices. Included in the purchase price will be your call and signal report, filled in by our PATIENT PENMAN in an exact duplicate of the original handwriting and ink. These QSL cards are rapidly becoming very popular for decorative and other purposes; they make excellent gifts for "the ham who has everything, almost."

Next month we will tell you about our mail-order department, featuring free Air Express to any point on the globe. In the meantime, if you are in the vicinity, drop in and see us; we think our service will please you.

Larsen E. Rapp
President

The 1959 Simulated Emergency Test

BY GEORGE HART,* WINJM

The 1959 SET was another good test of the Amateur Radio Emergency Corps and the National Traffic System, complete with its high points, low points, good and bad performances and unusual occurrences. After it was all over and reports had stopped drifting in and your NEC had cursed and sweated his way through the statistical analysis, it turned out that the national point total, as well as most other data, showed a slight increase over the 1958 performance. There were the usual "old faithful" ECs who turned in complete and accurate reports, a goodly number of new reports from eager-beavers taking part in the SET for the first time, and about the customary amount of sloppiness in reporting. But all in all, it looks as though the SET is here to stay.

This SET — What Is It?

Early in October of each year, after everybody has come back from vacation and is tired of losing, we pry off the lid of the active operating season by throwing a nationwide test of our amateur emergency communication and traffic handling facilities. Each Emergency Coordinator appointee is requested to conduct some kind of a simulated emergency shindig during a specified week end, in cooperation with his local Red Cross or civil defense organization. Each AREC member originates a message to ARRL Headquarters, and messages are also filed from local Red Cross chapters to their national headquarters and from local c.d. directors to state c.d. director and OCDM regional and national administrators. It is at once both a local and nationwide activity of both emergency communications and traffic handling facilities for the purpose both of a public demonstration and an annual evaluation of our capabilities. If you weren’t in it, you missed some fun, OM.

ARRL Activities

Almost 1500 messages were received from ECs

* National Emergency Coordinator, ARRL.

and AREC members, and another two hundred were received from other officials at ARRL headquarters. Altogether, the count of traffic delivered to the headquarters stands at 1667, this largely concentrated over a period of three or four days. WIAW was kept real busy, copying 838 messages over the air. W1YBH, Connecticut’s active PAM, phoned in 315 received at his station. WINJM delivered 192 and W1BDE 131. Other Connecticut amateurs who delivered messages to headquarters, either by telephone or mail, were K1EKJ (45), W1YNG (41), W1EPW (17), K1HIZT (7), W1DPO (6), W1HRO (2) and W1DAV (1). The rest were mailed in from outside Connecticut, 56 of them from the west coast.

Although all participating AREC members did not send us messages, we can conveniently break down receipts into call areas as a pretty good general indication of activity concentrations. As usual, the Fourth Call Area is way out in front in this respect, 369 messages having been received from AREC members in the southland. The 9 (Zerod?) Call Area sent us 240 messages to take second place in ’59. Following down the list, we have the Second Call Area with 145, the Ninth with 130, the Eighth with 133, the Seventh with 119, the Fifth with 102, the Sixth with 100, the First with 59 and, down at the bottom as usual, the Third with 36. We also received 27 messages from the VE’s and 11 from the KPs.

The greatest number of reports was received from Minnesota (37), but most of these were included in the report of the SEC. From the standpoint of separate reports, Michigan and Ohio were tops, with 12 each. Michigan contributed the highest score (4309) to the national total, largely because of the Detroit Metropolitan score of 3222. Among other high scoring sections were New York City-Long Island (2385), Eastern Florida (1790), Ohio (1396), Santa Clara Valley (887), Illinois (839), Indiana (839), Eastern New York (697), Tennessee (655),
Colorado (593) and Massachusetts (592). In most of the high-scoring sections, the performance of a single large city or metropolitan area was the principal contributing factor. Among large cities taking part we note Detroit, Chicago, New York, Miami, New Orleans, Cleveland, Houston, Louisville, Washington, St. Louis, Baltimore and Toronto. Conspicuous by their absence were Los Angeles, San Francisco, Seattle, Minneapolis, Philadelphia, Dallas, Kansas City and Pittsburgh. But the big city performance was much better than in 1958.

And we can’t help but remark what a whopping national total we would have had if all who reported by radio had also reported by mail to submit their scores.

**V.I.P. Messages**

Headquarters received messages from a number of non-amateur officials. South Carolina was a major contributor in this respect, with messages of greetings and felicitations from officials of Spartanburg, Rock Hill, Fort Mills, Lancaster, York County, Ebenezer, Hickory Grove, McCormick, Sharon, Snyrna and Clover. Also heard from were officials of Dade County, Miami Springs, Poinciana, Eau Gallie, Brevard County and Pinellas County, Fla.; San Gabriel, Sunnyvale and Oakland, Calif.; Sioux City, Iowa; Kansas City, Kans.; Harris County and Houston, Texas; Berrien County, Mich.; Chicago, Ill.; Denver and Jefferson County, Colo.; Pine Grove, Pa.; Cincinnati, Ohio; Schenectady County, N. Y.; and Moorstown, N. J. Formal messages were also received from the director, OCDM Region 1 and the Communications Officer, OCDM Region 6. Thanks to all the above and to any we may have missed for taking the trouble to let us hear from you during the SET.

**Red Cross Activities**

As a primary to-be-served agency, the American National Red Cross has always played an important part in the SET as AREC groups file messages from local chapters to national headquarters. ANRC communications headquarters in Richmond, Va., has informed us that during the 1959 SET messages were received from 34 states, a total of 275 messages. California headed the list, with 75 messages, and South Carolina was second with 72. Florida and Texas tied with 17. Minnesota 12, Michigan 8 and Oklahoma 6. Others originated five or less. Those states not heard from were Ala., Ariz., Ark., Conn., Del., Ga., Maine, Mass., Neb., N. H., N. Mex., N. C., N. Dak., Tenn., Utah and Wyoming. Red Cross messages were collected at central points throughout the country and relayed to headquarters, and W4PHL calculates that 1230 message handlings were accomplished during the test.

**Civil Defense Activities**

As usual, the SET had a strong civil defense flavor, with many RACES units participating in their AREC labs, just as AREC units participate in their RACES labs during "Operation Alert."

Prior to the test (but not much prior) we wrote to OCDM Operational Headquarters in Battle Creek and to each of the eight OCDM regional offices. Considering the short notice we gave them, the response was excellent. Four regions definitely indicated that they would participate, and sent us monitoring schedules, which were put over W1AW in the form of a special bulletin. OCDM Operational Headquarters (OHQ) at Battle Creek also asked all regions to participate and give them a report.

These reports were summarized by W8DUA and forwarded to us. They showed participation by five OCDM regions, plus the headquarters. Actually, only two regions did not participate, because the eighth region of OCDM was just being organized at the time of the test. We salute the active communications and radio officers of these regions, nearly all of whom are amateurs and very much interested in making a good showing: Region 1, K1IZU; Region 3, W4POI; Region 4, K8JAL; Region 6, W8WBC; Region 7, WA6FUN. W8DUA and K8BFI were active for Spark-plugging an active AREC group in Reno, Nevada, is EC W7FC/W7HPP, shown above operating from the Reno-Sparks-Washoe County C.D. Communications Bus during the SET.

W7YXM, EC for Natrona County, Wyo., directing operations at the club house.
OHQ, and 27 messages were received from c.d. officials throughout the country. Contact was made by amateur radio between most of the regions and OHQ, and some of the regions, notably Region 6, had their own intra-regional drills. A brief summary of each region's report is perhaps in order:

Region 1 (New England, N. Y. & N. J.) made a good try, but only one message was received, and that by mail. Messages were originated for ARRL and contact established with Region 2, K4LOJ/B on 40 meters (which, incidentally, is the only indication we have had that this region was active in any way).

Region 3 (Southeastern U. S.) had eleven stations on a monitoring schedule of the National Calling and Emergency frequencies and contact was made with OHQ and with Regions 1, 4 and 6. Message traffic was light.

K5JAL was quite active for Region 4 (Eastern Midwest states) with four operators and contact was made with Regions 3, 6 and OHQ. Thirty-seven message handlings were completed.

Six operators were active in Region 6 (Rocky Mountain and Western Midwest states) from W9WBC for a total of twelve operating hours, plus some additional operating from home stations. Contact was established with Regions 1, 2 and 4, and with state c.d. headquarters in Wyoming and North Dakota. Eleven messages were originated and five were received. Regional Communications Officer W0WBC summed up the operation as very worth while.

Although WA6FUN and W6LAR both monitored for Region 7 (Far Southwestern States), no messages were received and no contacts were made.

Local Activities

We think we are safe in saying that there was more local activity in the SET in 1959 than in 1958, and you will notice that most of the figures are somewhat higher than last year's (in parentheses). But mail reports were lower and "hearsay" reports higher. Had it not been for the latter, our total of reports would be somewhat lower than in '58. A "hearsay" report is an indication that an AREC group was active only through receipt of a message from a participating AREC member or inclusion on an SEC's summary; the EC was not heard from directly. Here's the 1959 summary:

Miscellany

You know, fellows, it isn't considered good policy to gripes in print, especially when you're trying to give an activity a big build up, but some of the traffic handling during this last SET was really stinking. We reach the inescapable conclusion that a lot of our emergency people just don't know how to handle traffic. Out of 100 messages that ECs said they sent us, transcription were not received here at the headquarters. Most of the traffic we received was sloppy, garbled and old. We were still getting SET traffic ten days after the Oct. 10-11 week end. One west coast amateur labeled it "junk" and mailed it in all the way from California rather than "clutter up" the NTS with it. Others delayed it for days on end as unimportant. We'll have more to say on this subject, but not here.

We want to compliment some of our wide-awake SECs for their part in the activities. In Minnesota, W7USF held a pre-SET forum of all interested Minnesota amateurs on 3925 kc., marshalling his forces for the big week end, resulting in the big Minnesota showing as reflected by the reports. Missouri SEC K5H10 and CSM W6BUL sent out a card to all ECs calling their attention to the SET, urging them to take part and announcing that he would be on 3900 kc. at a certain time to receive any traffic. In Eastern Florida, SEC W4TT was conspicuous by his presence and gave us a full report, as did Maritimes SEC VE2E1L, West Virginia SEC W3WHA, San Diego SEC W6WLF and several others. We dare say that in most of the sections that made a good showing, the efforts of the SECs were primarily responsible and deserve a great deal of credit.

"Our score was less than last year's, but we gained valuable operating experience and the SET was enjoyed by all who participated. Next year . . . ." — W7DEP, EC Redwood City, Albion & Monte Park, Calif, "Our SET problem was a railroad box car containing radioactive materials which had been humped and broken open, releasing dangerous radiation." — K5KIV, SEC Sacramento Valley, Calif, "... and that gives us 113 points, which I do not think is too bad." — K5DCC, EC Monroe, Colo. "We also had an actual emergency and the lads did a commendable job." — K5BHI, EC Pueblo, Colo. "We hope to do much better next year . . . ." — K5CEZ, EC Boulder County, Colo. The SET for Hillsborough County, Fla., was conducted by next, EC K4MF in the absence of EC K5JG who deserves much credit for his initiative. "KJSH handled SET traffic direct to W1AW; all SET traffic was in Hartford Sunday night." — W5JYT, SEC E. Fla. "This test was pulled "cold" on the fellows; only the club president and myself knew when it would be carried out." — W5UIUL, EC Fulton County, III. "Tremendous interest and activity in this county; over 100 active members." — W3BEW, EC Marion County, Ind. "This is the first SET in this zone since 1951, hope to have a very active group from now on." — K57XM, EC Kansas Zone 11. "Hams are not emergency conscious these days, some four years since the last disaster hit this area." — W7SIP, EC Woonsocket, Mass. "Just like on purpose, my antenna relay burned out during the test." — W3HHD, EC Emmet & Cheboygan Counties, Mich. "We will do better next year." — W7TMY, EC Ramsey County, Minn. "There was much good will and publicity and respect for the amateur created during this test." — W7ROD, EC Gallatin County, Mont. "The gang fooled me! They reported two extra (simulated) emergencies besides one I started with. We learned a lot and had a fine drill." — W7C0H, EC Missoula Area, Mont. "The number one need is for more portable and emergency equipment; we are planning how to overcome this and other obstacles. Will be looking forward to next year's AREC SET." — W7KOS, Acting EC, Chouteau County, N. Y. "The hams in Pembina County and vicinity have been more than willing to cooperate. Being EC is an easy job when you have such people to work with." — K5H0Z, EC Pembina County, N. Dak. "The SET went well. Next year ought to see even more participation with a bigger rating." — W8WAB, EC Scona County, Ohio. "We
had our SET in conjunction with the Sheriff's Department on Halloween night, thereby serving in the public interest." — WQQLJ, EC Lake County, Ohio. "Drove back 450 miles from hunting trip to put on SET. Absent members were out hunting." — WMT, EC Benton County, Ore. "We expect to have an active AREC group going here to supplement existing RACES facilities by the first of the year." — W3TRE, Acting EC, Cambria County, Pa. "Much better SET than last year." — WJAOY, Johnson City & Washington County, Tenn.

In the Kingsport, Tenn., SET, all messages coming into the control center were recorded, then given to typists to transcribe. This cut down on the-air time, because messages could be read at a normal reading speed. Good idea.

"If every ham that hasn't had to handle traffic during an emergency had to do so, they would find that more harm than good can be done without practice." — W3DSF, Acting EC, Harris County, Texas.

**Total reports of activity: 2,243 (216)**

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<td>Newton</td>
<td>W1NJM 44</td>
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<td>Dougherty County</td>
<td>W7GCO 148</td>
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The net control station for the Schuykill County, Pa., SET was K38HU, above.

Binghamton County 7 K7GCH 5

ILLINOIS
Cook County 2 W1HPG 392
Fulton County 3 W8AUUL 509
Greene, Jersey, Calhoun Counties 2 W9FA 561
MacLean County 2 W6XSL 157
Monroe County 5 W4CF 300
Skokie 6

INDIANA
 Cass County 2 K9GHH 114
Davis County 3 W9RAT 500
Hendry County 3 W9ZSG 88
Jackson County 3 W9RT 74
Lake County 4 W9EJW 158
Marion County 2 W9JSK 88
Morgan County 1,2 W9QYQ 65
Orange County 2 W9QYQ 65
Forter County 2 W9EH 165
Switzerland County 3 W9PFE 79
 Vanderburgh County 1,2 W9DGA 219

IOWA
Iowa County & Marion & Clinton Counties 2,12 K6AFN 82
Polk County 1 W4MJJ 325
Stout County 3 W8BRG 64

KANSAS
Nebraska 13 W8LZM 179
Douglas County 4 K8BXF 176
Zone 9 4 W8ONP 75
Zone 11, Butler, Marion & Chase Counties 7 K6T6M 175

KENTUCKY
Barren County 5 W4TQD 213
Jefferson County & area 1 W4BZ 213

LOUISIANA
Westside Area, New Orleans 1,2,14 W9N 101

MARYLAND
Baltimore City 2 W3MAZ 198
Baltimore County 3 W9GME 176
Calvert County 3 W9WG 49

MASSACHUSETTS
Fall River 2 W1HYH 92
Cromwell 1,2 W1MRQ 116
Holden 3 W1DXS 49
Waltham 1,2 W1SJI 96
Winchester 2,10 K1GMY 96
Winthrop 1,10 W1BB 283
Worcester 1,10 W8MPF 36

MICHIGAN
Ann Arbor 2 K5DVN 76
Bay County 4 W8TOK 85
Berrien County & part of Cass County 2 W8SSQ 181
Charlevoix 2,11 W9CIS 114
Detroit Metropolitan Area #1 14 W8WFA 522
Emmet & Cheboygan Counties 2,12 W8RHI 10
Genesee County 2,10 W9DZ 193
Isabella County 1,17 W8PDE 65

April 1960 55
K8LCL, one of the operators in the Lawrence County, Ohio, SET.

Kalamazoo 4
Menominee County 8
Shelburne County 2,18
St. Clair County 3
WSQFQ
WSQFQ
WSQGQ

MINNESOTA
Atleien County 4
Brookston County 4
Beltrami County 4
Benton County 4
Carlton County 4
Cass County 4
Clay County 4
Cottonwood County 4
Crow Wing County 2
Douglas County 4
Faribault County 4
Freeborn County 4
Hennepin County 4
Iasca County 4
Jackson County 4
La Suer County 4
Marshall County 4
Mille Lacs County 4
Mower County 4
Nobles County 4
Olmsted County 1,2
Ottertail County 4
Pennington County 4
Pine County 4
Pipestone County 4
Ramsey County 2
Red Lake County 4
Rice County 4
Rock County 3
Saint Louis County 2
Stearns County 4
Steil County 4
Swift County 4
Tod County 4
Waseca County 4
Winn County 4
Winona County 4
K8H0P
K8I0K
WB4WJ
WG6RT
W524J

MISSOURI
Columbia 4
Dixon 4
Clinton City 4
Harrison & Meeker Countics 3
Raytown 2
Redwood County 2,5
Springfield Area 1,2
West Plains 4
K5OLW
W8OMM
K8EPT
W8UJU

MONTANA
Broadwater County 9
Butte 2
Cass Co County 1
Missoula Area 1,2
W8EM
W75FR
W7EM
W7EM
W7COH
W7INM

NEVADA
Boulder City 2
Reno
K8EKG
K2JDD
K2OTI
W2OKS
K2GCH
W2HZZ
K2CTK
K2GSO
W2FI
K2G0M
K2QKM
W2LQK
W2AJG
W2EIH
K2INW
W2VKF
W2TY

NEW YORK
Albany County 8
Bayside 2
Bedlack County 2
Chautauqua County 2
Dutchess County & Poughkeepsie 1,2,21
Five Towns Area 2
Kings County 2,13
Livingston County 4
Nassau County 1
Nassau County Area 1
Onondaga County 4
Orleans County 5
Queens County 8
Queens County, 10 Meters 1
Rockland County 14
Rockland County 4
Schenectady County 2
Staten Island 3
Steuben County 2
Winston-Salem 4

NORTH CAROLINA
Burlington 2
Burke County 8
Pembina County 13

NORTH DAKOTA
Burleigh County 8

NOVA SCOTIA
Halifax City & County 4

OHIO
Cincinnati 4
Clermont County 3
Cuyahoga County 2,23
Franklin County 2
Jackson County 3
Lake County 1,24
Lawrence County 1,2,24
Montgomery County 3
Muskingum County 1

OKLAHOMA
Comanche 2
Craig County 4
Garfield County 3
Grant County 2
Jackson County 3
Muskogee County 2,25
Nelson County 3

ONTARIO
Belleville Area 2,15

OREGON
Benton County 8
Coos County 8
Lane County 2
Lincoln County 8

PA PENNSYLVANIA
Cambi County 2,29
Delaware County 2
Luzerne County 2
Montgomery County 1,2,29
Schuylkill & Lebanon Counties 3

PUERTO RICO

R downside

RHODE ISLAND
Narragansett 2
Newport 8

SOUTH CAROLINA
Aiken County 4
Barnwell 4
Holly Hill 3
Lancaster 3
Rock Hill 7,20
California Mobilecade and Field Trial

April 10, 1960

Here’s a mobile event that other parts of the country might want to imitate. This will be the second year that it has been tried in California, and it appears well on its way to being an annual affair at San Luis Obispo. In essence, this is a contest to select the most efficient mobile, and will be held at San Luis Obispo Air Field. The committee in charge of arrangements includes KG6IC, W6OZS, K6MAU, and K6SKU. Contact any of these fellows for further details. The complete rules are printed, below.

1. The mobile transmitter must be provided with leads, external to the transmitter, available in the front seat of the automobile to permit measuring final plate voltage and current independent of the transmitter meters. This is to provide access for standard meters that will be used by the contest judges. (Suggestion: The B+ lead be removed from the final amplifier r.f. choke and extended through the transmitter case. An additional lead should be soldered to the B+ end of the final amplifier choke and also brought through the case. These leads may be wrapped together and taped for protection every time and for permissory use.)

2. Each participant will be limited to one official trial which will be made on a first come—first served basis. Time permitting, additional unofficial trials may be made after all participants have had an official trial.

3. The official frequency for competition will be 3905 kc. All tests and tuning in the San Luis Obispo area must be done before 0630 on April 10. Any contestant testing on this frequency after the official starting time of 1000 hrs. will be disqualified.

4. Antenna Specifications; any type mobile antenna may be used in the contest provided it is capable of normal operation on the highways of California and is the antenna which was mounted on the automobile before leaving the home QTH and driving en route to San Luis Obispo.

5. The official field-strength measurement will be made approximately 4000 feet from the transmitting point, received on a pick-up antenna consisting of a mobile whip mounted on an automobile. The field strength will be measured with a logarithmic a.c. w.v.m. An efficiency factor will be determined by:

\[
\text{Received r.f. volts}^2 \times \frac{\text{Power input to final amplifier}}{\text{Unofficial readings for comparison will be attempted at several points (5 to 100 miles).}}
\]


7. Prizes: Perpetual trophy “The Five Foot Golden Whip” Permanent trophy “The Mobile Oscar” Both will be presented to the ONE mobile station exhibiting the highest efficiency.

April 1960
BACK in the days when a V.H.F. Sweepstakes brought in a few hundred logs we could get a summary of the contest in the April issue of QST. Now that participation is many times its early proportions, this kind of reporting is no longer possible. We can’t even tell you how many logs were submitted, at this writing, but they make quite a pile!

Because there was almost no F2-layer DX to give 50-Mc. operators a chance for astronomical section multipliers, scores are not as high as in the two previous contests where this mode of propagation was a factor. There were two excellent sporadic-E sessions, however, and some 6-meter DX was worked in every corner of the country. A brief flash of F2 across the Pacific provided a few West Coast operators a shot at Hawaii. Two-meter activity was at a high level, and this band was probably a larger factor in the scoring than it has been for some years past.

An all-time high for number of contacts by a single operator was set by W3KKN, Willow Grove, Pa., with 498 stations worked on 50, 144 and 220 Mc. This was good for 27,048 points, the country’s top score. The Philadelphia area was the scene for the four top scores. In addition to W3KKN, note the fine records of W3TYX, W3HYJ and K2TYW. This region was so loaded with activity that K2TP was able to work 400 stations for 18,400 points, even with more than 9 hours of the contest period away from home. Interest was spread well over the country, however. Dozens of logs, representing most sections of the country, show contact totals over 300.

Multiple-operator stations turned in impressive records. W2ADE, Mountain Lakes, N. J., with 7 operators sharing the load, made 512 contacts on three bands, for 32,016 points. Some of the coldest weather of the winter couldn’t keep the Waltham Amateur Radio Association home at home. They set up, as so often in the past, on Pack Monadnock Mountain, Peterboro, N. H., running up 428 contacts for 24,621 points. The father-son team of W2REB and K2MIPV, Chews Landing, N. J., turned in 428 contacts also, for 25,112 points. One of the finest West Coast scores ever was the work of the Southern California V.H.F. Club, W6VHF, with 470 contacts on 3 bands, for 15,024 points. Leading the Middle West were two single-operator stations: K5KLU and K9HWY, both of Chicago, with 346—17,922 and 276—17,792, respectively.

The sporadic-E skip made possible some surprising totals by operators who have only limited local activity to draw on. W4LIP, Miami, Fla., leads in this category with 205 50-Mc. QSOs in 19 ARL Sessions, for 15,990 points. K5TKR, Arlington, Texas, was 220—21—13,640, all on 50 mc.

Some kind of record may have been set by W1UZL/1. Operating from a police radio building atop Mt. Wachusett, near Princeton, Mass., W1UZL and K11ZM combined forces to put a kilowatt s.s.b. rig on the air on 50 Mc. Using only s.s.b. and c.w., they worked 117 stations in 24 sessions. Of these, 97 QSOs were with s.s.b.

This preliminary report is based on claimed scores only. The logs concerned have not been checked, so figures are not final. Official scores, club standings and final contest statistics will be in QST as soon as checking can be completed. Guess on the club award winner: It looks like the South Jersey Radio Association again, but they had a battle on their hands.

**HIGH CLAIMED SCORES**

**1960 A.R.R.L. V.H.F. SWEEPSTAKES**

**Single Operator**

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<th>Score</th>
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<tr>
<td>W3TYX</td>
<td>26,000</td>
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<tr>
<td>W3HYJ</td>
<td>21,752</td>
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<td>24,261</td>
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<td>W1IRUA</td>
<td>23,400</td>
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<td>K6KLJ</td>
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**Multiple Operator**

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<td>K1JCU</td>
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**Here and There**

V.h.f. men who hide out ten months of the year, waiting for the tropospheric openings commonly experienced in September and October, miss out on some good stuff. Ex. ample, superb tropospheric propagation of late January,
50 Mc. WAS

1 W2ZR 18 W2OJU 38 W7LL 57 W1SUZ
2 W2BJV 20 W7TEM** 39 W2DDX 58 W1AEP
3 W2BJS 21 KXEDX 40 W8BDX 59 W1FW
4 W2GZ 22 41 KXEDX 60 W1FZ
5 W2ZHL 23 W2ORE 42 W2ABN 61 W7MAH
6 W2OGA 24 W2ALU 43 W2BZB 62 W2EIZ
7 W2BPS 25 W2VES 44 W2VEK* 63 W2BVM
8 W2NII 26 W2WNG 45 W2KEH 64 W2YAC
9 W2DR 27 W2WCM 46 W2WUV 65 W2ADJ
10 W2HDO 28 W2WMT 47 W2WNN 66 W2WHH
11 W2JDS 29 W2WOLY 48 W2KETD 67 W2KJ1A
12 W2S 30 W2WMT 49 W2WLPD 68 W2WVQ
13 W2ZDJ 31 W2WHD 50 W2WLO 69 W2WQI
14 W2WHV 32 W2WFE 51 W2ZTW 70 W2SEDD
15 W2WVV 33 W2WTV 52 W2KVL** 71 W2KGD
16 W2BBB 34 W2WII* 53 W2WRL 72 W2KGO
17 W2QGW 35 W2MEU 54 W2WDE 73 W2WVJ
18 W2TSA 36 W2LW 55 W2WDE 74 W2WUI
19 W2THA 37 W2PWZ 56 W2WUM 75 W2WUL
20 W2VGA 38 W2PPZ 57 W2WWA 76 W2WUL
21 W2VSB 39 W2PVZ 58 W2WUI 77 W2WUL
22 W2WTT 40 W2PVZ 59 W2WUI 78 W2WUL
23 W2WDR 41 W2PVZ 60 W2WUL 79 W2WUL
24 W2WTR 42 W2PVZ 61 W2WUL 80 W2WUL

*6 stations **90 stations

VE2CN 15 VE2AIR 45 LUSMA 26 LATY 20
K7ATV 44 SMNAR 30 Z5K 26 VQ2FL 18
VE1EF 12 COZX 39 TICOS 24 JAGRO 18
K2QR 33 SMZSA 29 WCW 21 JAGRO 16
VE2GM 38 EZFAR 28 LAZT 21 JAGRO 17
K9UK 37 EMFRT 28 LUSDA 20 JAGRO 16
E1Z 35 EZFY 27 SIMCH 20 VSF 16

that had the entire Middle West area. Beginning Jan. 29 and running through Feb. 2, this session compared favorably with the best any season can offer. Signals out to 400 miles or so were like locals, and solid voice contacts were made over distances of 670 miles. Anything from locals on out was affected, and some phenomena 144-Mc. contacts were made with low-power and simple antennas. W6DBW, Independence, Mo., using a Communicator with a 5-element Yagi on the rafters of his garage, made good QSO with KB3EK, Franklin, Ind., 450 miles away. K9KVRG, mobile in Chicago with a Communicator and a halo antenna, had 87 signal on W9PPF, Milwaukwe, more than 100 miles away, W3FYZ, Middlen., L.A., worked W9WPJ, Pearin, Ill., and heard W9CGI, Oshen, Ind.

Many areas were contacted on 220 Mc. for the first time. KB5TF, Prairie Village, Kan., worked W8PTW, Benton Harbor, Mich., W8JY, Indianapolis, W9QAC, Aurora, Ill., W9WBY, Chicago, and W9AGG, Woodburn, Ill., initially only 10 watts input. The hop to W8PTW is about 400 miles. W8PTW's list included K9KGG W9WDX and K9KFT, all worked with strong voice signals, W9AGG a vertical Kansas, Missouri, Indiana and Oklahoma for the first time on 220.

A winter prediction surprise of a different sort broke on Jan. 23, but we didn't hear about it until too late to make March QST. W9NLX heard 25-Mc. sporadic-E skip coming in from under 350 miles. This was not to be expected, but they should show up very high for a winter opening, so John fired up on 144-Mc. e.w., calling CQ in an easterly direction. After about three trises he raised W8UNI, Kerrville, Texas. This is the first instance we know of where a DX has been heard and worked on the 144-Mc. band during December. The DX was heard at W9WY, El Paso, but that was a station on the other side of the state. The DX came in much stronger than the previous DX contact made in 1817 CST, and signals held for some 20 minutes thereafter, strong on peaks with deep and rapid fading — typical high-m.u.f. E characteristics. We have believed sporadic-E skip to be very rare on 144 Mc., but fairly frequent instances of it in the last few years indicate that it may have been possible more often than we have realized. Very short skip on 50 Mc. is the best clue. If you hear someone on 50 Mc. 300 to 600 miles away working a station another 300 miles farther away, not going on 144. Your chances are at their best right there. Loud signals from 500 miles or more on 50 Mc. probably have little significance for the 144-Mc. operator. They merely mean that the skip is up to 300 Mc. for that distance, but by no means to 144 Mc.

Meteo-s wat er work on 144 Mc. need not always rely on a major shower. Just to see what would happen, W7LDF, Moheun, Mass., and W8FBF, Milesburg, Iowa, had been in touch for more than 2 hours from 2100 EST Tuesdays. The night of Feb. 2 W7LDF heard W8FBF five different times in a 1-hour test. Most of this was just short paths, but at 2127 a burst long enough for identification was received. Summer heard W8FBF regularly on both mornings and evenings, with bursts up to 8 seconds duration.

To further v.f.i. interest in an area where activity comes hard is the objective of the Chinkook V.f.i. Society, soci
cording to VE8HIO, News Editor for the Society. Branches are being established in Calgary, Lander and other counties of this country — all "favored by the sweet gentle breeze of the Chinkook Wind." VE8HIO is getting set for a move to a new location, but be
ginning next September he will be looking for schedules of both 50 and 144 Mc. He is particularly interested in auroral work.

It may be a surprise to some to learn that there are about 50 stations on 144 Mc. around Pocatello, Idaho. W7OL, Caldwell, Idaho, says that nearly all work is with P.M. and he would like to see more mention of this in QST.

We have a start in this direction coming up, in an article dealing with the conversion of commercial gear, now available in large quantities at reasonable prices. We will be glad to run more of it later and request that this section of QST depend on you for its material.

Getting skeds lined up as to time is something of a problem, what with GMT, 4 U.S. time zones, and daylight saving time. The i.f缀 with W9UXF, Phoenix, Ariz., plans for GMT for all scheduling, so that everyone can use the same clock indication. We're not sure that v.f.i. men are ready for conversion to GMT for even that it is desirable to try to think in terms of GMT for domestic scheduling but we do feel strongly that daylight saving time has no place in amateur work. We also feel that 24-hour time is a must for ham purposes, and we have used 24-hour standard time in this department for some years. It will help reporting accuracy if everyone will do likewise. Please report sked times, contacts and the like in EST, CST, MST or PST — 24-hour time. If a major portion of you want GMT, we'll consider that, but daylight saving time and A.M. and P.M. are just not possible contacts. Let's throw them out of ham radio, once and for all.

W9SCH, Deerfield, Ill., voices a familiar complaint, one that has been with us since the dawn of ham radio, or of amateur radio as a whole. Too often, he says, there is nothing doing on the 2-meter band. Nobody on? Let some DX break through and you find out soon enough where people are — but a thousand receivers don't make a DX, it's the sound that makes the DX particularly among newcomers or prospective convertes. We have no complaint against the fellow who drops his local QSOs and goes after the DX; the problem is the fellow who times for hours and never makes the sound even when something exotic turns up. Remember, the fellow who is considered DX is probably no better than the man in the next town. If all of us don't all make a point of getting on the air regularly, who will know when there is DX coming through? Careful listening is good policy — but playing alone is not enough.

There have been schemes for combating this evil since time immemorial. They work only if complete cooperation exists, with the understanding that the m.u.f. was not supposed to be very high for a winter opening, so John fired up on 144-Mc. e.w., calling CQ in an easterly direction. After about three trises he raised W8UNI, Kerrville, Texas. This is the first instance we know of where a DX has been heard and worked on the 144-Mc. band during December. The DX was heard at W9WY, El Paso, but that was a station on the other side of the state. The DX came in much stronger than the previous DX contact was made in 1817 CST, and signals held for some 20 minutes thereafter, strong on peaks with deep and rapid fading — typical high-m.u.f. E characteristics. We have believed sporadic-E skip to be very rare on 144 Mc., but fairly frequent instances of it in the last few years indicate that it may have been possible more often than we have realized. Very short skip on 50 Mc. is the best clue. If you hear someone on 50 Mc. 300 to 600 miles away working a station another 300 miles farther away, not going on 144. Your chances are at their best right there. Loud signals from 500 miles or more on 50 Mc. probably have little significance for the 144-Mc. operator. They merely mean that the skip is up to 300 Mc. for that distance, but by no means to 144 Mc.

Meteo-s wat er work on 144 Mc. need not always rely on a major shower. Just to see what would happen, W7LDF, Moheun, Mass., and W8FBF, Milesburg, Iowa, had been in touch for more than 2 hours from 2100 EST Tuesdays. The night of Feb. 2 W7LDF heard W8FBF five different times in a 1-hour test. Most of this was just short paths, but at 2127 a burst long enough for identification was received. Summer heard W8FBF regularly on both mornings and evenings, with bursts up to 8 seconds duration.

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### 2-METER STANDINGS

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

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<th>WIREZ</th>
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*Our discussion of changing weather patterns and v.h.f. propagation in February QST brought information from W1KCT so as to means by which weather data can be obtained. Information in considerable detail, revised every 6 hours, is available to anyone who wishes to use a radioteletype printer. Transmitted in World Meteorological Organization code, it contains details of cloud cover, wind direction, wind velocity, visibility, present weather, weather 3 hours previously, barometer, temperature, type of storm clouds, dewpoint, shape of barometric curve for past three hours, and net barometric change. Other information, also in code, gives details of fronts, occlusions, principal air masses and the like. The usable code can be obtained from the Government Printing Office.*

The Michigan 6-Meter Club was formed a year ago to serve 6-meter men of the southeastern section of Michigan and adjacent Ohio. Net membership now includes about 120 stations. Their second annual club contest gets underway at 1400 April 23, running 24 hours. Any out-of-stater who works 10 or more Michigan stations is eligible for a certificate, to be issued by K1MGG, 19025 Greenview, Detroit, Mich. A list of participants is from K2MBJ.

From Illinois, KBDBJ writes that 4 of the 6 Skokie 6-Meter Indians are now on s.a.b. K9AMG W9B0D W9XWQ and K9BDBJ are on 50,305, and they find that even low power gives very nice coverage. Their net (all types of emission) meets on 50,290 Mc. Mondays at 2100 CST. Indian certificates are available to operators within 50 miles who work 6 members, or to others who work 3. They have issued 78 of these thus far, to 6 call areas.

### 220 Mc. and Up

Coverage on 220 Mc. is surprisingly good, even with low power, provided good antenna systems are used, says W9ITO, Kansas City, Mo. Several of the gang have surplus Navy MAR gear, with a 2938A in the final stage, running about 10 watts. Normally this transmitter is capable of putting 74 watts into the antenna, but in a test W9LRC reduced his power until only 14-watt output was indicated. His signal was still readable over the 18-mile path to W9ITO.

