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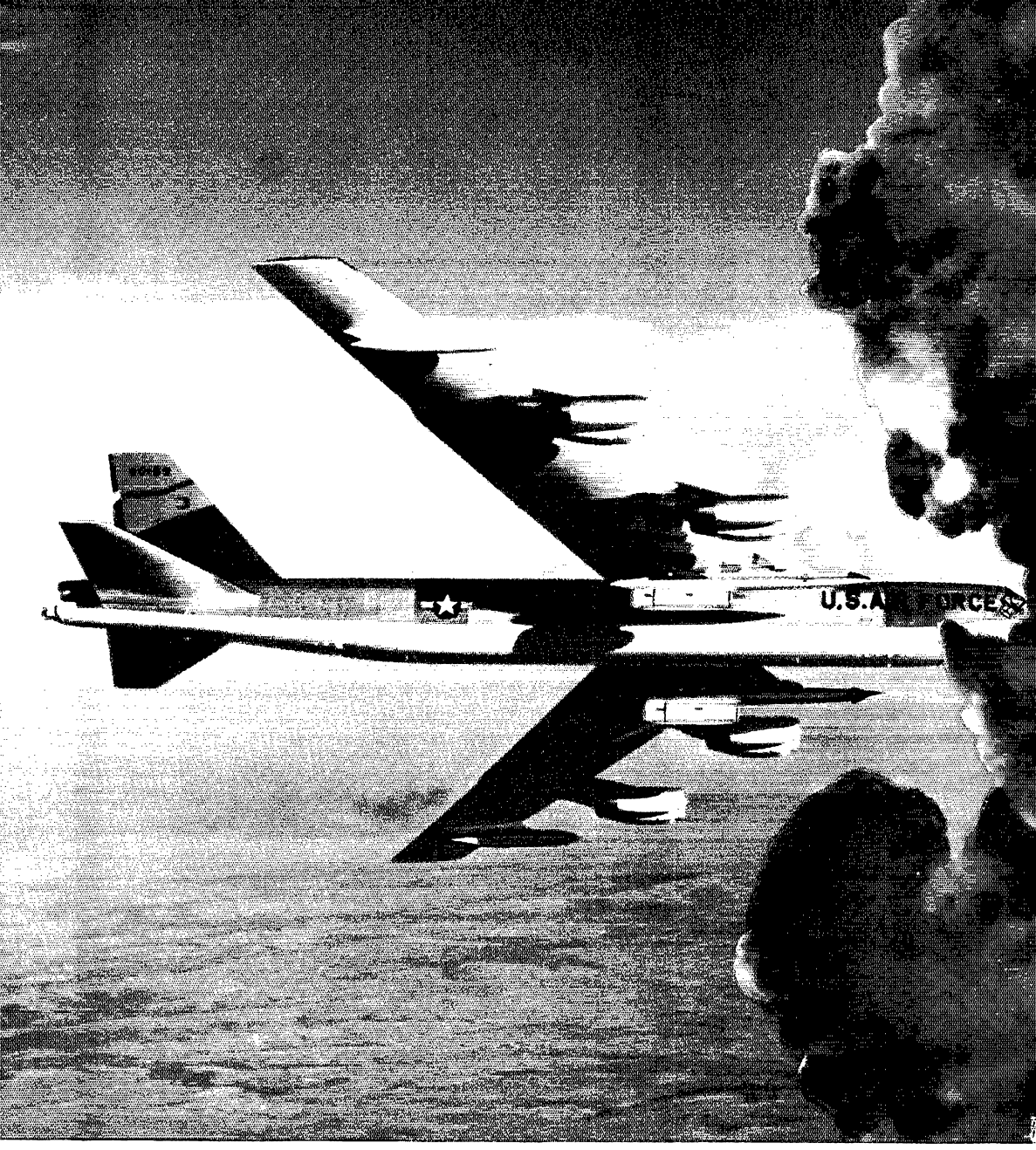
amateur radio

PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE



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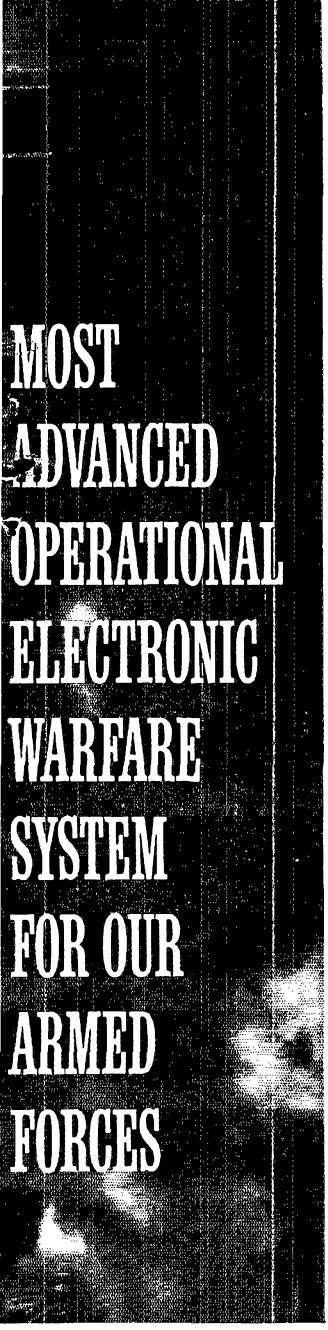

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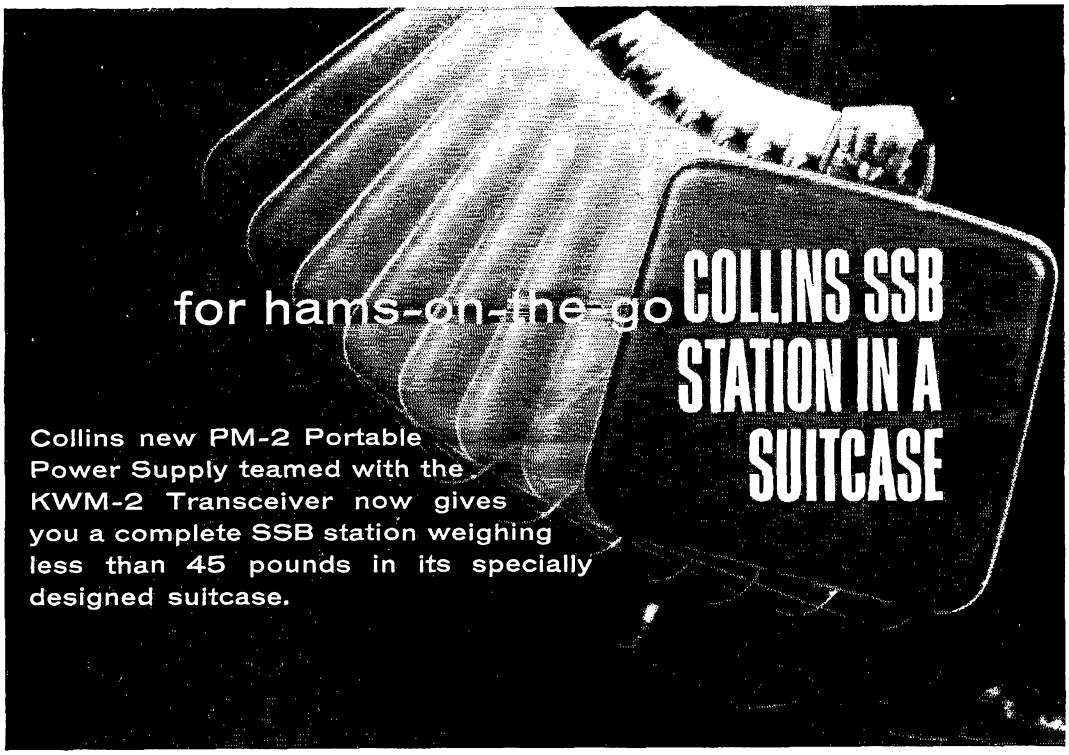
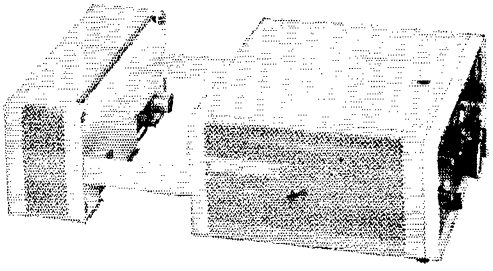
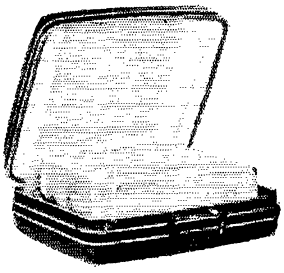


PM-2 Portable Power Supply

The PM-2, including its built-in auxiliary speaker, weighs only 13-1/2 pounds.

The PM-2 connects directly to the KWM-2; arm-like extensions hold it firmly in place.





Lined with foam plastic, the Samsonite suitcase provides shock-resistant protection for the PM-2, KWM-2 and accessories necessary for a complete SSB station — totaling less than 45 pounds.

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For registration, write W6ZHH, Box 568, San Pedro, California.

QST

AUGUST 1960

VOLUME XLIV • NUMBER 8

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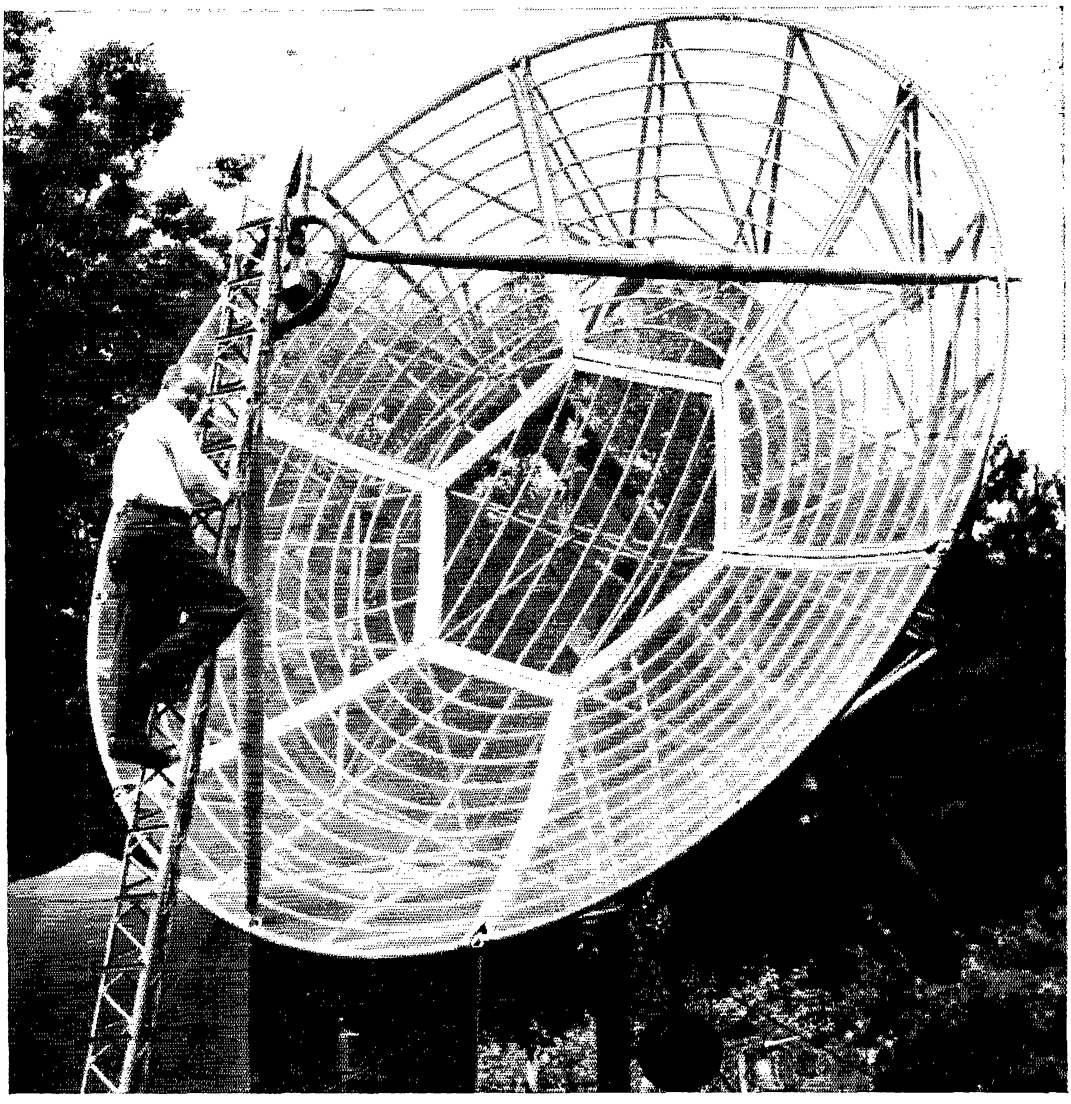

CQ 1296 MOONBOUNCE DE W1FZJ!

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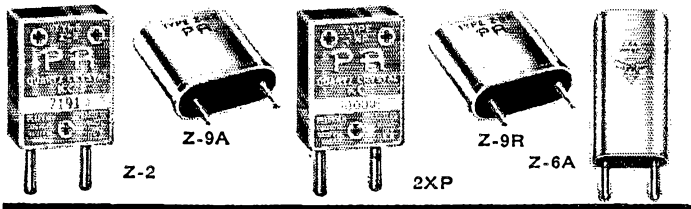

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to Amateur Radio!

- ★ HOW TO BECOME A RADIO AMATEUR
- ★ THE RADIO AMATEUR'S LICENSE MANUAL
- ★ LEARNING THE RADIO TELEGRAPH CODE
- ★ OPERATING AN AMATEUR RADIO STATION

Anyone starting out in amateur radio will find these publications a necessary part of his reading and studying for the coveted amateur radio operator's ticket. Written in clear, concise language, they help point the way for the beginner. Tried and proven by thousands upon thousands of amateurs, these ARRL publications are truly the "Gateway to Amateur Radio."

$1.50

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The American Radio Relay League, Inc.—West Hartford, Connecticut

THE AMERICAN RADIO RELAY LEAGUE, INC.,

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

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

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

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

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

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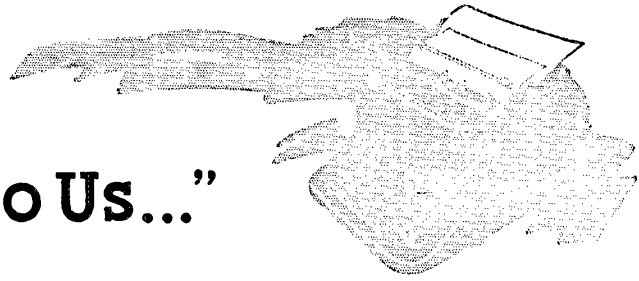


"It Seems to Us..."

WHICH CALL TO SIGN?

1. *Ham families.* Most of us are well aware that the U. S. regulations for amateurs are among the most liberal and flexible in the world. Particularly is this so as concerns the station license. The station license is issued almost automatically to nearly everyone who passes an operator examination. An American amateur doesn't have to specify what his equipment is to be; indeed, he may have as many transmitters as he wishes, and may change rigs as often as he wishes. Nor has there been much restriction on the granting of additional station licenses to households where a license already had been issued. This very flexibility, however, has sometimes caused confusion among amateurs.

FCC has recently announced a new policy which clears up one such confusion: which call to sign in a family where several amateurs use one set of equipment. Happily, the official view coincides with what has become a fairly widespread practice:

> "Where more than one amateur station license and call sign has been issued for the same location, it is permissible to operate a single combination of transmitting and receiving equipment under each license, provided that each station licensee has full control of the station at all times during which his license and call sign are being used. In such circumstances, separate station logs should be maintained and each licensee will be held responsible for all operation under his license and call sign."

In other words, now it's official: Mom and Junior can use Dad's rig, using their own calls and their own log books.

2. *Mobile to home.* Another frequent question is: "Can my mobile and home station work each other?" The answer is yes. You can have a friend who is licensed operate your home station while you operate the mobile, signing your call both places (e.g. "W1XYZ this is W1XYZ mobile in Podunk"). One caution: You must have your original operator's license with you whenever you operate your own or any one else's station, but a photocopy of the license will cover the station while someone else is operating. To put it another way, in the example cited above, you would have your original license with you in the mobile, and would leave a photocopy of it at the home station. The guest operator would also have to have his license with him.

3. *Operating a friend's equipment.* "My buddy, who is almost ready for his Novice test, has just finished building his transmitter. Can I test it out for him, using my call as portable?" No! Until he gets a license, the equipment at your friend's house constitutes an unlicensed fixed station. Similarly, if you visit your friend after he acquires the Novice ticket, it is not proper to fire up his equipment in the General Class bands using your call as portable. Again, his equipment constitutes a fixed station not licensed for the purpose to which you wish to put it.

Now it's a different story if you take your friend's equipment to another location, your own fixed-station address or a field site. Then the equipment *is* portable, and if you have control (i.e., operational responsibility) of the equipment you may properly operate it under your call.

What about the Novice operating your station, or the club station? So long as the operation takes place in the Novice bands, using crystal control and with 75 watts or less power input to the final, it is proper for the Novice to use the rig, signing the call assigned to the station. For instance, visiting Novices occasionally operate W1AW, in the Novice bands, running 75 watts with crystal control. They must have their license with them, and sign the log when they commence operating, but of course they sign W1AW on the air, just as any other operator would.

If there are any special cases you don't feel are covered by this discussion, the League headquarters staff will be happy to give you the correct answer. That's what we're here for, OMs!

OUR COVER

W1CUT, who in the past has solved nearly every mobile problem he has run up against, has something new to tackle. And that is, where to put all the gear in his new car. All the stuff shown on the cover fitted more or less easily in his Ford (which is pictured on the cover of our new mobile handbook), but he has his work cut out in getting all the gear into his A-40. However, notice how he exudes confidence as he surveys the situation!

COMING A.R.R.L. CONVENTIONS

July 30-31 — North Dakota State, Minot.
September 2-4 — Pacific Division, San Mateo.
September 10-11 — Central Division, Indianapolis, Indiana.
September 10-11 — Oklahoma State, Oklahoma City, Oklahoma.
September 16-17 — Dakota Division, Minneapolis, Minnesota.
September 16-17 — Quebec Province, Montreal.
October 7-8 — Great Lakes Division, Cleveland, Ohio.

PACIFIC DIVISION CONVENTION

San Mateo, California—September 2-4

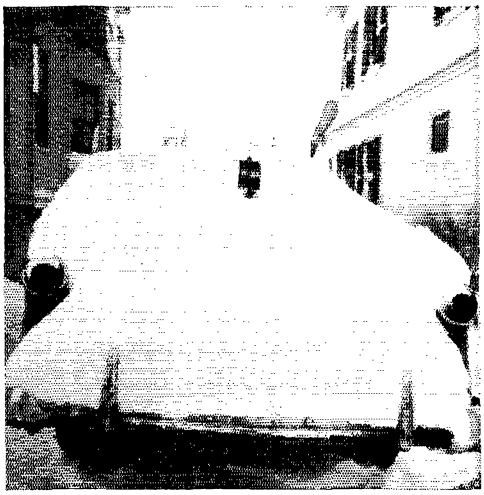
The Central California Radio Council extends a hearty invitation to amateurs to attend the 1960 Pacific Division Convention, set for the Labor Day week end, September 2-4, at the San Mateo County Fairgrounds, San Mateo, California (15 miles south of San Francisco). The host club will be the San Mateo Radio Club.

Highlighting convention attractions are top-notch technical speakers, mobile transmitter hunts, mobile judging contests, golf and bowling tournaments (with trophies to the winners), Saturday evening dance, deluxe banquet, conducted tours of electronics plants, Wouff Hong and SWOOP initiations, complete ladies program and equipment displays.

Larry Reed, W6CTH, is Convention chairman. Registration is $7.50, with pre-registration deadline August 20. Tickets, motel reservations (if desired), and additional information are available by writing to "ARRL Convention," P. O. Box 751, San Mateo, California.

(See page 57)

Strays



Remember days like this? Way back last winter when W1BB mobile was snowed under by an old-fashioned New England blizzard, his signal was still on the air. The snow made an FB ground plane, he says, and sends this photo to prove it.

—...—

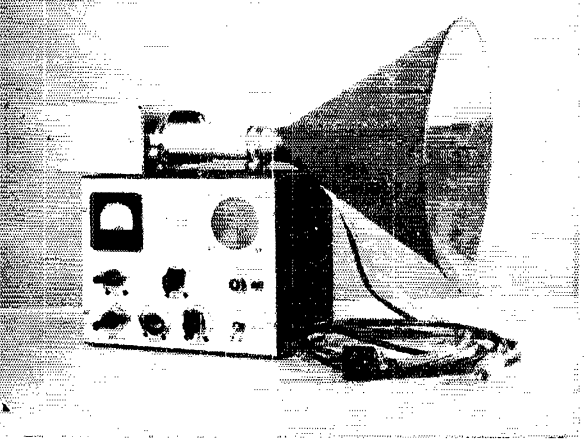
Heard on 15 last week: See Koo, See Koo, See Koo, This ees YV5 . . . tuning this freq and up and down and all around.

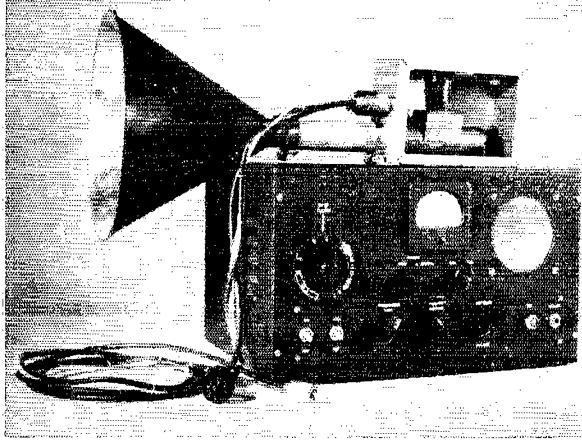
—...—

W1CPP recently received auto plates with his call on them. His XYL, who works part-time at Newport Hospital, tells doctors and nurses inquiring what the plates mean that her husband has an incurable disease.

—...—

Lee Roy Scott, W3PGB, of Silver Spring, Md., who completed 261 QSOs with Peru in less than two years, has been decorated by the Peruvian government. Scott said the calls represent 379 hours of conversation, mostly between relatives and most of them by Peruvian Embassy personnel stationed in Washington, D. C. Scott received the Cruz Peruana al Merito Aeronautico and was honored at an Embassy reception. W3PGB is with the Chesapeake and Potomac Telephone Company.





Two microwave transceivers by W8DRR. The r.f. units are identical, but different control and modulator sections are used. The station at the left utilizes a superregenerative detector for simplicity. The other employs an f.m. receiver built from readily available TV components. The horn antennas, suitable for short-range communication, are made from hardware-store funnels.

Experimental Transceivers for 5650 Mc.

Duplex Phone Communication with Home-Built Gear

BY C. J. PRECHTEL,* W8DRR

Most equipment thus far used in amateur work on frequencies above 2000 Mc. has leaned heavily toward the use of surplus components. Here is something a bit different: two complete stations for the 5650-Mc. band that are largely home built. The "plumbing" is handmade; the horns are hardware-store funnels; the i.f. systems simple adaptations of circuits familiar to nearly everyone. These stations provide good-quality duplex phone communication over line-of-sight paths.

THE 2K26 klystron, available on the surplus market, is rated at 120 milliwatts output at 6000 to 7000 Mc., but its tuning range extends well into the amateur band at 5650 to 5950 Mc. Two transceivers using this klystron are described herewith. Each station is built in two principal parts: an r.f. unit containing the klystron oscillator and crystal mixer, mounted in a wave-guide assembly with horn antenna attached; and a remote-control section consisting of the i.f. system for reception, power supplies, audio equipment, and a fine-tuning frequency control. The i.f. system can be an f.m. broadcast receiver, or it can be built for the purpose. Two examples of the latter are shown, though not described in full detail.

Each station transmits and receives simultaneously, in the manner commonly used in amateur microwave work. The klystron serves as the transmitting oscillator and as the receiver local oscillator, simplifying the equipment needed for two-way communication. The oscillator radiates energy into space via the horn antenna. At the same time a small amount of energy is injected into the crystal mixer in the assembly. The same thing is happening at the other end of the path, permitting duplex communication on voice with a single antenna and klystron at each end, so long as the antennas are aimed at each other and the two oscillators are separated in frequency by the amount used for the intermediate frequency in the receiver.

The klystron oscillator is readily frequency-modulated by varying its repeller voltage, so f.m. detection is the logical solution to the receiver problem. In one of the units the f.m. detector is a simple superregenerative receiver. The other uses a conventional f.m. limiter and discriminator. If some form of automatic frequency control is used, only one of the stations need be tuned to set the system up for communication, and to keep it in tune once the other signal is located.