W9LRC, K2TZN, and K4WPI are all using corner reflector arrays. W9ITO has a modified 10-element Channel 13 Yagi. A ridge directly to the south, 100 feet higher than the antenna, has to be left off the 220-Mc. coverage. While low power works nicely, simple antennas do not. When all bands in this area were using groundplanes and dipoles, results were practically nil.

Amateurs having good receiving gear and antennas for 1290 Mc. may want to listen for tests to be conducted at Haverford College under the direction of Prof. Benham, W93D. Both lunar and satellite-reflection tests will be made, using high power, a 12-foot parabolic reflector, and a receiver equipped with a parametric amplifier.

At the opposite end of the power scale is work being done on 2350 Mc. by K2DHE and W9A2G, Wannasaw, N. J. Art and Chuck are using simple modulated oscillator and superregenerative receiving gear, built from information in the Handbook. With this simple equipment they have had good results over underobstructed paths of 50 miles. Converted APX-6 rigs have been the life of the 1215-Mc. band in Southern California, according to W6MMU. This is a modified oscillator, with a superhet receiver having a broad bandwidth. Obviously, these are not in the same league with crystal control and low-noise receiver techniques, but with about 60 of the units on the air they keep interest alive between contests. Don has worked into San Diego with his APX-6 at his home location in Los Angeles.

Amateur well established in Ohio, K5AG, Columbus, puts a good video signal across the city to W8RJ, 14 miles to the north, and a better one to WSTY, about 8 miles away. His rig is *Handbook* style as far as the r.f. section is concerned, being a combination of the 144- and 430-Mc. rigs described therein: 12AX7 tube, 1F232 exciter, 8040 tripler. The video camera is a rebuilt ATK, and the antenna a 17-element Yagi. His sound is on the 50-Mc. band. Five stations are on with TV in the Columbus area, with several more in the works. W8HCC, Sandusky, recently worked W9EQJ, Toledo, two-way TV, after a slightly 832-Mc. contact. W9RJ, Detroit, 75 miles, and W8RJ, Columbus, 90 miles, regularly on 432 Mc. Several of the gang on 432 have recently added 416 Mc. r.f. stages, making a marked improvement in the reliable range. Mc. has a 4X150 tripler driving another as an amplifier, and a 416B-8BC4 r.f. lineup ahead of his crystal-mixer converter.

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60 **QST** for
220- and 420-Mc. STANDINGS

220 Mc.

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W7QDX, Clearfield, Utah — Heard signals from slightly south of west on 49.76, 49.72 and 49.71 Mc., Feb. 13 and 14, 1600 to 1800 MST Saturday and 1610 to 1713 Sunday. Now have 4-4000 Mc., regularly in marked improvement in results on Sunday morning. Nearer stations heard were W6NLZ, W6NLZ and K6ZGZ.

K6BFG, Lansing. Mich. — Worked W6TML, Independence, Mo., on 144 Mc. at 0053 Jan. 31. Many signals in nearer states, not normally heard, were coming through well. Indiana and Ohio were heard working stations in Kansas, not audible in Lansing.

W7WGF, Columbus, Ohio — WSTSE, Ec for Franklin County, has ARSC net going on 50.82 Mc. Crystals for this frequency are available from him. Much activity on 420-Mc. TV, with KSAGO W8FJX and K8MZH among new stations. Please contact County Net Agent today.万家, 50.15 Mc., CD Net on 145.27 Mc. Tuesdays, 2000.

K8MLI, Winnetka, Ill. — New Cook County RACES Net on 5.04 Mc. 2000 CST Mondays, W8ZKQ NCS. Experimenting with d.f. systems (Midwest W1HF, Club and V.H.F. Club of Chicago sponsoring 50-Mc. hunts) shows standard d.f. loop as good as anything. It is small, has a sharp null, and can be built with little expense.

W8EVL and K8DOP, Lancaster, Pa. — Worked W1LB, Miami, Fla., on 50-Mc. n.c. Jan. 27. Though running only 250 watts he had good signal.

K9RKS, Racine, Wis. — Have large phonic for working on K9IFN or other far-north stations.

W8HJ, Kansas City, Kan. — Phenomenal opening of Jan. 30 and 31 first observed when strong signals were spotted on high TV channels. Worked 9 Illinois stations, K9QUP, Hobart, Ind., and W8PGP, New Buffalo, Mich., all on 444-Mc. phone. Many Ohio and Indiana stations heard. Signals at 50-55 plus levels for hours, with none of the usual fading or aircraft flutter. Opening extended from Olathe, Kansas, and Pawnee City, Neb., along the Ohio and Missouri Valley across Ohio and Indiana to the southern tip of Michigan. Entire area was under very heavy cloud cover, with dense fog in many places. Ground temperature in Kansas City area just above freezing, but between 1600 and 1700, above cloud cover, it was 45 degrees.

K9JW, Waverly, Kan. — Transmitted TV picture for first time Feb. 3. Local interest in amateur TV developing, with several working on transmitters.

Note to OBS: The volume and interest of OBS reports on file this month is the best in the history of the appointment. Keep up the good work!
THIRD INTERNATIONAL CONVENTION of the YOUNG LADIES RADIO LEAGUE CAMBRIDGE, MASS. June 17-19, 1960

Sponsor: The Young Ladies Radio League, with the Women Radio Operators of New England as hostess club.
Dates: June 17, 18, and 19, 1960.
Co-Chairmen: Otile Woodward, WIZEN, and Mildred Doronius, WISVN.
Special Events: See program below plus Ye Olde WRONE Gift Shoppe and raffle of most fabulous bedsprean in hamdom. (The one-of-its-kind spread consists of squares of embroidered replicas of all of the various YL certificates available sent from YL clubs around the country.)
Registration: For YLs, $10.00 covers the cost of coffee hour, Saturday luncheon and banquet and Sunday outing. OM registration for the banquet is $5.00. For tickets contact Eunice Gordon, W1UKR, 55 Malibu Drive, Springfield, Mass. W1UKR will also handle hotel reservations. Tickets for the bedsprean (see above) may be purchased for 25¢ each from Chata Swensen, W1RLQ, Box 113, Morningdale, Mass. You do not have to be present to win the spread.
Hotel Rates: The Hotel Commander is featuring special rates of $8.00 for a single room with bath and $15.00 for a double or twin bedroom with bath until May 1 (in order that all rooms may be reserved on one floor). Reservations may be made through W1UKR (see registration information above).

Program:
Friday, June 17 — 2:00-5:00 p.m. Informal registration, YLs and OMs. 8:00 p.m. Informal get-together.
Saturday, June 18 — 9:00-11:30 a.m. — Registration.
9:30 a.m. — OMs: All day tour.
Millstone Observatory. Lunch on road. Visit to Radio Shack, Boston. Return 4:00 p.m.
YLs: YLRL Forum. Welcome, W1HOY. Business session, W6DNT.
10:15-10:30 a.m. — Coffee break.
11:30 a.m. — Recess.
4:00 p.m. — Recess.
6:00 p.m. — Cocktail hour.
7:00 p.m. — Banquet.

At the annual installation of officers of the New York City YLRL outgoing President Dot Westcott, K2DPN, handed over the gavel to Amy Samuels, W2EUL. Reorganized in 1942, the N. Y. C. YLRL meets monthly. All YLs in the N. Y. C. area are invited to membership.

*YL Editor, QST: Please send all news notes to W1QON's home address: 918 Fisher St., Walpole, Mass.
Adding to the display of JA YLs in February, here are four more photos from Japan. This time a pair of well-known American YLs enter the Japanese ham picture too. In JA land with their husbands on government assignments, Hilda Andrew, W4HWR/KA2HA, and Lois Jennings, K4CXJ/KA2YL, have appreciated the opportunity to meet some of the country’s leading lady operators in “ground contacts” (JA1YL’s substitute expression for “eyeball QSO”).

Upper left photo: JA1CLJ, Yoshiko, JA1YL, Kunie, W4HWR/KA2HA, Hilda, and K4CXJ/KA2YL, Lois, enjoy lunch at a “Chinese” restaurant. In spite of a language barrier, the conversation was animated.

Upper right: Hilda, W4HWR operates as KA2HA while her OM KA2JA peers over her shoulder.

Lower left: JA1CLJ and JA1YL pose prettily while K4CXJ operates as KA2YL in a sideband contact with a W7.

Lower right: Science teacher Mrs. Andrew explains an electric dry cell battery to students at Grant Heights Elementary School near Fuchu Air Station, Japan.

JA1YL, Kunie, has been active on 80, 40, 10, and 6 phone during the past two years, especially during contests. Kunie’s OM, JA1CO, is a technical engineer at Radio Research Laboratories.

JA1CLJ, Yoshiko, is the wife of prominent JA OM JA1ANG. Yoshiko’s four-year-old harmonic does not appreciate her mother spending much time in the shack, so extensive hamming for JA1CLJ has yet to come.

Well-known YL Hilda, W4HWR/KA2HA, ex-K2IWQ, is the wife of Chaplain (Lt. Col.) Joseph Andrew, staff chaplain for the 6000th Support Wing at Fuchu Air Station, Japan. Chaplain Andrew (“Joe”) is W4EGF/KA2JA. In Japan the Andrews have operated as an Auxiliary Military Radio Service team. Hilda, as a dependent, is not authorized to operate such a station, but as a Department of the Air Force civilian employee (substitute teacher at Grant Heights Elementary School) she is allowed to do so.

Both W4HWR and Lois Jennings, K4CXJ/KA2YL, have enjoyed being rare YL DX, but they look forward to coming back to the States this spring. Hilda says she will attend the YRL convention in Cambridge in June, if she has recovered from moving clothes, furniture, rig, and three children 10,000 miles!

(Photos courtesy W4HWR)

Speaker — Father Dan Linehan, W1HWK, Director of Weston Observatory, presents his scientific travels from a “Ham’s eye view.”

Sunday, June 19 — 12:30 p.m. Picnic at QTH of W1H0Y, in suburban Medfield. Swimming — bring your own suit.

CU in CAMBRIDGE!

AHEMI

108-22 Inwood St.
Jamaica 35, N. Y.

YL Editor, QST:

I felt a need to write to you on behalf of c.w. Every month I read the YL column in QST — I find one fault. In 99% of the pictures published in amateur radio magazines (QST and others) most of them picture a YL in front of a microphone (how dismal). In some of the photos there just might be the outline of what looks like a bug or straight

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key (those things you make the dots and dashes with) sitting behind a few dozen microphones.

Even in the pictures of the Japanese YLs published in February 1960 QST there were microphones only showing—not a brass pounding machine in the lot.

So, please, won't you show a few pictures of YLs, YYLs, and XYLs peacefully and happily getting along with a key? See the YLs in future YL/OM contests—on c.w. of course.

—George Wolzak, \#4463CC

Believe it or not, there are some YLs who are on c.w. exclusively. That 99% figure should be revised downward somewhat. A check of the photos appearing in the YL column in 1959 revealed that about 20% of the photos indicated that the subject YL was a bona fide brass pounder. Nevertheless, George, you make a big point. —Bi.

DX YL JAMBOREE

The YL SSB Net invites all YLs, especially DX YLs, to participate in a YL Jamboree on single sideband. Dates for the affair are April 27 at 2300 EST or April 28, 0200 GMT. NCS will listen for DX YLs first on the net frequency 14,260 kc, and will then tune 14,320 to 14,340 kc for other stations not on the net frequency. Contact NCS of the YL SSB net Harriett Woehl, K5BJU, for further information. The net meets regularly each Wednesday, 1300-1500 CST on 14,320 kc.

SQUAW VALLEY

As this is written, the 1960 Winter Olympics are about to take place. Plans for amateur communications at Squaw Valley are extensive, and a number of WW YLs have worked on some of the arrangements for many months. Next issue we hope to report on this participation by YLs in communications for the Winter Games.

TWO MORE CERTIFICATES

Announcement is made of two more new YL certifications. The ALAMO YLs of San Antonio, Texas, will issue a certificate to any amateur outside of Texas who contacts three ALAMO YL members and to any Texan ham who contacts four club members on the air. Send a list with date, time, call, and frequency of contacts, along with ten reuts to Ike Cole, WS5XT, 320 Meadowbrook, San Antonio 12, Texas.

The WAYLARC (Washington Area YL Amateur Radio Club) will issue a certificate to any amateur who contacts on the air at least five members of WAYLARC. DX amateur stations must contact at least three club members. Contacts made during club net time are not acceptable. Any contacts made on or after Jan. 1, 1960, will be honored. Submit verifying QSL cards (they will be returned) to custodian Camille Hedges, W3TSC, 2202 Culver St., Washington 21, D. C.

COMING GET-TOGETHERS AND EVENTS

FRONE Annual Spring Luncheon—May 14 at Robinson's Ten Acres, Route 20, Wayland. All YLs in New England cordially invited. Plans for YLRL Convention in June will be discussed. Luncheon is $2.50—contact Marie Welch, W1COL, 1228 Cambridge St., Cambridge 39, Mass.

Midwest YL Convention—The tenth annual will be held in Indianapolis, Ind., May 20-21, 1960. Pre-registration is $2.00. W9RTII is chairman; K9IXD, co-chairman.


1960 AWTAR—The fourteenth annual air derby of women pilots will start at Torrance, Calif., July 9 and will terminate July 13 at Wilmington, Del. Carolyn Currans, W3GTC, chairman of AWTAR radio net, invites YL participation in the net. (See March column.)

KEEPING UP WITH THE GIRLS

CLUBS:

YLRL—Former Vice President W9DKI: “Referring to January 1960 QST, on pp. 80-81, the YLRL will count both Alaska and Hawaii for state and for DX—this covers our WAS-YL and DX-YL certificates.”

R I. YLRC—New officers: Pres. W1GSB; V.P. K1GEF; Secy. K1AAK; Treas. K1DHW.

Penn-Jersey YL Club—New officers are Pres. W3GTC; V.P. W3SLF; Secy. K3EHH; Treas. K3EHH. Pres. W3GTC will chairmain AWTAR operations in July for the third year (see Coming Get-Togethers and Events).

ALAMO YLs—New officers are Pres. K5OPT; V.P. W5WXT; Secy.-Treas. K5OPS. Club meets next Friday at 0900 CST on 7225 kc. K5OPS, NCS, and Tuesday at 1900 CST on 145.2 mc. W3TSE NCS. (See rules for new certificate.)

WAYLARC—See rules for new certificate.

HAWR (Hosier Amateur Women's Klub) —Member-

Meet a young Young Lady from Parsippany, New Jersey, Miss Margie Aurick, WY2II, age eleven, augments hamming with Girl Scouting and straight a work in Grade V. Margie’s Dad Is W2QEX (a former Asst. Secy. of the ARRL).

The golden plaque beside W6NAN is inscribed "eternal gratitude from the men of Sonderstrom..." Twice weekly for nearly four years Lenore Conn, W6NAN, of Sherman Oaks, California, has maintained schedules with KG1FR, Air Force Base at Sonderstrom, Greenland, making it possible for the airmen there to talk to families back home. Lenore uses a KWS-1, 73A-4, a 3-band beam, and the constant cooperation of Joe, W6MSC, for her s.s.b. skeds. Also well-known in professional radio and TV, Lenore recently received the Radio and TV Women of Southern California Merit Award for 1959.
Strays

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

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

April 6 — Filter Design and Applications.
April 13 — New Semi-Conductors for High Frequency Circuits.
April 20 — Modern Trends in Electronic Instrumentation.

AF-MARS Eastern
(Sunday 1400 EST; 7285, 7540 and 15,715 kc.)

April 3 — Television and Scanning Techniques in the Field of Medical Electronics.

April 10 — Applications of Tunnel Diodes.
April 17 — Easter Recess.
April 24 — Transistor Circuit Considerations.

AF-MARS Western
(Sunday 1400 EST, 7822.5 kc., 3295 kc. and 143.46 mc.)

April 3 — Advanced Telemetry Techniques.
April 10 — Mobile and Portable High Frequency Antennas.
April 17 — Brain Power and the Missile Gap.
April 24 — Technical Net Session and Project Reports.

Maybe this is where we should get QST printed? W5EFW sends in the name of a Berea, Ohio, printer — C. W. Dash.

April 1960
FIFTH ANNUAL PACC CONTEST

c.w.: Apr. 30-May 1
Phone: May 7-8

Netherlands' VERON invites amateurs throughout the world to participate in the Fifth Annual PACC Contest to be held (c.w.) 1200 GMT April 30 to 2000 GMT May 1; the phone contest is the following week and May 7-8 same times.

Stations outside Holland will strive to contact PA stations once per band by calling "CQ PA" and exchanging the usual RST001, RST002, etc., signals ("T" omitted on phone, of course). Count three points for each completed contact. For final score multiply 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, Drenthe; FR, Friesland; GD, Gelderland; GR, Groningen; LB, Limburg; NB, Noord-Brabant; NH, Noord-Holland; OV, Overijssel; UT, Utrecht; ZH, Zuid-Holland; ZL, Zeeland. To be eligible for merit certificates, logs must be mailed to Contest Manager P.v.d. Berg, PA9VB, VERON, Keizerstraat 54, Gouda, Netherlands, no later than June 15, 1960.

INTERNATIONAL TELEGRAPHIC CONTEST

May 7-8

The Central Radio Club of the U.S.S.R. invites worldwide participation in the International Telegraphic Contest to develop skill in radio operating techniques and strengthen friendly relations among amateurs throughout the world. A radio amateur should score the maximum number of points possible for contacts with radio amateurs from as many different countries as possible. This contest is being held from 2100 GMT on May 7, 1960, to 2100 GMT on May 8, 1960. Although logs are solicited for the entire 24-hour period, only contacts made over a continuous 12 hour period will count for score. So you can work as much as 24 hours, but pick your best 12 consecutive hour stretch in figuring your score. Contacts should be established on 28, 21, 14, 7, or 3.5 Mc, c.w. only. The exchange consists of a six-digit number made up of RST and QSO number, starting with 001. Your first exchange might be 500001. Stations may be contacted only once per band; stations may be worked again on different bands. Contacts with stations of one's own country will not be credited; the ARRL Countries List shall be the official list of countries for the contest. Scoring: Each completed contact counts one (1) point. Final score is the number of contact points multiplied by the number of different countries worked on all bands, not the sum total on each band. A single discrepancy on a contact will void that contact. Awards: Award winners will be from each country for both single-operator and multiple-operator scores. Winners will also be determined for single band entries for both 7 and 3.5 Mc. Single-operator awards of a certificate and contest badge will be awarded to the five highest scoring single-operator entries from each country. Multiple-operator awards of a certificate will be awarded to the five highest scoring entries from each country with a contest badge to each operator. All participants who establish contact with 100 different Soviet operators will be awarded a "W100U" award; all participants who establish contact with six continents will receive the "PSK" award; and contact with 100 different countries will merit the "PI15C" award. Each participant, irrespective of the number of points scored, should make a report following the above sample, not later than May 15, 1960, to Chief, Judging Board, Post Office Box 101, Moscow, USSR.
Whereas:

Pragmatic individuals who maintain that phone is phone, c.w. is c.w., and never the twain shall meet, are flaunting a false premise. The twain met and mingled successfully long ago, long before Morse, Marconi and Fessenden. A French explorer named Bethencourt, visiting the Canaries in the fifteenth century, discovered that audio experts on the island of Gomera even then were fully aware of the DX advantages attainable through narrow bandwidths and high frequencies. Gomerans had already perfected the wonderful "Whistled Language of Gomera," a communications achievement about which Encyclopedia Britannica has this to say:

Many Gomerans possess the ability to talk by whistling. . . . Whistlers commonly insert two fingers into the mouth, using the same modifications in position of lips, tongue, etc., as in speech. In this manner they are able to produce greatly magnified birdlike sounds, which closely imitate the rhythm, tone and other intricacies of spoken Spanish, permitting them to converse across distances which the voice could not bridge. The most expert are found among the gauchos dwelling in the mountains around Chipude, where there is no other means of swift communication. There, illicit charcoal burners are rarely apprehended because details of the sheriffs' approach are announced in whistling.

In the chronicle of the expedition of Jean de Bethencourt in 1402, an implausible legend of missing tongues is related, to account for the origin of the whistled language. A more scientific explanation is that it has been of slow development, perfected from necessity after generations of practice. Rene Verneau (1891), Earnest A. Hooton (1925) and others who visited the archipelago for research state that whistling is not a code system but a true method of conveying thought.

Lest you think this EA8 bird bit is a mere extension of street-corner wolf whistles and other procedure signals, Britannica goes on:

In 1934 an official test was conducted by the inland government to authenticate the fact that conversations phrased in simple words could be carried on. Separated beyond shouting distance, whistlers exchanged 13 unreleased messages, composed by a witness and dictated to them. All messages, as sent and as received, were thereupon recorded in writing. Upon subsequent comparison of notes, 11 messages proved to have been transmitted and understood with exactitude; 2 showed inconsequential discrepancies; the expression "piece of paper" had been substituted for the less familiar word "newspaper"; and the command, "pick up two stones," was performed by picking up only one. A document certifying to the particulars of the test was placed in the archives of the island; official copies are in the library of the University of Arizona (Tucson) and the Free Library of Philadelphia.

Gomera's niche in DX history is further secured by the fact that the island was the last Old World stop for Columbus on his epic expedition of 1492. The house in which Chris stayed and the church he attended still stand. Now there was a DX man.

Two-year-old Charles Guernro of Los Angeles demonstrates that DX men are born as well as made. A recent front-page item in the daily press reports how Charlie nonchalantly picked up the telephone while mama was QRL in the kitchen, dialed a few numbers and raised an XYL in New York. Those doggone Sixes start out young.

What:

DX conditions have rarely given a more capricious and interesting performance than that of recent weeks. From "How's" correspondents on every continent and every band, 1.8 through 28 Mc., come reports of transoceanic signal barrages of electrifying audibility. These joyful sessions are regretfully punctuated by abrupt propitiatory depressions, but such bellwailing irrepressibility is what makes DXing the dynamic sport it is. Man, when you turn on that receiver you don't know whether you'll win, smile, grumble, cheer, moan, groan or drop dead twice. But you can be sure, in any event, that you'll get the challenge you bargained for! Let's see what the lads are working, hearing and chasing. . .

40 c.w.'s locus-pie possibilities are being redecorated nightly by OT DXers, and newcomers are quite surprised to hear 20-meter-type juicy ones lamming along on what they thought was just another rag-chew band. Yes, indeed: W1BPW, K1JCF, W2WAS, WA2s EFN FOC, K1ZT1, K1JYF, KN2TN, W3q JQG KG, K6s CIF DV, KIS SXK, W5S LQZ, W2XKB, KN2OK, W5s JIN 2YD, K6HL, FL4A, A. Ittig, J. Howard, ISW6L, VE7ON and WYDXC mention the workability of APs 2AD 26N 4M 21", GM8HF, C2NS L1 D8, C0s 2CT (7015 sec.) 7 hours GMT, 2MO 21Y (7) 5, 2WC (30) 2, 6NV (17) 1, CT2s AC Al, CX2TF, DA3s HL XJ, DUS7V, EA8s CG (31) 8, C1, EL4A, (3) 6, FJ1CE, FAs 2Vi SEC, GC2FZC (25) 7, HAIKWE, H69YG/mm, HH2LD,
April gallantly roots winter's chill solitude in our latitude, calling forth many a hamshock recluse to join the nearest hamfest. Operators at the DX end are equally diligent, a fact pointed up by the panels on these facing pages.

In the group at upper left are (front row) ZE5 JJC 4MJ 1JY 5JU SSJ 2JS 1JN 4JU; (second row) good ladies of the gathering, and ZE5 JJC 4MJ 1JY 5JU SSJ 2JS 1JN 4JU; (rear row) as s.w.l., ZE5 4JC 6JY 3JJ 7JJ 2KO 1JE 1JJ 6JY 3JJ 5JE 4JX 4JJ 6JL via JES and WD1A. ——— The army at above right comprises (front row)

HKa 6IC (9), 7XMI (4), HZAB 21, ITTACGA, JAI-2-3x en mass. JAs 4AIH 443H KXJ YFF 4YJ 4VQ YJY 5BUJ 5AI7 6AFL 6ALU 7KY 7SU 7JW 7WB TXF 7XM 7ZP 810 81J 8IC 61J 8SN 9TV 9OG SIS 806 GC all around breakfast time out west, Kgs IAQ 1BGX 4AG (6) 0, 4GY (23) 11, KX6CC, KZs MG T2, LA2DP (9) of Swakland, LZ1KGA, MIQAO, ODLS, OHNC, OX3RH (15) 20, PJ2AN, PYs in most call areas, PJ2AR 0, SPS CK KAF, STZAR (8) 23, SIVs WLCI, WJ, WJAFBA, TII, TIZL of the USA (2) 18 of Salak Hong, KCB (1) 11, KDA (18), KID KMI, UBAs FKI KED UG WC 4X, UDAEX 27AG (29), UABKAB, QOSAI, VE6DAM/AJ, VE6AGVC, SU. VEs in all districts. WPX (3) 49, YKE (5) 0, 3PAF (33) 10-11, 4LA 6RG 7BB/km 7CC (24) 12, 9BO 9EO 9ER, YQOQ (29) 21-22, VZRDK 9, VSOOM 7 (20), XEs in quantity YNAB, YNOK, that 3RR JEGG, YOSJ, YV4 CI 5DI DCE, ZCSAF (5), ZBRZ, ZAIKG, ZSSAU, ZNSX, gaspless, 5AYC 5TH and 9G1BQ. Oh, we could go on and on.

40 phone deserves some attention, however, and we can't narrate all of QST. So suffice it to say that COZ2Z, DJ2HE* (899) 5, ELLA, H9ATL, HK7NM (270) 2, HIPSFL, HK3HDP 5-6, HA1MJ, KGBX* (297) 5, KPI1 FV, OAIJX*, OHNC, OX3RH, PXIUP (97) 22, PY3BD, PZs AX* AS* (217) 10, SPSUC, TPE3F, TIE2C (206) 0, UAs L1Z 3NB, UC2GSM, UP2KN, X51AM, YOSVG, XX12M and ZSLD* (109) 10 are giving W8GKB, IBSL and VGRON a run for their money.

75 phone inspires the latter two monitoring organizations to sing the 3.5-Mc. praises of DJ2UH*, DLS ICW 6AI, HA1AIJA, H6FL, LXG, OYTM, OZSRK*, PAOBW*, UAI1Z and UR2KKE. Oh, the asterisk (*) indicate single-sideband employers in these radio-telephone paragraphs. Any W/K/Vs having this stuff? Don't forget that the European segments of "7Z" are narrow slots 'way down around 3.6 and 3.7 Me.

80 c.w. gave way to EL4A (5) 6, enabling Ken to eorial WA6s all through the land. Even 15-watt W6RAs made the 3.5-Mc. grade to Liberia! WA1HPW 6EMY, ITTACGA, A, Rozg, IBSL and VGRON recommended COZ2Q, C6s 6AG6, 7NL (29), 26, CHE5M, DMS2LM, ITTACGA, IT5CMAF (8) 7, UAs GFL 6LI DI1IA 9CM (14) 9, 4J7L 3DI, H16L, UNIAE, UP2A, UOZAN, UR2AI, VSOOM ZG2M. 29 (2) 30 and a host of lesser lights near the low edge. Atmospheres will change again in our latitudes, but that means less noise on the far end of the transatorial path by the same token. Grim, bear it, and log it!

10 c.w., now, for an abrupt change of pace and wavelength. W8s BPW F2 3ID, KLs CTA JFF IMP, K9s YKE YUE, YXG, KCBEG, WP4JX, KARY, Ks QJ, SXX, WX6DINX, W8YGR, WXSL, KLs JU LEQ OSV W8J HAF VQI (the Zerosia really go for Trel, I1ER and A, Ruey) suggest consultation with APA9T (110) 17, C6s 4AX 6DB (100) 16, 7IZ (100) 18, CXA 5Z (80), 22, DMV1U (50) 18, E8AP, EL4A, FASTT, FG2XH (188) 12, FOH1A (100) 24-21, the best Wyoming of G3HWM, HAI7 (90) 22 of San Andres, ITTITAI, JAI-2-3x chewily, JAs 6A4, 6AGA 8R, K2AS2, KG6F2E, KVE4BO (50) 3, OQ6BR, OX3DI, PZ7EM, R86J, R12C (13), R8s 5M2 (80) 16, 6D1 (120) 15-16, 7HIX (5) 10, UAs 1HR 2KAA 10, 5HP 4F, UC2BB (160) 15, UP2KR (12), U2QAB (100) 14, UR2JBU (160) 16, YSOI, YV2S A2 4YD (22), VO2WR (50), VR3W, XE3BL, YV5IL (12), ZEs 1JF (100) 14-15, 3J2 (100) 22, 8JO (100) 19, Z6TM and 4X4F3U.

10 phone holds up well with increased amplitude in the magnitude of its ups and downs. Said ups were well exploited by W8s FZ PVR BJJ VQF, Kks LIBW IMP, KZYL, W6HDW, KZ6G, KZOS, W8DINN, W8YN, K6LEQ, VQ2H, TG6TI and the late stones A, Rozg, and to the tune of G3ONE, G86A, 6LA 6X5 77C, CXZ 23Y 58B, DU9VMS, F8BCO, F8B8F, FQ4SH AF AT, GR2SM (30) 16 just England, HAI5Q, HGIPO, HII6S (300) 23, HIC8U (410) 14, HK4AI (420), sends of JA1-2-3x, JA6 4Y7 76B YCO (420), K6QPG/KWS now heading homeward, Kas 2X1 (800), 8R6 (440), KG6F2E, Kgs 4AK (200) 17, 4AX (10) 17, 6FA (700), 6AI6F 6AF, KM6HI (880), KGLF, KE7 CP, KTQD, K6M (300) 1, OA0B, ODSCL, O3QSV (278), RAs 1JF 2QH 6AG (908) 14, R7D7I, RN1AAA, RO5KVG (379) 15, R2KPCX, SL5AB (500) of Sweden, TFW2 WEY WVE (600) 15, TGG6IME, T2O6 (410), TV9D, TVP 21X (400), W8YGR, XG1AL (310), XDs 6ZG 8EM, YQ5 2AB* (651), 2SB (304), 4RF, YR2BC (410), XEs IPA 8RL, YO3W, ZDs 1JIO AE (270). ZPPEL, ZS7DI, ZQ17 (100) 19, other ZEs and 4Xs CK, EZIKA, 9G1CO. The north-south paths take over 28 Me, for the summer solstice soon, but keep your beams ready for the east-west stuff at frequent intervals. And don't be too sure that a silent nighttime band means a dead band.
Africa — Via W1WPO: FB5BC, sweating through QSL pile-ups for FB5XX and ZZ, points out that an air-mail reply requires three IRCs, and will therefore route through his bureaus. Via W1PM, he receives the Amsterdam and Kerguelen log transcript via 14,400, when conditions and DX permit.

Q2SM — Via W1YJ: Secretary Peter Ryby of the International Short Wave League writes, "2179 AM is CQXX and GWS is CQXX. VHF and VHF plus are OK. We shall be very pleased to accept QSLs for any of these stations. V0Q6M is another." Listener J. Howard notes that IBU's bureau address has changed to London, N.S. England. ... SU1MS, writing R2UYG, emphasizes that he 'accepts no QSLs direct. They must go via W2QON.'

Heard Islands, 1975. The QSLs and log transcriptions, W2HDS discloses association with the QSL problem of FB5XX, PR7ZC and 32A1F. "Quite a few cards are remaining unsent," he observed. "As W3QGU has trouble to send them back with notes of explanation," states Tom. "Luckily, most come with self-addressed stamped envelopes. W3QGU thanks all the members of the Mauritian QSL Bureau address; Paul Cauchebo, QCQAD, Box 467, Fort Louis ... QSM 28 direct is received on two occasions. W2QON, ZS1AM and others discover the info in 50 FDES to be ungodly. W2GDX digests notes that 'QSM is another far-off story. Unfortunately, enmeshed in another puzzle.' The Guifers also hint that the VQ1GCT address may help you keep track of VQ5BBB whose station identity terminates possibly in favor of Malee Isle and a QSO for Orb King of ET2US can be reached through his home QTH — W4W0W, 602 S. Andrews Blvd., Charleston, S. C. 29403. It is intermittently precarious these days in FESA's realm, resulting in sporadic shipment of log transcripts to QSL manager K2ZDK, 202 S. Center St., and FESA QSL matters current, however. And don't omit ams...

Oceania — "Arrangements have been completed with good friend KI3R, postmaster of the FSM, DX observed active on low band in the past few weeks: DJ5BQ, DL6A 1KE YI 3G2, a satellite of 4G1B. Quite a few have been reported on the SSTV and some even on 40 meters. DJ5BQ, KI3R, KI3R, KI3R and KI3R, DX bands, the intrepid observer with a 1975 performance now. The preliminary consensus is: "FB5WKB and associates will maintain experimental schedules such that, though, in general, 5.5-McE, headlines could break out at any time. Kudos, meanwhile, to W1BB whose DX section and DXC encouragement efforts all year so far toward keeping a bright DX spotlight on his favorite band, Keep up your good work, and now on to our stamp-stocking department..."

Where:

Asia — "All QSLs for QSOs under my MPF calls — BD2 MAR QAO and TAE — have been cleared via the RIBBON." Write Deputy High Commissioner for U.K., 41 Racecourse Rd., Lahore, to see if any of his staff are using my old call. I am not informed on current status of cards sent to him, hence do not have one or two good cards to send to any of you. BD2 MAR receives a card through my QSOs.

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Europe — W2DGT recommends DM QSL Bureau, Box 37, Strausburg 1, D.R.E., for your East Germany cards in lieu of the Hailo/Balke address. Via a friend using his invalid pre-1955 QTH with naturally, minimal results, QSLs to Giuseppe's up-to-date address will be answered. If sufficient numbers of IRCs are included. . . . From TP2WEN (W4WTK): "I have a stack of QSLs from all over the world for QSOs I have used in the past, mainly to push my own QTH. All QSLs for stations whose affliate starts with "W" (like my own) may be sent via AFO 81, New York, N.Y. Other QSLs go via W2QON. I have their own bureau. All Americans here use three-letter calls, never two-letter." And from ex-TP2WZ, now back in the US as K8ZBB, I have been receiving QSLs from all over the world. Two cards arrived as K8ZBB.... QSLs were received from most stations worked, but like everybody else, I need a few rare ones for DXCC. If you have the knowledge, I will need the card. For cards received, I would be glad to send a card if he will enclose a QSL with the card, to this address. Additionally, I will also be glad to assist you with your DX stations and stuff."

W2DGT hears that QSLs for LSAAD/P QSOs dated prior to November 29, 1959, were dispatched by batch on that date.
A half century ago—in the year of the Maine, to be more precise—one G. Marconi organized a wireless expedition to little Rathlin Island to initiate a radio link between that bleak outpost and the North Ireland mainland. This pioneering application of radiotelegraphy helped earn the great experimenter the Nobel physics prize in 1909. Last fall Gls 3HVX 3ILV 3KQV S5US SUR and friends saluted the semicentennial of Marconi’s triumph by revisiting the scene as GB3LR, scoring 575 QSOs with 45 countries in a three-day DXpedition. The installation’s 28-Mc. quad is visible at left, and the second picture shows one pile-up battling another. (Data via Gls HVX KYP and Gee-Eye)
working the States with ease. Two near-by hams and I intend DX expeditionary work in Monaco, San Marino and or Luxemborg in the near future.