A three-conductor shielded cable and a section of coax of equal length connect the r.f. and control sections of each station. This permits mounting the r.f. unit in an elevated or otherwise

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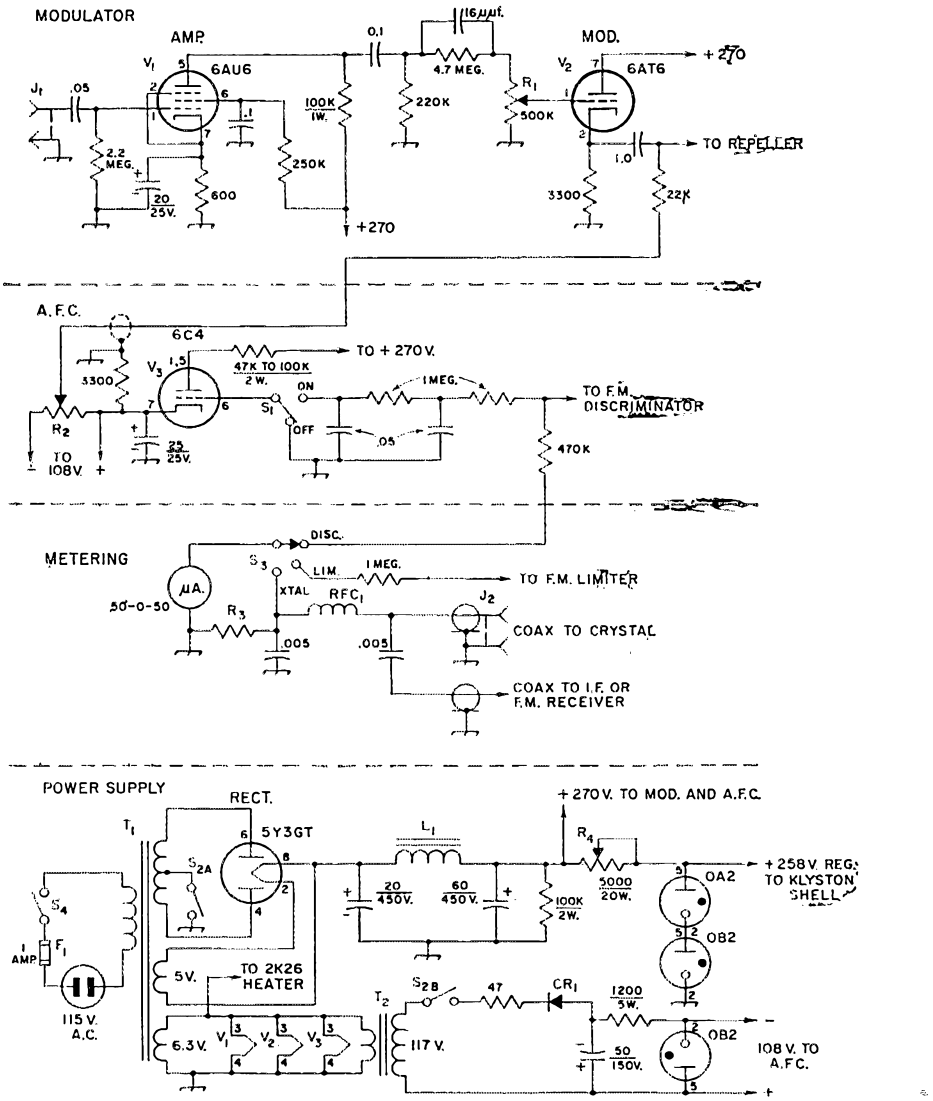


Fig. 1—Schematic diagram and parts information for the power supply and control unit of the W8DRR microwave transceivers. Unless otherwise specified, capacitor values are in μf. Capacitors marked with polarity are electrolytic. Resistors ½ watt unless specified.

CR_1—65-ma. selenium rectifier.
F_1—1-amp. fuse and holder.
J_1—Shielded microphone jack.
J_2—Coaxial chassis fitting.
L_1—10-hy. 110-ma. choke (Stancor C-1001).
R_1—0.5-megohm potentiometer, audio taper.
R_2—0.1-megohm potentiometer, carbon, linear taper.
R_3—Meter shunt; value to suit meter used, for 1-ma. range
R_4—5000 ohms, 20 watts, with slider.
RFC_1—15 turns No. 24 enamel on ½-inch form. (Any r.f. choke for 30 to 100 Mc. is suitable.)
S_1—Toggle switch, s.p.d.t.
S_2—Toggle switch, d.p.s.t.
S_3—Single-pole 3-position wafer switch.
S_4—Toggle switch, s.p.s.t.
T_1—270-0-270 volts at 70 ma. min., 5 volts 3 amp., 6.3 volts 3.5 amp. (Stancor PC-8405).
T_2—6.3 volts 1.2 amp. (Stancor P-6134).

favorable position. Line loss is not a serious factor, as the coax carries only the intermediate-frequency energy. The units described are not waterproofed, as they were intended for indoor use, with the horn antennas shooting through windows.

Electrical Details

The 2K26 kylstron requires 6.3 volts at 0.44 amp. for the heater; +100 to +300 volts at 25 ma. from a regulated and well-filtered supply for the cavity; −90 to −120 volts, also regulated and well-filtered, for the repeller. The repeller requires only a few microamperes, so this supply presents no problem. The crystal detector is wired so that the d.c. component of the rectified injection signal and the i.f. signal are transmitted through the coaxial cable to the control unit.

Here they are separated, the crystal current going to the metering circuit and the i.f. signal to the f.m. i.f. input. The crystal current provides a convenient means of indicating oscillation.

While the two r.f. units are identical, the control units are not. The first one built contains a +125-volt 50 ma. power supply for the receiver. An 0B2 regulator provides +108 volts for the klystron cavity. The same power transformer feeds a selenium rectifier to obtain −125 volts. Another 0B2 provides −108 volts for the repeller circuit. The i.f. system has a grounded-grid amplifier, a superregenerative detector (using slope detection for f.m.) and two stages of audio, with speaker and headphone output. A single 6AT6 serves as speech amplifier and modulator, providing more than enough gain for a crystal microphone. A control is provided for electrical adjustment of the klystron frequency.

The second unit is more elaborate, with supplies for +240 and −108 volts, a Mallory continuous tuner (54-190 Mc.), two stages of 23-Mc. i.f., a limiter, discriminator and two stages of audio with speaker and headphone output. A zero-center microammeter reads crystal current, and limiter and discriminator voltages. A 6AU6 speech amplifier drives a 6AT6 modulator. Electrical and automatic frequency control are incorporated in this unit. A 6C4 in a simple circuit does a good job in maintaining a constant intermediate frequency even though both klystrons might otherwise be shifting frequency constantly with line voltage or temperature changes.

Anyone interested in duplicating these transceivers can simplify the job by using a separate f.m. receiver for the i.f. system. The only requirement is that the receivers at both ends be capable of tuning to the same frequency, such as 88 Mc. If you build your own i.f. it can be on any frequency above about 30 Mc. or so.

A simple control unit for use with a separate receiver would require a positive power supply of 270 volts at 60 ma., with regulated output of 258 volts, a negative power supply giving 125 volts at 50 ma., with regulated output of 108 volts, a 6AT6 cathode-follower modulator, a 6C4 a.f.c. tube, a zero-center 50-μa. meter and single-pole 3-position switch, B+ and a.f.c. switches, frequency and microphone-gain controls, and suitable power and coaxial fittings for connection to r.f. section and separate receiver. Such a setup is shown in Fig. 1.

Construction

The waveguide in the r.f. section consists of an 8-inch length of 1¼-inch copper pipe, available at any plumbing-supply store. The 2K26 klystrons are available on the surplus market along with many other types. An aluminum piston ¾ inch long was turned on a lathe to fit snugly in the guide, just free enough to be moved easily. A hole drilled in the piston ½ inch deep was tapped for an 8-32 screw, which serves as a handle for adjusting the piston. The klystron socket is a modified octal socket, with the No. 4 clip removed and drilled out to make a hole large enough to accept the klystron coaxial probe. The socket should be the molded type with mounting flange.

The klystron is modified by lengthening the antenna probe. Solder a piece of No. 20 hook-up wire to the end, and allow 11 millimeters of inner conductor to protrude beyond the end of the outer conductor. Insulate the end of the outer conductor by wrapping one layer of plastic electrical tape around it. It must be insulated, because the probe and shell of the tube are directly connected to the positive high-voltage supply. Drill a hole in the guide 2¾ inches from one end, large enough to permit entry of the klystron probe without snagging the tape insulation. Any method of mounting the socket can be used. I fashioned a U-shaped piece of copper strip 2 inches wide, punched it for the socket, and soldered it to the guide, as seen in Fig. 2. The hole in the socket for the klystron

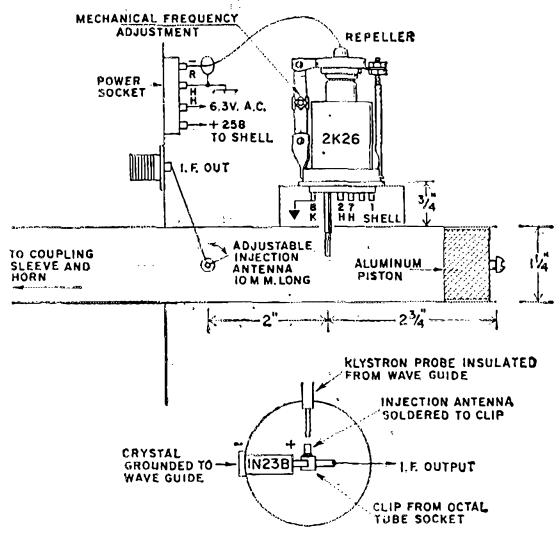
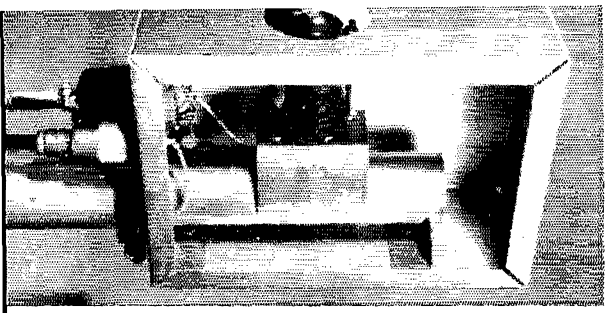


Fig. 2—Details of the klystron oscillator and crystal mixer used in the 5650-Mc. transceivers.

probe must be directly over the hole in the guide. The socket height should be adjusted so that the klystron probe's insulated outer conductor enters the hole 1/32 inch. The 1N23B crystal is mounted at right angles to the klystron probe and is positioned 4¾ inches from the piston end of the guide. It is self-supported by drilling a hole in the guide to provide a snug fit. Opposite this hole drill a small hole to permit exit of the conductor from the ungrounded terminal of the crystal. This is the i.f. output. A clip from an octal tube socket makes a good crystal connector and injection antenna support. A wire probe about 10 mm. long is soldered to the clip at right angles to it. The output wire is soldered to the clip also and the assembly is pulled into position through the open end of the guide. Inserting the crystal and connecting it to the clip completes the waveguide assembly.

The waveguide assembly is mounted in an aluminum chassis 3 × 5 × 7 inches with 2¾



Closeup of the r.f. assembly of the 5650-Mc. transceivers, showing the method of mounting the klystron on the tubular waveguide.

inches of the guide protruding from the end of the box. The power socket and coaxial fitting are also mounted on this end. This permits a short lead for the i.f. output between the crystal and the coaxial fitting.

The horn antennas are simply 10-inch tin funnels soldered to short sections of 1¼-inch copper pipe. A piece of aluminum tubing just large enough to slide over the pipe is used as a coupling sleeve between the r.f. section and the horn. This sleeve is slotted and clamped with auto radiator hose clamps. These horns have low power gain and were made for test purposes. A horn antenna about 21 inches long, with a 12½-inch throat diameter would have a gain of approximately 50, whereas the test horns have a gain of less than 10.

No special precautions need be taken in laying out the power supply or wiring it. The only critical area in the control unit is the microphone amplifier and modulator. Wiring from the microphone input through to the repeller terminal on the power socket should be short, and shielded to prevent hum pickup. Hum pickup should also be avoided in the a.f.c. circuitry.

Adjustment and Operation

Upon completion of the two r.f. sections and control units, the klystrons may be set to the approximate frequency and checked for oscillation. Adjust the klystron tuning strut to almost full height. Set the crystal injection probe to about a 45-degree angle. Turn on a.c. power and warm up the heater about 5 minutes. Set the meter-selector switch to the crystal position and the manual frequency control to approximately 90 volts; a.f.c. switch off; microphone gain off. After five minutes, turn on the high-voltage switch, rotate the frequency control from approximately 60 to 100 volts, and if all is well there will be an indication of oscillation on the meter. Adjust for maximum current, which should occur with the frequency control set near 90 to 100 volts with most tubes. Next, adjust the tuning piston for maximum crystal current. Then adjust the injection probe for 0.4 ma. by varying its angle with respect to the klystron antenna probe. This crystal current is recommended for the best signal-to-noise ratio.

At this point, switch the r.f. sections and repeat above steps on the second r.f. section, using the same control unit. After both r.f. sections have been checked out, test the other control unit. Now the matter of measuring frequency should be taken up. If you can beg or borrow a wavemeter that reads the 5650-Mc. band you have no problem. I did have a problem, and had to measure the wavelength in space. By using a variation of the Lecher wire principle [1] a crude wavelength measure can be made. Mount a 1N23B crystal about 1 inch above a cardboard shoe box or similar nonmetallic support. Connect a sensitive microammeter to it. Aim the open end of the waveguide at the crystal from about a foot away. Place a small metal plate behind the crystal and vary the position of the plate until a null is observed on the meter. Mark the position on the box, move the plate away from the crystal to the second null, and mark this position. Repeat for a third null. The distance between the first and third lines is one full wavelength. By careful measurement and double checking, reasonable accuracy can be obtained.

$$Frequency\ in\ kMc. = \frac{300}{wavelength\ in\ millimeters}.$$

After checking the wavelength to make sure that both units are in the band, try them for transmission and reception. The transceivers may be set up on opposite sides of a room, with the horn antennas attached and facing each other, and the control units connected. Set both i.f. units up on the same frequency. Warm up the klystron heaters about 5 minutes, then turn on power switch. Crystal current will indicate oscillation. If both klystrons happen to be mechanically tuned close to the same frequency (within 50–100 Mc.) it should be possible to tune in the opposite transceiver by varying the frequency potentiometer carefully. A strong signal should be heard and the limiter should read about −30 μa. With the a.f.c. switch off and the meter switch in the discriminator position, the needle will swing erratically plus and minus, depending on how good the voltage regulation is in each power supply. When the a.f.c. switch is on, this erratic movement should cease and it should be possible to set the discriminator to zero with the frequency potentiometer. If the signal refuses to lock in, the discriminator output polarity is wrong. In this case, it is only necessary to switch r.f. sections between the control sections to provide correct polarity. With the signals locked in you can check the modulator. Plug in the microphone and open the gain control. Audio will be heard on both receivers simultaneously. Quality will be excellent, especially if the power supplies have low hum level. The a.f.c. in one unit will

[1] This technique is illustrated on the cover of September 1948 *QST*. Print from original negative $1.50 postpaid.

maintain a constant frequency separation, so there is no need to have the other a.f.c. switch on.

For maximum antenna coupling, vary the waveguide length in the sleeve and adjust for a shallow dip in crystal current. After this adjustment, readjust the crystal injection probe for 0.4-ma. crystal current. When placing transceivers in operation, have one r.f. unit horizontal, the other vertical. This places each crystal in the proper plane for the incoming signal. (Unit 1 klystron probe vertical, unit 2 crystal vertical; unit 2 klystron probe horizontal, unit 1 crystal horizontal.) This arrangement was used because it made it possible to control oscillator injection.

The intermediate frequency selected is not too important; any frequency from 30 to 100 Mc. can be used. If 88 Mc. is selected and one klystron is on 5900 Mc., the other klystron must be on 5812 Mc. to insure operation inside the band. The 2K26 will oscillate at about four points when varying the repeller voltage from zero to −108; the correct mode of oscillation is at 90 to 100 volts. The frequency potentiometer will provide about 25 Mc. tuning range on each side of peak output, with about half power at the 25-Mc. points.

For optimum output, crystal currents should be at peak when the correct i.f. is obtained. If not, the mechanical tuning of one klystron should be shifted carefully and the repeller voltage adjusted until these results are obtained.

The crystal injection probe is adjusted by bending the output conductor where it leaves the guide. Once the adjustment is made, it will hold for some time. Improvements can be made in the crystal circuit, such as tuning it to the signal and intermediate frequencies. These refinements are not necessary, and can come later.

Modulator and A.F.C. Information

According to published data on the 2K26, its frequency will vary 1 Mc. with a 1-volt change in repeller voltage. Therefore, if a frequency swing of plus or minus 75 kc. is considered desirable for the i.f. system in use, varying the repeller voltage 0.075 volt at an audio rate will effect full modulation. The audio voltage coupled from the 6AT6 cathode to the repeller series resistor is more than enough to do the job.

Electrical tuning is accomplished by varying the potentiometer on the regulated negative supply, thereby varying the voltage applied to the repeller series resistor. Automatic frequency control is effected by varying the repeller voltage in accordance with changes in output voltage of the discriminator in the f.m. receiver. The regulated negative supply is in series with the cathode voltage of the 6C4 a.f.c. tube, so any change in cathode voltage due to a varying grid voltage raises or lowers the repeller voltage. When the change in repeller voltage is of the proper polarity, the intermediate frequency will be maintained constant.

Effectiveness of the automatic frequency control can be checked by placing an intermittent heavy load on the a.c. line and observing the discriminator reading. The needle will swing off center and then return to zero as the frequency is corrected. Action may be improved by using 2 to 4 megohms and 0.1 μf. in the second section of the a.f.c. filter. If the receiver has an "S" meter, this may be used instead of limiter metering.

Short distance tests were conducted with the help of Joe Koenig, K8EUY. The larger unit was used as a fixed station and the smaller as a mobile, powered by a homemade inverter. Future plans are for construction of larger and better horn antennas and also new r.f. units to operate in the 3500- and 10,000-Mc. bands. Low-power klystrons are available on the surplus market for operation in those bands. QST

Strays

And speaking of dummy load antennas, WA2CQY says he is a v.h.f. man and always figured these light-bulb QSOs were strictly a low-band phenomenon. But now he's changed his mind . . . testing his 40-watt 522 rig with a seven-watt light bulb as an antenna on 2 meters, he got an unexpected 59 plus report from 2½ miles away.

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VP3FM's name is R. F. McWatt!

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And from W8AK came this plaintive cry to Headquarters one afternoon by Western Union: "Halp — conditions are so bad I cannot even hear my beat oscillator."

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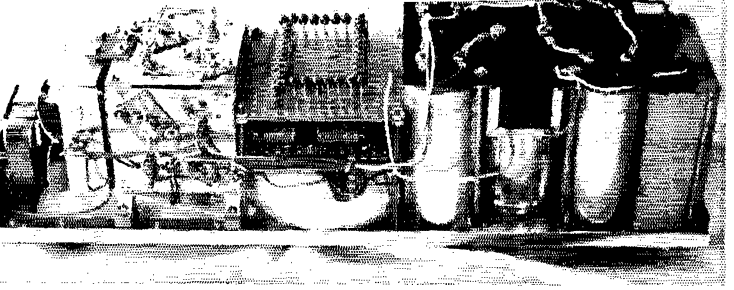
Readers have called our attention to the fact that the basic type of limiter circuit discussed by Walt Stiles on page 16 of the June issue is known as "Bishop's noise limiter". It was described by Nathaneil Bishop (W1EYM) in the June, 1953, issue of *Electronics*, but does not seem to have come into general use in the ham-receiver field.

Paul R. Wolf, W8IVE, received the "Ham of the Year" award at the Dayton, Ohio Hamvention this summer. A past president of the Greater Cincinnati Amateur Radio Assn., W8IVE has been running a code and thoery class since 1951 for amateur newcomers. About 345 persons have attended and 187 have received licenses. W8IVE is an ARRL Official Observer and Official Bulletin Station and is active in c.d. work.



The portable 1-kw. power supply. The low-voltage rectifiers are mounted within the narrow frame to the right of the fan. The transistors and Zener diodes are mounted inside the aluminum box. Sheets of perforated insulating material support the 36 high-voltage rectifiers above the toroid transformer. Both high- and low-voltage filter capacitors are at the right-hand end of the chassis.

Working on the principle that high-frequency power equipment requires less copper and iron than an equivalent 60-cycle system, the author makes use of a transistor oscillator as a frequency converter to reduce the size of a 1-kw. 3000-volt d.c. supply to approximately ¼ cubic foot!

Twelve-Pound Unit Delivering 3000 Volts D.C.

BY JO EMMETT JENNINGS,* W6EI

A Portable Kilowatt Power Supply

After gratifying success with lightweight mobile 12-volt transistor power supplies in the kilowatt class, it was decided to explore the possibility of making portable lightweight a.c.-operated transistor-powered equipment.

D. C. Input Source

Early in the development of this supply, it was found that a combination of four 28-volt transistor oscillators with their input circuits in series across a 112-volt d.c. source produced a very stable efficient driver for a high-power high-voltage secondary. All that remained to be done was to devise a means of converting 115 volts a.c. to d.c. Although this appeared to be easy, it proved to be the most serious obstacle of all. The first attempt to operate the oscillators from a rectified but unfiltered source resulted in eight useless 2N174s. In a later test, about 500 μf. of filter capacitance was used, but the oscillator output was low and the voltage regulation was poor. The addition of filter chokes did little more than increase the weight of the unit far beyond what was considered a reasonable figure. Finally, success was attained through the use of some high-capacitance electrolytic capacitor units of very small size developed by Mallory. These units differ from the ordinary electrolytic in that they are capable of handling relatively large amounts of 120-cycle ripple current. Our final schematic, shown in Fig. 1, employs four of these capacitors, which are rated at 5000 μf., 25 volts each. These are connected in series, with one capacitor across the input of each oscillator. In addition, a single 2250-μf. 150-volt unit of the same type is connected across the output of the 112-volt rectifier.

This d.c. supply for the transistor oscillator uses a selenium bridge rectifier operating directly from the a.c. line. Forced-air cooling of the rectifier units is provided by a small fan. To avoid a.c.-line polarization problems, the output of the supply is not grounded to the chassis.

High-Voltage System

The transformer core for T_1 was made by Arnold Engineering.[1] This transformer has a toroid core. The core is in the form of a winding of 0.004 × 1-inch strip in a semisquare configuration 4 inches outside diameter and a cross section 1 inch square. The oscillator windings were wound over a secondary winding which has 1900 turns of No. 28 Formvar wire. Each of the oscillator windings has 28 turns of No. 14 Formvar plus two feedback windings of 5 turns each of No. 22 plastic-covered wire.

Considerable time was spent in checking the base-to-collector voltage waveform on an oscilloscope. The spike which showed up did not yield completely to conventional despiking measures. The difficulty was finally solved by connecting Zener diodes between collector and emitter of each transistor.

The high-voltage bridge rectifier has nine Sarkes-Tarzian type F6 silicon diodes in series in each leg. Since the output ripple frequency is high, a filter choke with an inductance of 0.1 hy. will isolate the rectifiers from the filter capacitor.

Operation

The high capacitance across the input rectifier makes it necessary to use a special procedure in turning on the supply to avoid rectifier overload by the high capacitor charging current. The three resistors in the a.c. input circuit are current-limiting resistors to protect the rectifiers. S_1 progressively decreases the limiting resistance to zero as the capacitors become charged. In applying power, a brief but definite pause should be made between switch positions, the entire switch range

* 316 South 18th St., San Jose 27, Calif.

[1] P.O. Box G, Marengo, Illinois.

being covered in perhaps one or two seconds.

This supply, delivering a d.c. output of 3000 volts at the 1-kw. level, has a total weight of but 12½ pounds. It occupies a space of barely more than ¼ cubic foot. The over-all dimensions are 18 by 4¾ by 5¼ inches. It has proven the feasibility of reducing size and weight in power supplies by the principle of converting 60-cycle a.c. to a much higher frequency. It is quite reasonable to believe that more effective methods can be found to produce even higher powers with little increase in weight. With some of the high-power transistors now available, we expect to produce a supply capable of delivering 3 kw. of d.c. power at 3000 volts from 115-volt 60-cycle input, using only two transistors instead of eight. At the moment, the cost of these transistors is prohibitive for general application, but this situation may change in the not-too-distant future, making it possible to build supplies of extremely high power rating, weighing 10 to 15 pounds, at reasonable cost relative to power capability. QST

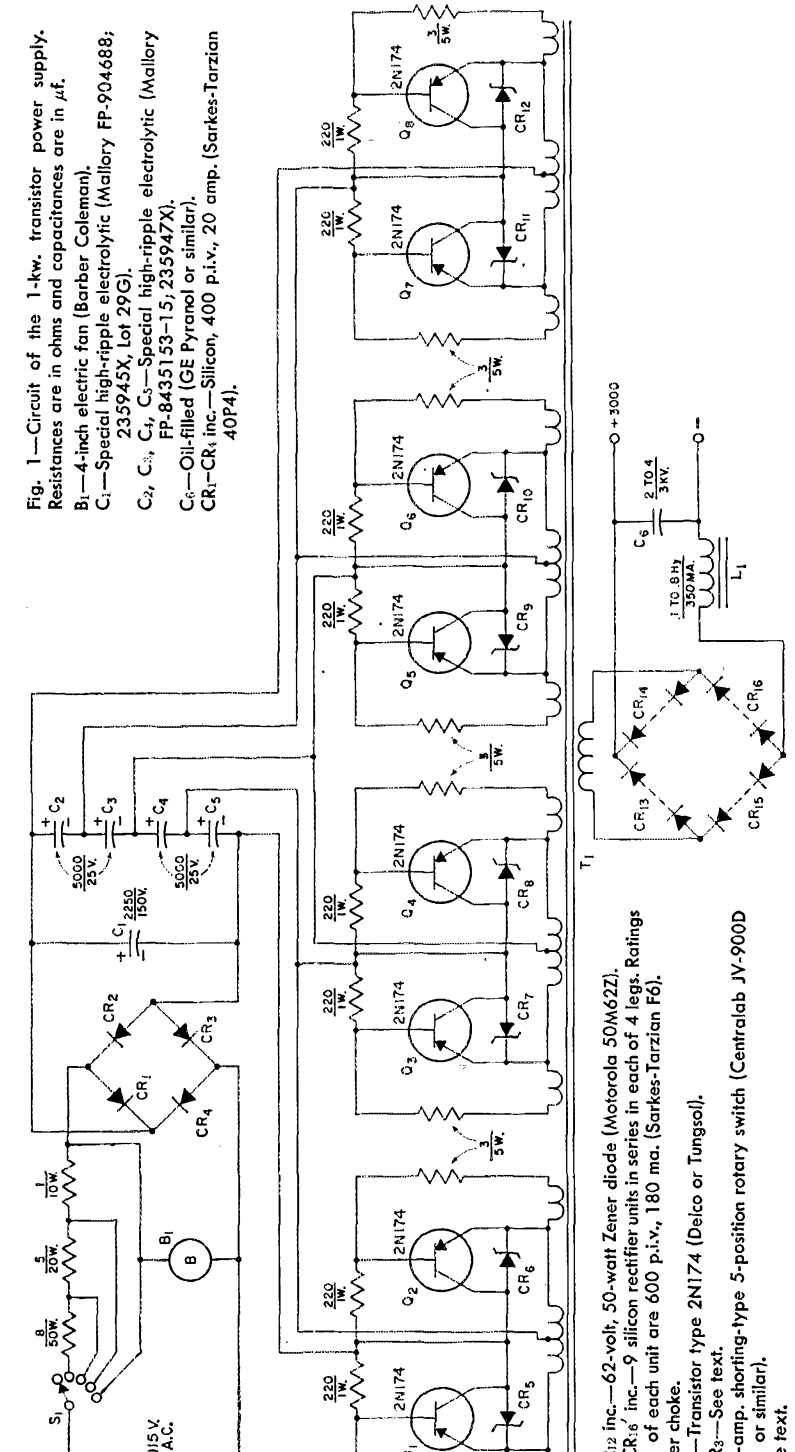


Fig. 1—Circuit of the 1-kw. transistor power supply. Resistances are in ohms and capacitances are in μf.
B_1—4-inch electric fan (Barber Coleman).
C_1—Special high-ripple electrolytic (Mallory FP-904688; 235945X, Lot 29G).
C_2, C_3, C_4, C_5—Special high-ripple electrolytic (Mallory FP-843515 3–15, 235947X).
C_6—Oil-filled (GE Pyranol or similar).
CR_1–CR_4 inc.—Silicon, 400 p.i.v., 20 amp. (Sarkes-Tarzian 40P4).
CR_5–CR_{12} inc.—62-volt, 50-watt Zener diode (Motorola 50M62Z).
CR_{13}–CR_{16} inc.—9 silicon rectifier units in series in each of 4 legs. Ratings of each unit are 600 p.i.v., 180 ma. (Sarkes-Tarzian F6).
L_1—Filter choke.
Q_1–Q_8—Transistor type 2N174 (Delco or Tungsol).
R_1, R_2, R_3—See text.
S_1—10-amp. shorting-type 5-position rotary switch (Centralab JV-900D or similar).
T_1—See text.