"There are other TF2s at remote sites but I'm not familiar with their calls. Almost every contact claims me as his first DX but in my part of VX bureau. I use the MARS station here -- an SSB-100, 75A-4 and rhodium directed at Washington, D.C. -- mostly on 20 c.w., 14,000-16,000 kc. and a.s.a. My diamond doesn't work too well on 20 mc, but we'll have an all-band vertical up soon." Neighboring TP/PH/BE closed his four meters for re-use to KJ2F, and had a total of 1898 QSOs with 142 countries and 48 states -- not W4CB for Wyoming three days before Q4T with a 5100kW, 44-kw. high-side output transmitter. The W5CQ and 600W-high input will power the QRP ticket good for c.w. only. "Paragraphs 12 and 23 will be interesting for hams in the U.S. and all over the world. They indicate that foreign amateurs possess the power to work almost any country in its own countries may obtain Polish amateur licenses for the duration of their visits to Poland. Requests for applications should be sent to Alimartewicz Laczko, Centrally Zordzictwo Radiofoniczne i Telewizji, Gorki sg. 9, Poland." You will recall that Yugoslavia has issued similar permits in the past to my K2R marks that V3KX, K2AE and I operated the Russian antenna is often workable after 1600 GMT on Wednesday and Saturdays. Twenty c.w. is favored in this part of the world. K3YVY's QSL ° in his DX dech on assignment in England. -- Rassu of V3KFA is nominated for your h.T. DX collection by W4CB. The station is on 10, 15, 20 and 40 meters and is a prime daily and volunteers to try skeds in the Italian segments of 80 meters, 3813-3827 and 3847-3867 kc. This is vice-manager of 8011KDXT activities to follow. - L31AF writes W7DMJ: "I began operating Central Radio Club station L31AKB in 1930, the first L3 license, you can imagine what it is to be the first DX. At the time the call L31AF was assigned the call L31AF in 1956 and now have worked about 140 countries from my home station. I am busy gathering QSOs for my 12 on 8011KDXT Broadbanding Short Wave Service has program transmitted the 12妹, and plan to do every 'DX on my L3 license every Friday of each month. We enjoy a wonderful readability in the eastern areas of your country but cannot say the same for the V3KX, K2AE and L31AF work. The 8011KDXT contribution Continental comments; K3YVY wishes to assist HE3LA's Lieutenanism DX campaign shortly. - USAW sports on my 10 with Franz Josef Land. - SVSB/WZ/WAI/WI/WT/WJ/WK/WX on Drink, SVSB AC and WX on Rhodes.

Africa -- "I was transferred from Pakistan about three months ago and am enjoying life here as SASTA," writes station owner W5LAK. "I had two days and 20 phone and will be sure to get back on c.w. when I'm settled in Tropik. Z2PAI, who has been in the Philippines for three long months, will be back in Libya this month. - "FRBXTa's Comoros activity is limited to 1500-1800 GMT, the only period he has power," notes W4QIC. "Andre's 15-meter sell-out to use M3B on Friday. Help! B3CRD represent the islands with a 4ZU beam and 200 watts on voice and code. Unlike Andre, "GP has 24-hour power facility." - ETE3CB/WZ/WX/CE/AC/3CRF (EZQF) is the CGW 1800 GMT. January 30th, DL0QF prepares for a Y815W overnight but DL0QF wants to sign Q2PF this summer. - AJ5AB, ham radio

Asia -- KAD1E does capable 1X editorial duty for the regurgitated EARL(M) News. The Yukon-in-Japan DX marathon finds K28S NY (102 countries confirmed), J6 001, CR (87), LL and EZ (61), AA (82) and JP (36) burning the midnight oil with gas abandon. By the way, all those KA signals on March 11th were triggered by an EARL DX QSO Party announced a bit too late for some -- necessary for DXCC arrived. - "SU1MS has a shiny new SB-10 to drive his homebrew rig and has revamped a Hammarlund Pro for SSB. I am on 14 and 28 kw. For KZUYO, "Makim will, however, continue his heavy helping of c.w. and n3.s. activity. He's an engineering student and we've to keep him in the air four months to continue his studies." - ZS6IF apprizes W7TS: "Ex-ZS6H, until recently working under a Z6Z call, has been transferred to Southland and promises to be very active on c.w. as a ZS1, ZS1L active mostly on 10 phone, like transmissions and QSOs short and ampy. - W27PB finds Z6Z9T on 15 August this year. - W7TSZopes to contact K2DZ, who is due to arrive in the next few weeks. - AFRON, WGOXC and WVDXC chorus Africa spots: Malawi put Q5PS6 off the air for a while but expects to air Eise a.s.b. before long. - P7TZE is 807 in receiving considerable attention. - ZS9R7C touts d.s.b. confirmations. - ZD9AID and AK keep schedules around 1900 GMT Sundays, 1400 kc.

Oceania -- "Have a DXpedition to Palmyra Island planned for this spring -- 48 hours, 100 watts on sideband and c.w. 14 Kc." This from amateur, K169QD. - FX-AVRAD (VX3AIAA) offers, "A very big thank-you to the many W5 operators I met hamwise who made amateur radio so extremely interesting during my three-year spell as beautiful Traveler of the Island." - USCGC Admiral out of Hawaii, is another of the many would-be DXpeditioners casting covetous glances toward the rare island. Sam sports a KV8A1 and long-wire proffering 21-mc. c.w. and phone. - KQ9P/KG3/WK used the G2A call, KG3WQ, in February 1964 action and then packed it for Sidsland, winding up a vigorous Wake Island DX career. Well done, Mary. - K1KIDS feels his recent Stateside visit provides sufficient material for a handy book, "It will probably take me about twelve months to recover enough energy and strength to write it, though after so many late nights in the States! Bill set foot in fifteen states and covered some 15,000 miles. - W4QIC confirms that CR180A, vacationing in Poland, intends to return to Poland late this year with improved DX chasing equipment and determination to match," "Another hurricane hit ZR2AB," reports W7TJS. - ESBT 1775 meters and 450 watts is coming. - ZL2AB currently experiments with a.s.b. - DTVSY's QSOs (Continued on page 124)
MORE ON GENEVA

On behalf of the Amateur VHF Institute of N. Y., I would like to extend to you our appreciation of a job well done at the Geneva Conference.

We amateurs were well aware of the many services which were clamoring for the amateur frequencies. We counted it as a minor miracle that we have retained all the frequencies we started with. Many thanks! — Claire Rosenbaum, W5KQL, Corresponding Secretary, Brooklyn, N. Y.

We were all impressed with the splendid efforts put forth on the part of ARRL on behalf of all radio amateurs at the Radio Convention. — B. G. Schievier, W5YJ/K5L, Kodiak, Alaska.

Three cheers for the ARRL and for the fine job done at the Geneva convention! I wonder how one can operate an amateur radio station without being a member of your organization. QST is as indispensable to a ham as a bible is to a minister. — Count Lavoliite, V6BHC, Montreal, Canada.

Just a word of commendation for the League's fine work at the Geneva convention. The results are quite pleasing. — Carl R. O'Gara, K5RYS, San Diago, California.

Deeply grateful to you people in ARRL for your everlasting interest in our amateur activities. Many thanks for your efforts at Geneva this past year. — Dick F. Scaife, K5RY, Boise, Idaho.


... My belated albeit sincere congratulations for a 4.0 job. I can appreciate the work of preparation and planning that went into this endeavor that assured us a successful outcome. Also my best wishes and congratulations to all your excellent staff... — Len Collett, K3IZC, Halifax, Canal Zone.

... Sincere congratulations on the job at Geneva. I hope some of our bright young brethren have the sense to realize that, in spite of all their sniping, ARRL saved the day, again, for ham radio... — George D. Moore, W1PIJ, W0WYT, Mission, Kansas.

I just thought I would send along a note of TNX for the job you did at the convention, and TNX again for saving our freggs. — Joe Scuderi, WZ9XH, Chicago, Illinois.

... Want to congratulate you and the League for grand work done in behalf of the amateur fraternity in preparation for and at the Geneva conference. It was an outstanding effort!... — Ed G. Roser, W2ZT1, Trenton, New Jersey.

We all have a great sigh of relief that not a single kc. was lost to the American radio amateur at the Geneva convention. Throughout the months that preceded the convention we were besieged with rumors, wild guesses and educated guesses — some well founded and some bordering on the ridiculous. There have been pros and cons written about the delegation of the ARRL being present at Geneva during the long period of time required for the convention and to the actual necessity of the delegation being there during the overall length of time. It seems to us had we not had someone there at all times to protect our interests the ARRL would not have done the job it is established to do. We, for one, feel that the U. S. delegation undoubtedly aided by the ARRL group did an almost impossible job. — Virginia "Ham," (Jan. 1960).

... I would like to thank ARRL for the job on behalf of the radio amateurs during the world-wide frequency allocation conference last year. Also for the countless other benefits that the ARRL has provided for the ham down through the years. — William H. Smith, W3TZN, Bedford, Pennsylvania.

HAMS AND THE MILITARY

I think that the article by W5PYU, "The Your Amateur License in the Naval Reserve," has done a superb job of answering many of the questions that young men in my age group (16-18) have no doubt been wondering about for a little while now. We have all heard rumors about the usefulness of amateur radio in the Armed Forces, but have been sadly lacking in facts. Mr. Hughes makes no bones about telling exactly the Navy's view of the matter, and this is perfectly O.K. in an article of this type. The reason I am writing is that I would like to say that I think there would be quite an audience for a few more articles such as this, having to do with the Air Force and the Army, written by qualified people. This subject is, I believe, on the minds of many young amateurs and budding enlisted, or, perhaps draftees. — Michael A. Budeus, K4QBT, Fairfax, Va.

160 MOBILE

Your article, "100 for Mobile!" in the October 1959 issue intrigued me very much. In fact, due to its compactness I proceeded to build and follow the pictorial parts placement. As this is the first transmitter I have ever built, I took great pains in planning and wiring the "underside". When I finished the project I felt very proud of the construction and appearance, comparable to commercial units. Since I had decided from the beginning to stay on one hand, I omitted the handswitch and inserted a filament toggle. To make it deluxe I added a relay for push-to-talk. The initial "fire-up" resulted in complete success, I have wanted a mobile transmitter for quite some time and this one certainly fills the bill, from compactness to contact! Congratulations to the author, D. A. King, K5ESE, for designing an excellent circuit. It has certainly put a dent into the mobile band in this area.

And thank you for a fine publication. I read it cover to cover. — Eugene Core, W4GUDU, Pasadena, California.

E = IR

While I realize that I am being a real ratty old man for raising such a "minor" point, I want to take exception to a statement made in February QST, page 39, under the title of "More Danger."

The statement says, "The power company said 7500 volts passed through his body." It seems to me that George Simon Ohm in all of his wisdom said that voltage never passed through anything. Voltage is a pressure which causes electrons to flow through a path when provided, and I believe in this case that the path was well and truly provided by the aforesaid body, in inverse proportion to the resistance of the path provided.

I have found that the beginning student in electricity seems to want to have everything moving, the voltage, the current, and the resistance, and until he can get a clear view of the voltage as a pressure, the current as a flow, and the resistance as a retarding force, he and Ohm's Law are completely at odds.

Now, if we leave loose little traps lying around in our technical literature, of a type that will bolster his misconceptions of the subject matter, I believe that we are doing our beginning reader a very great disservice.
In this case, I believe Pete received across his body a portion of the 7200 volts available dependent upon the ratio of the resistance of his body and the line, and bottom part of his body and the ground.

Let me get the idea that I am suggesting that one should use this as a method of proving a very interesting point of Ohm’s Law, but let’s keep the ideas straight so that the reader may be more aware of the factors involved in becoming part of a series circuit placed across a 7200-volt source. — J. C. Gille, VR82Z, St. Paula, Ontario, Canada.

BREAD AND BUTTER PUBLICITY

I’m interested in the ARRL publicity program; please send me the publicity aids explained in the February editorial.

I consider my membership in the ARRL very valuable to me, and instrumental in helping me to become a better operator. — James K. Niedbalski, KN0WJD, Colby, Kansas.

Just about one hour after reading your editorial (I always read that first), I was interrupted in my favorite pastime of DXing by one of the other local DX hounds, commenting on a Chicago Tribune story about my DXCC, and he inquired as to who my press agent was.

In this regard, I’d like to point out that I have no press agent other than the ARRL itself. As a result of one of our routine press releases, which even in the big cities do not always end up in the waste basket, a woman reporter for the Tribune was prompted to call me and inquire as to what it was all about. We had quite a lengthy conversation in which I did my best to give her a good overall picture of ham radio and its many facets.

Keep up the good work. I like the old rag just fine and can’t wait till the next one arrives in the mail. It is well balanced, and oh so interesting from editorial to want ads — I read it all — Edmund F. Molly, W9JFT, Chicago, Illinois.

I noticed in the editorial section of the February 1960 QST, an article on “Bread-and-Butter Publicity,” I would like the booklet and press release forms mentioned in that article.

I think this material will be quite valuable to us in our work with a local six-meter emergency net. — John B. Miller, K6B1Y, EC, McDonough County, Macomb, Illinois.

I enjoyed the editorial “Bread-and-Butter Publicity” very much. I am in charge of public relations for the newly formed Idaho Radio Society that at Pocatello and would be very interested in securing all the publicity aids League headquarters would care to send me. — David B. Blodell, KN7KYS, Pocatello, Idaho.

Having just been appointed to handle the publicity of the Portland Amateur Wireless Association, I was interested to note in the February QST that you can supply format for press releases, etc. We here in Portland have access to two daily newspapers. It’s quite possible that an addition to occasional coverage of our club news, a state-wide column could be developed in the interest of hamdom throughout the entire area. — Ben Weber, K11DSJ, Portland, Maine.

I wish to thank the League for the source material on Amateur Radio that I received from you, Excerpts from this plus personal experience, a handful of QSTs, a late callbook, and a showbox full of DX QSLs from 122 countries produced a well-received talk last Monday night before the Cumberland Women’s Club, Homer Larena, W9MXP, Cumberland, Wisconsin.

ADDITIONS TO HOME BREW

I read the February QST article “The Axioms of Home Brew,” and enjoyed it very much. I wonder if these three axioms might be added to the list:

18. The amateur engineer will solder and resolder an otal plug three or more times before remembering to insert the protective cap on the leads.

19. After the above procedure is completed, the lead will be exactly 1/2-inch too short.

20. If according to the engineer’s table of tube characteristics a final amplifier tube is rated at 250 watts, the plate will become red as the loading approaches 90 watts.

I imagine you came across these generalizations through hard experiences. I know I did. — Phil Herwitz, KB6GB, Chicago, Illinois.

THIS TEENAGE JAZZ

In the three years that I have been a radio amateur, I have read numerous complaints in QST about undesirable amateur activities on the part of teen-aged hams. Several amateurs have criticized such juvenile practices as using “cute” phonetics on the air and witty names in addressing QSLs. Others have protested our habit of discussing such subjects as school and YLs on the air. Another individual found the practice of giving ages on the air objectionable, while several others have found strong objection to our very existence on the ham-bands.

I believe that some of this criticism is unwarranted, and I would like to offer some defense for our on-the-air activities. First, it should be realized that most of us have sets of values somewhat different than those of the more mature amateurs. We are generally interested in different things. Appreciating cute phonetics and the like is a part of our personalities at present. Thus, for an older ham to object to our use of cute phonetics or names, or to protest the subject matter of our conversations, is entirely unrealistic as a parent would be if he demanded that his four-year-old son play chess rather than cowboys-and-Indians. It is also because of the difference in our interests that I often give my age on the air: it tells the fellow on the other end more about my personality than any other thing I might mention.

Is my habit of calling other teen-aged hams “chief TVI generator” and calling myself “KB9NB, the Young Nosterious Booster” so distasteful as to threaten the safety of our hobby, and so obnoxious as to classify me in the same “rogue’s gallery” as those who show wanton disregard for the laws of our country? As teen-agers, we have certain things we enjoy, and I hardly think that strong objections from older hams will inspire us to terminate these “undesirable” on-the-air practices any more than, returning to the analogy I used earlier, parental pressure would make an average four-year-old enjoy chess. Hence, if the answer to my rhetorical question is yes, it follows that the proper course would be for the FCC to make age a qualification for holding an amateur license. However, I feel that our idiocies are no more undesirable than those of other factions of the amateur fraternity, and I think that the primary motivation of those who object to the “Captain Video” set is pride. It is obviously no particular point of pride to simply possess a ticket, when nine- and ten-year-old children have been known to obtain the same class license. — Wayne E. Overlook, K7Y2B, Secretary, Mirna Costa High School Radio Club, Manhattan Beach, California.

I am sorry that my first letter to your fine magazine is a complaint, but I feel something must be said when the holders of the more advanced licenses criticize everything that the Novices do, from the poor sending and chirp to the way in which they address their QSLs. I thought that I’d put in a good word for these fellows, and, although I see nothing wrong with addressing the cards to Chief Operator Joe, etc., I have made a survey of all the QSLs that I have received in the last two years. Here are the results:

- 50% General
- 60% Novice

<table>
<thead>
<tr>
<th>Amateur Radio Station</th>
<th>General</th>
<th>Novice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Operator</td>
<td>26%</td>
<td>10%</td>
</tr>
<tr>
<td>Chief YL-Chaser</td>
<td>6%</td>
<td>3%</td>
</tr>
<tr>
<td>Brass Founder</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>R.F. Plant</td>
<td>2%</td>
<td>7%</td>
</tr>
<tr>
<td>Chief Switch Flipper</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>TVI Pahche</td>
<td>2%</td>
<td>7%</td>
</tr>
</tbody>
</table>

As you can see, the percent of “cute” titles is much higher on the General cards! The only thing that this proves is that Generals are just big Novices. — Scott Williams, WAD3NM, San Diego, California.

(Continued on page 135)
FCC Suspends Amateur Licenses in Exam Fraud. The Federal Communications Commission in these actions again invokes the penalty of taking amateur licensing privileges away from any amateurs who would be party to a fraud in obtaining an amateur license.

FCC ordered (Dec. 23, 1959) that the Conditional Class Amateur Radio Operator License (K4YMS) of Sol Herzog, Savannah, Tennessee BE SUSPENDED for the remainder of the license term, that is until July 15, 1964, under authority contained in Sec. 309 (m) (1) (A) of the Communications Act and Sec. 0.292 (f) of FCC rules, his amateur license to be mailed the FCC at Washington, D. C.; it appearing that the license was issued a Conditional Class license on July 15, pursuant to a written examination and code test purportedly taken by the said Sol Herzog before volunteer examining; it further appearing that he fraudulently indicated that he did not reside within seventy-five (75) miles of an FCC examining point by claiming residence on Lot 38, Cattle Drive, Crump, Tenn., whereas he actually was residing in Memphis Tenn., and that he falsely and knowingly described the location of his station, violating Sec. 12.14 (n), 12.64, and 12.102 of the FCC rules. This suspension was effective from Jan. 15.

FCC ordered (Dec. 31, 1959) that the General Class Amateur Radio Operator License (KG4MD) of Herbert D. Herzog, Memphis, Tenn., BE SUSPENDED for the remainder of the license term, that is, until Feb. 10, 1963, under authority contained in Sec. 309 (m) (1) (A) of the Communications Act and Sec. 0.292 (f) of FCC rules, his amateur license to be mailed to the office of FCC, Washington, D. C.; it appearing that the licensee certified to the Commission that on March 24, 1939, he gave the Morse Code Examination to Sol Herzog, stating that he passed the examination at the rate of 13 w.p.m. and as a result of said certification a Conditional Class license was issued ... it further appearing that the said Herbert D. Herzog had knowledge of the deception in the false representation of the residence of this applicant, and that notwithstanding, he willfully and knowingly assisted in obtaining this Conditional Class License in violation of Sec. 12.102 of FCC rules. This suspension was effective from Jan. 21.

Citizens Band Not to Permit Prerogatives of our Amateur Service. FCC amended its rules for the Citizens Radio Service, effective March 15, 1960, to define more closely the permissible communications and to make sure part of its allocation will not become an examination-free amateur band. FCC's report states that it had no intentions to create a service paralleling the Amateur Radio Service, nor was it intended that Citizens Radio licenses use their stations as a hobby in itself, for technical radio experiments or general contacts of a random nature ... provision for such already being made in the Amateur Radio Service for those who have the knowledge and skills to qualify. The Amateur Service (Sec. 12.102) of course prohibits amateurs from any use of amateur radio stations for gain or remuneration or conduct of personal business; note that the Citizens Radio Service as specified below is for "substantive messages related to the business or personal activities. . . ." but may not, even so, involve compensation or remuneration from others. The following excerpts from the FCC report clarify this matter of service rules and differences between the Citizens Service and Amateur Service and so are of some interest to amateurs.

"(11) . . . the Citizens Radio Service (except for Class C stations) is contemplated basically as a service for intercommunication between units of a single station. This does not mean that authorization for single units will not be granted, but requires that intercommunication between units of different stations be restricted to useful and substantive messages related to the business or personal activities of the individuals concerned . . . (13) . . . rules changes as adopted provide that except under certain clearly defined conditions, a station licensed in the CBS
may be used only for transmissions which relate to the business or personal affairs of the licensee.

"(17) Par. (e) of Sec. 19.61 merely states that which is a good operating procedure; that is, that all communications, regardless of their nature, shall be restricted to the minimum practicable transmission time . . . . (18) . . . . par. (f) of Sec. 19.61 limits the transmission of any Class D station or any exchange of communications between two or more Class D stations to not more than five consecutive minutes, followed by a two-minute silent period during which the licensee shall monitor the frequencies used and other stations will be provided the opportunity to use the frequencies.

"(19) . . . The practice of using a 'test' call for the purpose of inviting DX contacts with unknown stations will be considered a subterfuge in lieu of the general call CQ, and in violation of the rules . . . . Except for brief test transmissions and emergency or civil defense communications, all transmissions from a Class D station must be addressed to specific persons or stations within the direct groundwave coverage range, and any communications designed to elicit a response from a random or unknown station, such as by calling CQ is prohibited.

All Operators Can Help Improve Conditions in Our Bands. Quite a few letters are coming in these days (from hams about hams) complaining about key clicks, phone splatter, deplorable signal deficiencies and what not. The idea generally expressed is that we should run a list of signal offenders in QST or step up the sending of helpful advisory notices by Official Observers. As we have told one writer, the several weeks of time required to get a monthly magazine into print makes it impractical to advise of signal deficiencies in QST. A given set of spurious radiations may well have been remedied before QST arrives. There's also the chance of misidentified call signs.

In any event most operators, we believe, feel thoroughly ashamed of having a poorly filtered signal, splatter, disrespectful click and/or chirp, or undue broadness.

Unfortunately many fellows on the air never get to hear themselves as others hear them. But it's for sure that defective or shabby signals make an operator's on-the-air presence as shabby as Bowery and slum-area characters look to the man about town.

Our purpose here is to stress to you as an operator and QST reader, your own potential in getting signal conditions on the bands improved.

Your honest report, adding the C or K (for chirp or click), giving a true T-scale evaluation (please consult our RST definitions; the list, Op. 3 will be sent free on request), your voice description of signal troubles conveyed in honest and friendly fashion on the phone bands, can do more than all the Observer warnings and FCC notices put together to help improve the signals from stations reported below par.

Members of the ARRL Observer Corps do a generally commendable job, as a large file of appreciative correspondence will attest; FCC actions calling amateurs directly to account likewise! But it is our notion that the public opinion inherent in amateur radio itself is a greater force than even either or both of these together. "Pride in signal" has not disappeared or perished from the earth. But the evoking of that pride in correcting bad band conditions has been perilously diminished when too many are guilty of passing habitually-stereotyped reports, or engaging in downright flattery.

We want here to suggest that all operators be frank in telling operators over-the-air as they are worked, when their signals seem to you in any way faulty. Remember that when you do this, you are doing the other fellow a favor to help him remedy his poor signal. You and I certainly value a true report over a meaningless one, and every amateur is grateful for a tip-off that makes corrective measures possible before stern FCC action. Then how about giving forth with fewer "formula reports" and giving more significant and honest useful reports!

Logging Forms for the June Field Day Ready. Do you have your plans made for the coming ARRL Field Day? The convenient forms to use for FD operation are now available. We suggest that you ask for yours by radio or mail well in advance. Early requests provide ample mailing time for third class mail to bring our FD log sheets to you and avoid taking the chance that your forms will not arrive until after the June 25-26 week-end of operating.

A basic purpose of our Field Day is to provide a practical communications test for emergency-powered amateur radio equipment, both for receiving and transmitting. You can take part with your individual equipment, or go portable with another amateur, each of you providing some equipment and sharing the operating experience. Club activity is extremely popular, and FD is a challenge to every club's organizational abilities to show how effective a communications pattern can be proved for a specified period. FD is, as well, a training exercise for the individual operators. To get the most from FD in enjoyment and results takes some advance preparation and planning.

Preparing for FD. Club plans are usually worked out by club committees. A club may establish as many as found helpful. Different committees on location, commissary details, equipment setups, antennas, and operating plans, all under a general chairman may start functioning months in advance. Indeed some clubs start working on the new FD within one or two months after the last successful exercise! Clubs, depending on size, must themselves decide which transmitter-class they will enter. Will all operators in turn man an idealized emergency station, switched from one band to another? Will there be an operator team for each band, competing on its own? Shall there be separate Novice or Technician setups with special limitations, and will such run for just certain hours, or all through the FD?

If there are a number of amateurs in the group who have never been on a Field Day, or who are but recently licensed, we want to suggest not only adequate club briefings on the equipment to be used, but some blackboard and on-the-air sessions ahead of time. Net operation, message form, logging practice, the length and timing
of calls and answers, and the effectiveness of one's c.w. and phone procedures need evaluation to win out, either in personal home operation or FD activity. Each year about FD time we read in club bulletins of advance field exercises arranged by some clubs. Also we note that many club members who hold SCM appointment try out their new gadgetry and emergency equipment especially completed for FD by giving it a workout in the April CD Party. We want to stress that FD is a top interest activity for everyone, whether you work h.f. or v.h.f. As for Field Day in clubs, the operating should not in our opinion be limited to just your top operators; it should be a pleasurable workout in which every club member and operator can feel he was on the air and had a part in the net result, and in so doing learned some new and valuable pointers.

June QST will carry the full text of the Field Day Rules. These, in the usual pattern (see last June QST) have already been distributed to all affiliated clubs through the early 1969 Club Bulletin. As the FD Rules will explain, there are five possible classes for your entries to provide for clubs, individuals, groups and home stations.

Mobiles have an important place in our emergency work today; too; as about one amateur in every three has a mobile. ARRL urges that every amateur with mobile or hand-carried equipment be, by FD time, registered as to availability with the Amateur Radio Emergency Corps and/or signed up in the Radio Amateur Civil Emergency Service and thus made a part of community planning. Also we strongly suggest that clubs should report and lump together their individual-operator mobile scores in FD for listing in the Club Aggregate Mobile Scores, this besides turning in a Class A score of their field operations under one club chosen call.

About Individual Setups. Clubs usually compare their showing with "last year" or with the results as reported by groups of similar size and transmitter-class. Individuals operate and are compared in QST listings only with other individuals. If you have gear, home-built or manufactured, equipment capable of battery operation but never tested out, why not make it a point to give it a workout in the FD under a simulated emergency condition? There's a sense of gain and accomplishment in making simple, lightweight equipment do a passable or superior job from some spot where no community power source is available! To take part credibly in FD, it's not required that you put in full time, though many do. We recall our personal part in FD some years ago for just one afternoon of the exercise. Only a small rig was on hand, but getting that station going in a remote spot was a richly rewarding experience. ARRL has developed its FD pattern in the hope that you too will find valuable technical operating and fraternal experiences in the Field Day. This is a reminder to start your FD plans now!

—F.E.H.

**MEET THE SCM**

Meet the new SCM for the MD-DEL-DC Section Thomas B. Hodges, W3BKE ... and quite a background he carries with him too. Tom is presently with the FCC as an engineer in the Technical Research Division. He once was with the Library of Congress as Ass't. Chief, Division for the Blind, in which capacity he promoted publication of excerpts from the AARL License Manual and How to Become... in recorded form for use of the blind. This Talking Book is now in wide circulation.

[Image of a talking book]

Dating initial amateur radio interest back to 1924 and holding various calls over the years, Tom is well known for various contest activity, presently crediting his scores to the aggregate totals compiled by the Potomac Valley Radio Club. Sweepstakes, DX Contest, Field Day, and CD Parties are among the contests in which Tom has been active since 1953.

Motorcycle racing is his favorite sport with gardening as a hobby. Too, W3YL is also a ham, W3TSC. The MD-DEL-DC section is most fortunate to have W3BKE as their SCM.

**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 close of business, March 1st. In case 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 reasons of missing 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]
88 La Salle Road, West Hartford, Conn.

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

---

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.
Sparks really flew in the January CD Parties, as K2EU flowed the gang on both c.w. and phone to become the first dual winner. Shelving the Lettino 240 and NC240C for an Apache TX-1 and SX-101A induced Ken to dredge the bands to 217,470 points on c.w. and 41,495 on phone. This photo finds K2BLI in refulgent repose after his twin triumph.

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. R. Handy, Communications Manager

Section Closing Date SCM Term Ends
West Indies Apr. 11, 1960 William Werner Aug. 10, 1968
Quebec + Apr. 11, 1960 C. W. Skarstedt Dec. 15, 1959
North Carolina Apr. 11, 1960 H. Riley Fowler Mar. 6, 1960
Alberta + Apr. 11, 1960 Gordon W. Hollingshead May 1, 1960
Western Penn.- June 10, 1960 Anthony J. Morcaca Aug. 7, 1960
North Dakota June 10, 1960 Harold A. Wenzel Aug. 11, 1960
Kentucky June 10, 1960 Robert A. Thompson Aug. 18, 1960

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Louan 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 of term of office starting on the date given.

Mississippi Floyd C. Tideston, WS5MUG Dec. 10, 1960
Sk Sakatchewan H. H. Horn, VESHR Feb. 10, 1960
Eastern New York George W. Tracy, W2FPU Feb. 10, 1960
South Carolina Dr. J. O. Dunlap, W4GQY Jan. 1, 1960
Tennessee William F. Kennedy, WC9M Jan. 1, 1960

In the New Mexico Section of the Rocky Mountain Division, Mr. Newell P. Greene, K39JL, Mr. Carl W. Franz, WS5JHN, and Mr. Brian R. Ward, K3GQJ, were nominated. Mr. Greene received 35 votes, Mr. Franz received 34 votes, and Mr. Ward received 25 votes. Mr. Greene’s term of office began Feb. 10, 1960.

RESULTS, JANUARY CD PARTIES

Ye olde contest editor stood back rather astounded at the results of the January CD Parties showed a rather phenomenal performance. Claimed scores show that K2EU was not only the winner in the phone Party, but the c.w. Party as well. Isn’t this the first time this has ever been done? Near as I can recollect, the closest to rival it in recent years is that fest of W3TAZ in the July 1958 Party, when Jack was the winner on phone, and placed fifth on c.w. by the outdistance of five W6s under the old scoring system. I’m sure the gang will be out in full force in April to rack up scores of their own to ensure that K2EU, does not come through with a repeat performance. Another top scorer on c.w. was W1RAN with 209,729 points via 600 QSO’s in 63 sections, this score falling short of K2EU’s 653 contacts in 66 sections good for 217,470 points. W3KLA was disappointed at missing the 200K mark, but his score was good enough for a place finish, with W4DQZ and K3ZSHN rounding out the top five. Who is K3ZSHN you ask? Well, that’s old familiar W2NS1 all outfitted with a new call in Oklahoma. Yeah, I was puzzled at his knack of savvy too; so now you know!

Well, who would have also-rans to K2EU’s phone score of 41,495 points by 187 contacts in 43 sections? W4EIC’s radiant assault netted him 190 contacts a new phone QSO record, in finishing second with 40,170 points. W3NF supposedly had hit “in the bag” early in the Party, but old ass set in and EJ 118 finished up in front of the TV set come Sunday evening. Jiffy 23,840 points were good for fourth, though bowling EPA section honors to K3ANS with 30,090. Finishing off the raining six were W4QRG and W3KLA, the latter proving that he can occasionally shed his bug for a week end, and polish ’em off with the mike.

This Party was marked by the many new calls heard. Newcomers were everywhere handling out contacts left and right. This may prove an opportunity to better your previous high score in the coming April fracas. So men, forward . . . march!

The following are the high claimed scores. Figures show score claimed, number of QSOs, and number of different sections worked. Final and complete standings will appear in the April CD Bulletin.

April 1960 79
DXCC NOTES

Basic guidelines for determining our Countries List, established as the DXCC standard, were given on page 84, April 1950 QST. Some amateurs have asked that we tell them the specifics of the distance that would serve as a guide when applying points two and three of that discussion. This is possible, since the several applications of the policy made over a number of years make for well-established precedents. Here then are these provisions, to answer possible questions such as may arise from time to time:

2. The geographical separation. With regard to geographical separation by water where the place in question has no political/administrative dominion, it must be at least 225 miles from the nearest land to which it is administratively or politically attached to be considered for separate country status in the ARRL Countries List. This point shall not apply to the islands in a natural group.

3. Where foreign territory divides a country, there will be a minimum distance of 75 miles of foreign land separating the two areas or places in question. In the case of island groups this distance requirement does not apply.

DXCC credit, for some years, has been given for the Palestine listing on those stations operating in the city of Jerusalem and those stations operating in the UN Trustee Supervisory Sector bordering the city of Jerusalem. Effective April 1, 1960, no further credit toward the Palestine listing will be made for those stations operating in the Israeli section of the city of Jerusalem.

Confirmations for contacts with stations operating from the UN Trustee Supervisory Sector bordering the city of Jerusalem will continue to be credited to 1960 QST, as will confirmations for contacts made prior to April 1, 1960 with stations operating in the Israeli section of the city of Jerusalem.

In view of undeniable evidence presented by the Radio Society of Bulgaria regarding the operation by Dimiter Shirska, also known as Sbi, LZ1DX, LZ1DX/7A, TA1SB, ZAIKAD, KB8A A/2A etc., we are obliged to announce that previous credits given on LZ1DX/7A have been deleted from DXCC records and that no confirmations made out by or associated with Shirska will be accepted for DXCC credit.

Announcement is hereby made of the addition to the ARRL Countries List of Auckland & Campbell Islands. Both of these islands are located in the Pacific Ocean south of New Zealand. Auckland Island is approximately 300 miles south of New Zealand, Auckland Island is about 150 miles closer. Confirmations from either of these places will count the same for DXCC credit.

DXCC credit will be given starting June 1, 1960, for creditable confirmations dated on or after November 15, 1945. This is to permit foreign amateurs to start earning credits at the same time as those in the U.S. A. Confirmations received prior to June 1, 1960 for either of those will be returned without credit.

DX CENTURY CLUB AWARDS

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From January 1, to February 1, 1960 DXCC certificates and endorsements based on postwar contacts with 102 foreign countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

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U.S.-Canada Area and Continental Leaders

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Endorsements

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80 QST for
Throughout the last year or so this column has carried frequent reports of the doings of the AREC group of Cuyahoga County (Cleveland), Ohio. So often has this name appeared, in fact, that ye editor has groaned audibly from time to time and we have been accused of being partial to the Cleveland group. But the material was good, it was well written, concise, complete, and the subject matter was apropos. We used it. The EC for this group is and has been Walt Ermer, WSAEU, winner of the 1959 Edison Award.

We are in the AREC are very proud of the reflected glory in which we bask as a result of this award. Every man who tries to accomplish something has enemies, and no doubt Walt is no exception; but, oddman, we can't think of a more deserving person. The Cuyahoga AREC is a well-balanced communications unit. Come an emergency, it is right on the job, doing in stride what it keeps in training to do during the rest of the year. Recently, when he resigned as EC in order to turn the job over to someone else, Walt submitted a complete and detailed report of AREC activities for 1959. Besides actual emergency operations, they included communications for parades, sporting events, fund drives and similar emergency work.

One of the accounts, signed by the "assistant EC for parades," got a big laugh from some of the readers. But we weren't laughing. Providing communications for parades has a lot of specialized angles that have to be coordinated by someone familiar with them. And the Cuyahoga AREC's services were much in demand for this and other purposes. The group was very much in public good odor, and they were doing what more AREC groups should do: keeping active and at a high state of efficiency.

We are sure that Walt Ermer will be the first to decry his selection as an individual for the Edison Award honor, and he'll be right. No individual in a leadership role can take full credit for his organization's accomplishments. At the same time, no organization can become outstanding without an outstanding leader, and that's what WSAEU has been.

As inevitably as the sunrise, one reflects credit on the other.

This was the eighth Edison Award bestowed each year on the amateur, picked by a committee of impartial judges, who is considered to have rendered the maximum service to the public interest. In seven out of the eight choices, the amateur has been chosen from among those rendering service in declaring emergency or traffic field. This is not even to mention those who were awarded special citations for work in those fields. We feel that all this is a well-deserved tribute to our emergency and traffic-handling capabilities and achievements. The amateur radio and an indication that the greatest public service can be rendered in these fields of amateur endeavor.

On Nov. 23, 1959, the Kings County (Wash.) RACES coordinator was notified that flood waters were rising to the danger point on the Green River, and RACES operators were alerted at 0130. By 0600 a portable base station and 8 mobiles were operating in the Auburn area. As no emergency operations were immediately called for, more RACES units were activated to assist in the Snoqualmie River Valley, centering around Fall City. RACES mobiles were dispatched to coordinate work crews, floodlights, food supply shipments, and observe and report on flood conditions and to handle traffic to and from stranded families. Throughout the following day RACES members maintained communications with various points in the stricken area until all operations were secured. At the following Sunday week the Snoqualmie River was again on the rampage. At 1500, Dec. 1, WTTWU and WXKA set up a portable station in the Snoqualmie Fire Station to coordinate RACES units with the King County sheriff and military units. RACES mobiles furbished vital information on roads, bridges and flood levels throughout the night. All officials were favorably impressed with the spirit and efficiency of the RACES net. K7GUV lists the following net using this last having participated, with apologies to those omitted: K7A AVII DNF

AST ABB GUH UST ICB, W7OYO Q0P BBR FOK FAS FKL RNY BEI W7G NTG YVE JGE JGM QBD PRW YOQ SQG NUL DPW VDU FOR CNY TDX QFR FNA RY PRV UIN UYX J7U TWJY J8R HRA JWS URR JF WWF APB FOR JGQ GSS SEM NWP PZ0 CJU TRA ARC FCB.

Amateurs participated in communications activities in Crescent City Harbor, Calif., on Dec. 27, when a large explosion and sink, The Tri County Emergency Net was quick activated. KENNA took over as net control and the net handled many anxious personal inquiries from relatives of people on board the ship which was on fire. The amateur net was also instrumental in squashing false and exaggerated rumors. We are indebted to W5ACT and the clipping he sent for the calls of some of the other amateurs who were active in this emergency; W540 HJH YIJH JIO ANR UGE, K66 OBL ERC EYLY, W56CQO.

On Dec. 29 a major flood storm in Western New York created a disaster area in Rochester and surrounding towns in Monroe County and amateurs were called on for emergency communications assistance. Mobilization commenced at 1400. By 1800 fixed stations were set up at the Red Cross chapter house and in the o.d. and sheriff's offices. The o.d. control center station was put on the air and the net was already on duty and with fixed units in Brockport and Webster. The 2-meter band was used for fixed stations, and 10 and 6 meters were used for the mobiles. Operations continued until midnight. The following day the entire operation was repeated with the addition of several amateurs and emergency personnel. The amateurs were on duty from 0600 to 1600, and net control went over the entire county. Operations were concluded at 2330, only to be resumed again on Thursday, Dec. 31 without the tie-in to the sheriff but with a mobile dispatched to a new Red Cross station to relay necessary messages to the county house. This day's operation was butttened up at 0110 Friday morning. In many cases, amateur radio was the only means of communication, since telephone lines and power lines suffered extensive damage throughout the area.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

RACES and RACES worked together as a single unit in this emergency. Thirty-two operators were in actual participation, with many more standing by and available in case needed. Those taking part: K6J AQG HIS NNO JIT TKB DHR KAA BFF ALP ZRM SKG UXF ALZ OKS UCT LOL LWZ. W5W QY CTA UBF TCK KUJ KIO WYX UHF QYT GDB W4Y RVK K6V S6C YOWE TBR UTH, W6A EWA BRS ABL BM1. — W7QY, EC and W7CTA, RO, Monroe County, N. Y.

On Feb. 7 an intensive search was begun in the Los Linguis Canyon area of Texas for three college students who had been missing since the previous Wednesday. K5VHE/mobile was on the spot reporting news from the scene and the following net participated in relaying messages: K5J HJII DBC WER GDB YWJ, W5WY. The three boys were found dead of exposure at 1145, and amateurs were first to flash the tragic message to friends and relatives.

During the SI&T in Minnesota last October W6WUD advised the net that his five-year-old daughter was running a fever but that he was unable to go for a doctor because the roads were impassable. It soon developed that this was not a part of the SI&T but the real thing. W6ZOB contacted the clinic at Deer River which in turn contacted W6EAM, a doctor, on their private radio system, and soon W6EAM was on the air, operating a solid state rig. A week later W6ZOB relayed. W6WUD described the symptoms and listed the medications he had on hand and W6EAM prescribed from this. By evening the fever had broken, and the news to the SI&T was a recipe for success, which was provided by W6WPO. — W7UTS, SEC Minnesota.

As an aftermath of the earthquake in Peru, W6ERY and W6JCY were contacted on Jan. 14 by two Peruvians who
were desperate to get news of their family. W3ERY contacted OA4H1K, an American school teacher, who confirmed that the people concerned were not on the death lists. A schedule was made for the following day via W5JCY and contact with OA4H1K was perfect.

On Feb. 10 the Clarke County, Ga., AREC was alerted by EC K4BQP in connection with a storm warning. Within half an hour the net was functioning with K4PYM as net control; seven stations were in the net. As no communications emergency materials had been secured at 1032, having learned much about emergency preparedness. — K4BQP, EC Clarke County, Ga.

Cuyahoga County AREC reports its Project #8, to provide communications for the Greater Muscular Dystrophy Fund Drive on Nov. 22. A total of 27 amateurs took part by manning 16 mobiles, 2 portables and 2 fixed stations in consolidating funds from 80 points throughout the county. The Ohio National Guard rode "shotgun" with each mobile. During a five hour period headquarters operators W6LIX and K8MSB were kept busy handling almost 300 messages to and from the mobile net control stations, K8DAG and K8MSB. — W8NZI, Asst. EC Cuyahoga County, Ohio.

Fifty-four Oklahoma amateurs participated in "Operation Roentgen" on Dec. 7, a c.d. activity set up to gather information concerning materials sent out by them to various parts of the state. Communication was to be furnished by both amateur and commercial means. The amateur system faced very well in comparison to commercial circuits and c.d. officials were amazed at the speed and accuracy of the 54 amateurs who took part. — W8DRZ, NCM Oklahoma.

On Feb. 1 the Kings County (N. Y.) AREC group cooperated with the Brooklyn Red Cross Disaster Services in conducting a message-handling drill. The situation involved a simulated fire. Messages originating with Red Cross station K2QDB were sent to the Brooklyn Borough control station and relayed to the appropriate stations at supply, shelter and transportation centers. All communications were handled with dispatch. Five amateurs participated, although other net members were available for help if needed. After the drill a round table discussion was held. — K2OHH, Asst. EC 8 Meters, Kings County, N. Y.

December reports were received from 30 SECs representing 10,929 AREC members. So things continue to pick up in the AREC. First thing you know, as many as half of the SECs will be reporting each month. December reports received from: Ga., S. Texas, E. Fla., Colo., San Joaquin Valley, New Mexico, E. Bay, Minn., W. Va., Maritime, Wash., Ind., Mich., Nevada, Ala., Ont., Santa Clara Valley, Wisconsin, Sask., Man., N. Mex., Ore., Pa., N. Texas, Md.-Del.-D. C., S. Dak., Okla., Maine, E. Mass. and, for the first time in three years, Illinois.

During 1959 we received 391 SEC reports from 44 different ARLI sections. The number of different sections is the same as in 1958, but a great many more reports were received. The following sections turned in 100% reporting records: Eastern Florida (eighth consecutive year), N.Y.C.-L.I. (sixth consecutive year), San Joaquin Valley, (4), Santa Clara Valley (4), Colorado (3), Oklahoma (2), New Mexico (2), Wisconsin (2), So. Texas, Minnesota, Michigan. Congratulations to these 11 sections and their SECs for a fine reporting job. In addition may we add that experience shows that those who have something to report will report it. Those who are doing little or nothing are the ones we don't hear from. In that connection, we note completely empty SEC report files (going 'way back to 1952) for the following sections: Western Pa., Miss., New Hampshire, Hawaii, San Francisco, West Indies, Canal Zone, Quebec, Alberta, Yukon, Manitoba.


The city of Pacifico, Calif., is gradually getting itself equipped for RACES. Shown at a new v.h.f. installation just completed are (L. to r.) K5QXU, K6JRZ (EC), K6HVF and W6AAME. (Photo courtesy Pacifica Tribune.)

A.R.R.L. ACTIVITIES CALENDAR
Mar. 18-20: DX Competition (c.w.)
Apr. 6: CP Qualifying Run — W6OWP
Apr. 9-10: CD Party (c.w.)
Apr. 16-17: CD Party (phone)
Apr. 20: CP Qualifying Run — W1AW
May 5: CP Qualifying Run — W6OWP
May 19: CP Qualifying Run — W1AW
June 6: CP Qualifying Run — W6OWP
June 11-12: V.I.F.F. QSO Party
June 17: CP Qualifying Run — W1AW
June 25-26: Field Day
Nov. 12-13, 19-20: Sweepstakes Contest

OTHER ACTIVITIES
The following lists date, name, sponsor, and page reference of QST issue in which more details appear.
April 2-31: Helvetia-22 Contest, USKA (p. 83, last month).
Apr. 8-18: Goose Bay QSO Party, Goose Bay ARC (p. 150, this issue).
Apr. 9-10: The French Contest (phone), REF (p. 76, Feb. issue).
Apr. 30-May 1: PACC Contest (c.w.), VERON (p. 66, this month).
Apr. 30-May 1: Delaware QSO Party, Delaware ARC of Wilmington (p. 86, this issue).
May 2-4: Operation Alert, OCDM (p. 83, this issue).
May 7-8: International Telegraphic Contest, USSR Central Radio Club (p. 66, this issue).

82 QST for
**RACES News**

The OCDM RACES Coordinator, W8DU, advises us that Operation Alert for 1960 is scheduled to take place on May 2, 3, and 4. There will be only one phase of the exercise this year, with all action compacted into the three days. This probably means that activity will be more intense and almost simultaneous at all levels. We had to point out that Operation Alert is not just a communications exercise, that all o.d. activities will take place at all levels. Nevertheless, the communications phase is of the utmost importance, and we RACES operators will be expected to carry a large share of it. All ARE groups will be requested to offer their services and cooperate in this OCDM-sponsored operation to the maximum extent feasible.

Full details will be issued by ARRL to all ECs just as soon as they are available and released to states. This, then, is primarily advance notice of the dates chosen and a suggestion that you pick out your organizational activities to May 2, 3, and 4 for Operation Alert.

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**Traffic Topic**

Not so long ago some SCM (think it was K4AOZ of Ala.) said, "It is a little sad that many traffic fans read Traffic Topic." We considered him a great compliment, and we wish it were so, but frankly we doubt it; because if it were so, would we traffic men continue to lose up the traffic the way we do? In past issues we have covered nearly every subject that present correspondents say we should mention, yet daily experience on the traffic lanes indicates that a lot of this s age continues to go unheeded. Let us take a few lines herewith to review some of the faults we run into in traffic handling.

First of all, about these MARS refills. When you receive a message on a MARS circuit, you are not receiving it by amateur radio. When you refile it on an amateur circuit, you are not "reloblating it; you are ordering it, exactly in the same way you would originate a message received by telephone, telegraph, or mail. Such designations in the place of origin as "Alaska via MARS" and "Texas via MARS" are entirely improper and inadequate. Amateur form requires a place of origin by city and town, and we don't care what it was received via. If you refile (reloblate) a message received via MARS, the place of origin is your town and state following the actual place of origin if known — like "Fort Houston via Dallas Texas." If the MARS form does not contain the place of origin (it should), then you can't include it, so the only thing to do is leave it out. The only time the "via MARS" designation appears after the place of origin is when the message originated in a country in which third party traffic by amateur radio is not permitted — this to show that the traffic was not transmitted illegally.

Let's keep the MARS procedure off amateur hands. It's fine on MARS frequencies. In amateur meta it's poor operating.

We have our own procedures.

Most of the above was covered in "Traffic Topic" for January, 1960.

Some day a traffic station is going to hand us a book message in proper form and we're going to drop dead from shock. It hasn't happened yet. When sending a book message you never, never start with a message number. You never use the word "same" unless it appears in the message.

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**NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)**

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

The following are the National Calling and Emergency Frequencies for Canada: c.w. — 3535, 7030, 14,060; phone — 3765, 14,160, 28,290 kc.

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You start out by saying how many messages are in the book, then you send all the things that are the same for all the messages, then you send the things that are different for each message. What could be simpler? Full details on how to send a book message were given in "Traffic Topic" for July, 1957.

A lot of us still leave out the separator signs in addresses. This applies on 2-meter traffic circuits. The separator sign (didabidab) is most important and should become a matter of habit. Another thing a lot of us do is fail to indicate the end of the message (AR on c.w., say it on phone). Sometimes an operator will simply stop at the end of the signature.

There is a long pause before the receiving operator tumbles to the fact that the message is over and acknowledges it; then he stands by for the next message, not knowing for sure if the transmitting operator has any more of it. More often than not, the transmitting operator explains that he is K2U, Oh, brother! If the transmitting operator had followed the signature with AR N (or AR B if there was more to follow) or "end of message, no more" or "end of message," the situation would immediately have been clear.

On c.w. we still hear "to" before the addresses and "sig," before the signature. Unnecessary, and maybe confusing. On phone we hear "today's date." Get yourself a calendar so you know what the date is; don't depend on the other guy to make the correct interpretation.

We're not paying enough attention to the check of the message — that is, the number of words in the text. Again and again messages come through with "no check" or "CKXX" or (ugly) "double X-ray." Any operator who transmits a message without a check goes on my hit list. It's a very small matter to count the words as you write them down (count the words at twice the line spacing with a space between them) and there is absolutely no excuse for no check, even on service messages. If the guy who sends the traffic to you is a lid and doesn't include a check, don't let him make up for it by sending you back a check on the message. If you both agree that the check is wrong, correct it. (e.g. 10/11 or "ten slant eleven" is an original check of ten correct to eleven)."
Some of you old timers are just as guilty of committing these little faux pas as the newer men — so more so, because you're supposed to be setting an example. Instead, you're raising your bad habits along with them. Let's get with it, fellows, and improve our traffic handling procedure.

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**Net reports. Getting to be so many of these, let's try a tabulation for the January report:**

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<th>Net</th>
<th>Sessions</th>
<th>Checks</th>
<th>Traffic</th>
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**National Traffic System. It's time, once again, for our annual NTS statistical analysis, and that's what we'll concentrate on this month. But first, we want to tell all NTSers that the above palaver about lounging up traffic does include you. So read it, get mad, write us spirit and indignant letters — but improve your traffic handling!**

In 1956, 1957 and 1958, you may remember that 9HN took the statistical crown three years in a row. In 1959, however, the tide turned, and our statistical champ became the SIXTH REGION NET under the guidance of K6HLC. RNO placed first in total traffic and average traffic per session, third in rate and representation, and seventh in number of sessions, to edge out RNS, which placed second. Our former champ, 9HN, dropped to third place, principally through having placed ninth in number of sessions and seventh in representation. Here's the statistical lineup for 1959:

<table>
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<tr>
<th>Net</th>
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<th>Average</th>
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As mentioned last year (this col., Apr. 1959 QST), we are not so bold as to say that RNS is our best region net and ECN is our poorest, and so on in between. Opinion and intangible factors can do much to color this. The above is simply the way the statistics work out, the final standing being arrived at by averaging the numerical standings in each category. After all, 4RN has poor representation from the West Indies and Canal Zone to contend with, and so on.

Near the top of the BPL each month you will find the call W9FLX. Here's a snapshot of the GM himself, hard at work at his operating position. Red is a big NTS net at all levels, from section through area, and is a regular performer in the Central Area TCC. The tape transmitter in the background and tape perforator (hidden by the operator) are useful adjuncts in handling traffic the way Red does it.

RNT has Sask. and Alaska as non-contributors to its representation percentage. There are other reasons why one region may show up better or worse than another in the statistics. But statistics are hard and cruel and factual and they do not take reasons into account. We can, in a very general way, however, say that the above represents a pretty good analysis of the efficiency of our NTS region nets, all of which are getting more efficient each year.

January report:

<table>
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<td>TCC Pacific 7P 19</td>
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Summary: 1191 235668 EAN 12.3 CAN/PAN Record: 1784 214409 1982 12.5 100.0

1 Region net representation based on one session per night. Others are based on two or more sessions per night.
2 Section nets reporting: USN (Ga.); QFN, FMTTN, FPTTN, TUTQN, JSSN (Fla.); Iowa 75 Phone; VN & YFN (Va.); QN (Ind.); K6NO, K6N, K6NB, K6NB Morning, K6NP (Ala.); Tenn. CW, K6K, K6M, Tenn. Phone; KYN, K6NP (Ky.); SCN (S. C.); CN & CPN (Conn.); S. Dak. 75 Phone, S. Dak. CW & S. Dak. 40 Phone; RZQN (B. L.); CEPN (Colo.); BCEN (B. C.); TCLN (Iowa); K6NJ (N. D.); NEB (Nebrs.); SSCN (Calif.); WGN & WSSN (Wis.); N. Texas Traffic; BUN (Utah); EMN (Minn.); MDD (Md.-Del.-D. C.).
3 NTS functions reported, not counted as net sessions. In the above listing of section nets reporting; if you reported your net but it does not appear above, it may mean either that your report arrived too late (15th of month is nominal deadline) or it was unable because it did not give the three necessary items of information: number of sessions reported, traffic total, and NTS connections. At the present time the other information on the CD-125 card (NTS Section Net Report) is not being used, but we appreciate your continuing to fill it out. We have a good use in mind for it if we ever get a chance to do something about it.

W8SCW has issued an EAN Bulletin which contains a summary of 1959 operations. This area net handled over 15,000 messages in 1959, averaging 43.7 per session. Certificates have been issued to W8E9 M9G EOB KYQ NJM OAK OHR SNU, K6S CIF GRP, H72 CQB EZB RXL VDT ZRC, WASAPY, K6S MUB RYH SEX UTU UZI ZHE.
BRASS POUNDERS LEAGUE

Winners of H/L Certificates for January traffic:

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<th>Cell</th>
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<th>Loc.</th>
<th>Ret.</th>
<th>Tot.</th>
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W1AIW Operating Note

The operating schedule for W1AW appears on page 99 March QST. W1AW will follow this schedule through all of April. QST will begin operating on Eastern Daylight Saving Time. The next schedule in E8ST will appear in May QST.
ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Allen R. Brenner, W5EGQ—SEC; DUH, PAM; TEL, RM; AKA, K7CQ; AKA, K2CRN, W6SFO, c/o VHF-Emergency Committee, 1230 Old York Rd., Jenkintown 60-4, tower, K3IP has a new QTH, simplicity, and M7HPF is a new Viking Ranger and an H4Q-100, Atlantic City, General Manager, and K3TFL, has a new antenna, and K3QEP is a new DX-40 with v.i.o. K3M has a new granddaughter. K3ALD and DFK are setting up their shop K3QEP, DX 40 and 40. K3UAD makes a new mobile, to make No. 109, MFIP SWAG and ZM6AP to add to his list. New club officers: Lehigh Valley K3AH, Newsletter, K3SHE, K3GDS, K3SHE, GYD, YDS, K3JG, K3DVE, K3JG, EOE, TGR, EOE. The club has now 65 voting members. The Bucks County ARC will hold its 2nd Annual Annual Banquet, Apr. 3, for details and registration write K3GVS, Box 311, Bridgeton. New appointments: K3EHP as OSS, JPB as OAO and FAF as O7S, TEC made 1400 W2NHC in WAC. CUL increased West Coast skeds to eight to handle the extra traffic from a couple of southern states. NF lost his 60- 

FIFTH DELAWARE QSO PARTY
April 30 and May 1

The Delaware Amateur Radio Club of Wilmington announces its 5th Delaware QSO Party and invites all amateurs to participate. Delaware hams are urged to work as many out-of-state stations as possible, so that those who earn credit toward WAS and the W-DEL certificate, here are the details:

1. Time: 24-hour period from 1800 EST Saturday April 30 to 2400 EST Sunday, May 1.
2. No time limit and no power restrictions.
3. Scoring: Delaware stations: 1 point per contact and multiply total by the number of states, U. S. Possessions, Canadian provinces and foreign countries worked during the contest period. Outside stations: 5 points for each Delaware station worked and multiply total by the number of contacts in Delaware worked during the contest period.
4. Credit for contacts with the same station on another band.
5. A certificate will be awarded to the highest-scoring station in each state, U. S. Possession, Canadian provinces, foreign countries (3 or more contacts) and to the highest-scoring station in each Delaware county. In addition, a W-DEL certificate will be sent to any station working all 3 Delaware counties. Party logs showing required data will be accepted in lieu of QSLs.
6. Watch 3530, 3790, 3905, 7030, 7175, 7275, 14,100, 14,250, 21,100, 21,400, 28,100, 29,000 Kc., and 144 Mc., CUL.
7. General Call: “CQ DEL.” Delaware c.w. stations should identify themselves by signing de DEL (call) K. Phones say: “Delaware calling.”
8. Contact information required: Delaware stations send number of QSO, RST or RS and county (New Castle, Kent or Sussex). All others send number of QSO, RST or RS report, and state, possession, province, or country.
9. Logs and scores must be postmarked not later than May 15, 1960 and should be sent to the Delaware Amateur Radio Club, c/o John Barber, K3GEK, 5 Phelps Lane, Newark, Delaware.
NEW PRODUCTS
MUST MEET THE TEST OF TIME

Our February advertisement was devoted entirely to the subject of quality control in the production of amateur gear.

We recognized that we could not tell the complete story on this subject, and that many hams have not had the opportunity to visit in person a manufacturing facility such as ours. So we decided to highlight at least some of the unusual steps that we feel must be taken to prove the performance of our equipment before it reaches you.

To an even greater extent, the development of a totally new product concept is an exacting, time-consuming and costly process. A current, outstanding example at Hallicrafters is our FPM-200 transistorized transmitter/receiver which, until recently, was classified as a research and development program in our laboratories.

Last fall, we told you in this column that we would build fifty FPM-200’s, using production people, parts and tools. Today, sub-assemblies for all fifty units have been completed and tested, and we are now in final assembly. When they are finished they will be subjected to the same rigorous tests as were the engineering prototypes.

We would like the opportunity to tell and show you the full story of the FPM-200 development... if you are in Chicago this spring, stop by our plant and see for yourself the almost unbelievable care, talent, manpower and dollars being put into the development of this ham station of the future.

Plant Hours—8:30 A.M. to 5:00 P.M. Monday through Friday

Trav Marshall, K9EBE

advertisement
Popular CW and AM transmitter...RF/audio exciter!

VIKING "RANGER" TRANSMITTER/EXCITER—An outstanding power bargain—this compact, completely self-contained unit is a superbly engineered transmitter...and also serves as an RF/audio exciter for high power equipment. Delivers 75 watts CW input, or 65 watts phone input. Instant band-switching 160 through 10—built-in VFO or crystal control. 6146 final amplifier. Wide range pi-network coupling system will match antenna loads from 50 to 500 ohms—tunes out large amounts of reactance. Timed sequence keying. TVI suppressed. With tubes, less crystals.

Cat. No. 240-161-1...Kit..........................Amateur Net $229.50
Cat. No. 240-161-2...Wired and tested...............Amateur Net $329.50

Popular Johnson station accessories...

CRYSTAL CALIBRATOR — Provides accurate 100 kc. check points to 55 mc. Requires 6.3 volts at .15 amps, and 150-300 volts at 2 ma. With tube, military-type crystal, power cable and extension leads.

Cat. No. 250-28...Wired........................Amateur Net $17.95

"SIGNAL SENTRY"—Monitors CW or phone signals on all frequencies to 50 mc. without tuning. Energized by transmitter RF. Mutes receiver audio for break-in. May be used as code practice oscillator with simple circuit modification. With tubes.

Cat. No. 250-25...Wired........................Amateur Net $22.00

ATTENUATORS — Provide 6db of attenuation with required power dissipation to enable various units to serve as exciters for the Viking "Thunderbolt" linear amplifier. Dial instantly cuts attenuator in or out of circuit.

For use with Viking "Ranger" or similar unit. Provision for 75 watt bulb so unit may be used with Viking II or similar transmitter/exciter.

Cat. No. 250-42-1............................Amateur Net $21.50
Cat. No. 250-42-3...For HT-32 or similar unit...Amateur Net $21.50

FIRST CHOICE AMONG THE NATION'S AMATEURS

E. F. JOHNSON COMPANY • WASECA, MINNESOTA
No matter what you expect from a transmitter... 
You'll get more with a VIKING!

"COURIER" AMPLIFIER — Class B linear rated 500 watts P.E.P. input with auxiliary SSB exciter; 500 watts CW; 200 watts AM. Continuous coverage 3.5 to 30 mcs. With tubes.
Cat. No. 240-352-1. Kit $244.50
240-352-2. Wired $289.50

"VALIANT" — Instant bandswitching 600 through 10. 750 watts input CW and SSB (P.E.P. with aux. exciter) 200 watts phone. With tubes.
Cat. No. 240-104-1. Kit $349.50
240-104-2. Wired $439.50

"FIVE HUNDRED" — 600 watts CW input; 500 watts phone and SSB (P.E.P. with aux. SSB exciter). Bandswitching 80 through 10. With tubes.
Cat. No. 240-500-1. Kit $749.50
240-500-2. Wired $949.50

"THUNDERBOLT" AMPLIFIER — 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear. Continuous coverage 3.5 to 30 mcs. With tubes.
Cat. No. 240-353-1. Kit $524.50
240-353-2. Wired $589.50

"6N2" — Instant bandswitching coverage of both 6 and 2 meters. Power input rated at 150 watts CW, and 100 watts AM phone. With tubes.
Cat. No. 240-201-1. Kit $129.50
240-201-2. Wired $169.50

"6N2" THUNDERBOLT AMPLIFIER — Input rated 1200 watts P.E.P.* SSB and DSB, Class A-B; 1000 watts CW, Class C; 700 watts AM linear, Class A-B. Continuous coverage 6 and 2. With tubes.
Cat. No. 240-362-1. Kit $524.50
240-362-2. Wired $589.50

The world at your finger tips!

VIKING "KILOWATT" AMPLIFIER — This exciting unit is the only power amplifier available which will deliver full 2000 watts SSB* input, and 1000 watts CW and plate modulated AM! Class C final amplifier operation provides plate circuit efficiencies in excess of 70%. Continuous coverage 3.5 to 30 mcs. Excitation requirements: 30 watts RF and 10 watts audio for AM; 10 watts peak for SSB.
Cat. No. 240-1000. Wired and Tested $1595.00
251-101-1. Matching desk top, back and 3 drawer pedestal, FOB Corry, Pa. $122.00

*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.
1960 Edition

The RADIO AMATEUR'S HANDBOOK

AN INVALUABLE reference work and text for everyone—hams, engineers, lab men, technicians, experimenters, students, purchasing agents.

Distributors throughout the Nation have the 1960 Edition in stock. Better get your copy of this complete Handbook now. The demand is terrific!

In the pages of this latest edition will be found, in addition to accumulated knowledge since the first Handbook was issued in 1926, up-to-date information invaluable to ham and engineer alike. Every field of ham radio is covered: transmitting, both c.w. and 'phone; single-sideband and a.m.; receiving; propagation; antennas; construction; theory; charts; diagrams; circuits; transistors; miscellaneous data; procedures; station operation, etc.

For instance, the 1960 Edition carries

- Sections which include How-to-make-it articles dealing with Receivers, Transmitters, Power Supplies, Radiotelephony, V.H.F., U.H.F., Antennas, Mobile Equipment, radioteletype, transistorized equipment, etc.
- A separate section on test and measuring equipment
- 32 pages of data on vacuum tubes and semiconductors, a great time-saver to both engineer and ham
- Many pages of valuable catalog/advertising sheets, containing manufacturers' and distributors' products and services...a useful supplement to the editorial section
- Plus thorough treatment of such subjects as assembling and operating a station, BCI and TVI, construction practices, etc. — and fully indexed and completely illustrated throughout. You can locate in a jiffy what you want.

$3.50 U.S.A. Proper $4.00 U.S. Possessions and Canada, Elsewhere, $4.50. Buckram bound Edition, $6.00 everywhere. All prices postpaid.

The AMERICAN RADIO RELAY LEAGUE, INC.
West Hartford 7, Conn. • U.S.A.
FROM HEATH
9 NEW RADIO AMATEUR KITS

TEN-TRANSISTOR "MOHICAN" GENERAL COVERAGE RECEIVER KIT (GC-1)
An excellent portable or fixed station receiver! Many firsts in receiver design for outstanding performance... ten transistor circuit... flashlight battery power supply... ceramic IF transformers. The amazing, miniature transformers used in the GC-1 replace transformer, inductive and capacitive elements used in conventional circuits; offer superior time and temperature stability, never need alignment and provide excellent selectivity. Other features include telescoping 54" whip antenna, flywheel tuning, tuning meter, large slide-rule dial and attractive, rugged steel case in gray and gray-green. Covers 550 kc to 30 mc in five bands. Electrical bandspread on five additional bands cover amateur frequencies from 80 through 10 meters. Operates up to 400 hours on 8 standard size "C" batteries. Sensitivity: 10 uv, broadcast band; 2 uv, amateur bands for 10 db signal to noise ratio. Selectivity: 3 kc wide at 6 db down. Measures only 6 1/2" x 12" x 10". 20 lbs.
Heathkit XP-2: plug-in power supply for 110 VAC operation of GC-1. (optional extra). 2 lbs. $9.95

100 KC CRYSTAL CALIBRATOR KIT (HD-20)
Align or check calibration of your communications gear with this versatile ham aid. Provides marker frequencies every 100 kc between 100 kc and 54 mc. Transistor circuit is battery powered for complete portability. Accuracy is assured by .003% crystal furnished. Measures only 2 1/2" x 4 1/2" x 2 3/4". 1 lb.

GC-1
$9.995
$10.00 dn., $9.00 mo.

HD-20
$14.95

7 more kits on following pages
HEATHKIT®... WORLD’S FINEST HAM GEAR

"CHIPPEWA" KILOWATT LINEAR AMPLIFIER KIT (KL-1)
Here is a top-quality kilowatt rig with all the features you've been looking for. Operates at maximum legal power input on all bands between 80 and 10 meters, in SSB, CW or AM linear operation. Premium tubes (4-400A's), forced air cooled with centrifugal blower. Grid neutralized, continuous plate current monitoring, extensive TVI shielding. Features both tuned and swamped grid circuits to accommodate all popular exciters. Operates class A/B1 for SSB and AM linear service and high efficiency class C for CW service. Convenient panel controls include power switch, tune-operate switch, HV on/off switch, final switch, meter switch, grid bandswitch, grid tuning, mode switch, plate tuning, plate loading and bias adjust. Accessory connectors are provided on the rear apron of the chassis for complete compatibility with all control circuitry in the Heathkit "Apache" Transmitter. Two meters provided; one monitors final plate current; the other indicates switch selected readings of final grid current, screen current, and plate voltages. Send for complete specifications now. 70 lbs.

KL-1
$399.95
$40.00 dn.
(Write for time payment details)

A PERFECT COMPANION FOR THE "CHIPPEWA" KILOWATT POWER SUPPLY KIT (KS-1)
Ruggedly constructed for heavy-duty use in medium to high power installations, the KS-1 fills the requirements of a top-notch power supply with economy and safety. Features an oil-filled hermetically sealed plate transformer, "potted" swinging choke input filter and 60-second time delay relay. Line filters minimize RF radiation. Maximum DC power output is 1500 watts. Nominal voltage output, 3000 or 1500 volts. DC current output, average 500 ma, maximum 1000 ma. Control circuitry is arranged to allow remote installation. The KS-1 employs two 866A half-wave mercury vapor rectifiers in a full-wave, single-phase configuration. Power requirements: 115 V, 50/60 cycles, 20 amperes; 230 V, 50/60 cycles, 10 amperes. 105 lbs.

KS-1
$169.95
$17.00 dn.,
$15.00 mo.

6-METER CONVERTER KIT (XC-6)
Extends frequency coverage of the Heathkit "Mohawk" and most other general coverage receivers into the 6 meter band. Converts 50-54 mc signals to 22-26 mc. 3-tube circuit provides two RF stages and low-noise triode mixer. Calibration accuracy assured by .005% overtone crystal supplied. Provision for external RF gain control. 6 lbs.

XC-6
$26.95

2-METER CONVERTER KIT (XC-2)
This top-quality 2-meter converter may be used with receivers tuning any 4 mc segment between the frequencies of 22 and 35 mc when appropriate crystal is used. Converts 144-148 mc signals to 22-26 mc with .005% overtone crystal supplied. High quality parts used throughout. Silver plated chassis and shields. 7 lbs.

XC-2
$36.95
IN KIT FORM TOPS IN TRANSMITTING POWER

TWO BRAND NEW MODELS
HEATHKIT 10 & 6 METER TRANSCEIVER KITS
Complete ham facilities at low cost! The new Heathkit transceivers are combination transmitters designed for crystal control and variable tuned receivers operating on the 6 and 10 meter amateur bands (50 to 54 mc HW-29 and 28 to 29.7 mc for HW-19) in either fixed or mobile installations. Highly sensitive super-regenerative receivers pull in signals as low as 1 microvolt; low power output is more than adequate for "local" net operation. Other features include: built-in RF trap on 10 meter version to minimize TVI; adjustable link coupling on 6 meter version; built-in amplifier metering jack and "press-to-talk" switch with "transmit" and "hold" positions. Can be used in ham shack or as compact mobile rigs. Not for Citizen's Band use. Microphone and two power cables included. Handsomely styled in mocha and beige. Less crystal. 10 lbs.

VIBRATOR POWER SUPPLIES: VP-1-6 (6 volt), VP-1-12 (12 volt). 4 lbs. Kit; $8.95 each, wired; $12.95 each.

NEW! IMPROVED DESIGN TRANSISTOR MOBILE POWER SUPPLY (HP-10)
Brand new power supply for mobile gear; features all-transistor circuit, instant starting, high efficiency, rugged construction. Operates from 11 to 15 VDC input; at 12 VDC, provides 600 VDC @ 200 ma, or 600 VDC @ 150 ma & 300 VDC @ 100 ma simultaneously, at 120 watts. Negative 150 volts @ 30 ma also provided. Max. ambient temp., 150 @ 120 watts ICAS. Input current requirements: 2 amps, idling; 13 amps, full output. Includes heavy filtering of input and output leads, remote relay control of primary power, silicon rectifiers, and extruded aluminum heat sinks for efficient cooling of power transistors. Measures 8" x 7½" x 6½". 10 lbs.

ORDER DIRECT BY MAIL OR SEE YOUR HEATHKIT DEALER*
*The convenience of Local Heathkit Sales and Service costs but a few dollars more.

HEATH COMPANY
A subsidiary of DAVSTROM, INCORPORATED
Benton Harbor 8, Michigan

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FREE CATALOG!
Describes over 150 easy-to-build electronic kits in Hi-Fi, Test, Marine, and Ham radio fields. To get yours, fill in this coupon and mail today!