With sunspot activity on the skids, the 40- and 80-meter bands are going to assume increasing importance in DX work over the next few years. The simple antenna described here has been giving a good account of itself in many installations for both long- and short-haul work.

An Effective Antenna for 40 and 80

BY KEN GLANZER,* K7GCO

The Inverted V-Shaped Dipole

For the past eight years, the author (and several others at his suggestion) have been using a type of antenna that has consistently brought better signal reports on 80 and 40 meters, in comparative tests, than more conventional types such as the ground-plane and horizontal and vertical dipoles. Furthermore, it actually costs less and is easier to put up than most other types commonly used for these lower-frequency bands. Other advantages are that it can be put up in a smaller lot than required for a horizontal dipole, and the antenna does not have to support the weight of a feed line, which is quite a consideration where coaxial line is used.

Resonant Length

Fig. 1 shows the simplicity of the inverted V-shaped dipole. It consists of a half-wave dipole supported at the center, with the two halves dropped downward at an angle from the horizontal. Sloping the wires in this manner causes an increase in the resonant frequency so that a somewhat longer length of wire (approximately 5%) is required for the same frequency. However, the resonant length will be influenced by other factors in each individual case, so the length should be adjusted experimentally for each installation. This can be done with an s.w.r. bridge in the feed line, the length of the antenna being adjusted for minimum s.w.r. at the desired frequency.

* 202 South 124th, Seattle 88, Washington.

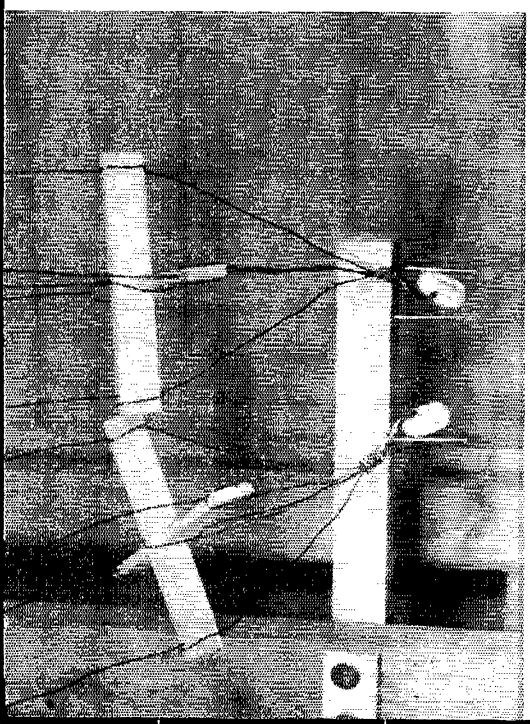
Impedance and Band Width

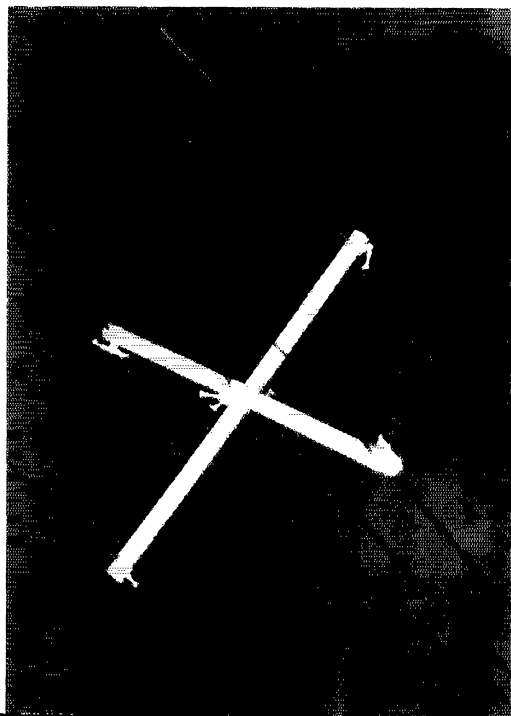
Sloping of the wires also results in a decrease in the feed-point impedance. A 50-ohm line will usually give a closer match than a 70-ohm line. While the angle of slope is not critical, but it will be found that as the angle between wires becomes sharper, the *Q* increases and the band width is narrowed. This narrowing can be limited by using three- or five-wire conductors or "cages" rather than single wires for the antenna (see photographs).

Directional properties are not pronounced, although there is some slight emphasis at right angles to the direction of the wire.

Two-Band Operation

For 40-meter operation, a separate similar dipole may be used. It may be connected in parallel with the 80-meter dipole at the feed





Details of cage construction for broadbanding elements. Spreaders are paraffined wood.

point and both may be fed with a single coaxial line. The 40-meter dipole may be run in any direction relative to the 80-meter dipole, but if the two dipoles are run at approximately right angles, as shown in Fig. 2, they will have less interaction and may also be used as the upper set of guy wires for a mast support.

Support

As with any other type of antenna, the inverted V-shaped dipole should be elevated as high as possible. It is quite feasible to use a tree as a support since most of the branches will be near the low-potential portion of the antenna. The elasticity of nylon cord makes it a desirable material for anchoring the ends of the dipoles. And, if a tree is used, the time-tested system of pulleys and counterweights may be used to advantage. The Cesco Dri-Fit connector is an ideal type of center insulator where coax feed is used. It has a heavy eyelet for attaching the hoisting rope.

A tower or pole supporting a beam antenna for the higher frequencies has been used as the center support for this antenna with no apparent impairment of the performance of the beam. However, it is probably a good idea to keep the apex 5 or 6 ft. below the array.

Feeding

In feeding this antenna, the same transmission-line problems must be considered as with any other antenna. Although coax feed can and has been used, the workable band width of any system using coax feed is limited if losses from a high s.w.r. and problems in loading are to be avoided. The author prefers tuned open-wire line not only because losses when working over the full width of the band are minimized, but also because it maintains a balanced system.

Results

In numerous tests in which it was possible to switch antennas instantly, the inverted V-shaped dipole has invariably proved to be superior to a half-wave horizontal dipole at the same height, a vertical dipole and a ground plane, which were

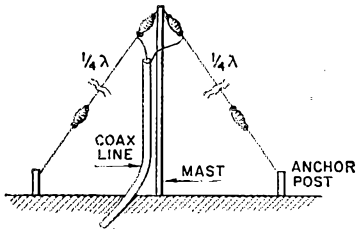


Fig. 1—The inverted-vee dipole. The length should be adjusted as described in the text.

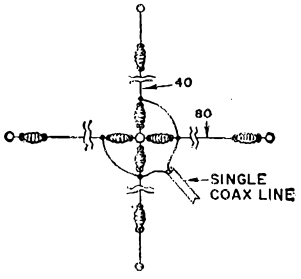


Fig. 2—Top view of a two-band arrangement. Dipoles for 80 and 40 meters are connected in parallel and fed with a single coaxial line.

used for comparison. It is assumed that the sloping results in a lower angle of radiation. K7GCO, running 600 watts input, has been frequently reported by DX stations as one of the top signals from the W7 area on the 40-meter phone band. DX on 75 meters includes an S8 contact with EL4A in Liberia — a fair haul from Washington on any band. Others who have tried this antenna have reported similar results, while some have found it the answer in covering shorter distances (100 to 1,000 miles) where both vertical and horizontal antennas had previously been required to assure reliable coverage.

Some work has been done at K7GCO on a fixed-direction beam using two elements of the inverted-V type, one as a director, supported at the ends of a 15-ft. boom on a tower. Results so far have been encouraging on both 40 and 80, although the spacing is rather close for 80. QST

K7GCO's antenna is shown here supported by a tall tree. Multiwire elements are used to increase band width.

Principles of Operation and Adjustment

While the familiar receiver S meter is one of the most prevalent instruments found in ham shacks, it is often the least understood. This article discusses some of the basic types including their adjustment and calibration.

Tuning (S)-Meter Circuits

BY MARVIN M. TEPPER,* W1YCV

NOTICE that the title places emphasis on *tuning*-meter circuits, *not* S-meter circuits. The original intent in such devices was not to compare signal strengths but to serve as an aid in tuning a signal in "on the button." It is more or less by accident that tuning-indicator meters happen to be so placed in receiver circuits that they may also indicate *relative* signal strength. But the accuracy in absolute terms is very much open to question.

Using the tuning meter as an S meter gives rise to a wide variation in interpretation. First, there is no accepted standard of signal input voltage *vs.* S-meter reading. The S meters of some receivers show a reading of S9 with a 50-μv. input signal, others with a 100-μv. signal, and still others have "Scotch" meters requiring a 200-μv. input signal for an S9 reading. Also, S meters do not operate directly from the signal input voltage, but only indirectly after the signal has been amplified. Thus the deflection depends upon receiver gain, and the receiver has yet to be built that will provide uniform gain over the width of an amateur band, let alone from band to band! Under the circumstances the average S meter provides little more accuracy than might be obtained by listening to the signal and comparing it with the standard S chart. Nevertheless, human nature being what it is, the perverse use of the tuning meter as an S meter is here to stay. It soothes the operator to hear the classic report, "Your signal is 40 db. over S9" which, translated literally, means "Your signal has 10,000 times the power of an extremely strong signal"!

* National Co., Inc., Malden, Mass.

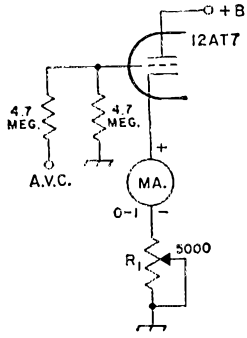


Fig. 1—A simple S-meter circuit using a separate S-meter tube. A wire-wound resistor is recommended for R_1.

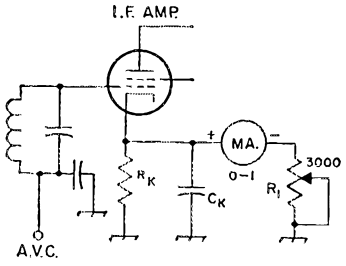


Fig. 2—Circuit similar to that of Fig. 1, but making use of an i.f. amplifier tube controlled by the a.v.c. system. R_K and C_K are the normal i.f. amplifier cathode resistor and bypass. R_1 is a 3000-ohm control.

S-Meter Circuits

S-meter circuits vary in detail, but all of the conventional types operate indirectly from the varying bias voltage developed in the receiver's a.v.c. system. With the remote cutoff tubes used in the r.f. and i.f. amplifiers of most receivers, the relationship between signal-input voltage and the a.v.c. voltage developed results in linear S-meter deflections in terms of db. only at low signal levels. At high signal levels, the variable-gain characteristic of the remote-cutoff tube destroys the linearity so that the scale of the S meter becomes compressed at the high-signal-level end. This is not necessarily a disadvantage; in fact, it may be considered desirable since the effect is to spread the calibration out over the most-used portion of the scale.

The meter itself cannot be connected directly to the a.v.c. line because the load would impose a virtual short circuit across the line. Some form of amplication is required. This amplification can take place through a separate a.v.c. amplifier or through a tube already serving as an r.f. or i.f. amplifier. Although the latter method is more economical, S-meter circuit values must be tailored so as not to interfere with the normal function of the amplifier. The separate a.v.c. amplifier is independent of such considerations, and its design is therefore more straightforward.

Simple Systems

Fig. 1 illustrates one of the simplest S-meter

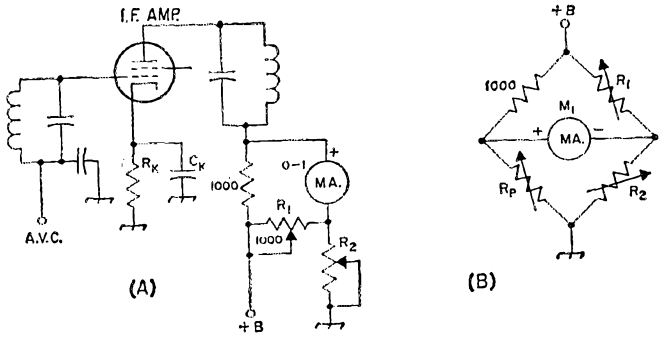


Fig. 3—Forward-reading bridge S-meter circuit. R_1 is a 1000-ohm control. R_2 should have a maximum resistance in ohms approximately 1000 times the plate voltage. R_K and C_K are the normal i.f. amplifier cathode resistor and bypass. B shows the equivalent circuit in which the plate resistance of the i.f. tube is represented by R_p.

circuits. In this circuit, the grid of a separate S-meter tube is connected to the a.v.c. line so that it receives biasing voltage in accordance with the variations in a.v.c. voltage with signal strength. The meter, a 0–1 d.c. milliammeter, and a variable resistor are connected in series in the cathode circuit. The series resistor, R_1, is adjusted so that the meter reads full scale with no signal. A signal at the input of the receiver will cause an increase in the a.v.c. bias which, in turn, will cause a decrease in the cathode current of the meter tube and the meter pointer will be deflected toward the zero-current mark. This is a "backward-reading" circuit, the pointer moving from right to left with an increase in signal strength. Since most operators prefer that the movement be from left to right, receiver manufacturers using backward-reading S-meter circuits use special meters which have a deflection opposite to that of conventional milliammeters, or mount a conventional milliammeter in an inverted position on the panel. The meter in this circuit cannot be pinned by a strong signal; it cannot be driven beyond the zero-current point.

A similar circuit applied to an i.f. amplifier tube, rather than to a separate S-meter tube, is shown in Fig. 2. Here the meter operates from the voltage drop across the cathode resistor of the i.f. amplifier. This voltage drop varies in accordance with the variations in cathode current caused by the changing a.v.c. bias. The meter is initially set at full-scale reading with no signal by adjustment of the series resistor, R_1. The operation is essentially the same as that of the circuit of Fig. 1. However, the a.v.c. voltage never drives the i.f. amplifier to zero cathode current, so the pointer will only approach the zero-current point on the strongest signals.

Forward-Reading Circuits

An S-meter circuit that may be adjusted for "forward reading" is shown in Fig. 3A. In this circuit, the plate resistance of an i.f. amplifier tube is used in one arm of a resistance bridge. The equivalent circuit is shown in Fig. 3B where R_p represents the tube plate resistance. With the amplifier tube out of its socket, R_2 is adjusted so that the meter reads full scale. Then, with the tube replaced, R_1 is adjusted until the meter reads zero current with no signal. When a signal is applied to the input of the receiver, the increase in a.v.c. bias increases the value of R_p, the bridge is unbalanced and current flows in the meter circuit. The meter cannot be pinned because the initial adjustment is for full-scale deflection with the i.f. amplifier tube cut off — a condition that will only be approached by the bias normally developed in the a.v.c. system.

Another variation of the bridge circuit is shown in Fig. 4A with its equivalent in Fig. 4B. In this circuit, the varying bias of an i.f. amplifier tube is applied to the grid of V_{1A} whose plate circuit serves as the variable arm of the bridge. The plate circuit of V_{1B} is used in one of the fixed arms, but its plate resistance may be set to the required fixed value by adjustment of its grid bias by means of R_2. With no signal, R_2 is first adjusted to balance the bridge (zero current reading). Then, with plate voltage removed from V_{1A}, R_1 is set to bring the current reading to full

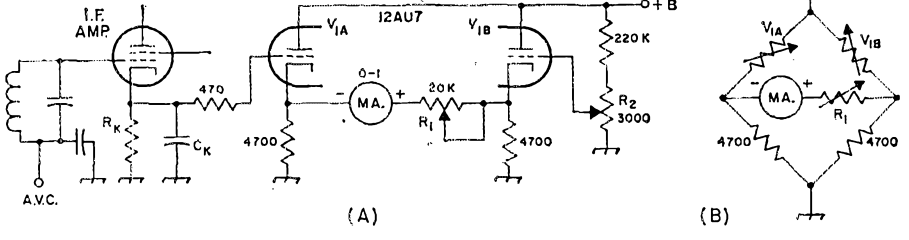


Fig. 4—Differential S-meter circuit. This circuit is similar to the bridge circuit of Fig. 3, but employs a separate S-meter tube. V_{1B} is used as an adjustable resistor in one arm of the bridge, as shown in the equivalent circuit of B. R_1 and R_2 are composition controls. R_K and C_K are the normal i.f. amplifier cathode resistor and bypass.

scale. With plate voltage reconnected to V_{1A}, the meter should deflect in accordance with the signal level.

Calibration

The most accurate method of calibrating an S meter involves the use of a signal generator with calibrated attenuator. The manual r.f. gain control should be set at some desired reference point. The S meters of most manufactured receivers are calibrated with the r.f. gain control wide open. A choice should be made as to the signal input voltage that will correspond to an S9 signal. With a signal of this magnitude applied to the input of the receiver, the S9 point on the meter should be established. Other S points on the scale may be plotted in reference to the S9 mark, inscribing an S point each time the signal input voltage is cut in half. For instance, if a 100-μv. signal is chosen for S9, then a 50-μv. signal will cause an S8 reading, a 25-μv. signal an S7 reading, a 12.5-μv. signal and S6 reading, and so forth. This gives readings of 6 db. per S point. If it is desired to have the readings above S9 in steps of 10 db., then a 10-db. point will be marked each time the input voltage is increased by a ratio of 3.16. Thus the 10-db. point above S9 will be the point registered on the meter when the signal input voltage is 316 μv., and the 20-db. point will be registered with a $3.16 \times 316 = 948$-μv. signal, and so on. Yes, indeed, a 40-db.-over-S9 signal is quite potent.

Not many of us have access to elaborate measuring equipment, and the following method will serve almost as well for practical purposes. Set the r.f. gain control so that the meter reads just above zero with no signal. Tune the receiver to different signals on the air. A weak signal accompanied by a high level of background noise (hiss) should give a reading of about S3. A fairly good signal accompanied by a medium amount of background noise should give a reading of about S5. A moderately strong signal accompanied by very little noise should give a reading of about S7. A strong signal with no background noise should give a reading of about S8.

From the preceding discussion of circuit operation, it is evident that a change with age in resistor values, or in the condition of tubes, not only those directly in the S-meter circuit but those in the gain-determining stages and in the a.v.c. circuit as well, will affect the accuracy of the meter. So perhaps an ear calibration by chart isn't so inaccurate after all! QST

Silent Keys

IT is with deep regret that we record the passing of these amateurs.

W1AX, John Albert Campbell, East Lexington, Mass.
W1KMQ, Herbert S. Cranton, Brockton, Mass.
W2TIY, John Fred Hoos, Livingston Manor, N. Y.
W4EDV, Roy E. Kolo, Fort Thomas, Ky.
W4IEC, Stanley M. Samuel, jr., Petersburg, Va.
K4KDY, Thomas E. Conrad, Portsmouth, Va.
W4KYY, Francis M. Becker, Alexandria, Va.
K4OLZ, Jack D. Justice, Norfolk, Va.
W4WS, Mont L. Patterson, DeLand, Fla.
K6ECQ, Harold H. Mackie, jr., Santa Barbara, Calif.
K6IMD, Albert S. Kaplan, Torrance, Calif.
W6ITD, Winston H. Leverett, Pacific Palisades, Calif.
W6OCJ, David R. Michaels, Palm City, Calif.
KN7JOH, Bruce O. Caldwell, Lynnwood, Wash.
ex-8BPT, Lil Bates (Mrs. Art C. Bates), Hingham, Mass.
W8DXC, Arnold West, Scio, Ohio
K8IID, John B. Nourse, Owosso, Mich.
W8JDM, Jack L. Miller, West Unity, Ohio
K8LGR, George D. Marple, Sutton, W. Va.
W8NP, William J. North, Massillon, Ohio
W9DCH, Joseph Luz, Chicago, Ill.
W9KX, Everett Anderson, Westville, Ill.
K9OFO, Edward W. Simpson, Villa Park, Ill.
W9VNT, Dr. Robert L. Smithwood, Bluffton, Ind.
W9WTC, LeRoy D. Wolff, Elgin, Ill.
W0CWG, Lawrence L. Mastin, Atchison, Kan.
K0UKK, Harold H. Worley, Denver, Colo.
FB8GP, Marie-Gilbert Pijeau, Archipel des Comozes, Madagascar
VE2IM, Sam P. Asbury, Montreal, Quebec
VE3DX, Edgar L. Wurtele, Ottawa, Ont.
VE3RH, Robert Haslett, Toronto, Ont.
VK3ACE, Clyde Case, Birchip, Victoria, Australia
ZL2QI, Leslie Murray Birdling, Waitara, New Zealand

Strays

Amateurs are invited to cooperate in a worthwhile "people-to-people" project started by Mr. and Mrs. Henry Mayers of Los Angeles. Through newspapers in Asia they get the names of people who read English and would like American magazines, both of general and specialized interest. With the help of other volunteers and the staff of KNXT (TV), they match the Asian requests against offers by Americans. Over 20,000 requests have been handled, but Mrs. Meyers has about two thousand requests on hand for radio and electronics magazines, mostly from radio engineers and technicians.

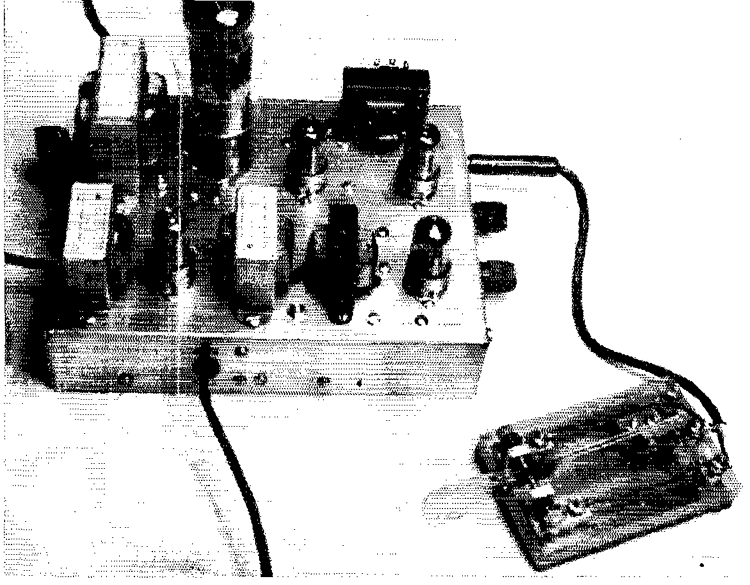
Though the original idea involved only magazines, K6YKI (who tipped us off about this project) reports a hearty welcome from his correspondents for such things as recent catalogs from radio parts distributors. Probably handbooks, tube manuals and other radio literature would be appreciated, too.

The only cost to participants in the project is the postage, and at the special magazine rate, this is mighty small.

Amateurs who would like to help should send a list of the magazines they can pass along and a stamped, self-addressed envelope to MAGAZINES, Channel 2, Hollywood 28, California.

—···—

SM3ADP was pleased to find a QSL card from K4ADQ in his mailbox because it was one more state confirmed. He filed it with his WAS cards, fired up the rig and called CQ. One station answered — K4ADQ . . . the only station SM3ADP has ever worked in South Carolina.



Top view of the keyer-monitor-muter. Across the bottom, from left to right, are T_2, T_1 and T_4. T_3 is in the upper left-hand corner and T_5 at the upper right.

In the chassis described here, several circuits described in earlier issues of *QST* have been combined into a single unit which, when plugged into an unaltered transmitter using cathode keying, and a receiver, will reduce the effort and add to the enjoyment of c.w. operation.

BY ERNEST ADOLPH,*
K1DRX, ex-K2JZT

The Electromonimuter

Electronic Key, Vacuum-Tube Keyer, Side-Tone Oscillator and Receiver Muter in One Package

FACED with the problem of doing something to improve my "fist," I started a search of current commercial electronic keys and articles dealing with the homemade product. Actually, what I wanted was not simply an electronic key, but something that would include a keyer, side-tone oscillator and receiver muter as well. The commercial electronic keys were rather high in price, I found, and none of them included the extra features I was looking for. Most of the homebrew jobs involved a multiplicity of relays which I wanted to avoid if possible.

Finally I ran across the article by K2POO.[1] This electronic-key unit includes a vacuum-tube keyer (no relays) for cathode keying. It looked encouraging, but interesting only if it could be combined easily with a side-tone oscillator and receiver muter. The latter two features I found combined in "Little Oskey" in an earlier issue of *QST* [2] and in the ARRL *Handbook*.

Circuit

A block diagram of the system is shown in Fig. 1. It will be noted that all connections required between the keyer unit and the transmitter and receiver are made through terminals and jacks normal to the latter.

The final version of the complete circuit is shown in Fig. 2. It will be seen that the "Little Oskey" (portion of the circuit above the dashed line) and the transmitter are keyed in parallel through the vacuum-tube keyer of the K2POO keying unit.