NAME ___________________________
ADDRESS ________________________
CITY _______ ZONE _______ STATE _________
The 3-Element Thunderbird

Hy-Gain's new Standard Trinder is the end result of an intensive and thorough engineering program initiated to mass produce the mechanically and electrically finest 3-Element trap tribander for amateur communications on 10, 15, and 30 meters. Unconditionally guaranteed to be better constructed and to outperform any other 3-Element trap tribander—regardless of price. Compare the 3-Element Thunderbird in construction, weight, trap, design and PRICE—definitely the greatest tribander at the lowest price! Overall boom length 14 ft. Longest element 26 ft.

Outstanding Features of the 2 and 3-Element Thunderbirds

New stronger and lighter all aluminum construction of 2" OD booms and 1½" OD elements... New plastic and steel gusset bracket assemblies—all steel fixtures and hardware "triple" treated in accordance with military specifications. 100% rust proof.

Low SWR

Guaranteed less than 2 to 1 SWR on all bands with no tuning or adjusting necessary. Excellent broad band characteristics. Designed for 50 ohm coaxial line.

Quick and easy assembly and installation from clearly written instruction manuals complete with drawings and photos.

Slim Traps

Unconditionally guaranteed to be completely impervious to all weather conditions. The new "solid state" slim traps are the world's smallest, lightest weight trap assemblies (1 ¼" in dia.) The highly efficient coil and capacitor are wound on and completely imbedded in the new low loss polypropylene plastic. Withstands maximum legal power. Thoroughly tested with leading commercial transmitters... Withstand 1000 watts CW or AM and 2000 watts SSB.

The 2-Element Thunderbird

The 2-Element Thunderbird is extremely light weight and easy to handle; installs in a matter of minutes. It goes up almost anywhere... apartment roofs, crowded city lots, small suburban homes... wherever space is a problem. It is so small your neighbors will hardly know it is in existence, but the hams who hear you on the band will! This little boom develops maximum gain possible in a 2-Element tribander. Rotates easily with a TV-Rotator—pack it up and take it with you when you move. Boom length only 6 ft. Longest element 26 ft.
ALL NEW hy-gain 4-Element Thunderbird tribander
For the ham who cares about these all-important design considerations

Mechanical Superiority
Heavy-duty braced, finish-aluminum, construction of 2 1/4" beam and 3 1/4" elements; elements secured to the beam with strong plastic and steel mount assemblies. Massive new formed steel heavily ribbed clamp attaches boom to mast with a positive clip. AL element and boom ends, plastic coated.

True Full Size Performance
Hy-Gain's high Q slim traps result in maximum element loading and true full size performance. Longest element of 32 ft. Full size elements and full wind beam spacing of 18 ft. allow 4-Element Thunderbird to operate within theoretical size limitations, which will produce maximum forward gain.

Properly Matched with New "Beta Match"
The new and unique Hy-Gain Beta Matching System is completely factory-pre-tuned and requires no further adjustment. Use of this revolutionary system permits design of the array for maximum gain and front-to-back with no compromise to facilitate matching. Exceptional bandwidth maintains low SWR over the operating band at resonance 1.0 to 1.5 on 10 Meters, 1.25 on 15 Meters, and 1.1 on 20 Meters. The dipole is wound for lightning protection and shunt fed with 50 ohm coax.

Interlaced 4th Element
Interlaced 4th element makes possible the choice of optimum standing on all 4 bands maintaining higher forward gain and lower SWR.

SLIM-TRAPS
Solid State Slim Traps
The new Hy-Gain Slim Trap (1 1/4") diameters in the world's smallest, lightest weight trap assembly, assures minimum wind loading as well as a slim and clean line silhouette against the sky. Its high efficiency coax and capacitor circuit is wound on a completely insulated in the new low loss polypropylene plastic. It is unconditionally guaranteed to be completely impervious to all weather conditions and to withstand 1000 watts AM or 2 KW (PEP). It is a completely solid state integrated assembly which is smaller than the element tubing itself.

Guaranteed for One Year

Instructions furnished for four maximum performance settings to favor most commonly used CW, AM or SSB frequencies

"The World's Largest Manufacturer of Amateur Communication Antennas"

Model TH-4
Weight: 38 Lbs.
$11750

NOW WITH THE NEW hy-gain SLIM-TRAPS

1135 NO. 22nd ST. - LINDON, NEBRASKA
Introducing and ONLY "SOLID STATE" trap system!

Take a close look at this new Hy-Gain Slim Trap. It's the world's smallest (only 1½" in diameter), lightest weight trap assembly. A high efficiency coil and capacitor circuit is wound and completely imbedded in the new low loss polypropylene plastic. This revolutionary design offers a thoroughly integrated, "solid state" tuned circuit assembly which is 100% devoid of air cavities. The Slim Trap therefore requires no sealing and no breather holes. Polypropylene, a newly discovered plastic has a high efficiency, low power factor dielectric, maintaining these excellent characteristics over wide temperature variation of from -45° to plus 250°. It is unconditionally guaranteed to be completely impervious to all weather conditions. Power ratings: 1000 watts CW or AM, 2000 watts peak envelope power single side band.

THE HYGAIN SLIM-TRAP

is individually resonated in a highly accurate temperature compensated oscillator circuit which is locked against crystal controlled frequency standards. It is then re-injection molded, sealed forever, on an exact design frequency. No other antenna trap is manufactured to attain close tolerances.

Almost indestructible, the new "solid state" Slim Line Trap is made of material thicker than the aluminum tubing used in the antenna elements.

HOW AN INTEGRAL FEATURE OF THE HYGAIN THUNDERBIRD tribands and hy-gain trap vericals

Carefully controlled and extremely thorough tests were conducted by Hy-Gain engineers and those of an independent testing laboratory. (Name upon request.)

Vibration and Shock

Vibration tests were conducted according to military standard MIL-STD-202A, method 204, consisting of vibration under three different. heating conditions and axes of vibration. Trap specimens were subjected to harmonic motion having an amplitude of 0.56" with maximum excursions of 0.96". Frequency of vibration was varied uniformly between 0.10 and 55 cps. Vibration cycling was conducted for an extended period of time in each testing condition.

Temperature Cycling

The slim trap was placed in a temperature chamber with cycling air. Temperature varied at rates of 10°F per hour, between -25°F to 250°F. The new polypropylene plastic was completely immersed — no cracks appeared at the lower temperatures; no discontinuities at higher temperatures.

Power

All antennas using the new slim line solid state traps were subjected to maximum legal power, AM CW and SSB, as generated by commercially manufactured amateur Xmitta—Coffman & Line Series including the 3053 linear amplifier, Hallicrafters H-735, H-732 combination, Sunset Model GSB103 linear amplifier, Johnson Viking lw and Thunderbolt trimar, Collins KHST and KHST, and several after high powered Xmitta.

Moisture Resistance

Moisture resistance tests were conducted according to military standard MIL-STD-202A, method 204. Test consisted of 90 days and nights of humidity cycling under conditions of 95 to 95% relative humidity while the temperature varied in 1°F steps between —25°F to 120°F. These tests were more severe than any possible weather conditions.

No electrical or mechanical change or damage of any kind occurred. Traps were completely intact mechanically with no deterioration whatsoever and frequency and Q remained exactly the same after completion of tests.
The World's Most Popular Antennas... 

The **Hy-Gain** MULTI-BAND VERTICALS

The exciting new hy-gain Slim-Trap (only 1½" in diameter) is the world's smallest, lightest weight trap assembly. Its high efficiency coil and capacitor circuit is wound on and completely imbedded in the new, low-loss, polypropylene plastic. It is unconditionally guaranteed to be completely impervious to all weather conditions. Power rating: 1000w AM, 2 KW (PEP).

NOW WITH THE NEW **Hy-Gain** SLIM-TRAPS

The Self-Supporting Hy-Gain Multiband Trap Verticals are completely factory pre-tuned with no further adjustment necessary, maintaining an SWR of 2:1 or less across the entire range of each band. 52 ohm coax feed line. True ¼-wave marconi resonance on each band makes possible low angle DX radiation pattern. All top grade construction throughout. May be mounted on rooftops or directly on the ground.

Ribbed cycloc base insulator makes these hy-gain verticals completely self-supporting. Heavy ten-gauge formed steel mounting bracket is adjustable for various sizes of masts. Weatherproof internal coaxial fittings supplied.

Model LC-80 Loading Coil ($7.95) adds 80M operation to the 14-AVS Vertical. Decoupling Stub ($4.95) adds 6M operation to both models 12 and 14 AVS.

12 AVS VERTICAL
For 10, 15 and 20 Meters; 15.5 ft. high, 9 lbs.

14 AVS VERTICAL
For 10-40 meters; 21 ft. high, 11 lbs. Includes Capacity Hat.

The World's Largest Manufacturer of Amateur Communication Antennas

**Hy-Gain** antenna products

5125 No. 26th St. • LINCOLN, NEBRASKA

$21.95

$27.95

97
COMMUNICATION is a MUST
Spartan Air Services uses TMC SSB for its ARCTIC NETWORK

THE SYSTEM USED BY SPARTAN INCLUDES TMC's

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<th>Item</th>
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The TECHNICAL MATERIEL CORPORATION
IN CANADA
TMC Canada Ltd., Ottawa, Ontario

Main Office MAMARONECK NEW YORK

99
IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—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 QR5 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
- CR3DZ
- KG6FAE
- VK9XX
- ZL5AA
- KH6UJ
- VK9AT
- CO2WD
- KL7BIZ
- VK9QJ
- CN2BK
- KM6AX
- VP2FA
- CN8PB
- KP4AGF
- VP2AY
- CR9AH
- KP6AL
- VP2DW
- CT1CB
- KR6BF
- VP2AX
- CQ2FD
- KS4AZ
- VP2LU
- DJ1FF
- KV4AA
- VP2SW
- DU7SV
- KW6CA
- VP5CP
- EA1FD
- KX6AF
- VP5BH
- EM4N
- KZ5CS
- VP5TR
- FBVD
- LA25G
- VP7NH
- F80Z
- LU2DFC
- LU1ZS
- FG7XE
- LZ1KSP
- VP9BK
- FG8AL
- OAAJ
- VR2DA
- FM7WT
- OEPJ
- VR3B
- FO8AD
- GH7MA
- VS1HC
- G33DOG
- OK1FF
- VS2SD
- GCBDO
- ON4AY
- VS6LN
- G13WUI
- KG1AX
- XE1PJ
- GM3QJB
- GZ1KK
- XW8AI
- GW3LIN
- PA9FAB
- YN1JW
- HASKBP
- PJ5SA
- YU3FS
- HJCIM
- PJ3ME
- YV5HL
- HC8LUX
- PY3W
- ZC5AL
- HEPACA
- PY9NE
- ZE1JV
- HP1L0
- S54AGB
- ZB1S
- JIIWV
- SF6B
- KH5MG/ZK1
- JIAIND
- TI2LA
- ZK2AD
- JZ0HA
- UJ1A
- ZL1ABZ
- W1AW
- UA1KKB
- ZL3JA
- KB5B
- UGQ2AB
- ZM6AS
- KC4AF
- VE6OJ
- ZS1OU

FACTS ON THE GOTHAM V-80 VERTICAL

- If K6INI can do it, so can you.
- Absolutely no guying needed.
- Radials not required.
- Only a few square inches of space needed.
- Four metal mounting strips furnished.
- Special B & W loading coil furnished.
- Every vertical is complete, ready for use.
- Mount it at any convenient height.
- No relays, traps, or gadgets used.
- Accepted design—in use for many years.
- Many thousands in use around the world.
- Simple assembly, quick installation.
- Withstands 75 mph wind-storms.
- Non-corrosive aluminum used exclusively.
- Omnidirectional radiation.
- Multi-band, V80 works 80, 40, 20, 15, 10, 6.
- Ideal for novices, but will handle a Kw.
- Will work with any receiver and xmitter.
- Overall height 23 feet.
- Uses one 52 ohm coax line.

GOTHAM
AN APPEAL TO INTELLIGENCE

A product that is consistently advertised in QST month after month, year after year, has to be good. Over 10,000 GOTHAM antennas have been purchased by QST readers. Even the "price-is-no-object" customers choose GOTHAM antennas on the basis of performance and value. Select your needs 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.

$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 30-90 miles consistent ground wave when the band is shut down. Thousands of Gotham ten meter beams have been perks for years, working wonders for their owners, and attesting to the superior design and value of a Gotham.

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

FREE! FREE! FREE!
Valuable catalog of 50 different antennas, with specifications and characteristics. Gives bands and frequencies covered, element information, size of element, boom lengths, power and decibel gain figures, weight, feed line used, polarization, and other valuable information. Send card today!

CITIZENS BAND ANTENNAS — Any of our ten meter beams or the V40 vertical is perfect for the CB operator.

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 #6 (6 Meters, 4-El) .... $39.95
□ Beam #10 (10 Meters, 4-El) ... 40.95
□ Beam #15 (15 Meters, 3-El) ... 49.95

15 METER BEAMS
Fifteen meters is the “sleepier” 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.

□ 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

(Notes: Gamma-match beams use 52 or 72 ohm coax, T-match beams use 300 ohm line.)

ALL-BAND VERTICAL ANTENNAS

□ V40 VERTICAL ANTENNA FOR 40, 20, 15, 10 AND 6 METER BANDS. ESPECIALLY SUITED FOR THE NOVICE WHO OPERATES 40 AND 15 .................. $14.95

□ V80 VERTICAL ANTENNA FOR 80, 40, 20, 15, 10 AND 6 METER BANDS. MOST POPULAR OF THE VERTICALS. USED BY THOUSANDS OF NOVICES, TECHNICIANS, AND GENERAL LICENSED HAMS ... $16.95

□ V160 VERTICAL ANTENNA FOR 160, 80, 40, 20, 15, 10 AND 6 METER BANDS. SAME AS THE OTHER VERTICAL ANTENNAS, EXCEPT THAT A LARGER LOADING COIL PERMITS OPERATION ON THE 160 METER BAND ALSO........... $18.95

HOW TO ORDER. Send check or money order directly to Gotham. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

Name..........................................................
Address..........................................................
City..................................................Zone....State..........

101
performance you can hear

Complete tuning versatility to meet any SSB reception problem—that's performance you can hear—and that's what you get in a Hammarlund HQ-180.

The general-coverage SSB HQ-180 offers true professional performance at an amateur price. It offers more features, more real quality and far more listening pleasure per dollar than any receiver in its class. Prove it to yourself—see and try the HQ-180 at your Hammarlund dealer.

SSB at its best

HAMMARLUND HQ-180

- Triple conversion, 18-tube superheterodyne.
- Full dial coverage from 540 KCS to 3000 KCS.
- Bandspread calibration for 80, 40, 20, 15 and 10 meter amateur bands.
- High frequency crystal filter for improved selectivity and shape factor of 1st IF amplifier.

- Razor-sharp, adjustable slot filter for up to 60 db attenuation.
- Separate linear detector for CW and SSB reception.
- Adjustable IF amplifier for maximum selectivity.
- Selectable sideband, upper, lower or both.
- Built-in crystal calibrator.
- Selectable AVC obtained from 60 KCS IF.

$429.00
(Additional Telechron Clock-Timer $10 extra)

HAMMARLUND MANUFACTURING COMPANY, INC.
460 West 34th Street, New York 1, New York

Export: Rocke International, 13 E. 40th St., New York 16, N. Y.
Canada: White Radio, Ltd., 41 West Avenue, North, Hamilton, Canada.
DON'T BUY ANY TRANSMITTER TILL YOU SEE THE FABULOUS HAMMARLUND HX-500...

the first SSB transmitter with the best of all at the right price!

READY IN MAY!

HAMMARLUND MANUFACTURING COMPANY, INC.
460 West 34th Street, New York 1, N.Y.

In Canada:
White Radio, Ltd.,
41 West Ave.,
N. Hamilton, Ont.
A Word From Ward...

MOBILEERS, AH!O!

"Hi, Jim... Have just entered the Hollywood Freeway inbound off Lankershim Boulevard... Situation fierce... Cars locked bumper to bumper far as I can see... If you are just getting under way, suggest you go over Laurel Canyon and east on Sunset..."

Does that sound like a radio report from your city traffic department? Not at all! That's mobile operator Fred W. alerting his buddy, Jim P. to aagged situation on the Hollywood Freeway — and telling him to avoid it!

That's only one of the hundreds of extend that mobile operators extend their activities by outfitting their automobiles to handle mobile communications. Have you done so yet?

A host of opportunities are open only to the mobile operator. Why not get in on them? With Spring around the corner, now's the time to get set for such exciting chores as helping with civilian defense, participating in field days, lining your buddies in DX outings, and aiding in the handling of such disasters as forest fires, hurricanes, wash-outs, tornados — and what have you.

But a word of caution: to get the fullest satisfaction from your mobile operations — you must have gear that can take the ruggedest treatment and still keep blasting away.

And when reliability enters the picture — so does Adirondack Radio Supply. Since 1936 we have bought, sold and traded the most reliable mobile radios available in the U.S. We'd like to put your station on wheels.

WRITE FOR OUR LATEST "USED" LIST

Ward J. Hinkle

Before you buy or trade, wire, write, call or drop in to see WARD, W2FEU

ADIRONNACK RADIO SUPPLY
185-191 W. Main St., Amsterdam, N. Y.

Phone: Victor 2-8330 Ward J. Hinkle, Owner

Station Activities

(Continued from page 98)


SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2EQB-DEC; W2TVW, R.M.; W3BZJ, W2BDW and W2ZL. Appointments: W2BLL, Somerville; W2QK, Trenton as OPS; WV2TO, Glassboro, as ORS. With regret we report the passing of K2FMD, Camden. The NJSKT Net reports 31 sessions, 736 attendees and 121 traffic for January. K2DEI, Maple Shade, made BPL again. George's traffic reports indicate many handled with Bailee Labbon's August 7th message.

A regular on EASN, W3BEI, Audubon, has daily skeds with K5AA and K5PFR. The Lewittown (N. J.) Club continues to grow in number with increase in CD activities. The SRA plans a QSO Party for May 7 and 8, hoping to offer an opportunity to many stations to receive their ARES acknowledgment. K3VY is chairman of this activity. W2UA, Moorestown, is vacationing in Europe. W2PSN is back after a spell of illness. W2BLY was top SJRA scorer in the recent V.H.F. Contest. Many outstanding scores were reported in this section. W2TVW, NCC, held a meeting of EK's recently. Plans were made for the year's ARES activities. It is reported that the motor vehicle license plate bill has passed K2DEI to K2HPL, secretary of the Delaware Valley Council of Radio Clubs. K2MBT is alternate. Contact W2AEZ, Westville, for Gloucester County meetings and activities. K2HEE, Laveen, and K2DEI, Deptford, are members of the Camden County Radio Coordinator, has prepared and distributed a fine report and plans for the county's spring and early summer RACES activities. No reports were received from Atlantic, Gloucester, Mercer and Salem Counties. Make Field Day plans early this year. Trailee: K2DEI 317, W3GWI 141, W3WNY 140, W2WTH 109, W3FJI 20, W3BEI 23, K3JJZ 1, W2SOX 10.

WESTERN NEW YORK — SCM, Charles T. Hansen, K2HUE-RLS; W2UPF and W2ZPI, PAM. Wages: WV2A and W2LXN (v.h.f.), NYS C.W. meets on 1515 ke. at 1900, ESS on 2300 ke., at 1900, NYS F.M. on 1480 ke., at 1900, NYS C.D. on 2500 ke. and 2700 ke. at 0900 Sun., TCPN 2nd call area on 2700 ke., at 1900, LPA on 3000 ke. at 1600. WAGC and K2JMG and W2CZG and W2CPG meet in January. Congratulations! Appointments: W2BEU and W2CGN as ORS; W2FMI as ORS; W2BGR as ORS; K2KF as ORS; W2DDE as ORS; W2F2U as ORS; K2KL as ORS. K2F2U received WBE and CP-S awards. W2DZK and K2ADX have new calls. W4GZS is having a party at 3:00 p.m. on the 28th. Contact Paul M. Pye, Ogdensburg, N. Y., for info. W3TJ, Contact T. Pearson, 103 Malden Rd., Syracuse 11, for details. The SARA Hamfest will be held May 14 at Delphi Post, Rochester. Contact K2OK or W24CE, Niagara Frontier DX Assn. and Rochester DX Club have challenged each other on club skeds in the DX Tel. Are other club skeds interested? Let us get a WNY Cup for DX in circulation. We already have a V.H.F. Cup making the rounds. The Syracuse V.H.F. Club, W24CE reports that W24RA, K2LRV and W2ARR handled emergency traffic on 2 meters via mobile and fixed operation for a recent train wreck in Chino, California. K2USC, who is now W4RCE, operates DLABS daily and would like to hear from his old friends on NYSPTEN. The Elmira ARC has a new meeting place, Thomson Award. K2Carriage House, K2PPT is pres.; K2TXM, vice-pres.; W2QK, secretary; K2LJ, treasurer. The Elmira ARC is publishing a fine bulletin edited by K2ZWG. The CARA elected W3AZD, pres.; K2TXW, vice-pres.; W2DZA, treasurer. K2DUL, vice-pres.; K2ZV, secretary; and K2QUG, net, chorus. K2QUG plans to get married. The RAT'S and RAWNY hold their annual auctions. Now is not too late to make your club Field Day plans. K2EYR, his ten-element 2-meter beam rotating, thanks to K2ZFY, W3UTH finally made the grade and was awarded W3EJ No. 11. K2ZM7 is now cut. Your Ni. would like to be on your club mailing list. It would facilitate handling inquiries from prospective club members, etc. To Scamper (Jan.), W2ZG, W2BE, K2GTY, K2VLT 337, K2YTP 150, W2EUE 107, W2EIE 103, W2MTA 89, K2IKH 85, K2RHY 78, K2RJZ 55, W2CR 54, W2ATA 81, K2ZJZ 47, K2XV 42, W2BKO 38, W2GQ (Continued on page 102)
Gonset continues to offer you big SSB values!

First, GSB-100, SSB transmitter/exciter... then GSB-101, the powerful 1000 watt P.E.P. linear amplifier. Now... to complete the SSB combo... G-63 a communications receiver of exceptional value!

G-63, modern in every respect, has many operating features usually found only in receivers priced substantially higher. Example: Sensitivity less than 1 microvolt for 6 db signal-plus-noise/noise ratio. And... a 6 meter band that is really "live."

For SSB reception... compare G-63 with other receivers in the same price Bracket. G-63 is stable, has low-drift HF and BF oscillators. There are two second detectors: Product type for better SSB/CW reception and diode type for AM. Full vision drum dial spreads each amateur band fully for easy tuning—vernier tuning knob has flywheel for smooth operation. This modern receiver covers six amateur bands—80, 40, 20, 15, 10 and 6 meters.

Other features: Double conversion—peaking-type "Q" multiplier gives adjustable band widths down to 100 cycles for CW. Bandpass I-F circuitry provides desirable steep-shoulder selectivity for AM and SSB reception. Also... "S" meter... AVC... Automatic noise limiter... plug-in crystal calibrator is available as an accessory.

G-63 communications receiver 239.50

GSB-100, 100 WATT P.E.P. SSB TRANSMITTER/EXCITER... 499.50

GSB-101, 1000 WATT P.E.P. SSB LINEAR AMPLIFIER............ 459.50
Now Your BEST buy in CITIZENS TRANSCIEVERS... EICO

* Dept. OS-4, 3309 N. Blvd., L.I.G., N.Y. Add 5% in the West © 1960

106
TELREX CHALLENGER!

TC-88 #9975

"TRI-BAND" SINGLE TRANSMISSION LINE

DESIGNED TO OUTPERFORM!
OUT-VALUE!
OUT-LAST!

BROAD-BAND BAZOOKA FEED!
FOR "BALANCED-PATTERN."

HAIRPIN RESONATED

26 LBS OF EDUCATED ALUMINUM---
DESIGNED TO OUTPERFORM ANY *100° ANTENNA!

RATING 2 KW PEP RAIN OR SHINE!

6 WORKING ELEMENTS

CLEAN DEEP NULLS

INSTALL 34 FT. ABOVE GROUND (OR HIGHER) SIT BACK AND HAVE FUN!

TELREX "TRI-BAND" ARRAYS WORLD RENOWNED FOR-
PERFORMANCE, EXCELLENCE AND VALUE! THE END RESULT
OF STRIVING FOR PERFECTION, IN THE LITTLE THINGS AS
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ANTENNAS SINCE 1921
INDIANA—SCM, Clifford A. Singer, W3SDW—Ass. SCM: Arthur T. Evans, W7VRC; PAM: BDG, BKJ, MIK, and UKX. RAs: DGA, JOZ, TT, and VAY. Net sked: IF: 80.00 daily and 1730 M-F on 3960 kc.; 1720 daily on 3020 kc.; QN: 1930 daily and RFN 0700 Sun. on 3655 kc.: QN training) 0900 M-F on 3745 kc. New appointments: K9XH as EC for Allen County and IUH for Tippecanoe County. New appointments: K9GDL Class III and IV: GSV, Class II (also retaining Class IV): DXA, Class I, III, and IV: RYU is now KCX; K9EJI and GEL are OESS. The Indiana Radio Club Council officials and other interested parties met at Purdue U. on Jan. 3 to discuss an ARRL Central Division Convention to be held in September. K9RIUQ was elected executive chairman to head the affair. HFO, JCC, and MVZ were appointed to the executive advisory board. TGC is trying hard to get an FCC new on 6 meters. New officers of the Hoosier Hills Ham Club are UQO, pres.; K9KPD, first vice-pres.; RUS, sec'y.; and PHYT, as YL at Indianapolis. K9JCG is building a 2-watt rig for 10 meters. K9NBSK is running a Challenger on 80, 40 and 15 meters. V9P has a base station on HZ-2-Mc. Lin. Hamilton County has a new net on 50.40 Mc. each Thurs. p.m. under the management of EC HIP. Q9XU4 has been chasing DX with a Benton Harbor KW (DX-100). Mr. St. Memard, K9ABA, is all set to go with a kw s.s.b. station. KXV is now police chief at Evansville. K9FJZ is building a transmitter. K9JFF has a new U9P-99 receiver. UQ9 and K8JPL in one week during the holiday season. LEC is after DX by phone. BKJ has an electronic key. BDG is now active. KCXOR radio exists as a hobby because of the service it renders. January news reports: BDG reports hit for PX9; reported by M9K, 273; VAY reports QN solved 722; TT submits a total of 297 for RFN; QN Training Net was not reported this month because of the illness of JOZ. Stations making KPL: NZZ, TT, M9J, ZV9, DGA, GJ8, and K9TYY. Traffic: [Jan.] W9NIZ 1136, TT 637, M4X 982, ZV9 505, GJA 346, K9AY 189, W3SDW 147, K9TYY 134, M4X 130, W8JW 183, ETM 94, H9G 91, K9QBZ 91, (XJ 99, W9EMG 92, M4X 92, K9WZ 26, K9TYY 26, K9IY 25, M9J 48, K9HGB 47, K9XK 48, W9NQ 19, Q9YQ 38, N1X 35, K9BSU 30, W9MIU 28, K9K4Q 28, P7S 27, G9V 26, L42 25, L4X 24, W9YC 22, W9YX 21, R9M 20, D9K 19, K9HLK 19, W9DC 22, W9VX 21, K9RC 20, D9K 19, K9M9 20, K9VX 17, K9JJK 17, K9XJG 17, K9M9TB 16, W9MGP 16, W9ILA 15, W9YX 12, K9LBN 10, A9K 8, GLE 8, W9HUF 7, T9C 7, WTY 6, DXW 4, HRV 4, DXW 4, K9HYV 4, W9M9V 2, YV9 2, N1X 1, (Dec.) K9P3T 28, MVE 12, M9C 12, AAR 8, WBYAA 7, F9U 2, V9Q 2, WTY 1.

WISCONSIN—SCM, George Wolda, W9WKB—SEC: YQ9, PAM: K9VNP, GEL and K9GK, K9GS, SAA, and K9BETL. HAM certificate was sent to K9GKW. K9AVK is attending West Point and is secretary of the club, whose call is K9DT. The following attended the meeting held by the Wisconsin Radio Club, with N9F, SAA, K9GW, K9Q9, ZRK, D9K, D9K, N9F, ECC, K9BMI and K9BETL. CC0 received WA0C and is taking traffic for students at Whitewater College. New officers of the Door County Club include UN9, pres.: OCD, vice-pres.: OVO, sec'y.-treas. The Jefferson County Club elected SCM, pres.: K9HCC, vice-pres.: and K9MMJ, sec'y.-treas. UN9 is now a DXP and is associated with the new 1-seaters license. The new HAM Radio has 328 pages, 1200 on 3655 kc. New members of the Racine Magnetic Club are OVO, pres.: K954, vice-pres.: K999, sec'y.-treas. K9CC, now with full break-in, is lighting a kev for better traffic training. Q9R is the second W9 to receive the WARM certificate. K9E9 and K9XK are a sporting new ranger. K90DF received a 3rd-class A1 commercial license, K9F is getting caught up with sending QSLs overdue since July. The W9RC is among the Wisconsin Hamfest May 1. K9J5K says the TV problem at Ridgeland was solved with the retransmission system conventioning all TV to n.h.f. Old-Timers are held by the MARC, with WD, in charge, was a big evening for the club, with a special guest. The W9RC is the new publisher of MARC bulletin Hamateur Chatter. K9T9C sent out a monthly activity reports to the SCM no later than the 5th of each month. Traffic: W9DNC 916, ONX 169, K9DTK 124, EIL 107, W9BBA 84, N9P 50, K9G9Y 43, W9K9B 

(Continued on page 110)
The design and production of communications receivers today is considerably different than in past years for two principal reasons. Costs have risen precipitously; to manufacture a receiver in the face of this and keep the price reasonable requires good tooling, long runs, and little allowance for error. Secondly, there are greater demands placed on receiver operation than ever before, versatility... handling ease... yes, amateurs have come to ask for parameters of performance almost unheard of in past years.

RME in announcing the new 6900 states without equivocation that this receiver performance is unmatched by anything near its price class. The 6900 is engineered to give optimum service for all modes of amateur communications — not merely one. Engineered under the supervision of Russ Planck, W9RGH, the 6900 has as many advanced pioneering features as its extraordinary namesake, the world famous RME69, which was the first band-switching communications receiver ever produced — over 20 years ago and still widely used today.

What makes the 6900 so Hot? First, meticulous attention to details so that every circuit is performing in an optimum manner. Second, an ingenious function selector, the Modemaster. Every circuit in the 6900 is designed to provide high selectivity; frequency stability, sensitivity and low internal noise. Finally, inclusion of all function controls necessary for a modern communications receiver... vernier control knob with override clutch for fast tuning; RF gain; AF gain; antenna trimmer; band selector, stand-by/receive/calibrate/transmit; ANL; T-notch filter; calibrate adjustment; band selector.

Whether you operate CW; SSB; or AM, you will have the almost uncanny feeling the 6900 was designed solely for you — this is the test of a modern communications receiver that we believe only ours can meet on the operating desk.

- CONTROLS: 11½" Single Slide Rule Tuning Dial; Logging Scale.
- COVERAGE: 80, 40, 20, 15 and 10 on 5 bands plus 10 to 11 mc for WWV or WWVH.
- Peak Selectivity plus tunable "T" Notch.
- Internal 100 kc Hermetically Sealed Crystal Calibrator.
- 500 and 4 ohm Outputs.
- Noise Limiter for SSB and CW, AM.
- Separate Detector for Single Sideband.
- 5 Meter Calibrated in 6 db Steps Above 59 for Better Reading.

- Improved Fast Attack AVC Circuit.
- Selectable Sideband.
- Panel of Attractive Grey "Clad-Rex" Vinyl Bonded to Aluminum with Charcoal Trim.
- Front Panel Controls Re-Grouped for Ultimate Operating Ease and Convenience.
- SENSITIVITY: 1 mv. 30% Modulation for 100 mw output.
- S-N-R: 10 db at 1 mv Input.
- SELECTIVITY: 500 cps, 6 db down, in CW mode.

See your RME distributor or write to

RME Electro-Voice
Dept. 40Q, BUCHANAN, MICH.
Dakota Division

North Dakota — SCD, Harold A. Wendel, W6BVA
— PAM: K6ZJS, RAI: T2. K6ZJS stopped in Bismarck
the last week in January and returned to the
Santa Fe on several appointments. K6BRL has been transferred to
Des Moines, Iowa, and will be moving this family
in the near future. Two new operators are in Des Moines: K6CH
in Pemba County, which meets every Wed at 2100 on
500 kc. PHC has set up a station at the fire hall. The
K6LZ, Weatherford, has been opening up on 3300 kc
for several months and could have more participation
for good coverage. The regular check-ins include
K6CRA, K6JGJ, K6XV, T3Y, TTY, and KH7Q. There
also have been check-ins from Nebraska and
Montana. The Jamestown Amateur Radio Club elected
host. Vice-pres.; K6J2Z, vice-pres.; K6JYI, K6TYI, K6TVI, K6TRC.
TRACC has set up training sessions in code and theory
at the Dickinson College every Fri. at 1900, Traffic;
K6HUF 19. FTP 88, GRM 27, W6SN 30. HST 22
K6TVI 19, GQG 15, MPH 5, H9W 5, W6BBF 4, PHC
4, K6PVY 4, GQG 3, W6WUP 3, K6LU 2, QNY 1,
K9J 1.

South Dakota — SCD, J. W. Skoroski, W6BNN
— Sect. Newly-elected officers of the Signal Hill
ARC are NWK, pres.; K6YTO, vice-pres.; K6ACJ,
secy.; and DVB, transmitter. DVB's report has neighborhood
trials to test the new equipment with three junctions
in the new homes. PRL, formerly of Gregory and Pierre,
now is located in Sioux Falls. K6LQJ has moved from
Armour to Washington, D.C. for the spring semester.
New calls: K6NYY, K6NYBZ and K6HUI, of Huron, and
K6MNR, of Sioux Falls. NCM has installed a new vertical
of 60 meters on February 12. FKX, HN, 1000 meters
is a Globe Scout Deluxe, and has received a W5AS award.
KDPP has a newly-built 10 meter band for 10 and 15 meters.
MCA's first activity from Huron last month was
received from K6TVI. A new card from any club. Add to newly-elected;
K6NYYD, Huron. K6KWEH and K6BEN were
interpreted by the recording on the Dave Snider
who was in New York on Jun. 31. Sect reports there are 86 registered
ARC members in South Dakota Radio Operators;
732, B5, 205, B5Q, 100, B5E, 100, B5Q, 5
B5, B5Y, 100, B5Y, 100, B5Y, 100, B5Y, 100, B5Y
K6TVI 19, GQG 15, MPH 5, H9W 5, W6BBF 4, PHC
4, K6PVY 4, GQG 3, W6WUP 3, K6LU 2, QNY 1,
K9J 1.

Minnesota — SCD, Mrs. Lydia S. Johnson, W6SKJ
— Sect. SCM: John O. Hall, BUI: SEC, TUS, PAMA;
OPX, TUS and K6EPT. RM: QJ and K6ZID. In
the rural area near Minneapolis a school has been
founded by students who are doing a study using
TwG. Benji, with PHD, DEPT, C1, UBL, PHM;
K6SEP, SYE, OAO, and MPR, conducted a simulated
severe blizzard drill recently. On April 11, the
LST, WMA, RA and K6IVY on making the 1958 FMT
Honor Roll! New officers of the Suburban Radio Club
are UVR, pres.; K6QPP, vice-pres.; FILL, secy.;
and RAL, 1st. The new Ultramobile Club's 1958 officers are
MDA, pres.; K6BMVY, vice-pres.; K6WNY, secy.;
treasurer. Director K6UO attended the Manchester Club meet-
ing. SEC TUS and VPO made BPL. EC K6GKI
attended an anten TV set to have an elementary course. After
twenty-two years of "young" EC K6GKQ visited
attended a dental convention in Chicago. K6NWQw uses
a Globe Chief 90X and a home-brew HVR-11 receiver
built by TUS. The home station of E6T. 120A of a
KING 500b, and a NC-300 and a three-element 20-meter
beam. K6UO's shack has an OK-20 with a Globe
U-1 modulator, a Heath VP-114, and an Amplifier, an Heath VP-
QJ-1 with home-brew r.f. stage. Congrats to KFN and
H9W on the 1958 Triflakers Award. TUP purchased a
75A-3 receiver. Appointments issued: K6CT, LBL WC
and WCX as ECs. Endorses EDS: GQG, GQ, OAG, TTY,
VOR, K6GKI and MAH Endoresed Opera are T6T, TWG,
K6D and EPT, OEF for K6UQO. OPX and K6Q's oldest daughter is attending St. Cloud Teachers Col-
lege, K9QG has a Vaunia, an SX-56 and a Tri-band
Amoy beam on 20, 40, and 75; tower: Truick (28.9)
VPO 510, K9J 219, K9WQ 173, RCT 172, W6SKJ 134,
K9KCG 117, QM 114, W21EN 112, K6Q 87, T9G 87,
UXM 82, K9Z 58, K9TVI 22, K6HY 57, K6D 61, K6Q 60,
LARK 55, OAR 52, K9YD 51, K6QX 51, K6ZID 50, MAH 47, W6QOY
45, PET 4, ROY 41, K6XST 37, K6UQ 54, T9M 33,
NQG 34, K6QY 34, I9G 27, W6WQ 27, ALW 26, LST
26, K6D 25, GW 25, W6QOL, K6QJ 21, K6YD 21, K6Q 21,
(Continued on page 112)
reliable WWV-WWVH reception

with a MOSLEY WWV-33
3-ELEMENT BEAM ANTENNA

Specifically designed to provide improved long path reception of Bureau of Standards' time, tone and frequency signals on 10, 15 and 20 mc. Uni-directional pattern achieves high forward gain with excellent side and back rejection. Beam is of hurricane construction... 100% rust and corrosion proof.

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21. QYX 19, WB8RD 17, YHR 17, DYC 15, KSKYX 15, W9WMA 13, TDY 12, FGP 10, TCK 10, UYR 10, K9RIN 8, W8WVT 8, HRY 6, KLSKU 5, WDBT 5, KPHA 5, WHEC 5, KXULX 4, WBCS 2, KXHJB 1, KNWQWZ 1.

DELTA DIVISION

LOUISIANA—SCM, Thomas J. Morgavi, W5FMQ—The Arcadia ARC at Crowley has made necessary preparations to operate with KUIAS in New Orleans. KUIAS, a recently-appointed OQ, and K5LZC have moved from Shreveport to Oil City, La. FYZ has a new 417-A converter; G0L on a new c.w. rig, KXAT 3, 220 with 1000 watts, and F650 is building a new final with a pair of 4-6s8, YTT is in Monroe converting an SCR-222. He is also working a 3.5-meter station and is copying all other members of the Confederate Signal Corps. The commandant of the Confederate Signal Corps incidentally is none other than SUM. FYZ worked Pennsylvania on 2 meters for a new state and would like skeds with other states. JAN has been above OA as of SS. SUM as O8P. New officers of the Baton Rouge ARC are KSDAC, pres.; PKY, v.p.; DST, sec.; and O8M, treasurer. K5SWS has received his DXCC certificate and a new Mohawk receiver about the same time. EA still is working on that new house. K5DZI is happy with his new HT-37. His DXCC count is 150. JIB, W5PFR, SEC for Louisiana, says that we could use as many EChs as volunteer. The I.AN Net on 3965 kc. operates as a slow-speed EChl and liaison with KN-5. Code drills are held at various spots. WYN, O8P, and net control for the Delta 75 Net on 3965 kc., is doing a real fine job. In spite of all that he took time to visit on the Coast, CEZ still was able to handle 412 messages in January. We lost a good traffic man to Texas—K5E3A. Traffic: W5WZ 22, M2X 160, K5AHU 79, ESW 29, WSHVNY 10, EA 7.

MISSISSIPPI—SCM, Floyd C. Teston, W4MUG—Greetings from Jackson and your new SCM. DLA and TAK are home after visits to the hospital. Announced hamfests in the state are Biloxi June 4 and 5; Jackson July 20 and 31. Let me know if you are planning one for your city. The Jackson Club is negotiating for the call WPX. Listen for it on Field Day. New club officers are as follows: Biloxi—FPX, pres., QX, v.p.; TFX, sec.; O6O, treas.; Jackson—KSF, sec.; and KJS, treas. The Gulf Coast S.S.B. Net is looking for formal traffic. It meets daily on 3965 kc. at 1700 with 7410 kc. as NCS. DLA is operating a new KVM-2. CRE has drifted to 3965 kc. with a 2010 and 3900 kc. K5KJH and BSA are moving to new QTHs. I will be looking for news from the Mazzards and the Gulf Coast. Net, as usual. Also I would like to hear from you on an individual basis. All news will be appreciated. Traffic: W5FMQ 233, KSQNP 141, DIN 61, W5M17 7.

TENNESSEE—SCM, R. W. Ingham, W4UJO—SEC: KACPS; FM: EX; PAHM: L1C and PAH. Director RVR reports on an FB trip to Chattanooga and announces VOE, SIGI, and LPW as Asst. Directors. KACPS makes the final report and wishes all well with his new QTH; Lynn Haven, Fla. UFV reports that ZZ will be operating portable this summer from atop Mt. LeConte in the Smokies. K3LPW operated 3741 kc. while vacationing and reports he has a new 5X-10A and that LTA has a new HT-38. K5RIN says he had a good time in the CD Party. Hamfest plans are being made in Memphis for June 12 and in Kinkaid for Aug. 14. WBK reports that KCPFM is the new manager of mobile activity in Memphis. New applicants: Le COP, DT, ORS, Renewed appointments: HHK as EC and LIQI as OES. Thanks for OES reports to HHK and K5KIYJ. K5KIYJ, 100; TQ, 222; for net reports. FYZ Traffic: (Jan.) W4PFL 1157, CXY 382, FX 256, KACPS 204, WPW 140, OGG 114, K4ACMQ 189, K5LJ 105, KFQF 101, Q4PQ 53, UO 212, UVP 20, PAI 24, DFB 10, ULYL 17, K5MN 12, WACEPU 12, KIPL 12, ZQ 8, GOW 6, W4Y1M 3, SIGI 1, K5KIYJ 2, (Dec.) K4FUS 12, W7DEB 10, DFB 4.

GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thompson, W4USD—Asst. SCM: W. C. Meeker, JCD, SEC: BAZ, R3I: K5C1H, PAHM: K5RBF, and SBD: K5H1F, AN, K5P1F, K5IA 82, PAH: K5M1R, BIA: K5U3B, Great Lakes Division Director and Col. Reed, Director of Kentucky Civil Defense, were the featured speakers at the Combined (Continued on page 114)
THOSE "DISTINCTIVELY NEW" SIGNALS...

ARE COMING FROM

100Vs

If you've been listening on the bands you know that 100Vs are now being delivered. Their outstanding signals are setting new standards for natural sounding communications quality.

A new audio limiter followed by a perfectly tailored audio filter makes a "barefoot" 100V sound like a "well mannered" half KW.

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100 WATT OUTPUT 80 through 10 meters—PLUS generous "out of band" coverage.

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UNWANTED SIDEBAND SUPPRESSION 50 DB OR BETTER

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BETA transmitter, 60w. Requires 600v @ 100ma, 300v @ 200ma.
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Kentucky Neta Dinner Meeting held in Louisville Jan. 16. Other speakers were K2OAO, HJC, W4ZAH, W4WD and SUD. It was a very enjoyable and profitable afternoon and evening and a better understanding of our goals and possibilities was obtained. Kentucky ARRL Net Manager K4EMQ reports that KNN cleared 36 messages during January. K4GNOV and K4NHXN helped with NCS. K4GKPQ is experimenting with a 100-watt RFI beacon. K4PGHh has a new SX-101A. Dick is supporting KYN to WBW and UTB in Madison. K4DFO has a new Hamper among the counties. K4FHP has moved to Willsale. CDA's new exciters works FB. V.H.L.F., PAM and K4LOA reports that a new 601-1ac, c/w net has been started. CDA reports good net activity with a net frequency from CMP and KBUB. Traffic: K4SCH 199, W4BAZ 175, SUD 1, K4GHP 30, LDC 49, W4JCG 47, SBH 44, W4DCA 40, JSH 38, K4GKQ 27, W4RBO 25, K4KFO 27, HOE 24, K4AIQ 24, W4BG 22, K4GNOV 22, KKN 21, K4DFO 20, LQ6 19, LMS 18, QZ6 17, VDO 17, KIS 16, W4HHP 12, K4GQN 9, W4Y 8, K4KFWQ, W4ADH 6, LEC 6, SZ1 6, K4CLO 5, W4UVH 5, K4FJP 4, MVI 1.

MICHIGAN—SCM, Ralph P. Thuetten, W8FX—SEC: YAN, RMS: SCW, OES, QQO, FFQ, PAMs: Y4K, NOG, K4IIC, LHC. EC reports W4ZGC, DZJ, IHC, NXG and UQO; OES to SWF; OI (HHT) to SWF and K4DMP; OES to JTQ, SWF, K4KVY and K4LUG; K4QOC, TBP, AEF to FDO, JKL, 4N and K4LPMY. OOS to K4EEM and K4GKM in 185 violations, 128 Novices and 173 harmonics. The Wolverines Southeast Network which started July 20, 1970 is doing very well. W4ZGC was on 80, 40 and 15 meters. AHA is K4AXW, SEC, QSY, BQA, New officers of the Detroit ARA are MGR, pres.; K4NED, vice-pres.; K4BUB, sec.; K4NFi, corr. sec. K4FDP, on 80 M. goes into the church p.m. system. The St. Clair Valley ARC had its annual dinner Jan. 19. The Genesee Co. ARC has started its monthly meetings on 50 kc. at U.P.A. on Jan. 4 by BPF, K4AOM now edits the Calvinburg Co. ARC club paper. K4BUL works FGW into QMN — the only active e.w. operator in An Arbor. K4BFT has started to handle traffic. FDO is having good luck with simple break-in from QST, June '70. K4AXW is now active on 50M. K4JGY completed the 26-tube Analog Computer for the Science Fair. K8LOS reports on the Fender Bender's Net, on 26.010 Mc, at 1700. Sounds like a mobile operators. K4BQG reports RG250s to RAn waiting for retuned, 50 March of Dimes collections to a downtown bank. NFD reports a Novice school in Belleville run by the Chicago Lakes ARC, P3D. K4JGY, on 220 kc. Jan. 31, QSM says the Oshtemo ARC has 16 mobiles and 4 base stations on 50 kc. K4FDP reports circuits in the Chicago area are full of traffic. K4GTM, P1G, vice-pres.; K4GSS, sec. WYSAN (SEC) expects a monthly Form 5 report from every county ECC. Those not reporting without a reason, will be called to account. Traffic (Jan.) WSOCC 577, FCW 306, FYQ 221, NOH 98, ES 83, YAN 84, K4GQ 46, K4Q 46, K4G 46, K4U 46, K4TW 27, K4C 27, K4XW 26, WATF 26, K4LPLV 26, W4WQ 25, TBP 20, ELW 25, K4HJ 25, W4ASD 21, LHP 21, FDO 17, QX 17, K4QO 15, UCD 12, K4KN 12, W4ALG 12, EFO 11, K4EQ 9, W4EQ 9, W4SB 9, K4JKY 8, K4JHT 5, LOS 2, W4STC 2, K4NU 1. (Dec.) K4KRL 50, JED 22, CWT 26, CKD 18, K4BLO 14, K4KSVN 12, W4WZC 10, K4AE 8, W4YM 8, W4KFO 2, W4UC 2.

OHIO—SCM, Wilson E. Weckel, W4ALX—Asst. SCM: J. G. Erickson, SIAE, SEC: HNP, RMS: DAE and VTP, PAMs: HZJ, WYS and K4SIGD. The Dayton Hamvention will be held May 7. Amateurs in Ohio, West Virginia, Kentucky, Indiana and Michigan are asked to nominate an outstanding amateur in their state, with the award to be presented at the Hamvention. Send your nominations to D. L. Marquette, DEH, 4209 N. Ryland Drive, Dayton 24, Ohio. Cachet County ARA's 1970 officers are K4NN, pres.; K4KN, sec.; K4NNY, treas.; K4NNY, sec.; K4GBK, has a new 75A-3, appointments made in January: OZ and K4DWO as ECC. A201-12 ORS: WYX as ORS. K4KRL and K4KHW as O06. K4ACW received his General Class license and K4MXX his Conditional Class ticket. K4LIS moved into a new house with a 36x11 tower and a T300 Jr. Mason beam. K4KSPX spent two weeks in Florida. Notice to all who hold appointments. Look at

(Continued on page 116)
YOU ARE ASSURED of complete satisfaction when you buy from Hornet!
• YOU MUST be satisfied with the quality of material and construction.
• YOU MUST be satisfied with the performance of the antenna.
Set your own standard of comparison. If you are not satisfied, you may return the antenna as set forth on the order form below, without further obligation.

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• Are Pre-tuned and Easy to Install
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Please Rush My Hornet Tribander for a 10-Day FREE TRIAL. If Fully Satisfied, I Agree to Pay as Checked Below. If Not Satisfied, I Agree to Return the Beam Prepaid Within 10 Days Without Further Obligation. ALL PRICES F.O.B. FACTORY.

☐ I prefer the model TB-3B.  ☐ I will pay cash within 10 days, if fully satisfied.  ☐ I will pay $9.30 within 10 days and $9.30 per month for 11 months.
☐ I prefer the model TB-3.  ☐ I will pay cash within 10 days. If fully satisfied.  ☐ I will pay $7.45 within 10 days and $5.50 per month for 11 months.
☐ I prefer the model TB-600.  ☐ I will pay cash within 10 days, if fully satisfied.  ☐ I will pay $5.50 within 10 days and $4.70 per month for 11 months.
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MY CALL LETTERS ARE

NAME ____________________________

ADDRESS ____________________________

CITY __________________ STATE

ABSOLUTELY NO RISK ON YOUR PART
TECRAFT DEPENDABLE and priced right

TECRAFT CRYSTAL CONTROLLED CASCODE CONVERTERS

For Amateur, Commercial And Special Services

USE WITH ANY COMMUNICATIONS RECEIVER

Amateur Net $44.95

MODEL

CC-50 50-54 mc - 6 meters
CC-108 108 mc - Satellite Frequencies
CC-120 For Aircraft Frequencies
CC-220 220-225 mc - 1 1/4 meters

Specify I.F. Frequency

CRYSTAL-CONTROLLED CONVERTERS FOR 10 AND 15 METERS

Model C-3-21 15 meters
Model C-3-26 10 meters
Choose IF output between 2 and 6 mc to suit your receiver.

$34.95

TECRAFT VHF TRANSMITTERS

For Mobile And Fixed Stations

Complete with Crystal & Tubes Amateur Net

Model TR 20/21 (10-15 meter band) 6AU6 Osc. 5763

A.C. POWER SUPPLIES

MODEL PTR2 Provides power for any TECRAFT transmitter. It will also power the companion converter.

$39.95

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your certificate and if it has not been endorsed within the past year, send it to your SCM for endorsement or on June 1st your appointment will be cancelled. We still need ECs in Allen, Ashland, Augusta, Belmont, Brown, Carroll, Champagn, Clinton, Crawford, Darke, Darke, Dechute, Greene, Hancock, Harrison, Holmes, Huron, Licking, Mahoning, Monroe, Morgan, Morrow, Ottawa, Perry, Portage, Richland, Rock, Sandusky, Shelby, Stark, Summit, Tuscarawas, Union, Vinton, Warren, Williams and Wood Counties. Clubs in counties where an EC is needed should select one of their members to be their representative. Anyone interested should get in touch with A. A. Barn, 1444 Edison Blvd.; Toledo, Ohio, or your SCM. The Senee 62 brand and saw a side-walk on Honduras by HR2HA and saw a CD film—"Texas City." Toledo's Ham Shack, Gossage, incites—Ask, C2KK as its him of the August of and invited us to KX. P00 and PXK returned to 160 meters, K8RX and K8R8Z are new hams, Toledo Mobile RA's 1960s bodies are ORG, prec. top. R2J, vio.-rnm. J3K. K8IIJ, prog. dir. This Ham Shack Gossage is celebrating its eleventh year, with HXW and HXK starting it. Then the girls turned it over to LAA show K9WX and MBL win the latter and VJO now editing this swell bulletin. I want to take this opportunity to thank all the equipment suppliers, who have made this project possible.

P.O. Box 84 • South Hackensack, N. J.
ATlas 8-9020

TECRAFT EQUIPMENT CRAFTERS

(Continued on page 118)
GEORGE TRANFIELD, JR.
FIRST PLACE WINNER
OF ASTATIC
WORLDWIDE OLDEST D-104 MICROPHONE CONTEST

The Astatic D-104 for the past quarter century has been hamsdom's favorite microphone. To determine how these microphones have withstood the march of time, Astatic announced three months ago it would reward the licensed ham operators who reported the ten oldest, operative D-104s. (The age of the mike determined by serial number.) The winning microphone, owned by George Tranfield, Jr., was produced in the very first days of Astatic's history. The large number of entries proved that thousands of the original D-104 microphones still are in operation.

THE ASTATIC CORPORATION,
CONNEAUT, OHIO

IN CANADA: CANADIAN ASTATIC LIMITED, TORONTO, ONTARIO
EXPORT SALES: ROBURN AGENCIES, INC.
431 GREENWICH ST., N. Y. 18, N. Y., U. S. A.

A working model D-104 cast in sterling silver, beautifully mounted for use, or for display as a trophy, PLUS a choice of either a standard model Astatic D-104, a 10-D (Dynamic) or a 10-C (Ceramic). Whatever microphone the winner selects will come equipped with the famous Astatic G-stand.

SECOND TO TENTH PRIZE WINNERS
Choice of a new standard Astatic D-104, 10-D or 10-C, complete with G-stand.
2. James T. Thompson, W9CAJ.
3. Earl S. Nelson, W8DS.
4. Walter R. Whitcomb, K5DEC.
5. W. V. Richardson, W1LGH.
6. Wes Miller, W5QNK.
8. Dominic Badami, W2HSY.
9. Charles M. Ham, W2KDC.
10. H. M. Nickel, D.D.S., W31UF.
Another pace-setting VHF package... New, higher performance model of the famed GONSET Communicator family. Advanced design, new styling, new features throughout to bring you even greater performance.

2 meter $289.50 | 6 meter $289.50
10% down ($28.95) | 10% down ($28.95)

A highly compact, beautifully-designed fixed station "package"... adds materially to the pleasure of local contacts... to the thrill and excitement of 6-meter DX. Puts a strong, crisp signal with real authority on the air.

HUGE trade in allowance will most likely eliminate the down payment. Easy time payment plan

$319.50 - 10% DOWN ($31.95)

NORTHERN NEW JERSEY...SCM, Edward Hart, Jr., W2ZYV -- SCM, W2AZY, RM: W2XAL, PAMS: K2BVR, W2CIL. NJN (phone) on 3655 kHz. daily at 1500, next 31 times with 62 stations and handled 497 messages. NJN (phone) meets daily except Sun. On 3655 kHz. and had 19 meetings with 25 stations and handled 129 messages. NJN (phone) on 5148 kHz. at 2300, had 9 meetings, 136 check-ins, 78 tridents. K2BVR and W2CIL enjoyed the CQ Party. It would many more appointees if they would turn out. W2CIX is better after a low month. W2KNN again will be on 40-meter e.w., after an absence of ten years. He is recovering after the Christmas traffic rush. K2EDD has a 10-meter beam. W2BVE has RTTY and a BC-221. K2DGL will again move to get an 80-meter crowd working. W2XAL, K2CEN, built the first 2-meter car for her Om, Tech. Class licensee K2IQ. K2IVL made IFL via Originally, a first class, and then W2AAPT. K2CBO is now Radio Officer for Riverdale, K2CTY lost a key member of the V.H.F. group. W2EKB, W2ASM worked WAC, but still needs two...
REAL GAIN

- in a Vehicular Antenna!

2.5 db gain
VSWR 1.5:1
Bandwidth ± 2%
Range 144-174 MC
GLOBE ELECTRONICS SCOUT DELUXE GIVES YOU

TALKABILITY

Straight through operation of Final on ALL bands; high efficiency and output on ALL bands; panel adjustment of loading on ALL bands; Pi-match 50-600 ohms balanced on 80-10M, and 50-78 ohms linked output on 6 meters. High level plate modulation using new 762A modulator tube. Just plug in VFO or crystal. Dual transmitter/VFO keying provisions for CW. Extensively shielded and filtered with separate final RF shield and built-in power supply.


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GLOBE ELECTRONICS A DIVISION OF TEETRON ELECTRONICS, INC.
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Coming Soon! New 2-Way Radio Pocketphone!

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Coming Soon! New 2-Way Radio Pocketphone!
ULTRA-HI "Q" COILS
FOR 80, 40, 20,
& 15 METERS
Your Choice
$5.25 ea.
The coil with the highest "Q" ever obtained. Tested and found to have a "Q" of wall over 315. Use with 36" base sect. 60" whip, 3/8 Dia.

FIBRE-GLAS WHIPS
The Feather-Weight Antenna with Spring-Steel Strength! Completely weatherproof, breakproof anten-nna with special flexibility that prevents accidental shorting-out against overhead obstructions which can cause loss of signal, serious damage to equipment.

3 ELEMENT 11M. BEAM
THE CITIZEN SR.
Provides a power gain of approx. 2 1/2 (DB) in forward direction, 10 to 1 interference reduction from sides and rear. VSFR-1. 1 to 1 at band center when fed with 52 OHM coax... $36.00

11M. CITIZEN BAND ANTENNA
26,900-27,225
MC
YSWR under 1.5:1 at resonance. Complete with 50' RG 59/U Cable, Swivel type antenna base for flat or peaked roof installation, GP 27-11...

100X Heavy Duty
100X Medium Duty
Model Model 149-140 100X

WRITE FOR FREE CATALOG
All products are for Universal Use-Mobile, Home, Marine, C.A.P., Civil Defense, Emergency, etc.

MULTI-BAND ANTENNA COILS
New plug-in type coils, designed to operate with std. 3" base and 5" whip.

6 or 12 volt models
Complete $24.95
Automatically tunes entire band by remote control.

NEW! SLIM-JIM ALL-BAND BASE LOADING ANTENNA COIL
96" WHIP
FOR 10, 11, 15, 20, 40, 80 METERS
SIZE 1 1/4" X 19"
Positive action, fast slide whip in or out to loading point and lock out into position.

NO. 399 B-1080 $17.95

NO. 999 10-15-20 MET $12.95

NO. 900 10-15-20-40-75 $14.95

NO. SSB-156 40 & 75 M. $14.95

FOUR ELEMENTS FOR LAND, SEA AND AIR

NO. 444 $17.80 No. 445 $7.95 No. 446 $13.45
Adjustable to any bumper. No holes to drill.

10 Met. 5 Ft. L $8.95
11 Met. 5 Ft. L $8.95
15 Met. 5 Ft. L $8.95
15 Met. 5 Ft. L $8.95
15 Met. 5 Ft. L $8.95
40 Met. 6 Ft. L $9.95
80 Met. 6 Ft. L $9.95

SKYMASTER COAX ANTENNA
Gets your signal through where others fail. Concentrates signals at the lowest angle, provides omni-directional pattern for best coverage. Maches RG 59/U Cable. SM-700...

No. 11 Met. $17.95
10 Met. $15.95
6 Met. $15.95
2 Met. $10.95

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All products are for Universal Use-Mobile, Home, Marine, C.A.P., Civil Defense, Emergency, etc.

100X Heavy Duty
100X Medium Duty
Model Model 149-140 100X

MASTER MAGIC WAND
New easy-to-install, single band, top-loaded plastic covered Fiber glass antenna provides maximum performance at the most useful radiation frequencies.

WRITE FOR FREE CATALOG
All products are for Universal Use-Mobile, Home, Marine, C.A.P., Civil Defense, Emergency, etc.
CRANK-UP TOWERS give you the "GREATEST HEIGHT-PER-DOLLAR!"

For optimum results there is an optimum antenna height above ground. With a TRI-EX Crank-Up Tower you can pick your best height, based on the band being used, conductivity of ground and clearance of surrounding objects.

Expertly engineered, and proven through years of actual use, the "H" towers support even the largest 20 meter and tri-band beams.

New iron phosphate rust-proof undercoating, plus epoxy resin primer, plus baked enamel finish, protects tower for years of maintenance-free use.

The winch is ratchet operated, and can be locked for safety. The "H" series tower is available in 37, 54 and 71 ft. models. Towers are shipped complete with base and crank.

Priced from $152.43

Write for full details, and for catalog showing complete TRI-EX line ... the "greatest Height-per-dollar" value you can buy.

TRI-EX TOWER CORP.
129 East Inyo Street
Tulare, California

and Midwest V.H.F. Association, Inc. of St. Louis. The following stations were reported as NCS-ONLY for the following nets: Butchers Net: K9HH, QJU, KBLTJ, FCT, KJ7TV, PL5. QN1, TFQ is back on NWN after a long absence. DLI is another new check-in to this net. K9FR reports contact with the ZM7DA DX-pedition. Only two stations, K9LZQ and K85GJ, from the section were active on this popular band section of the phone section of the CW Part. All section appointees are eligible for WAP and JUR reports. (See weekly column.)

NEBRASKA--SCM, Charles E. McNeil, W8EXP, at the Nebraska Section C.W. net had 21 sessions with QNI 347, QTC 216. The Western Nebraska Net, NIK, reporting, had QNI 476, QTC 670. Those reporting 100 per cent during January were K8KED, KB9Q, KE9E, KE9U, GGP, NIK, OFP, PZQ, K9T0H and K89RL. The Nebraska Emergency Phone Net had QNI 347, QTC 50, as reported by ZOY. The 15-Meter Morning Phone Net had QNI 755, QTC 147. The December report for the 75-Meter Morning Net was QNI 217, QTC 218, New officers of the Central Eastern Radio Club are YZT, pres.; MTH, vice-pres.; AQQ, secy.; K8CBY, treas. The new club call is TL, K868CM, in Lincoln. ARFW was conducted over 100 messages during January by the Emergency Net, at Jan. 18, K8CQG was appointed the new P2M. KPA is back on the air after six weeks in the hospital. The Central NET, W9GDP, had 23 sessions.

For more details of the National DX Convention and other ham activities, call CQ.

NEW ENGLAND DIVISION

CONNECTICUT--SCM, Victor L. Crawford, W3TIQ--K1WOM, AW, EFW, GIL, YV and YU made the BPL. KDL has a new amplifier using 213Es, K1LAI checks in to ON regulars, N8M had a visit from KYQ. MWB is running a Viking II with a 3-wire folder dipole. KIMOT has new 20- and 50-meter dipole set up and is checking in to CN, KN1NFZ is a new Novice in Bristol, G7Y is by-ling up on his C.W. so he can check into CN, K1CAK’s new rig is working fine. KYF enjoyed the CD Party. FF9 reports some club activity with the town of Redfield buying a Crescent Y, reports that CPM met 31 times, handled 332 messages and had an average daily attendance of 29 stations. On the CN P2M contest honor roll were K1CWO, KB9Y, KN1FHM, FIP, YBH, 31; KBBS, HJC, 30; TVU, VQH, 27; K1DKQ, K1QCB, LWL, 25; K0X has a new trans., is back on the air, the Central ECC has a new tower. FF9 reports that CVN handled 28 messages during 13 sessions with 30 stations entrants in the High QNI group. K1KOE, K1KIR, HJG, 9; K1AQA, 8, K1K is gone to France with the Air Force. K1HIJ has joined the ARRC and is in Bridgeport. K1HJ has his General Class license and is on with a Ranger. JRV and GWW are on RTTY, J1M handled traffic for G3VK. K1Riede worked between Porto Rico and Hertford on the 28, EJH entered a 222 for 2 meters. K1MNMY worked 26 states using 10-Meter 10-20. KYQ reports the CN first session handled 408 messages during 31 sessions with an average of 14.7 stations per session. The second session handled 162 messages in 28 sessions with 15.8 average stations per session. OBR, R9F, and KBHWF were high QNI. HZC is now stationed in Huntsville, Al. New officers of the Huntsville AKA are SBA, K1IAMO, K1AGM, K1MNMY, pres.; UKX, treas.; K1KSH, secy.; FQ, act. comm. LQZ heads up the TVI Committee. STT is on with new cap. K2QD has an ITT-20 in a panel of 250THS on s.a.b., is converting an ITT-20 for RTTY. W1NH advises that 8-Meter Net handled 23 messages during 8 sessions with High QNI going to K1BYD, 8; W1L; 61; K1Q, KIRC 3. New officers of the CQRC are FIP, pres.; K1AQA, vice-pres.; K1KIR, treas.; FQ, secy.; K1KOE and K1KIR trustees. FVV has a new Halliecker SR-34. AW added UN1KA and 213BB/Chanthan for new hams. K1DRA worked 188 QSOs in sessions on phone during the CD Party. K1NKR has a Globe Scout and a S-80. He worked a KZ5 on 7 Mc. K1MIF (Continued on page 144).
Remember when tape was considered the only means of perfect code transmission? Not any more! With the Hallicrafters 'TO' Electronic Keyer, your fist takes on all the crisp intelligibility of tape. Every character is letter-perfect. You'll clear up your transmission backlog in no time, and collect compliments on the clarity of your sending.

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MOON BASE—technical and psychological aspects by Dr. T. G. Helten, (Principal Biophysicist Research Dir., Wernher von Braun, Inc.) Before the first U.S. team can be sent to the moon a laboratory is needed to build on a Moon Base prototype (test chamber... 70 ft. suggested) to simulate moon environment and reproduce all the stresses under which humans will operate.

The fascinating book provides a technical description of the features of a Moon Base prototype and a psychological analysis of the smallest operational crew composition. Must reading for all contributing to space flight. \#556, $1.95

PRINCIPLES OF FREQUENCY MODULATION by B. S. Combs. Written at the intermediate level to suit the needs of an engineer, radio engineer, student of engineering and laboratory technician, this book offers comprehensive discussion of the basic principles of frequency modulation and its uses.


HOW TO USE METERS (2nd edition) by John F. Rider & Sol D. Prensky Engineers, laboratory and service technicians—everyone who uses meters in their daily work—will find this revised, expanded and modernized version of the fabulously popular original text absolutely indispensable.

Everything that is not written in meter instrumentation will be found in this book. For example, in addition to the measurement of the many types of conventional 0-1, high frequency meters, a discussion of the digital voltmeter is also included in detail. Also included are the ultra-high impedance electrometer vacum type, the vacuum type and transistor meters and industrial transducers for voltmeters. Explains in detail the construction and operation of all types of meters. \#314, $3.50

UNDERSTANDING MICROWAVES by Victor J. Young. Ph.D. (144 pages, 81/2 x 11). This book is yet another riprolick discussion at the intermediate level of the fundamentals of microwaves, their generation, transmission and reception. Prices subject to change without notice.

At your jobber or bookstore or order direct.

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MAINE—SCM, Jeffrey L. Weinstein, WJIAN—SEC: JIN, FAX: BXT, RSM: EFR, JIN’s Official Bulletin frequency is at 1700 or 3000 kc. The Maine Sea Gull Net meets about 1st and 3rd Mon. through Sat. at 1700 on 3000 kc. The Pine Tree Net meets Mon. through Fri. at 1900 and 3500 kc. The Maine No-Speed Net (Nor’easter) meets every Thurs. as a Sat. at 1700 on 3720 kc. New appointments: SWX 04: HDQ as OPS, CXX as OES. Worked England on 8 meters with a home brewed signal receiver. EIFW as OES.

EASTERN MASSACHUSETTS—SCM, Frank E. Birger, jr: HSF; appointments: UXN as EC for Dedham, TZZ as EC for Rindge, and UXN as OES for Dedham. K1XT as OES; Silent Keys: AHX and K1KUF. WKBZ focuses us on 6-METER-PK as K13BMP. Because of his health JISN has resigned from WKBZ. K1LTS is now in Quincy, FZT is on 78 meters. On 2 meters: K1GE, K1LC, K1JEK, MCD and EIQ. The Attleboro Area has applied for K1KQD to Fort Devens on many bands. The Waltham Club made over 93,000 points in the VHF split, K1KJ is working DX on 10 and 15 meters also. WU is working in shop at the Middlesex Pomona Orange on ham radio. Who are K1NIW and LBA in Beverly? K1NAM has a Globe Scout, and a Comet II. K1MIM is a manager of the Hudson Traffic Net on the 440 MHz band. K1KOC has a new dipole on 10 meters. K1BVI is moving to new net on 10 meters. K1NKS and NCU are now in Newton, K1HIM has a new electronic key. K1KWC is a SRC’s XYL. K1U1Q is working K1AM and has a Viking 1 and a NC-180H, K1LCQ has hi-fi Indians, K1GEE has a Globe Scout 68 and an NC-98 on several bands. K1HIM has an AC-410 on 40 meters. K1LCQ has a Chief 50A and a 5-815. WAREZ was winner of the Mass. QSO Party, sponsored by the Merrimac Valley ARC. W1DPO is working the Canada Club. New officers of the Merrimac Valley ARC: K1KNT, pres.; K1AJR, sec.; K1ULV, rec. The New England Club meet at MGV’s QTH. KICHH is on many bands and on active duty at Ft. Devens. K1KQG is working 10-5 meter with 15-8 on 440. Contact your SCM if you are interested in working on a license plate pull committee in your area. Let’s hear from more clubs and individuals about their activities. Traffic: (Jan.) W1HSO 84, K1DIAP 35, K1GQ 26, W1FDR 15, JIN 9, K1BVE 8, K1GQ 4, K1QJ 3, DTG 2, W1KE 2, (Dec.) K1QJ 35.

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124
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out a nice monthly ham news for the Yankee Radio Club. AQE has a license for 2 and 6 meters. The Framingham Club had a movie shown by QV, KIHT had his 100-watt 6-meter transmitter at another meeting at the South Shore Club, and on TVL the members of the QRA: EZY, DZ, KSR, and W6-7 etc.

The meeting of the States Wide Radio Club was held at RO's QTH attended by K1GFR, KB, BSG, MKT, QV, and ALP. K1GIN had an Ampex transmitter. K1GIN is mobile on 6 meters with YC-7 will be on 2 meters. K1LSS, Sudbury, and K1LMO, Acton, both from the west, are with 6 meter s.s.b. K1R9H set a new 30-Mc. Faradap, NKA in months 6 meters and says there is a teen-age set on 50.28 Mc, with K1GLM, L2GL, and OKF. L2N is busy with home QRP. L2N has his General Class license. L4D is in Maryland for Naval Reserve duty. WLP moved to Wakefield, K1LQV is on 2 meters. PEX has a 150-meter QSO. K1BGM, K1OP, George (NC1CE), SHY, K1MG, and MJC put on a comment demonstration for the Club Scouts. IHC is working on 5-Mc., general, appointments on.
TO SAVE, OR NOT TO SAVE
(A soliloquy in Three Acts, with a happy ending.)

Cast: A hop Ham, who has just decided to get more fun out of life by enjoying some better equipment in his shack.

Act I
(Our hero is in his shack. He has called QSO seventyeen times, and is listening to the other fellows working the DX.)

"To save, or not to save. That is the question. Whether it is safer to stick to your present equipment, or to get some better used gear for a lot less money."

Ham: Come to think of it, every rig on the air is a used one! And, if I could be sure of getting a really good one, there's no reason why I can't have a bigger one.

Ham: There would be no need to buy a pig-in-a-poke, and that's what Bill Harrison has been saying in his ads about his used equipment!"

Ham: All my friends tell me that Harrison Radio is the most reliable, and stands squarely behind the signal, and there's no reason why I have to buy 'Ham Headquarters, USA'.