In the original "Oskey" circuit, V_{1A} amplifies the receiver signal, while V_{1B} amplifies the side-tone oscillator signal, the two outputs being fed in parallel to the headphones. When the original version was first tried with my National 183-D receiver, it was found that the audio output on signals from the receiver was below the desired level. Since V_{1B} was doing nothing when the key was open, I coupled the output of V_{1A} to the grid of V_{1B} in parallel with the output of the side-tone oscillator, and coupled the head-

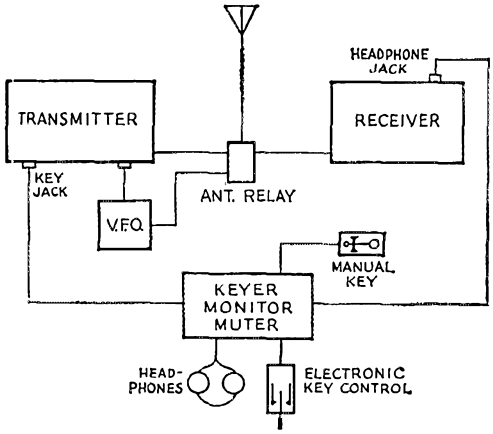


Fig. 1—Block diagram showing the arrangement of units in the keyer-monitor system described in the text. No alteration of either transmitter or receiver is required.

* 42 Brooksbie Road, Bedford, Mass.

[1] Livingston, "An All-Electronic Key and Keyer," *QST*, October, 1958.

[2] Campbell, "'Little Oskey'—A Monitoring Oscillator and Keyer," *QST*, October, 1955.

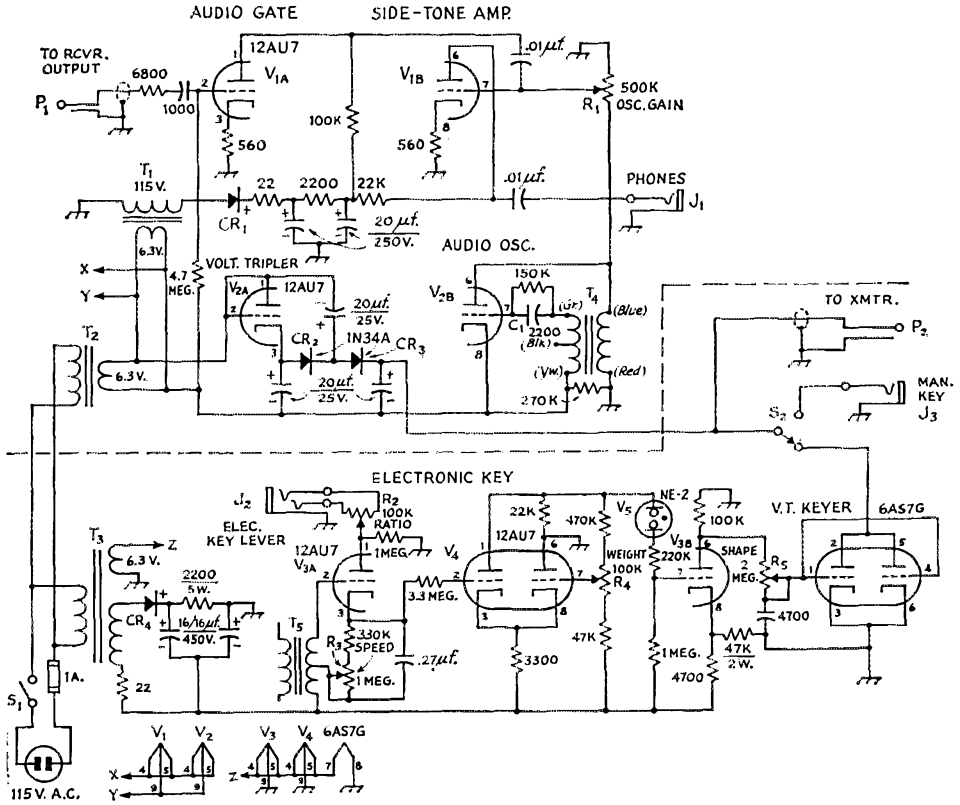


Fig. 2—Circuit of the combined electronic key, vacuum-tube keyer, side-tone oscillator and receiver muter. The portion of the circuit above the dashed line comprises "Little Oskey," while the portion below includes the electronic key and vacuum-tube keyer of K2POO. Both of these units were described in detail in earlier issues of *QST*. Unless indicated otherwise, capacitances are in μμf., resistances are in ohms, and resistors are ½-watt composition. Capacitors marked with polarity are electrolytic. Other capacitors may be paper or ceramic.

C_1—Audio-oscillator frequency may be changed by altering capacitance value, a lower capacitance resulting in a higher frequency.
CR_1, CR_4—Selenium rectifier, 130 volts, 65 ma.
CR_2, CR_3—Germanium diode (1N34A).
J_1, J_3—Open-circuit jack (Littel-Jax Type 11).
J_2—Double-circuit jack (Littel-Jax Type C-12B).
P_1, P_2—Standard phone plug or other connector to suit receiver output and transmitter key connectors, respectively.
R_1—Composition potentiometer, audio taper.
R_2, R_3, R_4, R_5—Composition potentiometer, linear taper.
S_1—S.p.s.t., attached to R_1.
S_2—S.p.d.t. rotary, tone-control type (Centralab 1460).
T_1, T_2—Filament transformer: 6.3 volts, 1.2 amps. (Stancor P-6134 or similar).
T_3—Power transformer: 125 volts, 50 ma., 6.3 volts, 2 amps. (Stancor PA-8421 or similar).
T_4—2:1 interstage audio transformer (Thordarson T-20A16 or similar).
T_5—Universal output transformer; secondary not used (Stancor A-3856 or similar).
V_1, V_2, V_3, V_4—12AU7.
V_5—1/25-watt neon bulb (NE-2).

phones to V_{1B} only. This provides an additional stage of amplification for the signal from the receiver. Now, V_{1B} amplifies the receiver signal when the key is open, and the side-tone signal when the key is closed. The arrangement works very smoothly and the headphone signal from the receiver is more than ample.

As a final touch, provision was added for plugging in a straight key at J_3.

Construction

Components are assembled on a 7 × 9 × 2-inch aluminum chassis. Since no attempt was made to construct the unit in ultracompact form, the electronic-key switch lever was not built into the chassis but was made up as a separate unit to conserve space at the operating position. Essential details of assembly of the chassis unit may be determined from the photographs. Exact duplication is not necessary since the arrangement of components is not critical. For the sake of convenience, I placed the audio gain control with attached power switch, the speed-control potentiometer and the jacks for electronic key lever and headphones on the front edge of the chassis. I used plugs and jacks of different diameters here so that neither plug could be placed in the wrong jack. The ratio, weight and character-shaping potentiometers are screwdriver-adjusted and are mounted along one side

of the chassis. The manual/electronic switch, S_2, and the jack for the manual key, J_3, are at the rear. Plugs P_1 and P_2 have cords long enough to reach the receiver and transmitter jacks.

Electronic-Key Switch Lever

In making the switch lever for the electronic key, the design described by W5DQV[3] was followed in essentials. This type of lever is not difficult to make and is very good functionally. The sketch of Fig. 3 shows the details. The base is 4½ by 2¾ inches and consists of a sandwich made up of a sheet of 3/16-inch brass with a sheet of ⅛-inch rubber cemented to it on the bottom side, and a sheet of ½-inch Plexiglas attached by means of screws to the top side. If you have a heavy fist, it may be advisable to increase the thickness of the brass plate to provide more anchoring weight. Plexiglas usually comes with a protective coating of paper. Don't remove this coating until all cutting and drilling has been completed if you want to maintain a scratch-free surface.

The lever arm consists of four layers of spring steel ½ inch wide and 0.025 inch thick. (I had difficulty in stacking hacksaw blades as suggested by W5DQV). One of the layers has a gap of ¾ inch, as shown, to provide flexibility. The pieces on either side of the gap are easily soft-soldered to the adjacent unbroken piece, using a propane torch (obtainable at any hardware store). The two outer strips carry contacts taken from old relays or vibrators and soldered to the strips with soft solder. The four strips are clamped together at one end and fastened to an angle piece by means of two 6-32 screws. It is practically impossible to drill holes in spring steel, but they can be made with a punch quite readily. The lever-arm mounting as well as the mountings for the stationary contacts are formed by soldering pieces of strip or bar stock together. After the strips have been mounted, the two outer strips should be sprung out slightly so that they barely touch the center bar.

The mountings for the stationary contacts must be insulated from the brass plate by countersinking the mounting-screw holes in the Plexiglas plate. The contact screws were taken from old adjustable-contact type relays, and ⅛-inch silver contacts were added by soldering them on. Old adjustment screws from telegraph keys, or even ordinary brass machine screws can be used in the same manner.

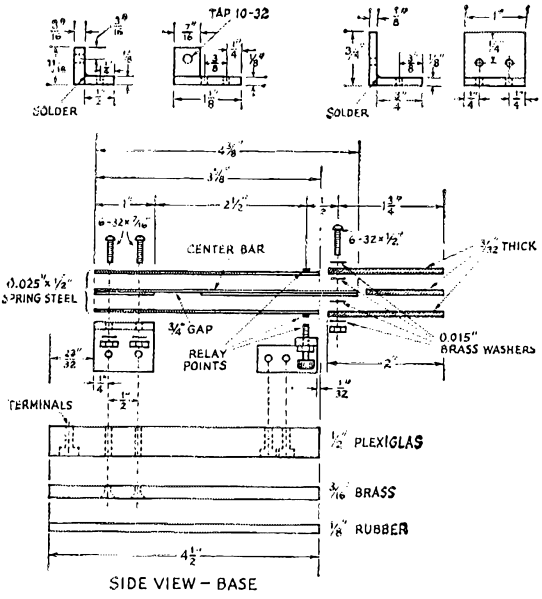


Fig. 3—Sketch showing construction of the electronic-key lever. The base is 2¾ inches wide.

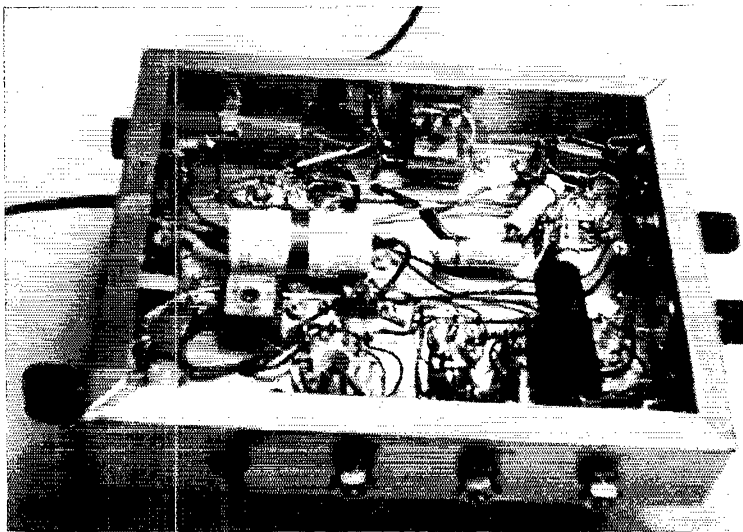
The paddle consists of three layers of 3/32-inch Plexiglas cemented together. The center piece is shorter than the other two so that a slot will be formed for the center bar which is 0.05 inch thick. Washers are used either side of the bar to fill the remaining space in the slot.

Performance

My transmitter consists of a W.R.L. 755A v.f.o. driving a Johnson Challenger, both units being keyed simultaneously in the cathode circuit. This had worked out reasonably well in the past. But when the keyer with its shaping circuit was used, the chirp in the v.f.o. became evident, as might have been expected. I now key the Challenger only, and the v.f.o. is turned off

(*Continued on page 140*)

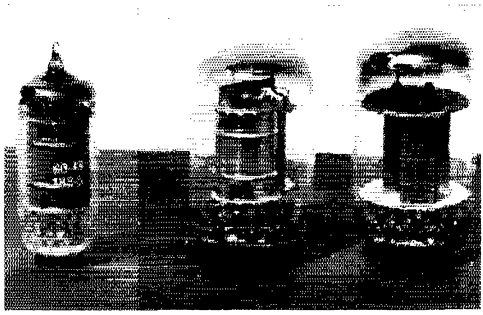
[3] Leslie, "Combined Keyer and Control Circuit," *QST*, February, 1957.



Bottom view of the electronic keying unit.

• Technical Topics

More Tubes in One Bulb



Two "Compactron" types compared with the conventional miniature-type receiving pentode at the left. The converter-i.f. combination is the one at the center; the right-hand tube is a detector diode, high-μ triode, power tetrode and power rectifier.

REMEMBER the "Victory" series of tubes used in a.c./d.c. receivers during World War II — the 12SQ7, 35Z5, 50L6 and the 12SK7s? They were eventually superseded by a similarly standardized miniature group but the idea of concentrating on a few types for the sake of economy and reliability has persisted. Now, the General Electric Company has announced a new series of tubes, appropriately called "Compactrons," that as a first objective will replace the present popular "five" yet require only two envelopes. The accompanying photograph shows the two Compactrons that do this. One is designed to replace the 12BA6 and 12BE6; the other combines the 35W4, 50C5 and the 12AV6.

The obvious advantage of the Compactron is that it saves space by combining several separate tube structures in one bulb. This has been done before, of course; we have innumerable dual tubes and even triples of one sort or another. The Compactron idea gets into larger structures and may result in even more extensive combinations. The tubes are somewhat "fatter" than the older miniature types, and the height runs from about 1 inch to 2¾ inches. A special base (12-pin) is required since more connections must be brought out to the tube pins. The pins are arranged in a ¾-inch-diameter circle on the glass-button base, which measures about 1⅛ inches in diameter.

At the present time, tubes are being developed for application in the home-entertainment field, for b.c. and t.v. receivers and high-fidelity equipment. However, there may be many potential uses for the compact tubes in industrial circuits, commercial two-way radio and, of course, amateur radio. For instance, the triode-power pentode-diode combination could be used in a compact portable "one-tube" transmitter, with the diode used for the power-supply rectifier, the triode as a crystal-controlled oscillator and the pentode as the power amplifier. A one-tube converter could be constructed using the pentagrid converter-pentode combination.

Compactrons are not yet available, although the two shown probably will be marketed shortly. Prices have not been announced, but General Electric predicts that eventually the price will be about 20 per cent lower per function than in the case of single tubes. Future plans anticipate a line of 75 to 100 types of Compactrons, which certainly should make life interesting for the compilers of tube data! — *E. L. C.*

S.F. Changes

NOTICED a peculiar buzz on WWV lately? It's not electrical noise, nor is it an attempt to jam the standard-frequency transmissions. It's a recent addition to the many services regularly broadcast by WWV, and is a pulse code which gives the day, hour, minute and second in Universal Time, and also the accuracy of the time ticks as transmitted by WWV to within a thousandth of a second. Its purpose is to provide a standardized timing basis for scientific observations at widely separated locations.

The code broadcasts at present occupy a one-minute interval immediately following the standard audio frequencies, except at the beginning of each hour. The audio tones are now transmitted for two- instead of three-minute periods.

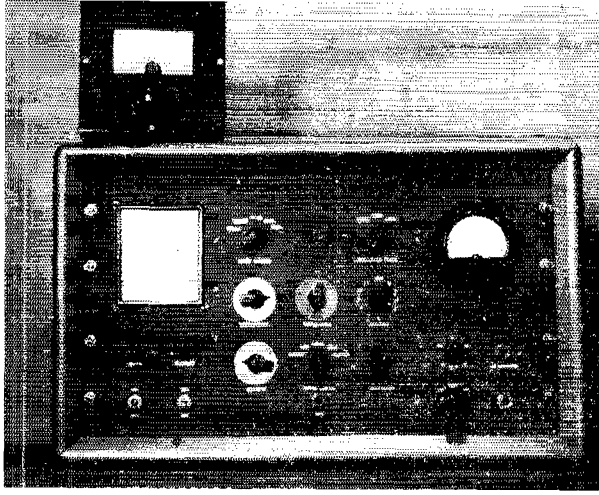
The code is experimental and may be changed in detail as experience with it accumulates. The basic pulse rate is 100 per second, and the complete message is sent in the space of one second. Blank spaces are provided for including additional types of information that it may be desirable to send in the future. Automatic decoding in computer-type equipment is contemplated; for those of us who have just ordinary receivers the code will be just an unintelligible buzz.

WWVL-WWVB

A new standard-frequency station, WWVL, began operation in early April. No ordinary receiver will pick up this one, since it operates on the very low frequency of 20 kilocycles. Located at Sunset Canyon, Colorado, it transmits a 20-kw. signal from an antenna which stretches more than a half mile across the top of the canyon. The low frequency is used because it gets away from the small but significant errors that accompany ionospheric propagation of high-frequency s.f. transmissions. The need for extremly high accuracy in frequency and time measurement, together with the necessity for covering the globe regardless of propagation conditions, are the underlying reasons for this shift to v.l.f. The Sun-

(Continued on page 148)

150 Watts A.M.—
180 Watts C.W.—
80 Through 10



The completed SJ-97A transmitter. From left to right and from top to bottom are: driver/final band switch and oscillator band switch; final tank capacitor, driver tank capacitor and crystal switch; indicator lamps, loading capacitor, meter switch, excitation control, audio gain control and low-level microphone jack; filament switch, plate switch, key jack, mode switch and high-level microphone jack. The v.f.o. tuned circuit on top is enclosed in a 6 × 6 × 6-inch aluminum box. S_8 is in the upper right-hand corner. The dial is a Millen 10039. The v.f.o. unit and transmitter are connected through a 2½-foot length of coax cable. The cabinet is a Bud "Prestige," type C-1552.

The SJ-97A Transmitter

BY BOB PERTHEL, W9MWD *

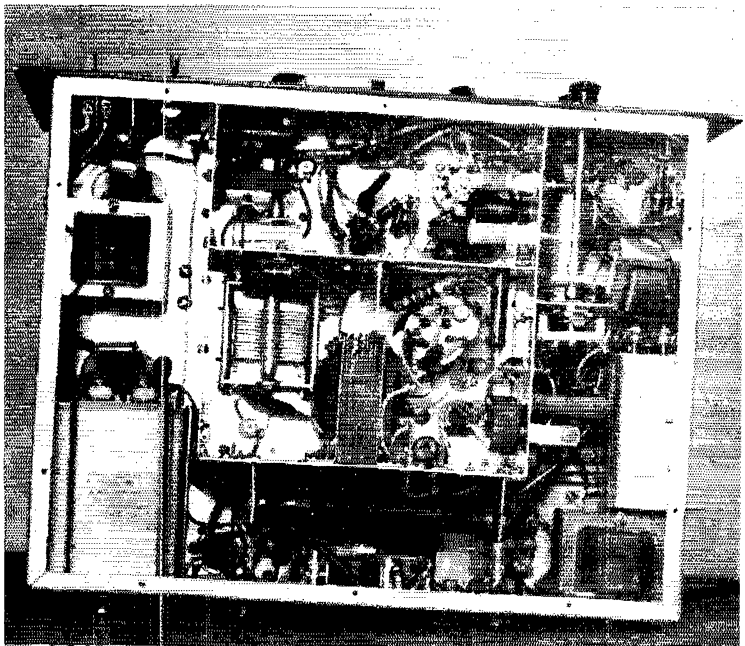
For a phone-c.w. transmitter in the 150-watt class, this self-contained unit by W9MWD is one of the simplest. By the judicious selection of surplus components, or by sharp horse trading, it can be built for less than $100. Even if all parts must be purchased new, the cost should be a minimum for a rig of these proportions.

IT SEEMS that everything today must have a name. This transmitter gets its title from the fact that it consists of 97 pounds of surplus junk carefully arranged on an aluminum chassis. The surplus parts selected were chosen mainly because of the value they represented, and a transmitter was designed around them. The actual cost of the complete unit was less than $100 and this includes a de luxe cabinet.

R.F. Circuitry

The design started with the final amplifier. An 814 was selected since it could be bought for $1.35 (surplus) and it carries full input ratings up to 30 Mc. — the highest frequency at which operation was contemplated. A single tube is usually easier to stabilize and get into proper operation than a combination of two or more smaller tubes with a combined equivalent power capability. Although the higher-power tube may require more plate voltage, this disadvantage has been minimized in this case by paralleling two inexpensive transformers and using a bridge rectifier. This arrangement also provides a half-voltage tap for powering the rest of the transmitter, resulting in further economy. A clamper tube eliminates the need for protective bias. The

* 2408 North 83rd St., Wauwatosa 13, Wis.



Bottom view of the SJ-97A with perforated cover removed from the shielding box. The slug-tuned oscillator plate coils are mounted horizontally from the right-hand wall of the compartment immediately behind the panel. S_2 is mounted on the chassis and is driven at right angles by a flexible shaft from the panel control. S_4 is mounted on a bracket attached to the right-hand wall of the box. In addition to the 814 socket, the lower compartment includes T_1 and the loading capacitor C_5. In the space around the box, T_2 is at the upper right, L_{13} at lower right and L_{12} at upper left. K_1 is mounted central on the lower edge of the chassis, below the bleeder resistor.

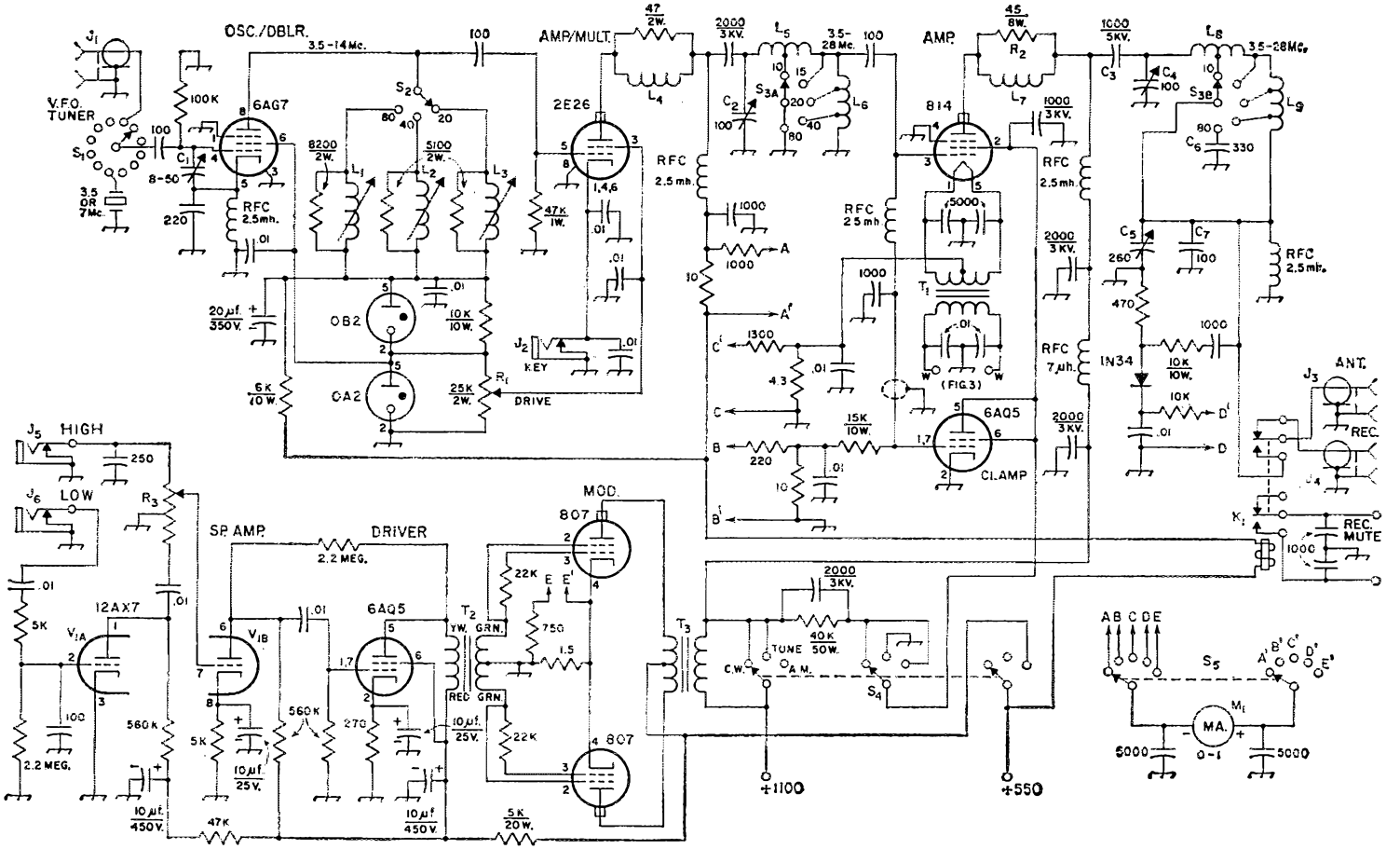

OSC./DBLR.
3.5-14 Mc.
AMP/MULT.
AMP.
V.F.O. TUNER
3.5 OR 7 Mc.
6AG7
2E26
814
OB2
CA2
6AQ5
CLAMP
12AX7
SP. AMP.
DRIVER
MOD.
807
HIGH
LOW
KEY
DRIVE
ANT.
REC.
REC. MUTE
TUNE
C.W.
A.M.
MA.
+1100
+550
RFC 2.5mh.
RFC 7μh.
IN34
(FIG.3)

Fig. 1—Circuit of the SJ-97A transmitter. Unless indicated otherwise, capacitances are in $\mu\mu$f., resistances are in ohms, and resistors are ½-watt composition. Fixed capacitors of less than 500-$\mu\mu$f. are mica; others, unless listed below, are disk ceramic excepting those marked with polarity which are electrolytic.