Ham: No point in taking a chance, I'll get in touch with Harrison right away.

(Curtain)

Act II
(The world-famous Harrison Trade-In Center. Our hero is rapturously inspecting the rows upon rows of shelves stretching into the distance, loaded with the greatest array of ham gear ever displayed under one roof.)

"WOW! Never saw so much ham gear in my life! There's several of the very models I want. Every piece has a green tag on it, and shows Service Lab verification of performance, and I'm certainly not getting in a pig-in-a-poke here! And just look at the prices on those tags! Never thought they could do it so low!"

There's B1, W2AZA, and Ben, W2SOH, and Ray, W2QYS, and Bernie, K2HMD, and Bob, K2VQ, all bustling about like busy bees, helping the crowds of hams look so pleasantly happy.

No wonder they do such a brisk business in the Harrison Trade-In Center... there's such a wide assortment of used gear... choose from... hardly be told from new... Here's their Clearance Section, where the unit which does not pass their high performance standards is yellow-tagged at a give-away price, and sold "as is."

All the boys are so friendly and helpful, so the price is right. I select it, and let me prove to my satisfaction that it is perfect before I take it home.

There's certainly no risk here... everything is unconditionally guaranteed. If anything should go wrong, their experienced service team will competently fix it without any charge for parts or labor during the first ninety days... And, if for any reason I am not entirely delighted with my purchase, I can return it at any time up to three months after purchase and be given a new one of the same or any other model for only the difference in price.

They really gave me a swell allowance on my old stuff... the swap cost a lot less than anywhere else... Hey, if I want to, I can spread it out over many months... Their low carrying cost lets me enjoy now, pay later.

Those new roads make it a snap to drive to this convenient, central location 12 blocks straight downtown from the Holland Tunnel... plenty of parking, too.

It's sure great to deal with Harrison!

(Curtain)

Alternate Act II
(For the ham who cannot visit "Ham Headquarters, USA", so traded by mail.)

(Times a few days later.)

"Harrison," my Ham's speedy reply by return mail!... He gives me a choice of the models I asked for... the prices are certainly no pig-in-a-poke!... More important to me, it's the values that are guaranteed to be unequalled.

He says he can enjoy all the advantages of those hams who come in to the Harrison Trade-In Center... they fill up and check it out before carefully packing and safely shipping it to me...

I have the same privileges of returning it, even for full cash refund within 15 days... He offers a really top allowance for my old gear... and I can take up to 24 months on the balance.

No question about it... for the best deal, every time — my order goes to Harrison!

(With look of well justified happy anticipation, he seals envelope.)

(Curtain)

Act III
(By the back in the shack, a few days later)

"Please stand by, Q15SB. I have 9M2DB on the hook, and he says X22AD has been calling me..."

This is certainly FB gear I got from the Harrison Trade-In Center... and his boys gave me some good dope on how to get the best out of it... Never heard of values to equal this... and the money I saved let me make the whole happy with a new mink coat.

Golly, we both are glad I always deal with Harrison!"

(Curtain, sustained applause)

Epilogue
(Honestly OM; I can't promise you'll make DXCC right away, just because you get your gear from me. At least, not in the first few days!

But I do tell you sincerely that whether you want to save with safety on my like new equipment, or if you want the very latest new production, you'll always get more real value for your money, and you'll always feel more comfortable at "Ham Headquarters, USA".

Come on in, and bring your old gear. I guarantee you'll return home happy with your trade. Or, drop me a line telling what you want, what you have to swap, and the terms you would like.

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ELEVENTH NEW HAMPSHIRE QSO PARTY
April 23 and 24

The Concord (N.H.) Brasspounders, W1OC, announce their sponsorship of the Eleventh New Hampshire QSO Party, and cordially invite all interested radio amateurs to participate. Here are the details:

(1) Contest period: Saturday, April 23, 6 P.M. EST to Sunday, April 24, 6 P.M. EST.
(2) QTH and QTH restrictions:
(3) Scoring: N.H. stations count 1 point for each N.H. contact, plus 2 points per outside contact Count 3 points for each 2-WAY contact 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, that contact the highest number of counties. Single operator stations only are eligible for the special endorsements.
(5) Operation is restricted to 80 meter c.w., and 75 meter phone, and 6 meter c.w. and phone. The same station may be worked for additional credit a total of 2 hours in each mode.
(6) General call: "CO NH" on c.w.; "CO 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. Those operators participating in both the c.w. and phone category must submit separate logs for each mode of operation. Each log shall be scored separately based on the number of contacts and counties worked in each mode. The scores and scores and certificate will be awarded to the Concord Brasspounders, P.O. Box 339, Concord, N.H.

(8) The WNH (Worked New Hampshire) certificate will be awarded to stations working ten or more counties during this QSO Party, participating logs continuing.

RHODE ISLAND—SCM, John E. Johnson, KIAAY
SEC, PAZ; HIBT; SMU; PAM; YRC; VLF, RUN; KCS; Monthly reports were received from VSZ, ESK, YRC, GR and K1CBR. K1BBK won the Merit Award for the time being for working the most stations in the class. QSO Party in December. He also won first place with top score in R. L. in the W. Va. QSO Party. KCS, with KICRN, was second. Worked 850 QSO's from invading the R. L. section for a v.h.f. win in January and it is believed that the W2 only has the W. Mass. section to beat. An operators' meeting was held Jan. 23 with N. E. Director EPW present. Additional meetings are planned for the future in the hope we can build a stronger section. YF6B, W9GN, K1BBK, A.A., W1SS, W1BBQ, W1MD, W1BB, W1XK, K1CBR and K1CBR are K1CBR in the W1MD QSO Party scheduled for later than May 15, 1960, 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 ten or more counties during this QSO Party, participating logs continuing.

VERMONT—SCM, Harry A. Preston, Jr., W1VBA—SEC: EIB; RM; K1BBG; PAM: HBG. Vermont fre- (Continued on page 129)
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Cwr. M-W-F at 1630, VEPM Sun. at 1730, VEFM Sun.
at 0900, QRM Mon.-Sat. at 1730. It is with regret to 
report here the passing of AVP and JZ. V.i.f., activity 
seems to be expanding in the Green Mountain State. 
KICMF has recovered from its recent illness, and 
Bryan, of Burlington, passed the Novice Class exam.
International Field Day, sponsored by the HARC.
Inc., is in its planning stage and probably will take 
place in early or mid-June 1960. Civil defense has two 
phone nets on week ends: Sat. morning from 0900 to 
1000 kc. or track and general emergency, Sun. morning 
0900 on the same frequency for official business. KIGBS 
is promoting RACES and is making efforts to spread 
these clubs to emphasize the importance of amateur radio in 
ed. FPS has been appointed Radio Officer for Brattle-
boro C.D. A new ham in Willard is KINW. Another in 
new ham in Killington is KILN. Trains CV2911, CV292, 
KHEM 261, WIOA 294, KIBGC 89, WIKRV 82, EJL 
31, KIHAR 21, WILHR 11.

NORTHWESTERN DIVISION

ALASKA—Acting SCM, Kenneth R. Koester, KL7BZO 
Our very dear friend CP is now back in Anchorage 
after being outside for medical care. APV has gone out-
side for a couple of months. CUS, of Fairbanks, says 
the club members are doing everything possible to make 
contact on 3 meters with DX. The agent for the Alaska 
R.R. at Nome, about 80 miles distance, has an 
SX-25 and a DX-40 with double doing quite well for 
low power. AEQ and Ann, in Fairbanks, report they 
both just got married. Ann passed the test for 1st-class 
phone. Pj is getting a new six-element beam on 2 
meters. He has 225 countries worked, K2OZ has a 
Monarch Telrex and a 2-meter Telrex beam. CIW is 
playing a new electronic key which he built on the air. 
CUK, who is now residing in Anchorage, has 
around the world with several ex-cells to his credit. He 
was an Asst. SCM in KGLD-Land and has been a ham for 
36 years. He will be on the air soon with a 75A-2, a 
3V-1, a Pacemaker and a 3DZZ beams. AN has been a 
ham for 30 years and finally got around to having a 
60-ft. tower. BK will be helping the Polar Amateur 
Radio Club of Alaska in sending messages for the girls 
who operate a message center at the PNA office down-
town during Fur Reminiscences.

IDAHO—SCM, Mrs. Helen M. Malette, WGGV-
ZRO is a new EC. The Boise C.D. 2-Meter Net 
received 7 out-of-city check-ins in January. Nampa has five 
2-meter stations on the air. DWE attended the ed. 
meeting in Boise. KBWV is the new QSL for the Dis-
trict 4 C.D. Morning Net. The new editor of Ham Hill 
News is OCR, assisted by CIE. Send them your ed. 
news, K7DU, is the new proxy of the S.E. Idaho Ra-
dio Society. The Magic Valley ARC held an auction 
and pot luck supper in February. The Pocatello ARC had 
a dinner and election in February. FARM Net Manager 
JHY shook up check-ins when he decided to handle 
traffic before roll call to avoid troublesome QRM. RQ 
K7D0 has a new daughter. K7KCM was traveling to KMKL. 
EF is moving to Oregon, and K4AYU will change his 
address to California. EF is taking the new 
Cox-Otto to Oregon. Olsen K7HGF, inside WR wire, FARM Net traffic: 116. Traffic: W7VQ 34, K7BW 29, WGGV 26, K4AYU 21, 
K7BVP 14, EQX 12, K4HYQ 9, GHCX 6, WTDW 5, 
ABR 4.

MONTANA—M. Vernou L. Phillips, W7NPW/WX1
—MPN meets M-W-F at 1600 on 3910 kc. MB 1400 to 
T-T-S at 1930 on 3330 kc. TPE received confirmations 
for the WPX Award. K7CHZ and HZ2Y earned WAC. 
K7CWA earned K7CWA and K7CWA. K7CWA earned 
the 7th consecutive HPL. DXX, K7FFC and K7FZD hand-
dled emergency communications for the Ophirum Radar 
Tower. MBI has a new ice out emergency. This girl 
YQZ celebrated his 86th birthday. K7EOS is a new 
Conditioned Chas at Stockport and K7HAT is a new 
Conditioned at Belfry, CK vacationed in Florida. Ham 
Licenses are scheduled as follows: Hardwood June 5, 
Wood Point June 9, Lewistown-July 10 and Havre Aug. 7. 
The Glacier HPL will be held at Augusta July 14-15. The 
Wathounds is a new club at Miles City and has graduated 
9 Novices. Officers are YUP pres., K7CQL, vice-
pres.; and K7GQ, secy.-treas. The Bridge City Amateur 
Radio Club are WSE, WSP; K7GTV and HFZ, vice-pres.; 
K7GWA, secy.-treas.; K7GWB, pub. chmn. K7FZD and 
W7PTC are EC. Recent appointments are K7FZD as 
FPO as OPS and EC and K1D as OC. Traffic: K7EWW 
383, KBX 260, BFTC 81, GCHX 6, WTDW 11, SKE 18, 
GDW 4, YQZ 4, K7KCH, W7NPW/WX1. TPE 2.

OREGON—SCM, Hubert R. McNally, W7JDX—RDU 
still is coming through with HPL but both ZB and 
K7CQL slipped a little this month. ZB lost two au-
(Continued on page 188)
The purpose of this special November issue of Proceedings, as outlined in the guest editorial by J. W. Moore, National Institute of Health, is "to provide its readers with some interesting, informative and perhaps provocative examples of various weddings of electronic art and concepts to some of the life sciences. This collection of articles is not intended to delineate Bio-Medical Electronics, but rather to illustrate the breadth of the field of interest of the Professional Group on Medical Electronics, which, by constitutional definition, is the study of biological and medical systems." Thus begins one of Proceedings' most fascinating issues—one that presents the scope of the broad new avenues of experimentation in biological measurements opened up by the speed, versatility and precision of modern electronics. This special issue is not only the current record of the progress in Bio-Medical Electronics, it is fascinating reading for radio-electronics engineers in general.

26 ARTICLES BY LEADERS IN THE BIO-MEDICAL ELECTRONIC FIELD

Below is just a partial listing of the articles this special issue covers. For example, the development of a broadband electrometer is described in the article by Gesteland, Howland, Lettvin and Pitts on "Microelectrodes and Their Use." This issue gives considerable emphasis to basic biological research. And, because the recruitment and training of personnel to work in the bio-medical instrumentation area is probably the most pressing problem to be faced by the PGME, there are supplementary articles in this area. This special November issue of Proceedings of the IRE on Bio-Medical Electronics is only one of the many services offered members of the IRE. If you are a non-member and wish a copy of this vital link in the record of radio-electronics, return the coupon below, today, to reserve it for yourself or your company.

PARTIAL CONTENTS OF THIS NOVEMBER BIO-MEDICAL ELECTRONICS ISSUE:

"An Analog Computer to Stimulate Systems of Coupled Bimolecular Reactions," by E. F. MacNichol, Johns Hopkins University
"Electron Transfer in Biological Systems," by B. Chance, University of Pennsylvania
"Alternating Current Spectroscopy of Biological Substances," by H. P. Schwan, University of Pennsylvania
"Comments on Microelectrodes," by R. C. Gesteland, B. Howland & J. Lettvin, Massachusetts Institute of Technology
"Some Functions of Nerve Cells in Terms of an Equivalent Network," by W. H. Freygang, National Institutes of Health
"Electronic Control of Some Active Bioelectric Membranes," by J. W. Moore, National Institutes of Health
"Scanning Microscopy in Medicine and Biology," by L. E. Flory, RCA Laboratories
"Instrumentation for Automatically Pre-Screening Cytological Smears," by R. G. Boxstrom, H. S. Sawyer & W. E. Tolles, Airborne Instruments Laboratory
"A Magnetic Flowmeter for Recording Cardiac Output," by H. W. Shirer, R. B. Shackelford & K. E. Jochim, University of Kansas
"The Use of an Analog Computer for Analysis of Control Mechanisms in the Circulation," by H. R. Warner, Latterday Saints Hospital

"Stability, Oscillations, and Noise in the Human Pupil Servomechanisms," by L. Stark, Yale University
"What the Frog's Eye Tells the Frog's Brain," by J. Y. Lettvin, H. R. Maturana, W. S. McCulloch & W. H. Pitts, Massachusetts Institute of Technology
"Repetitive Analog Computer for Analysis of Sums of Distribution Functions," by F. W. Noble, J. E. Hayes, W. M. Edin, National Heart Institute
"Medical Ultrasonics," by J. F. Herrick, Mayo Clinic; H. P. Schwan & J. M. Reid, University of Pennsylvania
"The Use of Electronic Computers in Aid Medical Diagnosis," by R. S. Ledley & L. B. Lusted, National Academy of Sciences
"New Instrumentation Concepts for Manned Flight," by L. J. Fogel, Convair
"The Origin of the Professional Group on Medical Electronics," by J. H. Montgomery, Vanderbilt Medical School
"Instrumentation in Bio-Medical Research," by P. E. Klopgst, National Academy of Sciences
"On the Role of the Engineer in Bio-Medical Instrumentation," by J. F. Harvey, Rockefeller Institute
"Medical Electronics Center—Interdisciplinary Coordination," by V. K. Zverkin, Rockefeller Institute

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All IRE members will receive this November issue as usual. Extra copies to members, $1.25 each (only one to a member).

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<th>52 ohm coax</th>
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<tbody>
<tr>
<td>Longest element</td>
<td>23 feet</td>
<td>13&quot; 6'</td>
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<tr>
<td>Turning radius</td>
<td>16 pounds</td>
<td>8 pounds</td>
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<td>Weight of beam</td>
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<td>none</td>
</tr>
<tr>
<td>Traps, coils</td>
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<td>none</td>
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<tr>
<td>Tuning</td>
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<tr>
<td>Low loss radiators</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Capacity</td>
<td>1 KW</td>
<td>1 KW</td>
</tr>
<tr>
<td>Cost</td>
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**WASHINGTON—SCM, Robert B. Thurston, WPTG**

**SECU: HMQ, RM; AM: FAXM: LRF and FGY. Your SEC is HMQ, put HMQ as shown in Feb. In QST, new officers of the North Seattle Amateur Radio Club are IMV, press: K7CFO, vice-pres: PFG, secy: K7CNQ, treas: K7CRC, LWB, QSL, club trustees. A new Official Bulletin Station in the Seattle Area is K7CIIH, VE2LE, W7 now is operating out of Seattle on 40 and 20 and 40 and 80 meters, with 50 watts and is looking for contacts. The Bremerton Annual Hamfest will be held at the Sons of Norway Hall, Bremerton, Washington, Dec. 11. Keep your QSLs and QSOs coming. W7RAB has a new 200-watt e.w. rig, K7GNA lost two antennas in the big wind so left for a vacation in Waveland for a month. K7ABY and CNR are QRL with TV equipment. REC is working portable out of Forks, ZSH is portable out of Olympic Hot Springs, OM0 is a new OBS in the Garwin Area, GIP is the new manager at WSN, with DIZX as associate manager. IEU is active in WSN now, AB4 says there is nothing new in ham radio, but is QRL getting ready for income and real estate taxes. INK is working for MARS confirmation. K7AJT has a new trap vertical for 10, 15 and 20 meters, SVN was active in a TD Party on 15 meters. K7DO is for a new Apache and is active in the AREC program from the Redland Area. K7KEE is planning on a new 300-watt transmitter. K7GCU has a new fashionable in Hoosport, KB7F is active on WRS and has a successful QSO with KB7D. Traffic: W7BA 1082, DIZX 698, QMH 276, HUT 157, IDK 180, KUM 134, GIP 121, K7CIIH 98, W7MC 36, B7G 26, K7ABY 12, K7QAN 10, K7QAN 9, K7CIIH 7, K7QAN 6, WTHO 24, K7AAB 3, WTHO 2, EK7 2.

---

**PACIFIC DIVISION**

**HAWAII—SCM, Samuel H. Lebow, K69AE—W7 MCJ, chief operator at KW6GCA and net control for the Pacific Net, has been transferred to Panay Island in the Philippines. KW6GCA will be off the air until at least one of the three Novaks Les left there possesses his Conditional class exam. K16BM is on the air with the entire 8-Line equipment. K69AHI is on 8 and 16 on the new HT-32; so is K69ABQ but with a different final, home-brew in both cases. K69AFD is back on RTTY and RTTY features built-in PSK, with the new HT-32. K69FOH has had several operations on his car and has shown an improvement each time. Ken is the chairman of the contact committee and is fishing up for clubs. The Hawaii Island Alop, so plan to attend. Don't forget Fourth of July week end in Hilo. K69AFD continues to be the only station reporting as well as to be the remaining operator. Where are the rest of you fellows? Traffic: K69AHI 384.

**NEVADA—SCM, Charles A. Rhines, W7TVU—IWT**

(Continued on page 154)
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<td>30S-1 Linear Amplifier</td>
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<td>32S-1 Transmitter</td>
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<td>516F-2 AC Power Supply</td>
<td>115.00</td>
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<td>516E-1 12V DC Power Supply</td>
<td>282.00</td>
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ing the practice sessions of the Olympic Games. The
lack was three 'til four in February when the two
operators took over. W6GQA held forth for the San
Francisco section in the January CD Party. W6OKR
prepares for an Easter 5-stater for the W6-GX
KQFQ is now on 49 meters during the day with her new dipole. Be-
sides being on the air, she is also on the ATC.
Net. Ralph also is on the N3NE Thurs. and FCC
station ID's. Fri. W6XOJQ now has two FCC spots on
49, but this week he is also on the Airborne
NCS spots on R66. N6C was at the February
CCW meeting. I attended the testimonial banquet
in honor of Walter H. K. Caruthers (K6UJ) on
Feb. 1. The toastmaster was Mr. Herbert Hoover, Jr.,
W6SH. The speakers and the guest list were most
impressive and I sincerely feel that it was well
have been made. Traffic: W6GQY 949, W6YQO 338,
K6QJ 279, K6QPC 16.

SACRAMENTO VALLEY—SCM, Jon J. O'Brien,
W6GDO—Assoc. SCM: William van de Kamp, W6CKV.
K6P, K6QK, W6CIA, PAM: W6JYX and W6-
CIV. Correction: SACF's 1966 officers are K6GES, pres.;
K6YLY, vice-pres.; W6GEY, secy.; K6JL, treas. Last
month we featured 1963 Rep. elects. K6JL's officers
are K6GES for 1966 are W6AMY, pres.; W6AW, vice-pres.;
and W6XWU, secy., treas. Mr. Shasta RC's officers
are W6KQ, pres.; W6KQ, secy., W6JL, treas. The
Marion (K6R) officers are W6KQ, pres.; W6JL, secy.;
and W6KQ. treas. W6KQ has a new power
and an NCU-403, K56XX is manager of the c.w.
section of Stockton. The ARC-sponsored event and
classes at McClellan had such a large sign-up that
two classes of fifty each have been made with a waiting
list, and any of the original students drop out. W6-
WWW is active in this section on week ends, con-
necting between the old Berkeley and home in Yuba
City, Ca. He has K6QJ 11 on 40 meters to pass the time
during the week. W6KDT was chosen "King" for the
Veterans March of Dames Dinner in Chico. W6CIM made
the trip to the earthquake emergency generator on a net check
when the power failed in his area. K6SEA was winner
of the Ranch Loma Night contest. W6EUL is the proud
owner of an Elmore mobile station. The Chico Elmota
club had a very nice dinner party celebrating its third anniversary.
W6GDO and K6JL enjoyed a visit by W6BQ, W6QZJ, W6YJ,
and XYL K66AJA, who have just returned from two years
on Guam. We solicit your reports for this column and
will certainly appreciate those which we receive. Traffic:
K6YBV 702, K66XX 206.

SAN JOAQUIN VALLEY—SCM, Ralph Sorayn,
W6YJU—The Bear Mountain Radio Club is a newly-
formed club in Arvin, Calif., with the following officers
elected: K6JL, pres.; W6YJU, vice-pres.; K6DDK, secy.;
K6QJ, treas.; and K6JI1 set man. The Northern and Southern California DX Club held its
annual dinner in Fresno. Among those attending
were W6KUT, W6UYW, W6EYP, W6BXX, W6EEF, W6VBYM,
W6ONK, W6XJF, W6JPM, and K6JLJ. W6JLF is
installing a 100 ft. self-supporting steel pole self-guyed,
rotating 2 r.p.m. with a four-element Telepex beam.
W6KUT is running an HT-32 with a Thunderbolt and
planning DX for the near future, W6BXX has a K6AYE-2,
W6ONK has an SX-101A and an HT-3A for shoes. W6BXX has
a pair of 2000a on 10 meters, K6CRR is heard on 75-
hertz voice. New members of the Porterville Radio
Club are W6QJQ, W6QZJ, K6JLJ, W6PQ, and W6QZJ.
K6QJQ got married and has moved to Mountain View.
W6QKQZQ is on 6 meters, K6JLJ, W6QZJ, and W6-
PQJQ have Hornet beams, K6QJQ operated portable
from Badger Pass with K6AUA, W6MCQZQ and W6VBBKD
logging. W6IL has moved to Visalia, W6USJ and W6-
QZQ are back at Tulare County. W6QJQ is in 40-
eter a.c. W6USJ made W6, K6ZQI is on 2 meters
with a 512. W6QLIS is on 2 meters. W6QLIS is a new
member, W6USJ, W6QZQ attended the Christmas Banquet for K6JL
in San Mateo Feb. 1. Traffic: W6USY 144, K6JLJ 20,
W6KAR 8, W6OKY 2.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Powell,
W6RPH—PAM: DRC, V.H.F., PAM: AGY. Activity on
the Tar Heel Net is very encouraging. QC was elected
pres. W6QOK, W6QOK, K6JLJ, W6PQ, K6JLJ, W6PQ,
K6JLJ, K6XQ, K6BH, K6XQ, W6QOK, K6JLJ, W6PQ,
K6XQ, K6BH, W6QOK. T.JA was reflected as net
sect., Cliff Blaack, c.n. communications officer for
civil defense, visited many counties in Western
North Carolina in January. The purpose was to consolidate
RACES programs in many counties. RVH talked
about the radio club in Charlotte and reported
additional interest in the medium in that area. News for
this column is hard to come by. Most of what I get

(Continued on page 48)
**BULLSEYE BUYS at ARROW!**

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have to listen for on the bands. If you have items of general interest to the amateur, please send them along. If you work in contests or special events send reports along. I will refer them to the proper ARRL department. What is your club doing? Reports of that nature are solicited. We are doing quite well in the civil defense work in the State, and most of our nets are doing fine. I receive regular reports on these matters, and I receive reports each month on MARSH Army. If you would like to see other phases published in the State, send items along. I can only report what I KNOW about. So let's have club reports and reports on what you are doing in ARVEC and club projects. It is the secretary's business to let the SCM know what is happening. All official appointees are reminded that a report is due each month.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, WAQQV—SRC: K4JPJ, PAM: H1, K4UJ: AVU, VIW; total 3800 points in the ARRL V.E.F. Sweepstakes. New officers of the Mike and Key Club of Greenville are K4VCA, pres.; K4NPY, vice-pres.; VIW, secy.; BHR, treas.; DEN is a member, and PIA hold a business meeting of the SGN in Barnwell Mar. 13. HDR is visiting in the Aragon (Lu-Land) and expects contacts back home. K4QOH is the new president of the Blue Ridge RC. TOY is secretary. The first hamfest of the year is planned for the 1st Sun. in May at Greenville. TJD is back on the Sun., AAT. Phone Net, K4PF is happy with a new meter beam. DX addressed the Columb B. & P. W. Club on c.d., AREO and RACES. K4QY is located for contacts. AAT reports that he expects to resume NCS duties on 3200 ke, after moving to Barnwell. New amateurs are HLN in Williston, K4FP and K4JO in Engress, PFP and HCRW in Barnwell. K4RJ is the new president of the Spartanburg RC. QQV was nominated for a second term as SCM without opposition. NDH and J. R. B. are the new editors of ARSC and are the SCM's business manager. The address is Box 39, Rock Hill. R. C. Tradier: K4PIA 188, VYR 188, W4AKC 83, K4AVU 81, GAT 65, W4KNI 27, PEO 50, K4ZJY 34, LNJ 14, MBN 14, IIB 12.

VIRGINIA—SCM, John Carl Morgan, W4KX—SRC: K4MJZ, RMs: W4SHE, QDY, K4JKK, QER, QSB and EZL, PAMS: W4GBP and ONY. Please note the new SCM's address on page 8, CQ. SWARC's code and theory classes resulted in the following new licenses in the Winchester Area: KN8S: RMX, 3TT, SUN. new SFO and SUP. K4LRS, the new president of the Petersburg ARC, reports the club has started weekly classes there. MIJ says ARVEC activity is starting to pick up, but volunteers still are needed for SC appointments in many parts of the State. CQX is getting in more band-time from VFL and reports he finally got that 160th QSL for DXCC. K4DP’s operated IMX from M.I.T., during the VFL Contest. KAAR is rhyming new-homecooked s.s.h.; K4QIX likewise for 4 meters. The new SUV was snared in the Hills, but all was tops for Virginia in the Mass. and W. Va. QSO Parties. CVX still is sending regular reports from everywhere in the world but home! The mikes in K4C’s car were the receiver end front cooking. The 250-watt transmitter and separate receiver antenna did it. There is much better reception and a new ARS-10 DVT special TR-Unit. This will be last SCM column by K4X. Again my most sincere thanks to all for your faithful reports and your support which makes possible my turning over to QDY a thriving section. I truly enjoyed working with you, and will continue to be in evidence on VN and elsewhere on the bands. Tradier: (Jan.) K4GPR 765, ENP 615, W4QDY 322, K4QIX 277, SQG 317, W4SHE 207, K4XMF 238, W4BHE 174, DVT 169, K4JRAK 70, K4ATO 72, K4LRS 175, K4H 45, KX 32, K4H 30, W4QCX 28, AP1 21, CWT 12, ONY 1, YTX 15, ZM 12, RAD 10, PFL 2, B 7, K4WHR 4, 5, 4, K4FRED (Dec.) K4NUS 100.

WEST VIRGINIA—SCM, Donald B. Morris, W5LM—SRC: H2A, K4K, K3BF, K4AKU, K4BY, W4BHE, and VYR. WVN C.W. Net meets on 3570 ke., at 1900, phone on 3800 ke., at 1730 and 0813 EST. It is with deep regret that we report the passing of GGC, report the passing of GOG, and the passing of QOK. Princeton, K4N3PC operated on 3720 ke., and hopes to be the State's youngest General Class licensees at ages 12. K2PFX has a new DX-1010B on 40 and 80 meters. K4KML and K4BBR worked Texas on 6 meters. K4MMZ worked Liberia on 14-Mc. c.w. K0JSSX reports that 9 mobiles are operating with 5 to 8 meters and 20. A local station has a 250-watt generator for stand-by. K5FFID is acting as e.w. net mgr. for H2A. VMP is on s.o.h. with a 26-A-P 110v motor in Florida. K4ZQ is quite active again after a recent illness. WHQ’s ex-VL now has her General Class license with the call K4JSY. Officers of the Kanawha River A.R.C. are K4QJL, K4KML, K4KMF, and K4SIM. (Continued on page 118)

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9 and 10 when the West Virginia Hamtest will be
held at Jefferson Mill. Attention: West Va, QSO Party will be held May 6 to 8. Trailing:
K5LIF 230, W5H6 150, K5CNN 165, W5GWR 103,
K5DS 16, 49, GAG 28, W5BNQ 188, K5WIF 49,
K5LGX 24, MMZ 20, W5CR 19, K5CSSG 16, JPY 10,
K5JFC 7, K5JEN 4, W5JIM 4.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, Carl L. Smith W5BWJ—SEC:
NIT, RMs; WME and EDK: PAMS; CWX and LJR.
Ohio: KQ and DCC. We respectfully honor the mem-
ory of PTT of PTT. On the last day of the
Colorado State Patrol, KQD was honored by the
Benson Award Committee with the issuance of a Special
Citation for Services in helmet communications. Others
took the usual post-holiday slump; however, the
overall increase in net activity, brought on by N1 and QTC,
for the past year indicates the amount of effort and
hard work that has been put forth by the RMs, PAMS,
Net Managers, NCSs and all members. New is the time
as to start planning for Field Day. Help the SEC and local
EC by volunteering in whatever way you can be of the
most service. Help out some club challenges for high
FD scores and the continued of a friendly rivalry
with other sections in this division. Congratulations to
W5L for DXCC, NIT, IQC, BGN, DML, and the gang
at ENA are operating RTTY in Pueblo. YOK is the
call of the Abbey Radio Club in Canon City. The DU
Club at ANA is operating on 150 meters with contacts in
8 states (but no Colorado). Copying c-w, and Q signals is
a snap when you try to rent the YXL’s crocket instru-
tional. SCM made BPL in January Test, W5WKG
426, K5EDH 331, W5BME 311, ANA 229,
K5DFK 216, ED5 211, W5FM 197, W5BYQ 109,
K5DNP 103, W5BQK 24, K5KGV 40, W5FN 20,
K5JH 35, K5MBH 27, GQR 22, W5HA 12, CBI 12, PG 10,
K5DNP 9, LCZ 1.

UTAH—SCM, Thomas H. Miller, WTQW—Asst.
SCM, John H. Sampson, 70C, FSC has resigned his
post as Section Emergency Coordinator. Thanks for a
job well done, Doug. The ARRC now has a total of 82
members throughout the State. New officers in the Or-
der Club are: MRT, pres.: LHP, VRT; and NEE, secre-
dary-treas., the Beehive Utah Net (BUN) has increased
in membership to 47 stations and it is becom-
ing increasingly difficult to keep up with the past
month. K5DBX has earned the BUN certificate.
This is quite a feat since the net has been operating on
a daily basis. Radio has it that VFO is going k.e.
DX has really improved in 40 meters during the early
morning hours. Send your monthly station activity re-
port forms to your SCM about the first of each month.
Trailing: W7OCX 234, KTHIO 8.

NEW MEXICO—SCM, Alan S. Harrett, KSDA—
SEE: CIN, PAM: ZU, YFF, PAM: FFB, NMEFN
meets Sun. 2 on 388 kHz. Too, and Thurs., at 1500
MST on 388 kHz. The New Mexico Breakfast Club
meets Mon. through Sat. at 0700 MST on 388 kHz, NMBP
meets Mon. and Thurs. at 1500 MST on 388 kHz.
TWN meets Mon. through Sat. at 0300 MST on 2000
MST. Try to check in as many nets as you can. I want
to take this opportunity to congratulate K5HOL, the
new SCM for New Mexico. Please send your trailer and news
by the 4th of each month toFrank, 506 W. 2nd,
Roswell, New Mexico. Help him as he has no
merely generously helped me in the past two years. We are sorry to see
HOME/5 as EC of Los Cruces. KSDTM is now home
from the hospital. A speed recovery to you, ORI.
of Albuquerque, has a new ham shack. LHF worked
10 hours in the U.C. CW Test; Trailing: (Jan.) W5ZCN
446, K5KGP W5BNQ/3, K5KOG 66, K5LGX 66,
W5JET 30, DLAM 23, LWK 12, W5G 8, VC 7, GB 4,
BZR 4, ZU 4, K5HOL 2, W5KW 5, K5BRR 3, DBH 2,
EP 2, W5FPH 2, ESS 1, K5H 1, ONE 1, (Dec.) K5KFP
133.

WYOMING—SCM, Liel D. Branson, W5ANU—SEE:
CQL: The Wyoming Express Net meets Sun. 2000 MST on
3880 kHz.; the Wyoming Jackalope Net Mon. through Fri.
at 1500 MST on 7205 kHz, for trailing; the YO Net is a
c.w. net on 388 kHz. Wed. and Fri., at 1500 MST on 3880
kHz. LKQ has been appointed EC Natrona County re-
placing TXL, who resigned. W5GWW/7 is first Assistant
EC. The YO Net needs more members. The Wyoming
Hamfest Committee set a temporary date as July 22-
23, PVN put up a new beam at the ranch in Shirley
Bein, assisted by YVQ and YOA. YJG and YS put up
a 40 foot beam for 15 meter. YVQ and IDO, from Casper,
YWV Cheyenne, have been in the hospital for a check-up.
The Casper Radio Club had a pot-luck dinner and had 110
went to Pinedale for the Cutler Races and to visit AFC.
Trailing: W7YV 161, B50 53, AXG 10, L9K 8, K5FR
5, W5RMW 4, AMI 4, W59 5, XAX 4, B5R 4, WYY 3,
AEC 1, KTHIO 7, W1SR 1.

(Continued on page 141)
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SOUTHEASTERN DIVISION

ALABAMA—SCM, William D. Dootherow, KA4OZ—Ann.: SCM: O. K. Gibbs, KB4TO; SEC: JDA; RM: RLG, PAM, PM, PHH, BTO and W6KF, W5ASV, W4SD; Appointments: K4JRM and KAV and SAV as ORs; K4QKU, MBB and CIN as OBSs; KB4SIZ as OBS; PFR as CO. Congrats to new Alabama members: AENN, K4HAG, ABN; K4YQK; AENS; K4KD; AENT; K4DJJ. We welcome the Springhill Amateur Radio Society, Mobile, whose officers are JCY, vice-pres.; K4EKP, vice-pres.; ZKQ, secy.; K4YAF, treas.; CRY, K4E3R and A1FL, directors. JCY and USM made DXCC, CIN has a 2-meter, 12-watt transmitter using a 8-element beam and calls QO on 146.1 Mc. each night except Mon. and Fri. at 10 P.M. CST. New officers of the Muscle Shoals ARC are K4RIIl, pres.; K4AUP, vice-pres.; K4AUP, secy.-treas.; and K4QBM, Asst. to K4EKM. Congrats to K4SAV and K4RIJ on being 100 per cent on AENB in January. K4HAG is now a 20-meter homebrew rig. USM is on 146, 126 with a 20A to a Thunderbolt at 1 kw. Anyone interested in AREC Field Day with the Jefferson County group should contact K4DJJ. All are welcome, ATK uses a new Elmac transmitter for fixed and mobile. A new ham in Jasper is KB4QMI. The Selma Amateur Radio Club participated in a boat race demonstration, relaying from start to finish via the rig in an airplane. K4DJJ has a new Viking Ranger. K4FTC reports that Haleville has 4 Generals and 1 Novice. Traffic: (Jan.) K4PFRM 297, W4RKG 222, K4SAV 100, K4EE 83, DJJ 52, YGS 74, A0Z 69, W4KIX 53, K4CFD 51, PHH 48, W4MI 45, ATB 41, K4RIL 45, R4M 40, W4DPL 38, K4RUK 29, USM 28, K4ESB 25, HVN 24, JDA 23, HTO 22, IPE 18, OCI 18, W4ICU 16, K4RSB 14, JSP 13, JSP 11, TSN 10, ISF 8, W4XZQ 6, KB4G 6, KB4Y 6, JPB 5, XH 6, PHP 6, W4CFI 5, CIN 4, K4UGR 4, W4RTQ 3, K4HBW 2, R4X 2, Z 2, W4JGH 1. (Dec.) K4AAM 60, FTF 5, VTR 5, W4ZSH 4, FNA 2.

EASTERN FLORIDA—SCM, John K. Porter W4KGC—VTP. RM: K4SHJ, PAM: TAS, VHF, PAM: R4ld: New officers of the New Smyrna Beach ARC are K4LCF, pres.; K4JU, vice-pres.; K4ISA, secy.; K4TTH, treas.; and OT, sta. eng. The Amateur Club had a successful booth at the County Fair. K4FG5 has a new Tri-Bander. DVR has a new 250-watt Celebes. New officers of the Miami Springs ARC are K4QGQ, pres.; SA, vice-pres.; K4N4VS, secy., treas. We were sorry to hear of the passing of LMG. New officers of the Broward ARC are K4QGQ, pres.; K4QGD, vice-pres.; K4JSB, secy., treas. and K4BYT, sgt. at arms. The St. Pete ARC started its spring code class Feb. 23. The class meets every Wed. at 1930 EST in the club house at 1321 Beach Drive, S.E. K4HXB, net mgr. of PEPN, is back on with his big rig, a pair of 40-YLs. Floridors now have over 83 members. New officers of the P4, Pierce Club are K4CXX, pres.; K4U4Q, vice-pres.; K4OE3P, secy., treas.; and K4YVR, act. chmn. As of this time there are more than 50 hams in the P4 service area. The Fernandina 40-Meter Club has a new 25-watt Transistor. New officers of the Bethune Biscayne ARC are K4BAC, pres.; K4GAB, vice-pres.; K4BAC, secy., treas. and K4BB, act. chmn. At this time there are more than twenty-five hundred showed up. Traffic: (Jan.) K4SHJ 686, BY 750, FNA 661, QL 630, K4630, EBY 238, W4FPC 468, K4LDF 308, LCF 268, ODS 272, RNS 190, W4NWX 157, K4LJR 156, GHS 132, W4TAS 123, K4AHW 95, W4LMT 92, 100 93, FET 77, K4AAX 98, W4HGW 12, JY 49, K4XNO 25, AZH 24, FYG 20, W4KBC 20, FFR 27, DVR 27, K4TDT 21, K4KDP 24, KB4N 17, DOS 12, K4QPr 14, K4AZE 13, K4QG 9, EHW 8, HSB 8, K4MSTP 7, RM4G5 6, K4QGQ 5, K4GML 3, W4DPD 2. (Dec.) K4AAM 702, W4LMT 194, K4QBS 125, W4MUH 67, EHW 15.

WESTERN FLORIDA—SCM, Frank M. Butler, Jr., WARK—Sec.: H5K; PAM: R5E; RM: AXP and UBR. Bloomington: K4DST reports that a club has been formed by hams in this area. Perriv: K4QP now checks into the W4 FM. Phone Net on 3530 kc. Pott. St. Joe: K4Q5H has moved to White Co. and is active on 20, 40, 80, 150 and 40 meters. Madison: DLO, PBO, RCO and RDQ are the only hams in Madison County. A recent survey of the MARS field shows that four counties in this section have no hams at all—Liberty, Wakulla, Jefferson and Hamilton. If you know of any, please write your SCM. PFR: Walton/Eglin AFB: K4JRM is the new net manager for the RAI for W4 FM. He already is net mgr. for K4 FF, W4 FM, Net, 3530 kc. The Eglin Club made a little money and had a lot of fun with its operations. A new member has been installed in the clubhouse. Creeetwv: ECI, a practicing M.D., is active on 10 meters. He and JOZ, (Continued on page 144)
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Defilings Springs, have been worked on ground wave from Ft. Walton, Pembina. PAOC and Grace sponsored an F8 ham-trot, transmitter hunt and banquet to mark the visit of Danny Welty, of Longuise fame. No plugs were entertained by the club auxiliary members. HI is experimenting with ham TV. KK1RD writes an interesting DX column for Parasites. Note to all ECs: Please send your monthly reports to Clark Simms, HUK, 3365 Newton Drive, Pembina, Fl. Trailing: (Jan.) K4UBR 306, DBS 29, WAGA 14. (Dec.) W5RIK 314.

GEORGIA—SCM: William F. Kennedy, W4CFJ—SEC: PAJU, PAM's: LVE and ACH. RM: DJY. GCN: 3000 kHz. at 0900 EST on Tues. and Thurs., 2090 on Sun.; GSN, Mon. through Sun. at 1900 EST on 3595 kHz., DDY as NC; GTAN, Sun. at 1600 EST. 73-Meter Phone Net, each Sun. at 1500 EST, K4TYC as NC; ATL, Ten-Meter Phone Net, each Sun. at 2200 EST. 26.0 Mc., K4NC as NC; GIPFL Net each Thurs. at 2100 EST. K4UN in NC; GAN, Sun. at 1705 kHz., 1800 EST, Mon. through Fri., K4BYF as net mgr. The YL bug disrupted the Georgia Phone Net during the month of January, butting K4GQT, GCP, LVE and HAL. The Peaches will sure be sorry to lose K4CYV. Olen, to WS-Land. We hope this is a temporary move. K4PKS reports some new members on 6 and 2 meters. Stations that participated in the March of Dimes in Columbus, Ga., were K4UCM, K4E5U/M, K4ATM, W4VVM, W4ARA/M, K4V/1, and stations operating W4AY 4 were W4AHK, K4QFC, W4PZL, W4WWX and W4FIZ/K. The Greater Atlanta V.H.F. Society Net meets Feb. at 2000 EST. 50.169 mc. Net control is K4FKN. Drop in any Friday night; the members will be glad to have you. K4BJH reports that the Columbus High School Amateur Radio Club station, K4N, is now on the air. K4BYK is re-modeling the shack and may be off the air awhile. The Dalton Cherokee Radio Club was reactivated Jan. 7, 1954. K4TFF operated from Gracey Mtn. 3500 feet above sea level during the V.H.F. Sweepstakes. Check the dates on your ARRL appointments and be sure they are renewed on time or they will be cancelled. Trailing: W4IZU 504, DDY 362, K4EHM 13000, McB 4, B0P 120, W4AI 17, PFA 7, BYK 6, W4PPN 6, K4AFL 1, W4T 3.

WEST INDIES—SCM: William Werner, KP4DJ—SEC: A.A. Knights W4UN on 20 kHz. 20000 S. Mol. AM is in VY-Land again for 27K W/MW tests. AJT assembled a short transmitter for use on 50 Mc. AM is improving AM's SR Challenge. Two transmitters, AMU measured with an average error of only 26 parts per million in the Nat. ARRL test. DW was active on 40-meter c.w. and is resuming his income. AZ changed the bins on the p.p. 810 final for class B for s.s.s. HRIIML is studying radio maintenance at the FAA receiving station. W4QPL, FAA Chief Maintenance Eng., was in KP4-Land on business. EX-KM4PB is back with a new call, KP4BWE. K3EFT, visiting KP4-Land, had his cruise ship, credited his log, and cruised DP via KD, YT and CC received "Worked United Nations Award" certificates for working 70 countries that are UN members. YP, CC, KD and JA received "QSL/250". CC and KD worked WV4AN and ZM7DA, KD got a DXCC-250 sticker and an ARRL (QSL) diploma. Numerous qrp-ers are camping out and managing to stump holdings of the old HamNet on 7200 kc. 7 Mc. is active night and day in KP4-Land. Lit is mobile on 7 Mc.

CANAL ZONE—SCM: Ralph E. Harvey, K53RY—The Canal Zone Amateur Radio Association held its annual election in January, and the following were elected: SW prof.: KQ, vice-prof.: GS sec.; R.T. treas. RS, net. user. We extend our best wishes to them during their term in office. RM was in Pasadena, Calif., for business for the company, and expects to be back there in June. R.T. Feb. 12 for an extended vacation on the West Coast in the San Francisco Area. RK has returned from a vacation on the Pacific Coast. RM has new ARRLs on the air after some slight difficulty with the v.t.o. because of an extra long metal screw causing a slight short. The Greenwood Amateur Radio Club expects to hold open house at its new club house at a date to be announced and invite all amateurs to be present. LC was visited by W4XHS on route to the HCR DXV in operation. Trailing: (Jan.) K5QSB 85, OA 89, HK 72, AD 58, JW 45, RR 31, WB 23, VF 21, LC 6, VR 5. (Dec.) K5ZJW 60.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM: Albert F. Hild, Jr., W6OJB—SEC: W6LJP. RNs: W6HEG and K6HLR. PAM's: W6BUK and W6ORS. The following stations earned BPL this month: A6ICA, W6GYY, K6FXQ, K6HLR.

(Continued on page 147)
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KJTOP returned to radio school in Oklahoma. K9THI is a K-9 trainer in Texas and WA6BOL completed remodeling his home, including sky-hooks and is planning to move again. W6BGU and W6FBI have a schedule every Sat. evening. K6KIL/6 moved back to the home QTH. Palmdale, K6RCL was interviewed on a local BC station about amateur radio as a hobby. W4HYU received a new plaque award from Westinghouse. Trailie: WA8BLM 595, W8YPF 24, W8FIFO 4.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W56NG—Assoc. SCM, E. C. Pool, W56FO, SEC: K3AEX, PAM: BOO, RMI: K5ETX, K5AWQ let an electric drill get loose and whirl the cord around his arm—results, a broken arm. I do not like to use anyone as an example, but it is possible that accidents such as this one, when brought to the attention of others may prevent similar misfortunes. Sorry to hear of it, Roy, and we wish you a speedy recovery. GNX, now in Beirut, Lebanon, sends best wishes to the West Texas gang and advises he expects to return to the States December. BOO, Al-Cleman County EC, is stirring up much interest in ARREC by having some good emergency drills. MSGB has an AP-67 working all hands. The NTO Net has changed its name to North Texas Traffic Net. EY reports K5-A is going fine. With the opening of Mexico to third-party traffic there is possibility for some pioneering in the good-neighbors policy for ham radio. During early January CO Dept. K5PJV worked D7QD, an old college classmate from whom he had not heard in 29 years. WKT reports many contacts on 5 meters, including such distant stations as Virginia, Maryland and Western Penna. VNN is operating portable with an IC-9 at College Station, where he is attending Texas A and M. The W50F Club of Ft. Worth (Women Ham Operators) operated its station, K5LZW/8, at the southwestern exposition and Fat Stock Show. Slowed, Jan. 29 through Feb. and March, the BPT Traffic. Trailie: W5KKB 408, GY 521, K5HPG 222, L5WZ 216, W6BNO 14, K5WJ 102, W6LGI 101, K5AY 90, LB 70, GUY 25, ACX 30, J5N 23, W5CPC 18, K5PV 14, LB 14, Lit 14, K5PKX 8. (Dec.) K39JP 267.

OKLAHOMA—SCM, Adrian V. Ren, W5DRZ—K8-
DJA, EC for Navies County, got 50 amateurs together at Pryor for ARREC planning, SEC UYQ was special guest. K5OJA/K5A supplied many contacts from Delaware for ‘‘Okahoma 77.’’ Choctaw County now boasts an amateur, K5YPS. VQ is NCS on RT9, Fifth Region NTS Net. The Edmond Club offers a certificate, "EARS," to anyone working four club members. JCY, and ERE made television news by contacting Peru at the time of the earthquake. K5YK and A1S are on phone. ADC, Hughes County EC, has two new re-
cruits in Holdenville-K5ZST, and K5KSNP. Butter-
 simulator is finally possessing its Chisholm Trail Jamboree Field Day Plaque. Chislom Trail Club paper, is really full of interesting news. More news to you later at Duncan. The Oklahoma 77 160-
Meter Net set up a portable station at Camp Kickapoo the last of January and kept the 10-Mc. airways hot with good uggles running. The K9KXV/103 made three contacts in one hour, BDX, of Enid, an old-timer and a well-loved amateur, said he put on the key shaft Jun. 25, and wait on the others to catch up. Trailie: K5KZG 257, W5DRZ 105, VQ 120, K5AY 109, ST 85, LSAM 69, W6AX 47, QX 46, K5KSNP 15, W8UYQ 42, JXN 41, K5LPI 26, W6WY 55, K5KIB 28, W5PNG 28, K5MNG 26, JQA 26, AUX 23, W5CCK 20, K5GKR 19, W5KRY 16, WAF 15, K5KBN 11, QEE 9, W5WDD 2, K5ZMII 6, U6D 5, L5AM 4, W6AX 4, K5CBA 2, QAR 2.

SOUTHERN TEXAS—SCM, Roy K. Eagleson, W5-
QEA—SEC: QK, PAM: Z6D, RMI: K6HEZ. We are sorry to report that K6NEX is going to remote assignment in Alaska. Hurry back, Doc. AOU spent a vacation in Wisconsin to see a white Christmas and some VIs at the end of the road. Don't think he was disappointed; K5YKY, U1C and his XTL, stayed in Brownsville, ZON and family have been visiting in California, and came back through Los Angeles. K5, EVY missed having his New Year's party on 75 meters this year, the first time in many months. AG will do this year, but his YSG and QCI are on 2 meters and El Paso way. K5KZON is a new call in El Paso. The 7290 Traffic Net had 41 sessions, 649 messages with DX stations involved. AIR and DEF are working on new s.s.b. equipment. Looks like I will be forced to it. E7T is doing work on the new equipment. K5G3X is new member at Laredo. K5G3X has 60 counties in the last three months. UK is just announcing his new mark on countries. There was a new write up and pic-
ture in the Houston Chronicle about K5EYZ. More (Continued on page 109)
E-Z WAY... TOWERS

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TILTS OVER for
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GOOSE BAY QSO PARTY
April 8-18

All amateurs are invited by the Goose Bay Amateur Radio Club to participate in the annual Goose Bay QSO Party which commences at 0100 GMT April 8 and ends at 2359 GMT April 18. The All bands and either phone, c.w., or both may be used. The exchange will consist of RS or RST, name, and city. A WAG (WAG ALL GABBARC) Certificate will be awarded to all U.S.A. and Canadian stations reporting QSOs with five GBARC members during the contest period, and to all other stations reporting QSOs with four GBARC members. Logs showing dates, times, signals reported exchanged, and stations worked should be submitted to Ted Harvey, VO2AB, Awards Manager, Atraio, Dept. of Transport, Goose Bay, Labrador, Canada. No QSL cards need be submitted for WAG as logs can be checked locally. The following VO2 stations will be on during this period: VO2V, RH, HJ, NA, EB, UA, RC, AW, AB, FS, GB.

ONTARIO—SCM, Richard W. Roberts, K4NQG—We regretted to inform our members of the passing of AL, who will be missed by all of us. At one time Keith was ARRL Canadian General Manager for ARRL. NF was in Toronto for surgery and is now back on the job once more. The s.s.b. and phone contests ended at 2359 GMT April 8 and 18, respectively, with the winner of each event being a MOTONIC ARC elected DGF, pres.; CSX, vice-pres.; DYO, sec.-treas.; COY, CXG, COE and EQL directors. ATU, including the host, was a guest from Geneva, was $4.95 postpaid. No, Easton, Mass.

NOW A 3-BAND S.F. QUAD by CUBEX

No relays, switches or matching devices required. Operate 10-15-20 meters with only one 52 or 72 ohm line, plus all the CUBEX MK III features at no increase in price. Only $97.50 ready to install.

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BB, treat.; HI secy.; TA, conv. chmn.; South Shores: KB, pres.; IC, gen.-pres.; AB, ass't secy.; ABB, pres.; IU, vice-pres.; NP, treas.; AAD, secy. YA contacted Russian station UPOL-8 on 20-meter c.w. QTC at North Pole. DX? obtained a nide's call for QSO. QC mantains 10-meter skala with YS6, QGN (Ontario-Quebec C.W. Net) now is slow speed (12-15 w.p.m.) to encourage informal participation. The local DX did well in the BERU Test. WW will place near the top. YU, WA, NV, AYY and others turned in fine results. NV QSO was active during the WAE Contest. Sorry to learn that Betty, RR, suffered a stroke. WE join all her friends in wishing her a speedy recovery. JE acquired a RTZ-2 and is now considering batteries of the higher frequencies. ZG, OX, AIM and APJ are active net men on 2 meters. News of Keith Russell’s (BAIL, TUR) death earlier this year hit VE8 most, in VE204. He was a long-time member in VE and did much for the ham fraternity. AIM and BCL both bought new bugs. The latter is on 10-meter s.s.b. ABP reports the traffic gang, BAT (ex-S19C, YS80T) is still going strong at the station net. ABP expects to have a new 2-meter beam going soon. Interest in 160 meters is on the upswing. EC, the old "Grandfather" of the Three Rivers gang, also is your SCM’s most faithful reporter. The Annual Banquet of the South Shore Club was an outstanding success, and CA won the "Most Active Award" for 1959. YA (QSL Mgr.) asks us to extend hearty thanks for all Christmas greetings. The AARC is sponsoring the convention to be held in Montreal, Sept. 17. Much work is necessary and your earnest cooperation is requested.

Traffic: VE2WBT 356, VE2CSN/VE8 171, VE2EBL 116, BQ 40, EC 13, AGN 1, YA 2.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE2JT—During January the BCEN had 32 sessions on 3550 kc, divided between 1000 and 2200 hours, with 400 check-ins and 219 pieces of traffic handled. At the moment the radio shows 44 calls on 20 VERT, 22 on VE50, 24 on VE60. AOT has been appointed RX for B.C. QL is a new ORS. QC tells me there is a ham club in Terrace. The LIBRA group, with 5 members and 2 students, makes them 2 XYLs and 1 YL, and classes are held on Sun. nights. IN has a strong fascination for a bull elk—no more 20-meter antenna. AEC is operating a new Navigator and ABQ wonders what happened to the "Cassinia" amateur magazine. AIM is the proud papa of a son. The wee small hours for DXing are "changing." AQU has completed his 6-meter rig. BDC is checking into BCEN regularly and, since AOT, shows signs of being able to take over some leadership posts. AOS is up to his ears in traffic, mail, and work. AOD has the liaison assignment to BRT. By years the BCARA has helped the amateurs of British Columbia with various and sundry problems, the biggest one being TVI. The TVI committee has spent many hours of its time with the problems of individual amateurs, giving help, advice and lending equipment. The BCARA (Jack Sibson, VE2BQ) asks the gang who have these TVI services available to provide assistance in the form of funds or equipment to help carry on their work. Traffic: VE2AAR 125, QJ 49, AOT 63, AEC 38, AOD 25, BDC 2.

MANITOBA—SCM, J. A. Elliott, VE4EF—This will be my last report as SCM and I want to thank all those who have been so generous with their assistance. Special thanks to JY for taking over many of the duties as SCM. Please give him your support, guys. GB is spending his vacation south of the border, PA, from the Pa. was in Winnipeg recently and took a four-hour new auto. LO has smoke signals on the air at last. SIZ visited Winnipeg, St. James, Brandon and nearby areas on his time out from Eskimo Point. KK has a Collins SSB transmitter and will be heard with a new s.s.b. signal on the high frequencies. LP has joined the s.s.b. bandwagon with his new transmitter. LF has a new group meeting at 8 o'clock each evening on 50,055 kc. TP has been working lots of DX with his new antenna. From early indications it looks like the Manitoba in Hmercon is going to have a top man for Manitoba in the BERU contest. Others heard in contact with LF, MJ, XO and HM. HW got his quad rig. AOR has a new XG-260 receiver. HM is getting out well with his new Eco transmitter. YM is back on 20 meters with the kind assistance of OS, DU, HS and BIL. Congratulations to BH who is the first blind ham in Manitoba. EI has woked 129 countries on 20-meter c.w. in 10 months. Traffic: VE41M 65, SL 26, PE 11, IJ, JY 11, CX 4, MJ 6, HW 1, YM 4, PA 4, IW 3, MN 3, AN 2, KY 2, GU 2, WS 2, XP 2, PW 1.

SASKATCHEWAN—SCM, Harold R. Horn, VE3HR—It’s nice to be back again as your SCM. I hope I (Continued on page 64)
Collins 75S-1 Receiver

Collins 75S-1 SSB Receiver incorporates the same standard of excellence and many of the design features of the 75A-4. These include dual conversion with a crystal controlled first oscillator; bandpass first IF; stable, permeability tuned VFO; Mechanical Filter for selectivity and sideband selection; excellent AVC characteristics for SSB reception with full RF gain, and product detector. Another worthwhile feature is the use of only 150 volts on all vacuum tube plates— you get less heat, compact design, and better reliability.

Bob Kelly, K8NZA, Willys Motors, Toledo, Ohio, says, "Me, I'm a cliff dweller now days, and I don't have room for a lot of different pieces of radio equipment. So, I decided upon the Collins S/Line. It's complete, yet compact. And really looks good in my combination eating-living-recreation room."

73 Dale ... W8GDE

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can do a good job for you this term. A lot depends on each and everyone of you by way of sending me reports on monthly activities and taking part in the weekly program in this section. Our largest item of course is the announcement that we will be displaying VE3 car license plates this year. Be proud of them and live up to the rules of the road so that no blemish may befall us. The Saskatchewan Amateur Radio League executives along with XW, are to be congratulated on the excellent results obtained from their presentation of the issue to the Provincial Government and licensing body. LU will be looking after administration and inquiries should be directed to SARL P.O. Box 542, Regina, Ska. QL is building a new mobile transmitter. 2W3F, a visitor, gave an amateur demonstration to a group of Saskatchewan Amateurs that proved very interesting. JO is recovering nicely after a severe auto accident. The Saskatoon Club under Preston, recently held a training for new amateur prospects. LC is back on the bands after a long absence, DR and VL are fighting their DX totals now on 160, AJ, LA, CA, and MZ are continuing and put out a couple of QSOs, QN, Ex-CV3 and the XYL of CV3C, is a new XYL heard on 14 and 20 Mc. 5W11FQ made WACO in quick order and 5Y6V/L is trying to iron out modulator troubles for spring mobile activities, LU received the "Certificate of Merit" in the 20th Annual, the Saskatoon and District committee is back to service to amateur radio. Our sympathy to the family of EX-5X, who passed away in February: Traffic: YK6B, EQ 8, HX Q 8, DQ 6, DQ 4, TM 4, RS 3, PQ 3, BF 2, CR 2, BF 2, L 2.

How's DX?

(Continued from page 78)

with K86 ONY QSYK, K866 OHG and RBB earned him a WAR certification - Worked All Yndians from the ham-"test DX family in Birmingham, Mich. - VERON, W9DXC and W9DXX wrote further on 'The Grand Canyon DXV' is out and with a 100-watt finder on him active on Sundays, Tuesdays and Wednesdays after 0530 GMT, 14-Me, a.m. preferred. Colleagues in the Mountain West expects to return to DX later this month. -"Amerind" possibilities are said to be in process of enhancement. - F4KAS anticipates another Walliss session near month or thereafter." The latest DXVWZ was to climax Chatham's doing with operational ZWZM-217 probe.

Hereabouts - VP2ED fired up from St. Kitts with a single hop to the rock. K68X heard another 10 watt QSO for a crystal before he hears 7004 and 14,006 kc, to a complete fizzle... On the 13th-14th of next month K8B ETF TVP and VE3TB will end five years of service in Vermont with a concentrated "1/1" effort on 10 through 50 meters, c.w., a.m. and possibly s.s.b. Watch 10440, 10400, 7010, 7250, 14,940, 14,510, 12,610, 12,410, 12,000 and 28,600 kc, for their Apache under all three calls... W7TTF offers his Nova Scotia kilowatt for c.w., a.m. and sidetone bands. You name the band... W1RGI made it 107/102 and phone DXCC with a mere 40 watt 300, Hejiking-modulated by a single 6L6 "except for about five countries 14-Me..." a borrowed Ranger three or four years ago, I lay a great deal of my success to two Lasy-1s and two Bi-Square switchable arrays. I also own blame my lack of Arksana on orientation problems. The trees here just aren't in the right places..." W9LXS and friends had a lot of fun since HCCOB in the Clamshells some weeks ago. A team with W4COS would have been unique, but Paul is now K8WQJ in Iowa... Hvmhm = K2TYE observes that V2CZJH is a Mountie at Port Harrison on Vancouver Island. The structure at zero degrees F. is t-shirt weather. (Wonder if he always gets his QSL, Boss - Jeeze) And VE6B, through W21DL, puts in his bid for world's farthest-north ham station, Ellesmere Island some 400 miles from the peppermint pole... W8OFP interests us with usual mention of his new "live" installation of 'Talk about concentrated r.f.'... "exclaiming K3CUL. "A news item reports there are forty kilowatts of r.f. to each square inch on the antenna surface. If California. VE6B could use some of that stuff, for W6K6Q logged him at 597 below... "This month, according to W6B6U, W6DIW will be performing various reports on the California counties. Parties interested in seeing up their WACOs should write "DX for his literature"... Of course, W6Q6B, ARRL's L.A. office, finds it hard to squeeze out new ones while surrounded by such local DX talent as W6282F JH8, K866 OHG K866 KU8C and TFR. And then there's newcomer W6B3 (ex-TARAVU..."
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KA2DX-W4FB-W4GVT-et-o-etc. re-conned with . . . .
TQ5T couldn't land Japan, though, for months, mouths
and months. Then came early January on 10 phone and
Rod was buried under an avalanche of fifteen JA's in less
than two hours. TQ5T now is president of GUGA, by the
way, and this Guatemalan society is considering the issuance
of TG-type awards of interest to local and non-TG DXers . . . .
"I finally really managed to punch my new Alaskan QTH," writes K17COI from Eklutna. "But there are two
things still to be desired: (1) a device that will automatically
attenuate W5AL or it's about 60 kilohertz and (2) DX predicted
by ARRL DXCC Deskman W1P0, all HCSJU QSOs in the
Cisalpino were made aboard Cristoforo Colombo. Con-
tact is under this call occurred with the ship at anchor; this
is "land-based" by Ecuadorian interpretation but does not
jibe with DXCC Rule No. 8. Needless to stress, there was
no deixic intent by HCSJU — it's just the way the ball
bounced . . . .
V22A/N5 easily wins Niagara Frontier DX
Association's January Signal-of-the-Month award.
CQ5GZ (CQ5AG) worked out eleven of the 1959 Signal-of-
the-Month winners (H6C, K4BBV, VE3MB, YR5AC,
K1HUK-V8N1Z, V08s FIM L1W, V29J, DU5V,
UA1DZ, 7G1A and ZS1RF/8) to rate NFDXZ's special
Signal-of-the-Year citation. W2FXA, club secretary, re-
ports lively balloting in these "elections".
94CW W1LZ and 2CMW checked in with "DXCC"
credentials Nos. 23, 21 and 27, respectively (see p. 96, July
1959 QST). Reportive s.w.i. A. R. R. A. makes an
improvement of one-way version of DXCC . . . . Additional
hemispheric icetoppler flashes thanks to ISWL, SIC0C
VE6OM, VGDFC and W7WAM. W7WAM's action is
from USC, Martin Port; W5C, 88 Glover; USM, the
Staten Island; and USX, a fresh land base . . . San
diego DX Club braved the 1960 W1DCC, our DME v.p., and
NXP, new-tunes - VP2PBL line to follow Mont-
serrat radiations with British Virgin Islands QSOs . . . .
H1PEC W1AX, W1GUT-et-o-etc. almost所有 for a
trip to the Great Barrier Reef in a few weeks . . . .
Weird Caribbean entry XW8AF/FG7 was a
definite logpile. He's now FG7XSS.
VP4WD (GTA) went home from Tobago after some 280 W1QO
contacts with 35 states, and 260 other contacts with 40 countries. A
slacker member held back.

(a) Correspondence

DATA FOR THE BLIND

G. May I say how much we appreciate the information
which you recently sent out entitled "Ham Data For The
Blind."

As librarians we often get requests for information of
this nature, and your complete statement of all things
will prove a valuable bit of information to keep on hand
to answer questions. I hope that you will be able to bring
this information up to date from time to time. There are
certainly many blind people who are interested in radio, and
anything we can have is a help. — Newcomb Club, Perkins
School For The Blind, Watertown, Massachusetts.

SSB HERE TO STAY

G. I was rather startled to see a drafrj annunt a.s.b. appear
in QST as an "article". I have reference to the blaff from Mr. Blett, W8CBM, in the February issue. Perhaps
you will permit a few words of rebuttal.

I hope I am wrong but I rather fear that Mr. Blett is one
of the a.m. men who attempt to QSO on 14,280 and
then complain blind, you ask about s.s.b. QRM. I have
concern for the proper use of the English language is indeed
laudable, but he should be more eclectic. Listening to one of the
hourly monologues to which a.m. men are so addicted should
provide him with plenty of material for a second "article."

W8CBM makes one sent. As an ex-op (Alaska Communications
System), I am very much in favor of nets. A variety
of unimportant traffic is inefficiently handled, but this is a
fringe benefit. The great value of nets to ham radio is that
they serve to include all you all these people at the same frequency, thus
reducing QRM on the rest of the band.

It is true that frequency fighting does occur; deplorable,
but under the proper stimulus even a ham will exhibit
stultic tendencies.

S.a.b. is here to stay, boys, and is growing daily. To para-
phrase a contemporary politician, "Some of these hams
must be dragged, screaming, into the 20th century."

(Continued on page 166)
NEW 1960 CATALOG - FREE!
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CODE
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"Hats off to WSCBM for his critical remarks on s.s.b. antics. It is quite obvious that within the past few years sideband has most definitely "come into its own." As I can see, it enjoys the present position of passing a.m. in both efficiency and popularity.

However, my main reason for not having swung over to sideband is the general poor operating practices that I have observed in many hours of listening. Specifically, I do not care for "uhh's" and "ahh's", off-frequency squealing voices and long tiring talks on the marvelous advantages of sideband frequency.

Surely, too, it has been my impression that many sideband operators tend to snore at other modes of amateur transmission and to place themselves in a self-appointed world apart from the "peasants." Is this not a sick attitude? — Let us hope that WSCBM's article will bring about self-criticism and a general improvement in sideband operations. — Mike Christie, K9IHD, San Luis Obispo, California.

CHESS GAME?...

1. We the undersigned are interested in contacting other hams who would like to play chess over the air.

As there are few chess-playing hams in the local area, we thought we would drop QST a line, and see if maybe you could help us out.

Those who are interested should look for us around 20.0 Mc. or drop us a line for schedules on 10, 15 or 20 meters.

— Denis Sifer, W8XV; Carlos R. Hernandez, K9QFM, Bismarck, Nebraska

NOT HERE!

4. To begin with, ARRL is a fine organization and QST is tops. That takes care of the roses. Now to what I believe is a legitimate complaint; I have finally discovered what makes 75 such a mad house. It is not the a.m. boys stacking four deep on the frequency; it is not the s.s.b. boys generating their scrumbled telephony; it is not the Novice; it is not the SS or anything else. It is the boys who like to play lone distance (short-wave) chess games. On this night at 2341 hours I came upon a very powerful station on the air.

No one was saying a word. I waited for CQ or anything else. At 2357 I got, "I move my Queen, etc." Back came the other station at 2359 and held it until 2413, when he made his move. Under this thunder of QRM there were two fellows probably running a mere 200 watts trying to have a QSO.

Chess is a fine game. Play it over the air like you like. But don't hold up the air, while you are trying to make a profound move that is designed to shake the grand masters. Your attention is invited to The Radio Amateur's Handbook, Chapter 24, pages 59-60 where a note like Navy Regs, Hi... — David McCarthy, KB9BCS, Stroudsburg, Pa.

1. [And to section 12,134 of the FCC regulations -- Editor.]

Strays

Another place where the editorial "we" is rather inappropriate. A guy on 14 Mc. referring to his wife as "our XYL."

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**FREQUENCY RANGE:**

<table>
<thead>
<tr>
<th>Band</th>
<th>1000 MC</th>
<th>150 MC</th>
<th>45 MC</th>
<th>12 MC</th>
<th>4 MC</th>
<th>1.5 MC</th>
<th>1.2 MC</th>
<th>750 KC</th>
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<tbody>
<tr>
<td>Band 1</td>
<td>-</td>
<td>1000 MC</td>
<td>150 MC</td>
<td>45 MC</td>
<td>12 MC</td>
<td>4 MC</td>
<td>1.5 MC</td>
<td>1.2 MC</td>
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<tr>
<td>Band 2</td>
<td>-</td>
<td>-</td>
<td>1000 MC</td>
<td>150 MC</td>
<td>45 MC</td>
<td>12 MC</td>
<td>4 MC</td>
<td>1.5 MC</td>
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<tr>
<td>Band 3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1000 MC</td>
<td>150 MC</td>
<td>45 MC</td>
<td>12 MC</td>
<td>4 MC</td>
</tr>
<tr>
<td>Band 4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1000 MC</td>
<td>150 MC</td>
<td>45 MC</td>
<td>12 MC</td>
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<tr>
<td>Band 5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1000 MC</td>
<td>150 MC</td>
<td>45 MC</td>
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<tr>
<td>Band 6</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1000 MC</td>
<td>150 MC</td>
</tr>
<tr>
<td>Band 7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1000 MC</td>
</tr>
</tbody>
</table>

**Note:** Bandspread dial provided with 0-100 logging scale calibrated for 80, 40, 20, 15, and 10 meter amateur bands.

**FREQUENCY STABILITY:**

Long term stability after warm-up is 0.002%.

**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 resonant autotuning plug-in crystal filter providing 5 additional selectivity settings below 750 kc plus phasing at output frequencies. Bandspread dial provided with 0-100 logging scale calibrated for 80, 40, 20, 15, and 10 meter amateur bands.

**SSR PROVISIONS:** Separate SSB heterodyne detector, SSB filter, and automatic gain control and separate beat oscillator.

**Fixed Channel Operation:**

HF oscillator has 9 crystal positions for fixed channel operation. Channels may be selected by front panel switch. In addition, HF oscillator may be controlled from external master oscillator with front panel switch. HF oscillator is also used for tuning of receiver to crystal controlled frequencies.

**DIVERSITY PROVISIONS:**

Basic receiver may be operated on any receiver oscillator of the type 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 oscillator as master control, or slave from other oscillator sources. IF detector and AGC outputs available for use with external loads or combiners.

**POWER REQUIREMENTS:** 110-220 volts, 50-60 cycles AC

**MANUFACTURER’S SUGGESTED LIST PRICE:** $395.

**OPTIONAL ACCESSORIES:**

1. NC-400 crystal calibrator. Output frequencies of 100, 10, and 1 mc.
2. NT-4 matching speaker.
3. NC-400 DMK diversity modification kit.
4. NC-400 HF mechanical filter housing.

**Additional Information:**

Manufacturers suggested list price. Sold only by National Radio Distributors.

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Check the chart for a quick appraisal of the RCA-7270's capabilities. For a complete technical bulletin on SSB, AM and CW use, qsl, RCA Commercial Engineering, Sec. D-37-M, Harrison, N. J.

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