C_1—NPO ceramic trimmer.
C_2—Midget variable (Hammarlund MC-100S or similar)
C_3—Doorknob-type ceramic (Centralab 858S-1000).
C_4—3000-volt variable (Johnson 154-7 or similar).
C_5—260-$\mu\mu$f. or more receiving-type variable (B.c. replacement type suitable. If max. cap. is more than 700 $\mu\mu$f., C_6 and C_7 may not be needed).
C_6, C_7—Mica.
J_1, J_2, J_4—Chassis-mounting coax connector (SO-239).
J_3, J_5, J_6—Closed-circuit jack.
K_1—24-volt d.c. relay, d.p.d.t. (Potter & Brumfield KA11D or similar).
L_1—Approx. 60 μh.—120 turns No. 28.
L_2—Approx. 15 μh.—40 turns No. 26.
L_3—Approx. 4 μh.—20 turns No. 22. Above coils are close-wound on ½-inch iron-slug form (Miller 22A000RB1 form).
L_4—4½ turns No. 18 wound on shunting resistor.
L_5—8½ turns No. 12, 1-inch diam., 1 inch long, tapped at 5 turns from C_2 end.
L_6—14 turns No. 22, plus 18 turns No. 28, 1-inch diam., close-wound, tapped at junction of the two sections and at 4 turns from L_5 end. (No. 22 end connects to L_5 and the 15-meter tap is at this junction.)
L_7—3 turns No. 18, ¼-inch diam., ½ inch long.
L_8—7½ turns No. 10, 1-inch diam., 1½ inches long, tapped at 4 turns from C_4 end.
L_9—4 turns No. 18, 1⅞-inch diam., approx. 1 inch long, plus 21 turns No. 18 2½ inches long, tapped at 3½ turns from L_8 end. (Four-turn section connects to L_8).
M_1—3-inch 0–1 ma. d.c. meter.
R_1—25,000-ohm 2-watt control (Ohmite CU-2531).
R_2—Four 180-ohm 2-watt resistors in parallel.
R_3—2-megohm control, tapped at 0.9 megohm (Mallory UT-451).
S_1—1-section 1-pole 12-position ceramic rotary switch (Centralab PA 2001).
S_2—Same as S_1, 3 positions used.
S_3—2-section 2-pole 6-position ceramic rotary switch (Centralab PA-302 index head, two PA-17 sections, 5 positions used).
S_4—1-section 3-pole 3-position ceramic rotary switch (Centralab 2507).
S_5—1-section 2-pole 5-position phenolic rotary switch (Centralab PA 1003).
T_1—10-volt 4-amp. filament transformer (Stancor P-5016).
T_2—Driver transformer: 1:1 primary to ½ secondary (Stancor A-4752).
T_3—Modulation transformer: 125 watts, approx. 7000 ohms to 7000 ohms (Stancor A-3894). See text.

pi-network output tank is designed to work into 50- or 70-ohm coax.

The 2E26 is not the cheapest tube that might be used for the driver, but it was chosen because of its low grid-plate capacitance, small driving requirements, and also because it suited the available plate voltage. With the use of this tube, no additional buffer-multiplier stage is necessary to secure the desired oscillator isolation and furnish a reserve of drive, even on 10 meters. At a plate voltage of 550, the plate current when on 80 or 40 meters is less than 10 ma. A 2-watt composition potentiometer, R_1, in the screen circuit permits adjustment of drive to the final amplifier to the optimum level. The transmitter is keyed in this stage.

The 6AG7 grid-plate crystal oscillator may be converted to v.f.o. by simply switching in an external two-band (3.5- or 7-Mc.) high-C tank circuit (see Fig. 2) in place of a crystal. Frequency stability with this arrangement is surprisingly good. Broad-banded circuits are used in the output. When the 6AG7 is operating as a crystal oscillator, the output is more than adequate to drive the 2E26; in fact, it was necessary to use a grid-leak resistance value higher than normal to limit the grid current to its maximum rated value of 3.5 ma. A pair of VR tubes provides a regulated-voltage source for the screens of the oscillator and driver, and the plate of the oscillator.

The transmitter is entirely band-switched. The final and buffer switches are ganged, since the final always operates "straight through." The oscillator plate circuit is switched separately to permit various multiplier combinations in the 2E26 and 6AG7 stages, thus allowing crystals to be used on all of their useful harmonics. The inductance of the coils is adjusted so that undesired harmonics do not appear in any of the tuning ranges.

Modulator

The audio section was built around a pair of triode-connected zero-bias Class B 807s. This simplifies the design since it dispenses with regulated screen and bias supplies. With only about 75 watts of audio required, a 6AQ5 will furnish adequate driving power. A small amount of negative feedback is used to improve the waveform and regulation of this stage. A single 12AX7 provides enough preamplification for a crystal microphone. A separate jack, J_5, is provided to handle higher input levels. A center-tapped gain-control potentiometer, R_3, common to the two input circuits, provides smooth and rapid change-over from one to the other.

The modulation transformer is a surplus 300-watt 400-cycle power transformer with two 1200-volt center-tapped high-voltage secondaries.

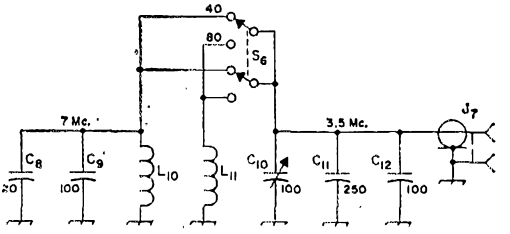


Fig. 2—Circuit of the v.f.o. tuning unit. Capacitances are in $\mu\mu$f. The poles of S_6 are paralleled to assure positive contact.

C_8—N750 negative-temperature-coefficient compensating capacitor.
C_9, C_{11}, C_{12}—Silver mica.
C_{10}—Midget variable (Hammarlund MC-100S or similar).
J_7—Chassis-mounting coax connector (SO-239).
L_{10}—5 turns No. 22, 1-inch diam., 1 inch long.
L_{11}—26 turns No. 22, 1-inch diam., close-wound.
S_6—1-section 2-pole 6-position ceramic rotary switch (Centralab 2003, 2 positions used).

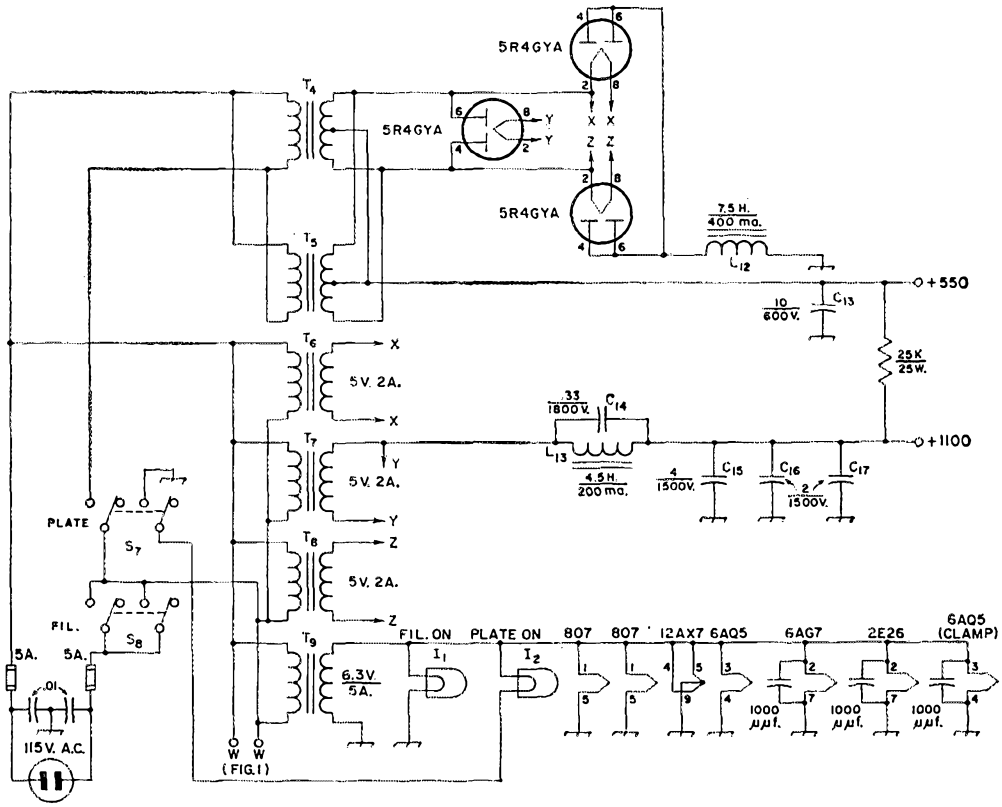


Fig. 3—Circuit diagram of the power supply for the SJ-97A transmitter. Unless indicated otherwise, capacitances are in microfarads and resistances are in ohms.

C_{13}—10-μf. 600-volt oil, or two 20-μf. 450-volt electrolytics in series.

C_{14}—0.33 μf. 1800-volt ceramic or paper (four 0.33-μf. 1000-volt units in series parallel) (Aerovox P84CM). (See text.)

C_{15}—4-μf. 1500-volt oil.

C_{16}, C_{17}—2-μf. 1500-volt oil.

Note: Four 40-μf. 450 volt electrolytics in series, each shunted by a 0.1 megohm 5-watt resistor may be used to replace the combination of C_{15}, C_{16} and C_{17}.

I_1, I_2—6-volt dial lamp.

L_{12}—Filter choke (Stancor C-1414).

L_{13}—Filter choke (Stancor C-1411).

S_7, S_8—D.p.d.t. toggle switch.

T_4, T_5—Plate transformer: 1200 volts r.m.s., c.t., 200 ma. (Stancor PC-8414 or similar, filament windings not used).

T_6, T_7, T_8—Filament transformer: 5 volts, 2 amp. or 5 volts 3 amp. (Stancor P-6467 or similar).

T_9—Filament transformer: 6.3 volts, 6 amp. (Stancor P-4089 or similar).

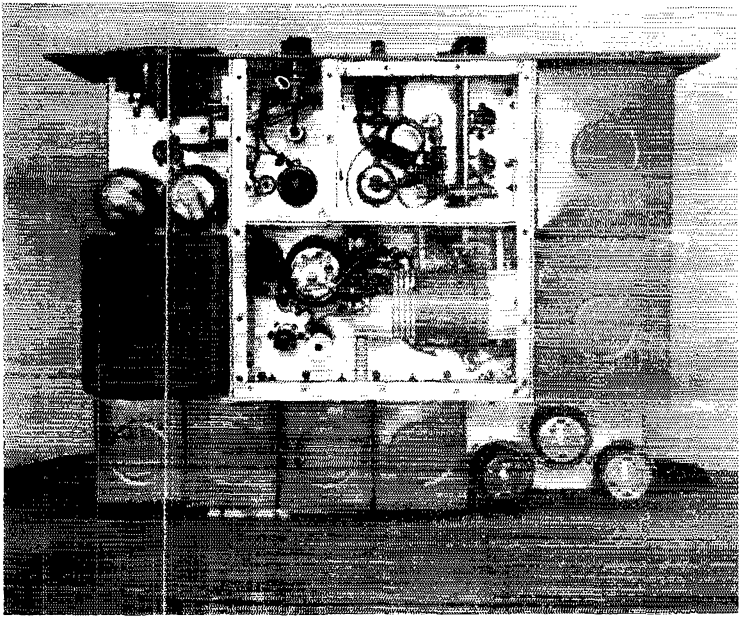
The 807s are not critical as to loading, and a transformer ratio of 1 to 1 works out nicely. The primary winding of the transformer is not used. The frequency response of this transformer is about 5 db. down at 100 cycles[1] — just about optimum for voice communication. High frequencies are attenuated by using larger r.f. bypass capacitances than normal in the final r.f. amplifier plate-supply circuit.

Control Circuits

The design of this transmitter includes other features that have come to be expected in a present-day rig. There are 11 positions on the crystal switch in addition to the v.f.o. position. A C.W./TUNE/A.M. switch permits front-panel selection of the desired mode of operation. In the TUNE position, the screen of the final is grounded and the modulator is disabled. With the key open and the function switch in the c.w. or TUNE positions, the v.f.o. can be set to frequency without radiating an interfering signal. One pole of a small 24-volt d.c. relay is used for antenna transfer. The coil of this relay is connected in series with the plate-supply lead of the r.f. exciter so that it is automatically energized when the supply is tuned on. The small change in current when the 2E26 is keyed does not affect the operation of the relay. The second pole of the relay may be used for muting the receiver.

A meter switch permits metering of all significant circuits, including checking of relative power output. Suitable resistor multipliers for the 0–1-ma. meter are provided in the driver plate circuit, final-amplifier grid and cathode circuits, and the modulator cathode circuit. The full-scale readings are 100, 25, 300 and 500 ma. in the respective circuits.

[1] This may be due to the effect of unbalanced Class C stage direct current in the secondary. — *Ed.*



The r.f. components on top of the chassis are enclosed in a divided box. The 6AG7 is in the small compartment at the upper left; crystals are stacked externally on the adjacent wall of the box. The section at the upper right contains the 2E26, its tank-circuit components and the two VR tubes. S_{3B} is mounted on the wall separating the driver from the final amplifier and is ganged to S_{3A} mounted on the opposite side of this wall. The final tank capacitor is partially hidden by the tank coil mounted over it. The 6AQ5 clamper tube is in the lower left-hand corner of the amplifier section. Starting at the upper right-hand corner of the chassis and proceeding clockwise, are T_4, T_5 the rectifier tubes, T_6, T_7, T_8, T_9, T_{10}, the 807 modulators and the 6AQ5 driver. The 12AX7 speech amplifier is hidden by the meter.

Power Supply

Fig. 3 shows the diagram of the power supply. In case anyone wonders why the two transformers were not used in series in the simpler full-wave circuit, it should be pointed out that when two separate transformers are used in this circuit, the circuit operates as two distinct half-wave supplies *in series*, with the inherent inefficiency of supplies of this type, as those who have tried it have discovered.[2] And, as mentioned previously, the bridge arrangement provides a half-voltage tap. C_{14} is used for the purpose of combining with L_{13} to form a parallel circuit resonant near 120 cycles to improve filtering. A bleeder path from the low-voltage tap to ground is provided through the VR dropping resistor and the 2E26 screen voltage-divider resistors in Fig. 1.

Construction

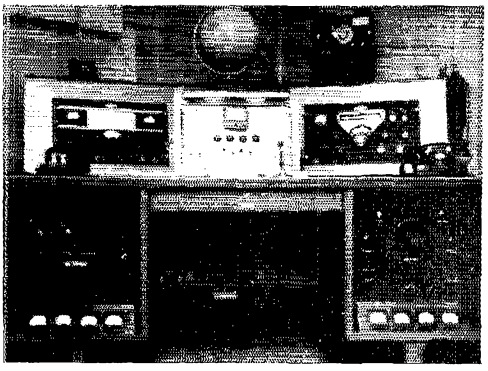
As with any other transmitter, shielding is an important part of the construction. All r.f. circuitry is built into an $8\frac{1}{2} \times 9\frac{1}{2} \times 6\frac{1}{4}$-inch box on top of the chassis, and a similar box $3\frac{1}{2}$ inches deep on the under side. The one on top is divided into three compartments for the oscillator, driver and final amplifier. The box below has a partition separating driver and final-amplifier components. These boxes have $\frac{1}{16}$-inch aluminum-sheet walls and Reynolds perforated-aluminum covers. Thin $\frac{1}{2}$-inch steel angle stock of the types used in dry-wall construction, secured by machine screws and nuts spaced at intervals of not over 2 inches, was used for support and bonding as necessary.

Both boxes are centered at the front of a $13 \times 17 \times 4$-inch heavy-duty aluminum chassis bolted to a $10\frac{1}{2} \times 19$-inch rack panel. Paint remover was used on the back side of the panel to assure r.f.-tight contact between the panel and boxes. The construction of this shielding was much less work than anticipated since aluminum can be worked quite satisfactorily and easily with ordinary woodworking tools. The shielding not only makes for stable operation without the need for neutralizing, but also permits simple precautions against TVI to be effective. It also cuts down the signal from the oscillator to the point where the v.f.o. can be set accurately to frequency without having to reduce receiver gain to prevent blocking.

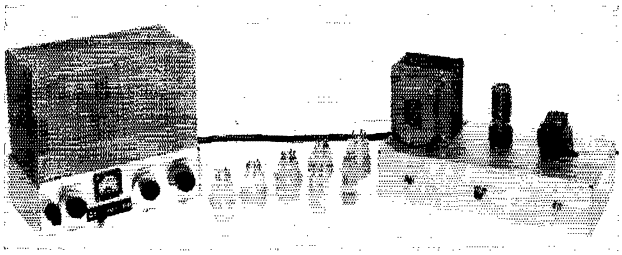
Most of the remaining essential details will become evident upon examination of the photographs and their captions. As mentioned previously, most of the components used were surplus items. In case an equivalent surplus item cannot be found, suitable substitutes are listed under the diagrams. QST

[2] The two transformers could, however, be used in two separate full-wave circuits connected in series. This would provide the required half-voltage tap with a saving of a rectifier tube and transformer. — *Ed.*

Strays



Another fellow who has solved the neatness problem is W3BBV, whose station is pictured above.



The complete transmitter and power supply. The connecting power cable (visible across the back) can be any length that suits your operating setup. Seven plug-in coils cover 80 through 10 meters, two coils for the oscillator and five for the amplifier.

All-Band C.W. Transmitter for the Novice

Low Cost, Easy Construction with TVI Shielding

A Novice who's in earnest about ham radio sooner or later becomes a General, so it pays to start out with equipment that will take advantage of General privileges. This 40-watt transmitter uses plug-in coils for flexibility and for simplicity of circuit layout. TVI shielding is maintained, along with convenience in changing coils, by an overlapping cover that requires no fasteners.

BY LEWIS G. McCOY,* W1ICP

PLUG-IN coils have a number of advantages for the beginner. They can be relatively large — meaning that they can be of really low-loss construction — without increasing the bulk of the transmitter, over-all, in the way switchable coils of similar construction would. The circuit is much simpler to follow, lacking the maze of wiring that accompanies multiband switching. Flexibility is maximum, since all one needs to do for working on any frequency within the usable range of the circuit is to fix up a new coil, or set of coils. And there is less wiring to do initially in building the outfit.

The transmitter shown in the accompanying photographs makes it easy to combine these conveniences with good shielding for TVI. It is a simple two-stage rig using a 6AG7 crystal oscillator and an inexpensive tetrode amplifier.

Two types of amplifier tubes can be used, either the 1625 or the 807. The 1625 is available on surplus for approximately 30 cents while the 807 sells for about $3.00. Both tubes have the same electrical characteristics with the exception of the heater, the 1625 requiring 12.6 volts and the 807, 6.3 volts. If your power transformer has two 6.3-volt windings[1] they can be connected in series to provide 12.6 volts for the cheaper 1625. Or if you happen to have an extra 6.3-volt filament transformer it can be connected in series with the 6.3-volt winding of a power transformer having only one such winding. Both methods are shown in Fig. 2, but if you have to buy a separate 6.3-volt transformer you may find it cheaper to use an 807.

The transmitter is designed for 40 to 50 watts input, depending on the plate voltage available from the power transformer used. It is assumed that the Novice constructor is going to get his General Class license so information is given for putting the rig on 20 and 10 meters in addition to 80, 40 and 15. In order to simplify construction, an easy-to-make design of plug-in coil is used.

Also, because television interference is a problem that nearly every amateur must face, the r.f. unit is completely shielded to prevent radiation of harmonics that could cause interference.

Circuit Details

A 6AG7 grid-plate type crystal-controlled oscillator is used. In this type oscillator the input side of the tube operates at the crystal frequency while the output side can be tuned either to the crystal frequency or to multiples of it. In other words, the 6AG7 can be operated as a combined oscillator and frequency multiplier. L_1-L_2, with C_2, is the coil and capacitor combination that serves as the plate tank circuit of the oscillator.

Both 80- or 40-meter crystals are used; for 80-meter operation a 3.5-Mc. crystal is used (L_2 is not required on this band since L_1 alone is the 80-meter tank coil). The same crystal will furnish adequate drive on 40 meters, with the oscillator

* Technical Assistant, *QST*.

[1] Power transformers salvaged from old TV receiver chassis usually have two such windings. As old chassis with perfectly good power transformers usually can be picked up at TV service shops for five dollars or so, this is an economical source of parts for a power supply. The filter choke and filter capacitors can be salvaged, too, along with miscellaneous small components such as disk capacitors.

working as a doubler, and on 20 meters, in which case the oscillator quadruples. A 40-meter crystal can be used for 7-Mc. work, for 14 Mc. by doubling in the oscillator plate circuit, and for 21 Mc. with tripling in the oscillator. A 40-meter crystal is required on 28 Mc.; the oscillator doubles to 14 Mc. and the amplifier doubles to 28 Mc. The amplifier is operated straight through on all other bands.

The amplifier tank circuit is a pi network designed primarily to work into 50- and 75-ohm loads. It uses a 140-$\mu\mu$f. capacitor, C_3, for tuning. A two-section broadcast type variable capacitor, C_6, with approximately 465 $\mu\mu$f. per section is used for adjusting the loading. The two sections are connected in parallel to provide a total capacitance of slightly over 900 $\mu\mu$f. Additional capacitance is needed on 80 meters so mica capacitors, C_4 and C_5, are connected in parallel with C_3 and C_6, respectively, when the 80-meter tank coil is plugged in. L_3, in the plate lead of the amplifier, is for suppressing parasitic oscillations. RFC_3 is used as a safety precaution in the event that the 0.001-μf. plate blocking capacitor should break down and short circuit, in which case the d.c. voltage will be shorted to ground through the choke rather than appearing on the antenna circuit.

Keying and Metering

Two methods of keying are provided. The oscillator and amplifier can be keyed simultaneously or the amplifier can be keyed by itself. In both cases the stages are keyed by opening and closing the cathode circuits. Some amateurs prefer break-in type operation, which requires that both stages of the transmitter be keyed. However, better keying — fewer clicks and chirps — results with cathode keying when the oscillator is permitted to run continuously and the amplifier is keyed. It is recommended that the newcomers read the keying chapter of *The Radio Amateur's Handbook* for more detailed information on the subject.

S_2 is used to switch the oscillator cathode either to the keying line or to chassis ground. Also, S_2 can be used as a "spotting" switch to check your transmitting frequency with your receiver, since switching the oscillator cathode to ground turns on the oscillator but leaves the amplifier off so long as the key is open.

A 0-1 milliammeter is connected as a low-range (approximately 5 volts) voltmeter for measuring the amplifier grid and cathode currents. It can be switched to either circuit by means of S_1. Full-scale readings are approximately 10 ma. for grid current and 200 ma. for cathode current.

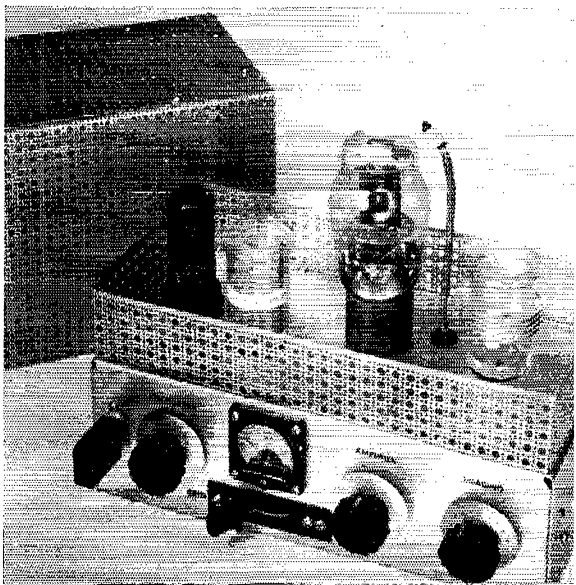
The value given in Fig. 1 for R_3 is for meters having the D'Arsonval type movement, the internal resistance of a 0-1-ma. meter of this type being between 50 and 100 ohms. If a moving-vane type meter is used be sure to check on the internal resistance of the meter. Such meters usually have an internal resistance of about 1000 ohms for a 0-1-ma. movement, in which case R_3 should be changed to 3900 ohms. In any case, the total of the meter resistance and R_3 should be approximately 5000 ohms, whatever the meter resistance.

A third position of the meter switch provides for using the meter as a 0–500 d.c. voltmeter for checking the voltage on the amplifier screen and oscillator plate. As outlined later, this voltage must be set to 300 for optimum results. On the 500-volt range, 300 volts is represented by a reading of 0.6 ma. on the 1-ma. meter.

Power Supply

A capacitor-input type power supply is used in order to get the maximum possible voltage from the power transformer. The rectifier, a 5U4G, is more than capable of handling the d.c. voltage and current requirements of the transmitter. Output voltage from the supply will, of course, depend on the transformer used. However, the average TV transformer, when used in the circuit as shown, will give a voltage somewhere near 400 volts. A tapped bleeder resistor, R_4, is used in the supply, the tap being set to give 300 volts for the screen of the amplifier and the plate and screen of the oscillator.

The double-pole single-throw toggle switch, S_3, has two functions. One pole is used to open or close the center tap of the power transformer high-voltage secondary. This serves as the "standby-transmit" switch. The other section of S_3 controls a 115-volt a.c. outlet (two terminals mounted on the power-supply chassis). This voltage can be used to operate an antenna relay. The power supply, which is mounted on a sepa-



To the right of the meter and meter switch are the amplifier tuning and loading controls. This view of the r.f. unit shows the construction of the "fence" around the top of the chassis. The cover, also made from perforated aluminum, is visible at the rear. The 6AG7 oscillator tube is at the left on the chassis with its plate coil beside it. The amplifier tank coil is at the right. The crystal socket is a Millen 33102 and the dials are Johnson type 116-222.

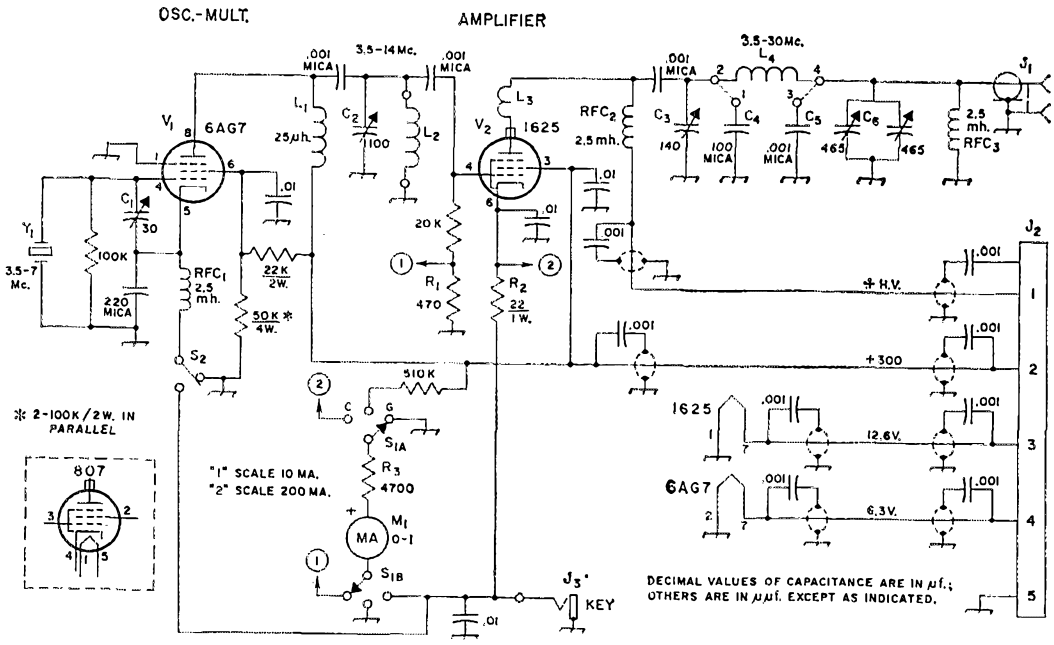


Fig. 1—Circuit diagram of the transmitter. Resistances are in ohms, resistors are ½ watt, capacitors are disk ceramic unless otherwise indicated.

C_1—3-30-$\mu\mu$f. mica trimmer.
C_2—100-$\mu\mu$f. variable (Hammarlund HF-100).
C_3—140-$\mu\mu$f. variable (Hammarlund MC-140-M, Johnson 140R12, Millen 19140, Bud MC-1856).
C_4—100-$\mu\mu$f. mica.
C_5—0.001-μf. mica.
C_6—2-gang t.r.f. type variable, approx. 465 $\mu\mu$f. per section (Allied Radio No. 61H059).
J_1—Coax chassis receptacle, SO-239.
J_2—Octal plug, male, chassis-mounting type (Amphenol 86-CP8).
J_3—Open-circuit phone jack.
L_1—25-μh. r.f. choke (Millen 34300-25).
L_2, L_4—See coil table.
L_3—12 turns No. 22 enam. wound on high-value (over 10K) 1-watt resistor as a form.
M_1—0-1 d.c. milliammeter, miniature type.
R_1—470 ohms, ½ watt.
R_2—22 ohms, 1 watt.
R_3—4700 ohms, ½ watt; see text.
RFC_1, RFC_2, RFC_3—2.5 mh. (Millen 34300-2500).
S_1—Lever-operated, 2 poles, 3 positions non-shorting (Centralab 1454).
S_2—S.p.d.t. toggle.
Y_1—3.5- or 7-Mc. crystals as required.
In addition to the above, the power cable requires two 8-contact connectors, one male and one female (Amphenol 78-PF8 and 86-PM8).

rate chassis from the transmitter, is connected to the rig via a power cable.

Construction Details

A 3 × 5 × 9½-inch aluminum chassis is used for the r.f. unit. Before starting construction study the top and bottom views of the transmitter; while there is nothing highly critical about the placement of components it is a good idea to follow the general arrangement shown in the photographs.

Before installing the tube and coil sockets mount C_3, C_2, and C_6 temporarily in place. This will show you how much space is available for mounting the sockets.

Note in Fig. 1 that the pin connections are different for the 1625 and 807. In addition, the two types require different sockets. The 1625 has a 7-pin base and takes a large 7-pin socket (Amphenol 77MIP7L) while the 807 takes an ordinary 5-prong socket.

The leads from J_2 to the different circuits are all run in shielded wire (Belden 8885) bypassed at each end by a 0.001 disk ceramic capacitor. Using the shielded wire and bypasses helps to prevent harmonic leakage via the leads.

A "fence" of perforated aluminum runs around the top of the chassis. This is made from a piece of Reynold's do-it-yourself stock 1¾ inches wide by 29⅜ inches long. It is formed to fit around the top of the chassis, the two sides measuring 4⅞ inches and the front and back 9⅝ inches, with a 1-inch overlap at the joint. The fence is 1½ inches high and has a ¼-inch wide lip around the bottom for securing it to the chassis top with machine screws and nuts.

The sides of the shield are formed from a piece of perforated aluminum 7 × 29⅝ inches before folding. The measurements are 4 15/16 inches deep and 9⅜ inches along the front and back. A one-inch flange is folded in around the top edges, so the over-all height is 6 inches. There is also a 1-inch overlap at the final corner. The top piece is 4¾ by 9¼ inches and is held to the flanges by machine screws. When the completed cover is slid over the fence and down flush with the chassis the overlap of the two pieces is sufficient to prevent harmonic leakage, provided care has

been used in folding to achieve a snug fit, so no screws are needed to hold the cover in place. This simplifies coil changing because the cover can be removed and replaced quite easily.

A 3 × 7 × 12-inch aluminum chassis is used for the power supply. Aside from being careful about insulation in the high-voltage wiring, this unit can be built in any fashion you please.

The cable that connects the transmitter to the power supply can be made any length that suits your operating position.

If you have connected two 6.3-volt windings in series to obtain 12.6 volts for a 1625 and find that when the power supply and transmitter are connected together the 1625 heater doesn't light up, the two 6.3-volt windings are "bucking" each other, resulting in zero voltage. Reverse the connections to one of the windings if this is the case.

Making the Coils

Information on the plug-in coils is given in Table I. All coils are made from commercial coil stock, which eliminates the tiresome job of winding your own. The oscillator coils are mounted inside the plug-in coil forms. When cutting the coils from the original stock allow three extra turns for the 20-15-meter coil and five extra turns for the 40-meter one. When these extra turns are unwound from each end of the polystyrene support bars you'll have sufficient lead length to reach through the prongs on the plug-in coil forms. An easy way to cut the coils from the original stock is to heat a razor blade and use it to slice through the polystyrene bars.

The Air Dux coils specified in Table I have exactly the right inside diameter to make a good fit over the outsides of the coil forms. Allow a couple extra turns on each of the coils for lead length. Slide the coil over the form and then drill two holes in the form, one at each end of the coil. The leads are fed through these holes and down into the prongs. Before soldering the prongs file the nickel plating from the ends of the prongs, as they will take solder more readily with the nickel removed. When soldering, hold the prong with a pair of pliers, to prevent too much heat from reaching the base of the coil form and softening it. And be sure to clean off any rosin that may adhere to the prongs after soldering.

When assembling the 80-meter coil, connect jumper leads from the ends of the coil to the prongs that connect to C_4 and C_5 when the coil is plugged into the amplifier coil socket. Fig. 1 gives the coil socket pin connections used in the transmitter shown in the photographs.

TABLE I

Plug-In Coil Data

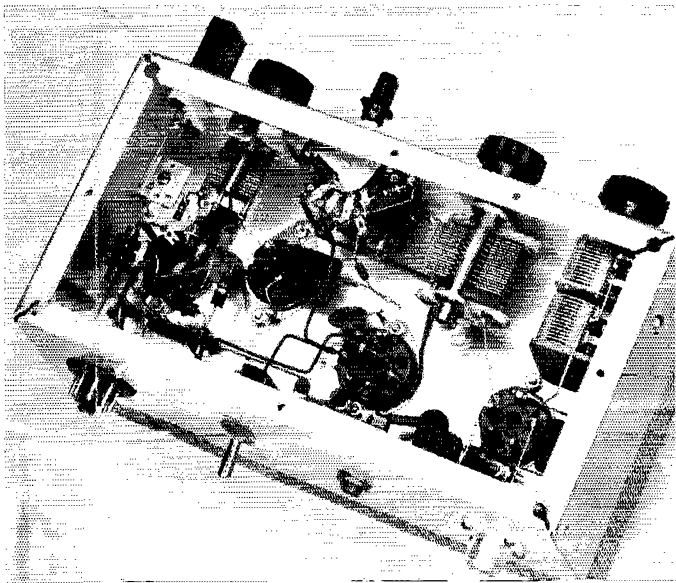
L_2 — 7 Mc. — 29½ turns No. 20, 16 turns per inch, ¾-inch diam. (B & W Miniductor 3011, Illumitronic Air Dux 616T).
— 14–21 Mc. — 7½ turns No. 20, 16 turns per inch, ¾-inch diam. (B & W Miniductor 3011, Illumitronic Air Dux 616T).
L_4 — 3.5 Mc. — 19½ turns No. 20, 16 turns per inch, 1½-inch diam. (Illumitronic Air Dux 1216T).
— 7 Mc. — 11¾ turns No. 20, 16 turns per inch, 1½-inch diam. (Illumitronic Air Dux 1216T).
— 14 Mc. — 7½ turns No. 16, 8 turns per inch, 1½-inch diam. (Illumitronic Air Dux 1208T).
— 21 Mc. — 5¾ turns No. 16, 8 turns per inch, 1½-inch diam. (Illumitronic Air Dux 1208T).
— 28 Mc. — 4 turns No. 16, 8 turns per inch, 1½-inch diam. (Illumitronic Air Dux 1208T).

Note: A single 3-inch length of B & W 3011 or Illumitronic 1216T will suffice for the 7- and 14–21-Mc. oscillator coils. One length of Illumitronic 1216T is sufficient for the 3.5- and 7-Mc. amplifier coils, and a single length of 1208T will make the 14-, 21- and 28-Mc. coils. The L_2 coils are mounted in Amphenol 24-4P coil forms (2 required) and the L_4 coils in Amphenol 24-5P coil forms (5 required), 1¼-inch diameter. Although only four prongs are needed in the amplifier coils, use of the 5-prong form precludes plugging an amplifier coil into the oscillator coil socket, and vice versa.

Tune-Up Procedure

The adjustable tap on R_4 in Fig. 2 furnishes screen voltage for the amplifier and the plate and screen voltages for the oscillator. Before turning on the power set the slider at about one-quarter of the total resistor length measured from the B-plus end. This setting of the tap should be approximately correct but a final adjustment may be required when the transmitter is tested.

You'll need a dummy load for tune-up purposes, and a good one to use is a 40-watt light



The 6AG7 socket and oscillator circuit components are at the left in this bottom view. (The parallel 100K resistors in the voltage divider for the screen of the 6AG7 are hidden by the chassis wall at the lower left.) To the right of the 6AG7 socket are the sockets for L_2, the 1625, and L_4, in that order. The loading capacitor, C_8, is mounted on the wall of the chassis, at the right in this view. From the left along the back of the chassis (bottom) are J_2, S_2, J_3 and J_1.

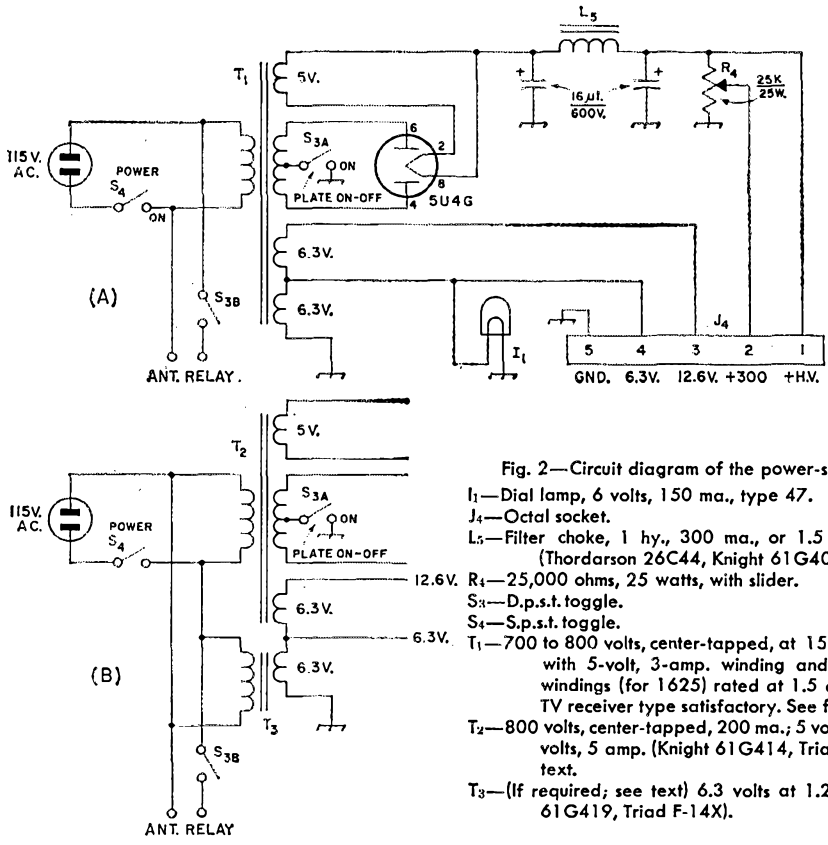


Fig. 2—Circuit diagram of the power-supply unit.

I_1—Dial lamp, 6 volts, 150 ma., type 47.
J_4—Octal socket.
L_5—Filter choke, 1 hy., 300 ma., or 1.5 hy., 200 ma. (Thordarson 26C44, Knight 61G406).
R_4—25,000 ohms, 25 watts, with slider.
S_3—D.p.s.t. toggle.
S_4—S.p.s.t. toggle.
T_1—700 to 800 volts, center-tapped, at 150 ma. or more, with 5-volt, 3-amp. winding and two 6.3-volt windings (for 1625) rated at 1.5 amp. or more; TV receiver type satisfactory. See footnote 1.
T_2—800 volts, center-tapped, 200 ma.; 5 volts, 3 amp.; 6.3 volts, 5 amp. (Knight 61G414, Triad R-21A); see text.
T_3—(If required; see text) 6.3 volts at 1.2 amp. (Knight 61G419, Triad F-14X).

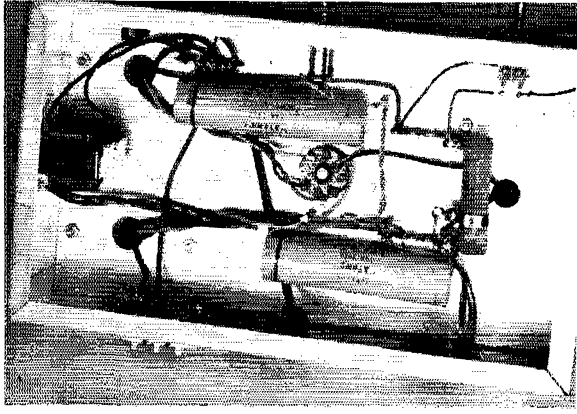
bulb. Connect a lead from J_1 to the center contact on the base of the bulb and another lead between chassis ground and the threaded portion of the base. The first step is to make sure the oscillator is working. Use an 80-meter crystal at first, and no coil at L_2. Plug a key into J_3 and turn on the power supply. Switch S_2 to the position that turns on the oscillator and switch on the B plus with S_3. Next, listen with your receiver at the crystal frequency and you should be able to hear a signal from the oscillator. If you find that the oscillator isn't working, recheck your wiring for errors.

Plug in the 80-meter tank coil at L_4 and, with the oscillator running, set S_1 so the meter reads amplifier grid current. Then close the key and tune C_2 for a reading of 2 to 4 milliamperes. Don't hold the key down for long, because the amplifier will draw excessive plate current since its plate tuning will be off resonance. Next, set C_6 at maximum capacitance (plates fully meshed), switch the meter to read amplifier cathode current, and close the key. Tune C_3 for a dip (minimum reading) in cathode current. Gradually decrease the capacitance of C_6, keeping C_3 tuned for the dip, which will be less marked as the loading increases. The lamp should get brighter each time you decrease the capacitance of C_6 and retune C_3. Continue this process until the lamp brightness reaches a maximum and begins to decrease.

At this point check the screen voltage by setting S_1 to the center position. If the voltage is not 300 with the key down when the transmitter is tuned as described, shut off the power and move the tap on R_4 to a new trial position. Move it a little toward the B-plus end of R_4 if the voltage is low, and in the other direction if it is too high. Then retune as before for maximum lamp brightness and again check the screen voltage. When you find the tap position on R_4 that gives you 300 volts with the lamp at maximum brightness, the cathode current should be 90 to 100 ma., representing full loading.

The tuning procedure for other bands is just the same, The proper coils have to be used at L_2 and L_4, of course. With 80-meter crystals, use the 40-meter coil at L_2 for 40-meter output from the amplifier, and the 20–15-meter coil at L_2 for 20-meter amplifier output. With 40-meter crystals, the 40-meter coil should be used at L_2 for 40-meter operation, and the 20–15-meter coil for 20-, 15- and 10-meter amplifier output. In every case the amplifier tank coil, L_4, should be the one designed for the band you want to use.

When using the 20–15-meter grid coil, certain precautions should be observed. There are two settings of C_2 that will provide grid drive to the amplifier. The one nearest maximum capacitance of C_2 is the 20-meter setting and the one nearest minimum, 15 meters. Another way to check the



This is just one of many possible ways to arrange the power-supply parts. The transformer on the left wall is T_3, a 6.3-volt unit connected in series with the 6.3-volt winding on T_2 for a 1625 heater.

settings of C_2 is with your receiver. Remove the antenna from the receiver, turn down the r.f. gain control and listen at the desired multiple of the crystal frequency. The setting of C_2 that produces the loudest signal is the correct one. Another method of checking the band to which the transmitter is tuned is to use an absorption type wavemeter. Details for construction of wavemeters of this type are given in the Measurements chapter of the *Handbook*.[2]

To adjust C_1, use a 40-meter crystal and tune up on 15 meters. Adjust C_1 so that the amplifier current is no more than 2 ma. with C_2 peaked for maximum reading. This adjustment need not be changed, once set, with crystals of ordinary activity.

The power input to the amplifier will depend on the voltage output of the power supply under load. If the amplifier screen voltage (which is also the oscillator plate voltage) is adjusted to 300 volts as described above, the cathode current will be practically the same at full load regardless of the plate voltage. However, the input power is equal to the current multiplied by the actual plate voltage. With the power transformer and other components specified in Fig. 2 the plate-supply voltage was 480 at a cathode current of 95 ma. With other transformers, such as one salvaged from an old TV set, the voltage may be somewhat less. TV power transformers usually deliver at least 350 volts each side of the center tap, and with a filter of the same type as in Fig. 2 will deliver a d.c. output voltage of somewhat more than 400 volts at the current drain of this transmitter.

A Novice should take particular care, when putting his first transmitter on the air, to make sure that he is actually transmitting on the band he *thinks* he is on. Before putting an antenna on this rig, check that the transmitter is actually tuned to the desired band. The absorption wavemeter is the best and simplest instrument for doing this.

Another thing the Novice should guard against is second-harmonic radiation when operating on 80 meters. How to suppress such harmonics has been treated in detail in recent *QST* articles.[3] Also, if 15-meter operation is planned and Channel 3 is received in your area, it would be smart to use a low-pass filter with the transmitter in order to suppress any harmonics likely to cause TVI. In fact, to be safe, a low-pass filter should be installed if there is any likelihood of TVI, no matter what band or bands you plan to use.[4]

QST—

[2] A simple design is also given in July, 1958, *QST*, page 19, "The Novice Band Checker."

[3] McCoy, "Harmonics, Harmonics, Harmonics," *QST*, May, 1960, and "A Multiband Antenna System for the Newcomer," *QST*, March, 1959.

[4] Construction of such filters is described in the BCI-TVI chapter of the *Handbook*.

As we go to press, we learn that Amphenol is no longer making the coil forms used in this transmitter, but that their manufacture will be continued by Allied Radio, Chicago, Ill.

August 1935

. . . The issue 25 years ago featured more economical phone operation, and technical articles included George Grammer's explanation of greater economy in Class-B modulator design for speech . . . an all-purpose S.S. Superhet with turret-type automatic coil changing . . . a c.w.-phone transmitter with RK-20 output giving four bands with two tubes . . . and adjusting the phone transmitter for best modulation performance. . . .

The editorial reflected pleasure in FCC regulation changes for the 10-meter band, requiring adequately filtered direct-current power supply and demanding stable signals which did not radiate interference. The band was now available for mobile work and the editorial commented on the fact that even DX work was possible.

. . . The West Gulf Division Convention was meeting in Corpus Christi and the registration for two days (including a big dance, floor shows galore, boat ride in the Gulf for the ladies and prizes for everybody) was $3 for hams and $1.50 for wives.

. . . A stray recorded this conversation overheard by W9EPT:

W8ILH: SA, OM, I am an XYL and not an OM.

W9BHK: R R R what was that about your xtal, OM?

. . . And the last stray in the magazine noted: These YLs take no chances with ham-relayed messages. W3EHL received a message on Feb. 28 from one of them. It began: "Easter Greetings . . ."

More Gain Per Pound

A Featherweight Array for 50-Mc. Portable Work

BY EDWARD P. TILTON,* WIHDQ

It does little practical good to design a portable station so that it weighs only a few pounds and is close to pocket size if you have to haul the antenna for it on a truck. Here is an array with a high gain-to-weight ratio, built for use with the 6-meter pack set described in March QST. *Though it weighs as little as two pounds, its performance compares favorably with home-station arrays.*

A HARD fact of life with a portable v.h.f. station is that the lighter and lower powered you make it, the more you need a big beam antenna when you take the rig out to your favorite mountain top. Antenna gain pays off handsomely in any v.h.f. endeavor, but with the power level you can muster from lightweight dry batteries even the best antenna is none too good.

Faced with this sad state of affairs over many years of portable work, the writer has built beam after beam, striving always for the lightest possible construction and extremes of portability. When you leave your car at the end of a mountain road and strike out on foot with a complete 50-Mc. ham station on your back, you count your ounces and inches with great care, especially when your age-frequency ratio begins to exceed 1! This latest antenna effort was designed to be a companion to the battery portable 6-meter station described in March *QST*. In its lightest form it can weigh as little as two pounds for the works: 3 elements, boom, transmission line and supporting and rotating cords. Here's how.

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

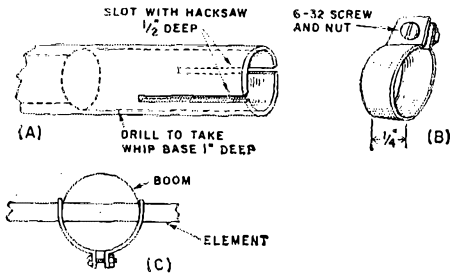


Fig. 1—Details of the elements used in the featherweight 50-Mc. array. The slotted and counterbored end of an element center section is shown at A. Clamp, B, compresses the center section around the whip insert. Clamps, C, hold the elements firmly in the boom

The general idea for the antenna was born when we came across some featherweight 38-inch whips (Lafayette Radio Type F-343; price, 59 cents each) that telescope to 9 inches over all. Six of these were procured to serve as the end portions of our three elements. Center sections of ¼-inch dural tubing were cut to the proper lengths so that with whips inserted we have a reflector, a driven element and a director for a 6-meter beam. The dimensions given may seem a bit odd to experienced builders of v.h.f. arrays, but more of that later. The ends of the center sections were drilled out to the diameter of the whips, to a depth of one inch, and then sawed lengthwise for about a half inch to provide for clamping the whips tightly in place. See Fig. 1A and B.

The boom was made from a section of lightweight 1¼-inch aluminum masting (Channel Master Part 9215) 7½ feet long. This was sawed to make two pieces each 40 inches long, for easy carrying. (This wastes 10 inches of the masting.) One end of each piece of masting is compressed to fit into the next section, and the ends are swaged so they will not turn individually when used together. Thus, when the 40-inch pieces are cut and one of them is turned around, the two fit together the same way two full-length pieces would, making a boom about 76 inches long.

The elements run through the boom and are held in place with small strips of aluminum, as shown in Fig. 1C. As an aid to quick assembly, each element is marked with a wrapping of black electrical tape, at the point where one of the retaining clips grips it. The inner edge of this tape is approximately 11/16 inch from the midpoint of the center section of each element.

The Feed System

Lightness and ease of assembly being the most important attributes, we shopped around quite a bit for a feed method. The gamma match is ideal, except for the mechanical complications it introduces in an array that must be completely dismantled for carrying. Folded dipoles are out, for obvious mechanical reasons. Baluns are cumbersome, and easily broken. (Ever break off the inner conductor of a piece of RG-58/U while out on location, far from the cutting and soldering tools you use so casually at home?)

These angles brought us to the use of two familiar items of the past, the delta match and the antenna coupler. The delta section was made by slitting a piece of 300-ohm Twin-Lead lengthwise for about 36 inches. The insulation and strengthening qualities of the plastic covering are thus retained. Spring grid clips (National Type 8) make the connections to the driven element. Alligator clips could serve this purpose. Point of connection is not critical; we set the clips near the outer ends of the driven-element center section.

The Twin-Lead portion can be any length, including the fanned-out delta, but it was made a half wavelength (8 feet) over-all in this instance, the idea being that an impedance-repeating section would be desirable. Also, it was felt that coax for the main run of transmission line would be better than Twin-Lead for portable work. A conventional antenna coupler, circuit in Fig. 2, was built into the smallest size Minibox. This is taped to the vertical support, when one is used, or left dangling when the beam is rope-supported. Two pieces of coax are usually carried; one about 6 feet long for use when it will reach, and another 25 feet long. With a coax splicer this gives a maximum transmission length of nearly 40 feet, if needed.

Except for difficult climbs where compactness and light weight are of utmost importance, the Sunday golf bag system worked out for an earlier two-band beam [1] is utilized for packing the featherweight array up to mountain-top locations. This gives us a 15-foot vertical support and a convenient method of carrying the array and small tools. The support is made from two of the mast sections similar to the one used for the boom. These are also cut in half for easy carrying. A wooden plug for one end of one of these was made, so that all the parts for the array can be dropped into this section. If the driven element and reflector center sections are further sectionalized, these can be carried inside the boom, and both ends plugged up to prevent loss of small parts. When the aluminum vertical member is used, the boom is clamped to it with conventional TV hardware.

Where the canvas golf bag and the masting represent too much of a load, the beam can be suspended by a sling of sash cord, or other strong lightweight rope. Hoisting is done by means of a length of similar cord, which is thrown over a tree branch or other available support. Lengths of cord attached to the ends of the boom can be used for rotation and for keeping the array lined up in the desired direction.

Element Lengths

The spacing of the elements was limited by the available boom length, but they are close to optimum for a 3-element 50-Mc array. The element lengths turned out to be something of a surprise. We knew that there was a "K factor," of course, but had not paid too much attention

[1] Tilton, "A Portable Beam for 50 and 144 Mc.," *QST*, August, 1956, page 35.

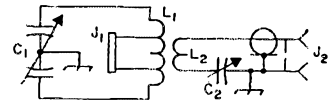


Fig. 2—Circuit diagram and parts information for the antenna coupler used with the portable array.
C_1—11-$\mu\mu$f. butterfly variable (Hammarlund MACBF-11).
C_2—75-$\mu\mu$f. screwdriver adjustment trimmer (Hammarlund APC-75).
J_1—Crystal socket.
J_2—Coaxial fitting.
L_1—14 turns No. 20 tinned, 5/8-inch diam., 7/8 inch long, tapped 1½ turns from each end. (B&W Miniductor No. 3007).
L_2—2 turns plastic-insulated hookup wire, wrapped around center of L_1. Twist leads 2 turns to hold wire in place.

to it heretofore. We ran into it solidly, however, when we tried our beam with those little whip inserts. The maximum diameter of the whip is less than 3/16 inch, and it tapers to something close to a No. 16 wire at the end.

Without thinking about this, we made up our center sections so that the beam elements would come out to the familiar *Handbook* lengths. In this form the beam worked about as well as a stone connected to the end of the feedline, except that it did have a small *back-to-front* ratio. This meant that the reflector was actually a director, and the director was nothing, as far as 50-Mc. reception was concerned. Next we fed the "reflector" and used the former driven element as a director. Still we had reverse directivity at the frequencies we wanted to use.

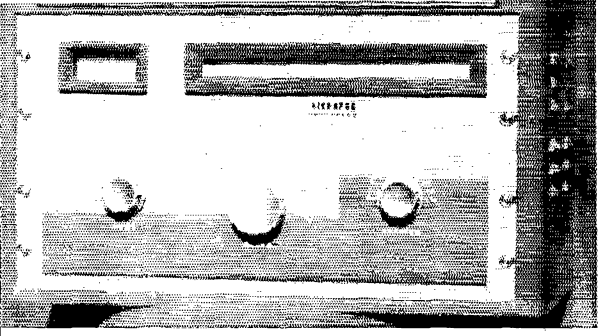
Two more sets of elements were made before we finally got the performance we wanted in the first megacycle of the band. The final dimensions are as follows: reflector 120½ inches, driven element 116 inches, director 113 inches. These call for center sections of 16½, 12 and 39 inches, respectively. No actual performance measurements have been made on the array, but it does have a very high front-to-back ratio and substantial gain over the range from 50 to 51 Mc. Its performance, when tested at the home location, was surprisingly close to that of a 5-element beam mounted nearly 60 feet higher above ground. When used with the March *QST* portable on various mountain tops, it has proved to be invaluable in making contacts. Without exception, operators contacted express amazement that so small a fraction of a watt can produce such a signal. These same fellows are all but impossible to raise when we call them on the little whip used for local work with the portable job.

Adjustments

As the ends of the elements are telescoping whips it is no problem to make the array work anywhere in the band. For frequencies higher than the usual first-megacycle channels, make the elements 2 inches shorter for each megacycle higher in center frequency.

An advantage of the delta-and-antenna-coupler

(*Continued on page 142*)



The panel of W6FLT's kilowatt grounded-grid 813 amplifier is designed to match the Apache transmitter which is used as the driver. Controls from left to right are for the band switch, plate tank capacitor and loading capacitor.

BY W. R. STANGEL,* W6FLT

Kw. Amplifier for the DX Bands

813s in Grounded-Grid

Over the past several months we have had numerous requests for information on a grounded-grid amplifier using the popular type 813. We are pleased to present this nicely turned out version by W6FLT.

THIS amplifier was designed to be used with any transmitter of the 100-watt-output class serving as the driver. In my own case, the driver happens to be the Heath Apache, thus the similarity in panels. The amplifier operates at 400 ma. and 2250 volts. The total power input to all stages feeding power to the antenna (this includes the final stage of the driver) is one kilowatt. Since my interest lies in only the higher-frequency bands, the design has been confined to the 14-, 21- and 28-Mc. bands. Thus far, the amplifier has been used on c.w. only, but it should be equally satisfactory as an s.s.b. linear when suitably adjusted for this type of operation.

With a low-pass filter and antenna coupler, there is no TVI, even though the TV antenna is almost directly under the 14-Mc. beam. This has not been the case with any grounded-cathode transmitter that has been used previously at this station, which is located in a fringe area.

Circuit

The circuit, shown in Fig. 1, is quite conventional for a grounded-grid amplifier. The control grids are not grounded directly, but are suitably bypassed instead to permit the use of grid-leak bias. The screens are grounded directly, placing them in parallel with the control grids so far as r.f. is concerned. The filaments are isolated from ground for r.f. by the bifilar choke RFC_1. The tank coil in the pi-network output circuit is tapped for the three bands. A.c. and plate-voltage leads are filtered for v.h.f. A fan provides circulation of air around the 813s.

*P. O. Box 392, Lakeport, California.

Construction

The chassis measures 12 by 17 by 2 inches and is spaced 1¼ inches behind the 10½ × 19-inch panel to allow room for the dial assembly, bandswitch drive and dial lamps. The shielding enclosure is 12 by 13 by 8¼ inches, leaving a 4-inch space at the left-hand end of the chassis for the filament and dial-lamp transformers. The back and sides of the enclosure are made of Reynolds perforated aluminum sheet. The right-hand end and back are extended so that they may be fastened to the apron surfaces of the chassis. The bottom edge of the remaining side is bent over to form a lip by which this side may be secured to the surface of the chassis. The front edges of the two sides of the box also have lips for fastening to the front wall. The latter is a sheet of solid aluminum attached to the front apron of the chassis. The cover is secured by a series of 4-36 machine screws tapped into ¼-inch square brass rod running around the top edge of the enclosure. Screw holes are spaced 2 inches apart.

The placement of components within the shielding compartment may be determined from the top-view photograph. The tank capacitor is mounted directly on the chassis and is placed so that its shaft is central in respect to the panel (not the front wall of the enclosure). The tank coil and band switch are mounted close to the capacitor. A separate coil section is used for 10 meters, as indicated in Fig. 1. The switch is driven by the left-hand panel knob by means of a metal band and a pair of pulleys. The band is made from ¼-inch shim stock obtained from an automobile supply store. The pulleys are 1½ inches in diameter and the band is pinned to the pulleys to keep it from slipping. The switch was taken from a BC-375 tuning unit but I have had no trouble with an ordinary receiving-type ceramic switch which I used in another amplifier running at 800 watts input. Copper braid, ¼-inch wide, is used for the coil tap leads.

The shaft of the pi-network output capacitor, mounted to the right, runs within an inch or so of the tank coil, so a section of insulated rod was

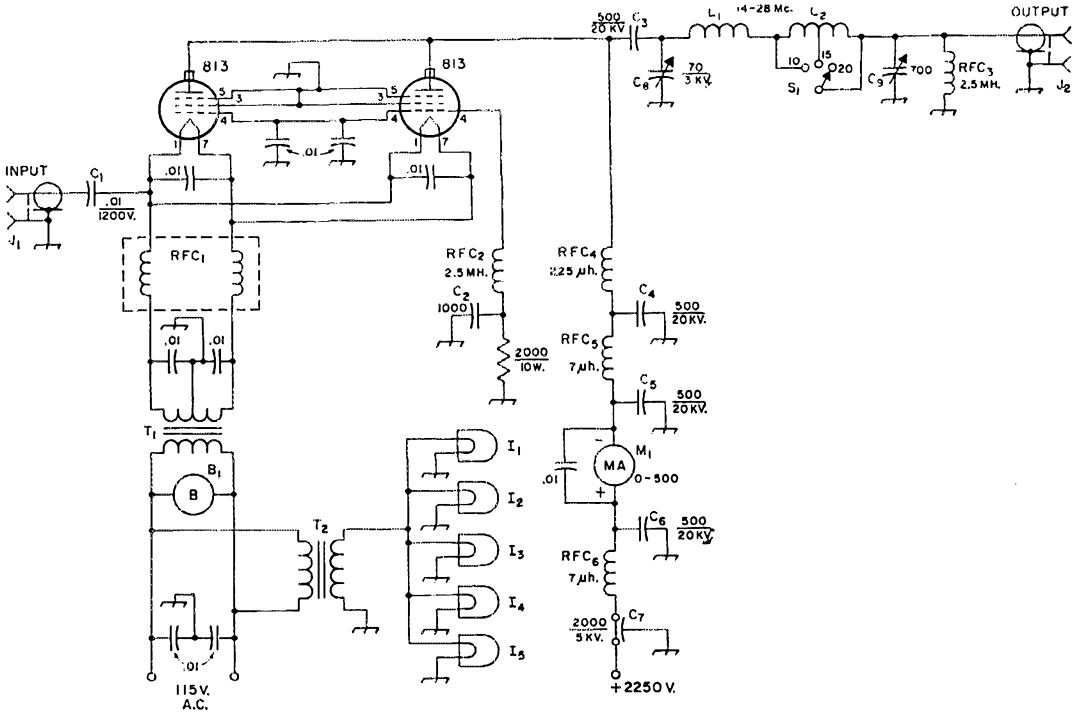


Fig. 1—Circuit of the 813 grounded-grid amplifier. Capacitances less than 0.01 μf. are in μμf. Capacitors not listed below are disc ceramic.

B_1—Fan and motor (Elmar Electronics*).
C_1—Mica.
C_2—500-volt disk ceramic.
C_3, C_4, C_5, C_6—TV "Doorknob" ceramic.
C_7—Feed-through type (Sprague 47P16).
C_8—3000-volt variable (Johnson 155-9).
C_9—Dual b.c. replacement-type variable, 350 μμf. per section, sections in parallel.
I_1–I_5 inc.—6.3-volt dial lamp.
J_1, J_2—Chassis-mounting coax receptacle (SO-239).
L_1—3 turns ½-inch copper strap, 1-inch diam., 1¾ inches long.
L_2—9 turns ¼-inch copper tubing, 2¼-inch diam., 4 inches long, tapped at 2½ and 6 turns from output end.
M_1—D.c. milliammeter.
RFC_1—Barker & Williamson FC-15.
RFC_2—125-ma. r.f. choke (National R-100S).
RFC_3—50 ma. r.f. choke.
RFC_4—National R-175-A.
RFC_5, RFC_6—V.h.f. choke (Ohmite Z-50).
S_1—See text.
T_1—10-volt 10-amp. filament transformer (Merit P-3146, Stancor P-6461 or similar).
T_2—6.3-volt 1-amp. filament transformer (Thordarson 21F08).

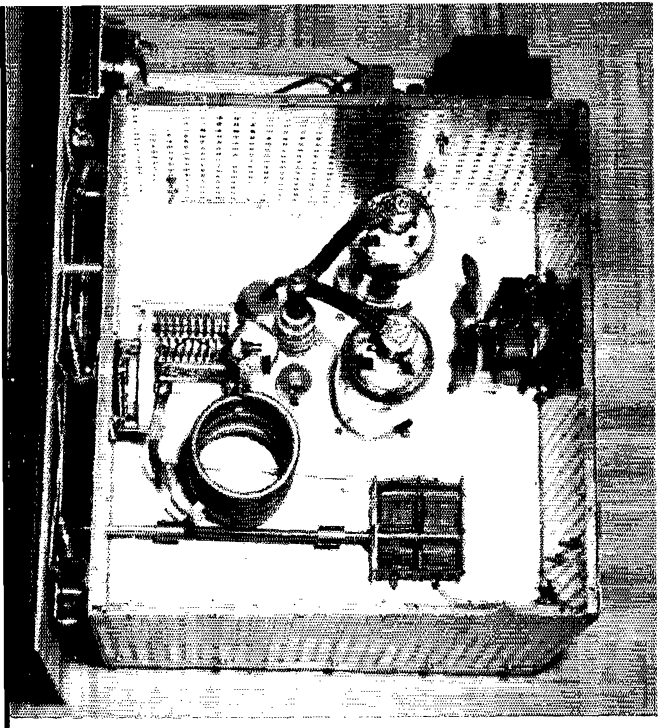
inserted between the capacitor shaft and the panel control shaft.

The sockets of the 813s are submounted flush against the under side of the chassis with Pins 3 and 5 grounded to the nearest mounting screws. The filament choke is mounted close to the sockets and the capacitors shunting the filaments are connected directly at the socket terminals. Bypasses are grounded at the nearest point on the chassis. The hardware was removed from the R-175-A choke and the unit mounted directly on the chassis. The fan is mounted on rubber shock mounts to reduce noise and vibration.

The r.f. input connector is set in the rear edge of the chassis at the closest point to the tube sockets. The output connector is mounted above chassis in the rear wall of the enclosure at a point close to the loading capacitor. A Millen safety terminal is used for the high-voltage connection and a barrier strip for the a.c. connections. High-voltage test-lead wire covered with copper braid is used for the high-voltage wiring. Connections between the top of the plate r.f. choke and the plates of the 813s are made with ½-inch copper braid.

The shaft of the tank capacitor extends through to the center knob on the panel. This shaft carries a 5¼-inch dial pulley mounted between the panel and the shielding enclosure. The dial scale is drawn on white paper and then glued to a plate of 1/16-inch aluminum measuring 2½ by 11 inches. The plate is mounted on the front of the shielding enclosure on ¾-inch spacers. A small pulley is mounted at each end of the plate and the dial cable runs from the large pulley on the tank-capacitor shaft over and across the small pulleys and back to the drive pulley. The pointer, salvaged from an old radio receiver, is fastened to the dial cable. The diameter of the drive pulley restricts the movement of the pointer to less than the full dial length, so the 0 and 100 points on the scale are a distance from the ends of the dial plate. The escutcheons, control knobs

* 140 11th St., Oakland 7, Calif.



Interior view of the 813 grounded-grid amplifier.

and a meter-mounting bracket were obtained from Heath as replacement parts. The panel decoration is a strip of ⅛-inch Masonite cut to match the one on the Apache.

The meter is in the high-voltage lead to the plate and therefore the meter should be recessed and insulated from its mounting. The meter was insulated from the metal mounting bracket by applying empire cloth, holding it in place with plastic tape.

The dial scale is illuminated by three dial lamps, one in the center and one at each end; two lamps illuminate the meter.

Adjustment

The tuning procedure to be used with a grounded-grid amplifier differs from that usually followed in adjusting a grounded-cathode stage. Some form of output indicator is a necessity. Although a point will be found where the plate current dips with tuning of the output tank circuit, this may not, and probably will not, be the point of maximum output.

Also, the output will be found to vary widely with the driving power applied. I use my standing-wave indicator set in the "forward" position as an output indicator. Alternatively, a field-strength meter will serve.

The length of the coax between the output of the driver and the input of the amplifier should be kept as short as practicable, since the input impedance of the amplifier changes considerably with drive and loading adjustments, making it virtually impossible to maintain a proper termination for the coax line.

It is advisable to reduce plate voltage during the initial tune-up procedure, although the plate power input can be held to a safe value by keeping the driving input down. Plate voltage on the amplifier should be turned off while the driver is first adjusted to resonance with its output coupling reduced to minimum. Set the amplifier tank capacitor at about half maximum capacitance and the output capacitor at about ⅔ maximum (assuming a 50-ohm load). Now apply plate voltage to the amplifier. The idling current at 2500 volts, and without excitation should be about 70 ma. Increase the coupling to the driver until the amplifier plate current increases to 150 or 200 ma. Adjust both tank and loading capacitors for maximum output. These controls interlock, requiring a process of juggling until the maximum-output settings are found. Now the driver coupling can be increased until the input to the driver is at maximum rating (assuming a driver in the 100-watt-or-so-output class). Simultaneously, the loading of the amplifier should be readjusted so that the sum of the inputs to the driver and the amplifier does not exceed 1000 watts. With the Apache loaded to an input of 180 watts, the grid current to the amplifier runs about 40 ma. and the voltage across the grid leak is 80 volts. Using the standard methods of checking, no tendency toward parasitic oscillation was found and no other difficulties have been met in operating the amplifier on any of the three bands. QST

Strays

When a new man arrives at Fort Carson, Colo., his parents learn of his safe arrival promptly, thanks to members of the Springs-Peak Amateur Radio Club working through the MARS station.

Among the sheaf of papers handed to new arrivals is a slip on which they can write messages for the folks at home. The messages are collected every morning. Military officials have praised the system as a morale-builder for the men and their families. The idea came from Capt. Eric Hogberg, a charter member of the amateur radio club at Carson.

• Recent Equipment —

Transcon Mobile Gear

EQUIPMENT recently introduced by the Transcon Division of Northeast Telecommunications, Inc., Plantsville, Conn., should be of interest to the mobile operator, especially at this time of year. Designed primarily for mobile use — although there is nothing to prevent their being used in the home station, too — the sizes and shapes of these units make for convenient mounting under the dash or in cramped spaces. The charcoal gray and black cabinets with red slide switches should squelch any of the XYL's objections to their appearance in the family car

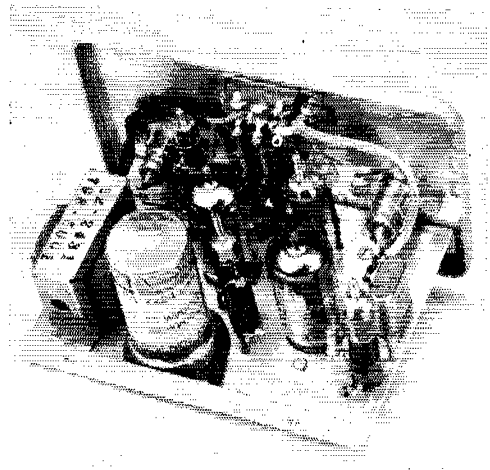
Aircon Converters

One recent development that found hearty acceptance among the mobile gang was the introduction of the 12-volt plate-supply tube. Here at last was a vacuum tube that would operate as an oscillator or as an amplifier with only car-battery voltage on the heater and plate. However, there are still quite a few mobiles around with 6-volt systems, and it certainly was frustrating to this group not to be able to use these tubes.

Transcon, in their new Aircon converter line, now have a crystal-controlled converter available for the 6-volt crowd. Using a new Amperex low-voltage dual-triode tube, the 6GM8, they found the r.f. amplifier and mixer performed well at 6 volts but that the oscillator was sluggish and sometimes refused to start oscillating on the low voltage. Their solution was to include two penlight cells in the converter, which gave an additional 3 volts to the 6 volts on the oscillator plate. This extra voltage is sufficient for healthy reliable oscillator operation. Since the oscillator plate current is only about 2 ma., the cells last practically shelf life.

In addition to the 6-volt model, units that operate from 12 volts d.c. and either 12 volts d.c. or 115 volts a.c. are available. The a.c./d.c. model uses a small step-down transformer to drop the 115 volts to a low voltage where it is rectified by a semiconductor diode. An *RC* network provides the necessary filtering.

The converters are available to cover the 6- and 10-meter amateur bands and can be ordered with i.f. outputs from the broadcast band through 7 Mc. Other i.f.s can be obtained by the use of the proper crystal. Two stages of grounded-grid r.f. amplification (6GM8) are used in the converter circuit. A crystal-controlled oscillator (one section of a 6GM8) using overtone crystals supplies the necessary injection. The other half of a 6GM8, with capacitive output coupling to the tunable receiver, is used as the mixer.



This view shows the 12-volt d.c./115-volt a.c. 6-meter Aircon converter with its gray cabinet removed. The front panel contains the antenna input and converter output jacks, power connector, and the power on-off slide switch. When the converter power switch is turned off, the antenna is switched straight through and is connected to the receiver. The transformer at the left adjacent to the large filter capacitor is the 115-volt step-down transformer.

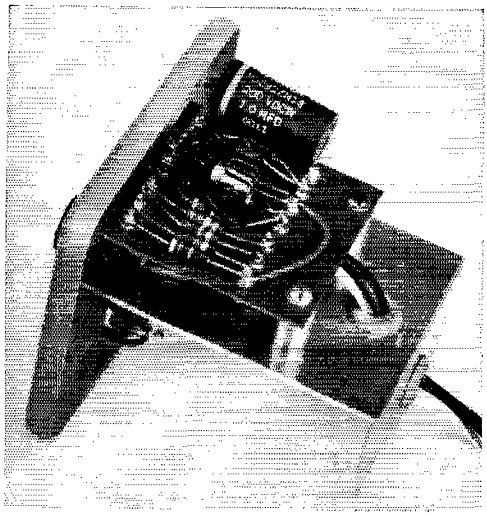
Connections necessary for using the converter are the power leads (either positive or negative ground systems can be used), converter antenna input, and converter output. Both power cords for the a.c./d.c. converter are supplied with the unit.

The converters measure 5 inches wide, 3 inches high, and 3½ inches deep.

Transquelch

The Transquelch noise clipper and squelch unit operates from either 6 or 12 volts d.c. and requires only three simple connections to the station receiver: chassis ground, 6 or 12 volts d.c., and the low-level audio at the receiver's volume control. It comes wired for 12 volts but it is only necessary to add a 1-watt resistor in parallel with an existing resistor to convert it to 6-volt use. When connected to a receiver, the device can be adjusted to quiet the receiver's output automatically when there is no signal present. However, when a signal appears, the squelch circuit functions and allows the audio output of the receiver to be heard.

There is only one operating control on the Transquelch — a potentiometer which adjusts the squelch threshold. Power for the unit can be controlled by the companion receiver.



An inside view of the Transquelch. One of the two transistors used is visible along with various resistors and capacitors. The remainder of the components are on the other side of the phenolic mounting board. In order to use the Transquelch on 6 volts it is necessary to add a resistor in parallel with the one in the foreground.

No vacuum tubes are used in the Transquelch circuit. Instead, transistors and diodes are incorporated in a gating circuit that controls the receiver's audio. The device is connected in shunt with the receiver's low-level audio at a high-impedance point -- usually following the detector — and consists of a bridge circuit with a transistor in one leg. Two diodes connected to opposite terminals of the bridge act as the gate. When no signal is present the diodes are biased so as to show a short circuit from the "hot" audio connection to ground. This is the "no signal heard" condition. However, when an audio signal appears, the effective resistance of the transistor in the bridge circuit is changed, unbalancing the bridge and reverse-biasing the rectifiers. The diodes then show a high impedance to ground, allowing the audio voltage to pass unaffected to the receiver's audio amplifiers.

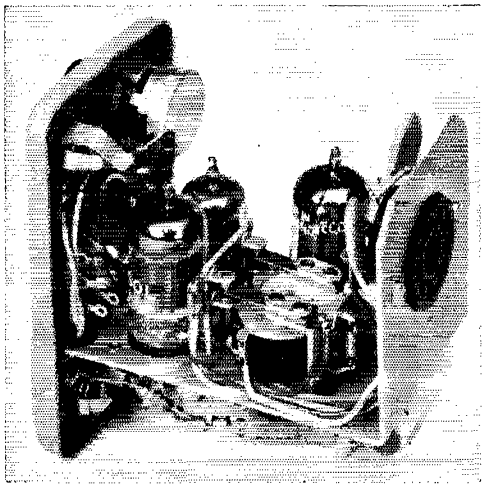
If the Transquelch is adjusted so that the diodes are just barely in the nonconducting condition (with an incoming signal) the peaks of any transients having fast rise time, such as ignition noise, will drive the diodes into conduction. This clips the noise pulses but does not affect the desired signal, since the time constant of the circuit holds the average diode bias at the selected operating level. This noise-clipping action can certainly be appreciated, especially in mobile operation.

The only limitation to the use of the Transquelch is that it cannot be used in all-transistor receivers, since the impedance levels in transistor circuits are too low for effective short-circuiting. It can be used, however, with "hybrid" or with vacuum-tube sets — in short, with any receiver that has a high-impedance low-level audio circuit. If the Transquelch is used in conjunction with an automobile receiver the vehicle must have a negative-ground battery system.

The Transquelch measures 3 inches high, 3½ inches wide and 3½ inches deep and weighs only ½ pound. The cabinet is styled in charcoal gray and black and its form makes it compatible with other Transcon products.

An instruction sheet supplied with the unit includes several schematics of typical broadcast receiver detectors and audio circuits. Instructions are given on how to connect the Transquelch to these circuits.

Voxbox



This view of the Voxbox shows the 9-pin octal socket for making connections to the relay and for supplying power to the unit. In actual use the unit is placed with the long dimension horizontal.

The Voxbox is a VOX unit completely self-contained and housed in a cabinet 4 inches wide, 2⅝ inches high and 3⅞ inches deep. (In case you're not familiar with the term VOX, it stands for "voice operated break-in.") The Voxbox contains a relay which is controlled by amplified audio from either a crystal or dynamic microphone. When the operator speaks, the relay is activated and controls the station transmitter, receiver, antenna relay, or performs other similar control functions. It is possible to adjust the relay so that it will hold in between syllables or the normal pauses between words.

The Voxbox circuit follows conventional practice, using a 12AX7 double triode in a two-stage *RC* coupled audio amplifier, a 6AL5 (12AL5 for 12-volt operation) audio rectifier, and a 12AU7 double triode as a d.c. amplifier and relay control tube.

Although the Voxbox can be used in the home station, it has a natural application to the mobile station since, when used along with a chest mike or headset mike, it allows "both hands-on-the-wheel" operation. Any device that promotes

mobile safety is a worthwhile addition, and although VOX up to this time has been used almost exclusively for s.s.b. operation there is no logical reason why it should not be used with a.m. or f.m. The only difficulty usually encountered when using VOX on a.m. is that the operator at the receiving end of the circuit sometimes thinks it is his turn to transmit when the carrier suddenly disappears while the transmitting operator is catching his breath. However, this problem can be overcome if the VOX operation is explained at the beginning of the contact.

Controls on the Voxbox include an audio control which compensates for the different output levels of different microphones, a delay control which adjusts the relay hold-in, and an on-off slide switch. Also located on the front panel are two mike jacks — one for the microphone input and the other for microphone output to the transmitter speech equipment. Provisions are made for reverting to push-to-talk operation if desired.

Located at the rear of the cabinet is a nine-prong octal socket. Connections are made here for the heater, B-plus and the terminals of the relay which control the external equipment. The relay contacts are double-pole double-throw and are rated at 1.5 amp. at 115 volts a.c. Power requirements for the Voxbox are 6.3 volts at 0.9 amp. or 12.6 volts at 0.45 amp., and 150 to 250 volts d.c. at about 30 ma. — *E. L. C.*

Gonset GSB-101 Linear Amplifier

ALTHOUGH designed as a companion unit for the GSB-100 transmitter[1] the Gonset GSB-101 linear amplifier can be used with any exciter capable of furnishing about 75 watts of driving power. The amplifier is capable of delivering an output of 800 watts on s.s.b. (p.e.p.), 700 watts on c.w., and 160 watts of carrier on a.m.

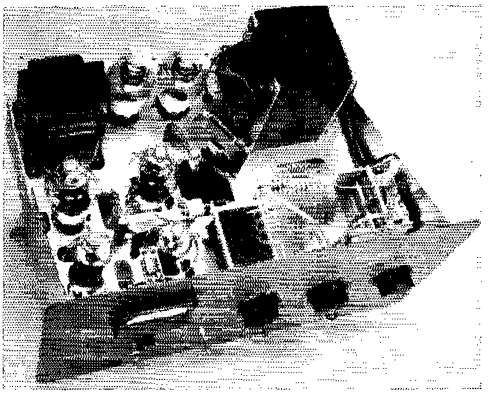
The "101" operates on all amateur bands between 80 and 10 meters, and since its four 811A triode amplifier tubes are connected in a grounded-grid circuit there is no necessity for grid tuning. The only tuning controls are those for the amplifier plate tank and loading.

The four 811As, connected in parallel, are cathode driven using the circuit arrangement shown in Fig. 1. Excitation is applied across the filament chokes, RFC_1-RFC_2, through a small inductance, L_1, which according to the instruction book helps at the higher frequencies to improve the match to 52-ohm line coming from the exciter. This is presumably because the cathode-to-ground reactance tends to become capacitive at the high-frequency end, so that the proper amount of series inductance will have something of the effect of an L network.

Fig. 1 also shows how Gonset stabilizes the triode amplifiers. A link, L_2, coupled to the filament r.f. isolating choke, provides the means for coupling neutralizing voltage through the neutralizing capacitor, C_N, from the plates to the cathodes. Parasitic oscillations are suppressed by the use of parasitic chokes in the individual plate leads of the 811As.

The amplifier output circuit uses a pi network designed for matching nonreactive load impedances between 30 and 200 ohms. The tank coil is tapped at the appropriate point for each band, the tap being selected by the BAND SWITCH control. The band switch has seven positions, three of which are for the 80-meter band, where varying amounts of fixed loading capacitance are cut into the output circuit in parallel with the variable loading capacitor. (The latter has two 500-$\mu\mu$f. units on the same shaft, connected in parallel.) A total of 2500 $\mu\mu$f. additional loading capacitance is used at the low-frequency end of the 3.5-Mc. band, 1500 $\mu\mu$f. is added at the center

[1] "Recent Equipment," *QST*, September, 1959.



View of the GSB-101 linear amplifier. The four 811A tubes are visible in the left corner of the chassis. Next to these tubes are the tuning capacitor, tank coil and dual-section loading capacitor. A cooling fan directly behind the tank capacitor circulates air around the amplifier tubes. Arranged along the rear of the chassis from left to right are the high-voltage power-supply choke, 866A rectifier tubes and the plate transformer. Directly below the panel meter are the meter switch and a "power on" lamp indicator. To the right are the main power toggle switch, tuning control, plate toggle switch, band switch and the loading control. The amplifier may be rack mounted or housed in its gray perforated cabinet, which is not shown in these photographs.

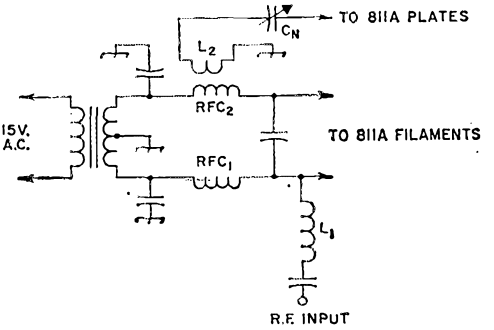
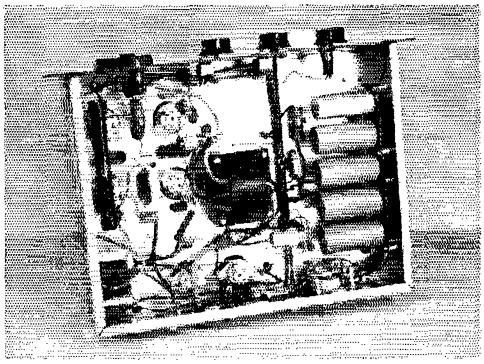


Fig. 1—A special link, L_2, in the filament circuit couples neutralizing voltage to the filaments to stabilize the amplifier. C_N is the neutralizing capacitor. RFC_1 and RFC_2 are the filament isolating chokes.



Bottom view of the GSB-101 linear amplifier. The capacitor bank on the right is part of the high-voltage supply filter. The transformer in the chassis center is the filament transformer for the 811As. The tube mounted on the bracket just below the transformer is the diode rectifier for the output indicator. Although not visible in the photograph, rear apron connections include receiver antenna coaxial connector, ground stud, antenna coaxial connector, antenna relay power connector, line cord, r.f. input coaxial connector, and external cut-off bias connector.

portion, and 500 $\mu\mu$f. at the high end. Fixed loading of 500 $\mu\mu$f. is also added on the 40-meter position of the switch. The tank tuning capacitor has a maximum of 350 $\mu\mu$f.

All necessary power for the amplifier comes from a supply contained in the GSB-101. Primary requirements at peak output are about 1500 watts at 115 volts a.c. A 1500-volt d.c. supply incorporating 866A rectifiers furnishes the plate voltage. A 4-volt negative supply, operating from the filament transformer and using a semiconductor diode rectifier, provides the proper operating bias for the tubes. Additional bias for cutting off the tube plate current during receiving periods can be inserted in series with the 4-volt operating bias through a pair of terminals on the rear chassis apron.

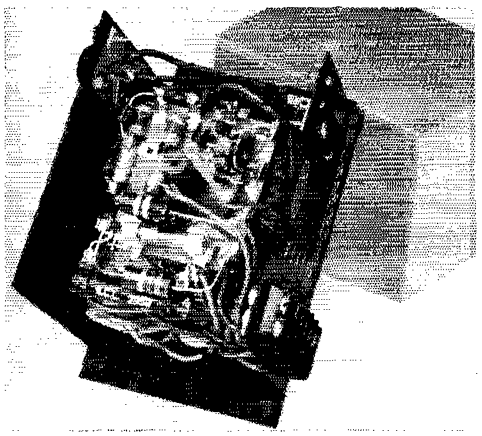
Power for the amplifier is controlled by two toggle switches on the panel. The POWER switch turns on the filaments and the cooling fan which circulates air around the four amplifier tubes. The PLATE switch applies primary voltage to the plate transformer.

The GSB-101 has a built-in antenna changeover relay, wired to be operated from an external 115-volt source. Most exciters these days have provision for controlling such a relay when switching from send to receive, on either manual or VOX operation. This is also true of the GSB-100, with which the GSB-101 is coordinated in respect to over-all control. Two coaxial connectors on the rear apron of the 101, labeled RCVR and ANT, connect to the relay contacts. The receiver lead is grounded during transmission, for protection of the receiver's front end.

Two meter connections, switched by the panel METER switch, are available. They are for reading amplifier plate current (0 to 800 ma.) and relative r.f. output. The output indicator uses a vacuum-tube (9006) diode rectifier capacitively coupled to the antenna output circuit. A potentiometer controls the sensitivity of the meter when it is operating as an output indicator. The s.p.d.t. meter switch is mounted on this pot. An s.p.d.t. switch is sufficient because the plate current is metered by measuring the voltage drop across a 10-ohm resistor connected between the negative terminal of the plate supply and chassis; thus one side of the 0–500 microammeter used in the amplifier can be permanently connected to chassis for both types of measurement.

The GSB-101 measures 19½ inches wide, 11¼ inches high, and 14¼ inches deep. — *E. L. C.*

B & W Transistor Power Converters



View of the 120-watt transistor power converter. A toroid transformer, not visible in the photograph, is located below the phenolic component mounting board. Two Bendix power transistors are mounted on each side of the U shaped chassis.

THE Barker & Williamson power converters for mobile power supplies include three models ranging in power output from 25 to 120 watts. A 25-watt, 115/26-volt, 400-cycle inverter is also available. All of the models are designed for 12–14 volts d.c. input.

Shown in the accompanying photograph is the model TPC-120W, a 120-watt unit. It weighs 1½ pounds and measures 4½ inches wide by 5¼ inches long by 3¾ inches high. The construction and form factor of the other models are similar to the 120-watt unit. The 25-watt model delivers 250 volts at 100 ma. and the 60-watt unit supplies 300/150 volts at 200-ma. total. The 25- and 60-watt models measure 3 × 4¾ × 3⅛ inches and weigh 13½ ounces.

The 120-watt model is capable of supplying outputs of 500 volts and 250 volts at a maximum total current of 200 ma., plus a negative 60 volts at 10 ma. d.c. for grid bias. The dual positive output voltages make possible the operation of both transmitter and receiver from a single supply. If the various voltages are used simultane-

ously, the total power should not exceed 120 watts. For full-load operation at 12 to 14 volts the input current is about 12 amp.

These supplies are designed to be mounted on a flat metal surface, such as the surface inside an automobile trunk. If mounted on materials having poor heat conductivity it is necessary first to mount the unit on a heat sink, which in the case of the 120-watt unit measures 8 × 8 × ⅛ inches. Properly mounted, the supply will operate at full ratings in ambient temperatures up to 105 degrees F. — *E. L. C.*

• Technical Correspondence

MORE ON TRANSEQUATORIAL PROPAGATION

71 Addison Road
Hatfield, Salisbury
Southern Rhodesia

Technical Editor, *QST*:

The last few months have been a time of hectic activity for ZC4WR, ZS1LA and ZE2JV. The article in December *QST*[1] stirred up considerable scientific interest, and we have been very busy trying to get some more answers.

We figured that if you want to know how a signal gets from A to B, the best way to find out is to measure how long it takes, and measure its angle of arrival. From then on a little intelligent guessing can be helped by a lot of reading. By using a duplex radio circuit and oscilloscope timing methods it was a relatively simple matter to measure travel time for a round trip. This has been done for three paths, with results given below. Times given are for the round trip, in milliseconds.

Path	*Time*	*Propagation Mode*
ZS1LA–ZE2JV	15.3 ms.	One-hop F_2, 28–29.5 Mc.
ZS1LA–ZC4WR	58 ± 1	Three-hop F_2, 28–29.5 Mc.
ZE2JV–ZC4WR	40	Two-hop F_2, 29.5–28, or 29.5–50 Mc.
" "	44 to 45	F-type TE (Billiard-ball mode).
" "	55 and up	Pure TE, variable delay.
" "		All possible combinations of above.

It's no news to anyone who has tried it by amateur methods that measuring angle of arrival is not easy. Tilting a Yagi doesn't mean much, unless you go up a thousand feet or so above ground on a nonmetallic platform. I chose to use ground instead, but you need a *known* ground. This was solved by waiting for thunderstorms to saturate the earth. This isn't the safest of pastimes, but you will live all right if you let go as soon as the corona starts. ZC4WR was more fortunate — his antennas are on top of a reinforced concrete roof.

The method employed was to compare a ground plane, a dipole and a Yagi. The vertical polar diagrams are then plotted to scale, and arrival angles found which satisfy the measured comparative signal strengths. By this means, the following angles were deduced: F_2 — 7 degrees day, 6 degrees night; F-type TE — 3 degrees, decreasing to zero degrees at fadeout; pure TE — 4 degrees, decreasing to 2 degrees by the time I'm too tired to stay up measuring it any longer. These tests provide interesting antenna comparisons at times; for TE a ground plane may beat a Yagi one wavelength above ground by 10 db. at 10 P.M.!

There exist in the geomagnetic latitudes of 10 to 15 degrees zones of high electron density. At an equinox these are symmetrical about a trough over the geomagnetic equator, and in a year of high sunspot number they appear from 1100 to 0100 local time, with densities above 3×10^6 electrons per cubic centimeter. (17-Mc. critical frequency at vertical incidence.) This is about three times the electron density you find anywhere else in the F_2 region. The height of maximum electron density over the geomagnetic equator descends from 400 to 300 kilometers between sunset and midnight, coming down at about 19 kilometers per hour.

ZC4WR and I are just under 52 degrees of latitude apart, with the geomagnetic equator midway between us. It may be seen that 2-hop F_2 hits right at the center of the high-density areas, and the TE mode encounters the "shoulders" at 10 degrees. It would seem that F-type TE comes off the electron gradient at the shoulder and shoots straight across to the other side, whilst true TE uses the high-density zones as a lens.

These high-density zones are essentially unstable, and regions of flux and turbulence productive of large inhomogeneities. This is the primary cause of flutter, but the severest flutter is caused by the mixing of the three modes of propagation, each with its distinctive time delay.

One mystery remains unsolved: February through April, 1960, showed the highest reliability yet recorded by ZC4WR on the 50-Mc. signals of ZE2JV. The figures for September will be awaited with great interest.

— *R. G. Cracknell, ZE2JV*

[1] Cracknell — "Transequatorial Propagation of v.h.f. Signals," *QST*, December, 1959, page 11.

FITTING COAX ADAPTERS

West Concord
Mass.

Technical Editor, *QST*:

In reference to R. W. Burhans' article on the u.h.f. coaxial s.w.r. bridge (p. 30, June *QST*), I'd like to comment on the sentence that reads, "If this termination (GR Type 874-WM) is used, General Radio coaxial fittings are necessary, or suitable adapters must be made for the bridge." Those people desiring to use the Type 874-WM 50-ohm Termination with Type BNC, N or other connectors should be advised that GR makes adapters to match the Type 874 connector to most other types of connectors, including BNC, N, UHF, TN, HN, C, SC, LC and several others. In fact, the line of adapters is so wide that they are often used in pairs to cross-connect two connectors for which no direct adapter is available.

— *F. T. Van Voen, W1NYL*
General Radio Company

ANOTHER CAUSE OF POWER-LINE NOISE

Clarks Hill
Indiana

Technical Editor, *QST*:

For two years I have been bothered with power-line noise. I could only work in wet weather, and an hour after it stopped raining the terrible raspy buzz — like a welding arc — would start in and continue until the next rainstorm. Attempts to run it down were of no avail as it seemed to be over a widespread area.

A short time ago a power-company representative and I went out with my mobile set to check for loose tie wires, as described in Richard M. Smith's very fine article on line noise in November 1959 *QST*. We found one or two loose tie wires and two or three defective cutouts and arresters. Replacing these helped some. But we discovered that the 7200-volt line used insulated wire which was tied to the insulators with bare wire. This insulation, being old, acted as a leaky capacitor when dry. We found twelve such poles, besides a couple of transformer networks in similar condition. Stripping off the insulation and retying improved the noise, but it was still there until the last tie wire was changed, upon which it cleared up completely.

This noise was bad at 1600 kc. and peaked every three or four megacycles from there through the spectrum up to 50 Mc. It even came in on TV Channel 4 and also on 144 Mc. On 50 Mc. you could hear it all over the shack even with the receiver gain turned down low.

I'm sure there are plenty of old lines in existence today using this construction and causing plenty of trouble. If you have a similar noise, take a walk under the lines and look for this condition; it will pay big rewards.

— *W. R. Adams, K9MYY*

Hints and Kinks For the Experimenter

USING THE HEATHKIT SB-10 WITH THE JOHNSON VIKING VALIANT

OUR "Stray" in November, 1959, *QST*, asking for information from those using the SB-10 and Valiant, produced quite a response. In fact, we received so many replies it is impossible to credit any one person with the Hint & Kink below. Most of the material is taken from KH6CEA's letter, but credit should also go to K6JCN and W5WCP for their contributions.

If these step-by-step instructions are followed, the SB-10 sideband adapter can be made to work with the Valiant transmitter. The modification is simple and utilizes all the existing r.f. circuitry in the Valiant. No panel drilling is necessary and, except for the added coax fitting at the rear of the Valiant, there is no change in the appearance of either unit. The modification does not in any way affect normal operation on a.m. or c.w. Step-by-step modifications to the Valiant are:

1) Disconnect the wires on terminals 9, 10 and 11 of switch section SW_{4C}.

2) Tie together and solder the above leads.

3) Disconnect capacitor C_{101} (100 $\mu\mu$f.) from terminal 12 of switch SW_{4C}.

4) Disconnect the coaxial cable attached to terminal 4 and C_{101}.

5) Disconnect resistors R_{10} and R_{54} (100 ohms) from terminal 12 of switch SW_{4C}.

6) Remove the switch wafer SW_{4C} from the switch assembly and replace it with a 2-pole 3-position wafer (Centralab type RRD).

7) Install a jumper wire between terminals 1 and 2 of switch SW_{4A}.

8) Unsolder the connection between capacitors C_{96}, C_{97} (25 $\mu\mu$f.) and pin 5 of the 6146s.

9) Mount a single lug terminal strip or stand-off insulator adjacent to capacitors C_{96}, C_{97}; e.g., on the 6146 tube socket mounting screw farthest left on the chassis.

10) Connect the capacitors C_{96}, C_{97} to the lug on the terminal strip. Don't solder.

11) Connect one end of a heavy wire to the same lug on the terminal strip and solder. Connect the other end of the wire to terminal 1 of the new switch wafer SW_{4C} (see Fig. 1).

12) Connect the open end of the coax (from step 4) to terminal 2 of SW_{4C} (see Fig. 1).

13) Connect a jumper wire between terminals 3, 4, 7 and 8 on switch SW_{4C} (see Fig. 1).

14) Connect a heavy wire from pin 5 of the 6146s to terminal 5 of switch SW_{4C}.

15) Drill hole in rear chassis apron to fit coax connector such as the Amphenol 83-1R.

16) Connect a length of RG-59/U cable from the above connector to terminal 6 of switch SW_{4C} (see Fig. 1).

Audio Filter for the SB-10

To obtain sideband suppression in the Heathkit SB-10 phasing exciter it is necessary to limit the audio frequencies to a range of 300 to 3000 cycles. By adding the filter shown in Fig. 2, the audio band pass is restricted to approximately 400 to 2700 cycles. The heavy lines in Fig. 2 indicate the parts that have to be added to the existing SB-10 circuit. Consult the schematic diagram in the SB-10 instruction book.

— *R. J. Dauphinee, K6JCN, ex-W1KMP*

BALL-POINT TEST PROBES

CONVENIENT test probes can be made from those slim ball-point pens. First, remove the tip and then solder a lead to the metal shaft. Run the lead back through the plastic barrel and reinsert the tip. Since the tip extends only a fraction of an inch below the plastic barrel, it is easy to use in restricted spaces without danger of shorting against nearby components or wires.

— *Richard W. Roberts, K9HFR*

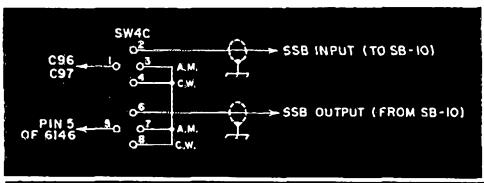


Fig. 1—Switch connections for Valiant modification, left.

SW_{4C}—Centralab type RRD switch wafer.

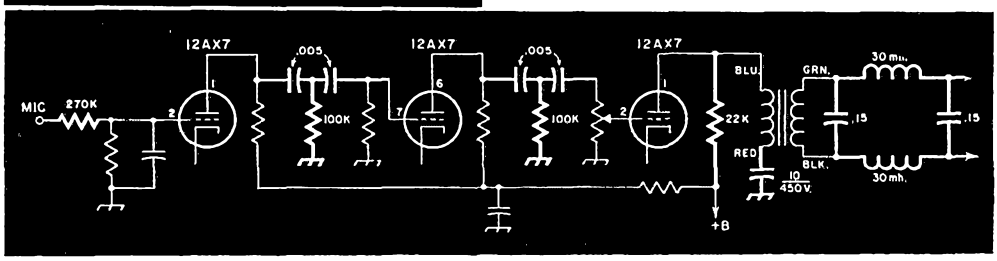


Fig. 2—The heavy lines indicate the parts that are added to the existing SB-10 circuit, below. Capacitances are in μf., resistances are in ohms, resistors are ½ watt.

USING THE GRID-DIP OSCILLATOR

To check the relative activity of crystals, clip a crystal holder across the coil terminals of a grip-dip oscillator. Plug in the crystal to be checked and if the indicating meter comes up to about the same reading as it would if a coil had been used, the crystal is good. If the meter shows only a slight rise, the crystal may need cleaning and is not very active. If there is little or no reading, the crystal is inactive. The station receiver can be used to check the approximate oscillation frequency of the test crystal.

— *Phillip F. Robinson, W1CK*

A GRID-DIP oscillator can be used for many crystal tests around the shack. It can be used to find the frequency of unknown crystals or as a stable crystal-controlled signal generator for receiver alignment, band-edge markers, or stable b.f.o. Of course, the grid-dip oscillator can be used in grinding or etching crystals to measure conveniently and quickly the frequency and relative activity of the crystal. Since the tuning capacitor in most grid-dip oscillators is in shunt with the crystal, increasing its capacity will "pull" the crystal slightly. Thus, it is possible to find the range of pulling of a particular crystal for its use in a frequency standard or as an oscillator in f.s.k. teletype work. Always take the g.d.o. along to the surplus store when you are shopping for surplus crystals — it may prevent your picking up a dud!

— *F. T. Swift, W6CMQ*

Editor's Note: The above applications are suitable only with grid-dip meters having a Colpitts oscillator circuit.

MINIDUCTOR TAPS

THERE have been many Hints & Kinks on methods of soldering taps to small close-wound coils such as the Miniductors. I have found that the easiest method is to use Minnesota Mining's Fibre Glass Electric Tape available at most hardware or electrical suppliers. Cut off two short pieces of the tape and slip one on each side of the wire to be soldered and fold down. Now the tap can be soldered to the wire without damaging the surrounding turns. Solder will not stick to the tape nor will it burn. After making the connection the tape can be pulled free.

— *Charles L. Mosher, W9JLN*

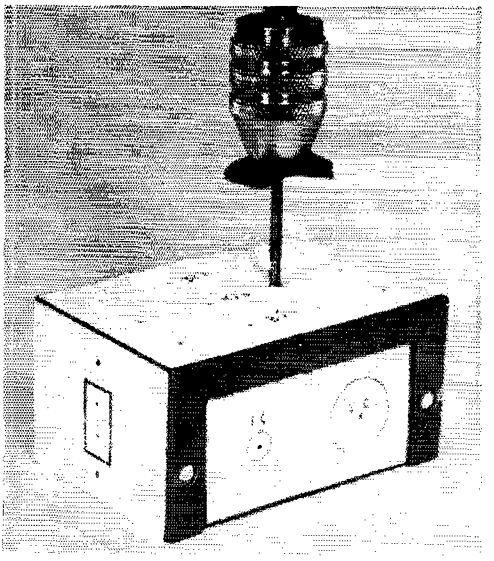
EXTRA COVERAGE ON 20 WITH THE KWM-1

KWM-1 owners who wish to operate the new phone segment, 14.300 to 14.350 Mc., can replace the 9100-kc. crystal in position 2 in the KWM-1 crystal box with a 9125-kc. crystal. This will change the tuning range of position 2 to 14.250–14.350 Mc. The red scale on the tuning dial is used with this arrangement. Another alternative would be to replace the crystal in position 3 (WWV) with the 9125-kc. crystal.

— *Rich Wright, W7PT*

GOOD CHASSIS LAYOUT PROCEDURE

IT is good practice to cover a chassis box with paper for layout, drilling, and cutting. Seeing it pictured here should encourage others to adapt this time- and trouble-saving idea.



Quadrille or similar ruled paper should be cut to fit each surface and then attached with rubber cement. The ruled lines will help your thinking during the layout operation, save measuring with a ruler in many cases, and permit erasures. Dots indicate the centers for drilling. Outlines for large or odd-shaped openings can be drawn and reference notations can be added. Prick-punch all center marks before the drilling operation.

Leave the guide sheets attached while drilling and cutting to protect the bare metal or previously enameled surfaces. The sheets will peel off like adhesive tape when the work is done.

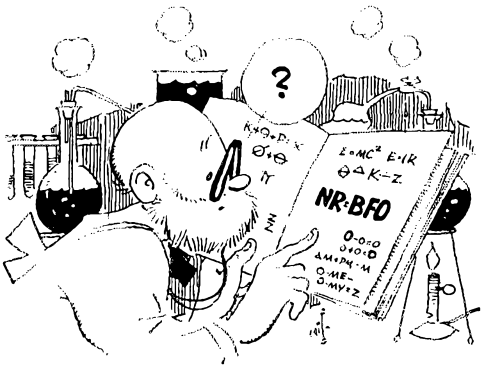
The photograph also illustrates another idea: Push a drill bit through a couple of layers of felt so that in case the drill pierces the metal unexpectedly, the felt will prevent the drill chuck from marring the surface.

— *John Howard, K8MME*

ANTENNA RAISING — NO CLIMBING

BEGINNERS may have wondered how to get antenna wire up to the tops of trees or other high objects. One of the oldest and easiest ways is to connect a rubber ball to the end of a length of mason string. Throw the ball up and over the desired limb. Once a "string path" has been established, the antenna wire can be secured to the string and pulled over. Secure the wire to the tree base; the other end connects to the antenna. For trees over 25 feet use a bow and arrow. Connect some light fish line to the arrow and shoot the arrow over the target.

— *Franklin L. Curcio, W2JYI*



The 1960 Novice Roundup Results

BY JOHN F. LINDHOLM,* W1DGL

NR=BFO. This is exactly how the Novice Roundup announcement in January *QST* began, and those of you who remember that math lesson well, recall that the *N*ovice *R*oundup equals a *B*arrel of *F*un *O*perating. How true this was! This year's top go-getter was KN5ZMU who pounded brass for 20,679 points; it takes a bunch of fine operating to whomp up a score like that! Here's the gang that topped the 10,000 marker!

KN5ZMU	20,679	KN3JMM	12,512
KN9SXV	18,360	KN5VYA	12,485
KN8RFU	16,500	KN4HQI	12,426
KN5VQR	14,700	WV2HVR	11,883
KN4MPE	13,340	KNØVMZ	11,286
WV6FOF	13,230	KN1LLU	11,271
KN8OCN/4	12,880	KN1KPS	11,076
	WH6DMU	10,488	

Of course, the Code Proficiency Run took on added emphasis as CP credit points were added to many scores and CP certificates were earned by many beaming NR entrants.

Novice Noise

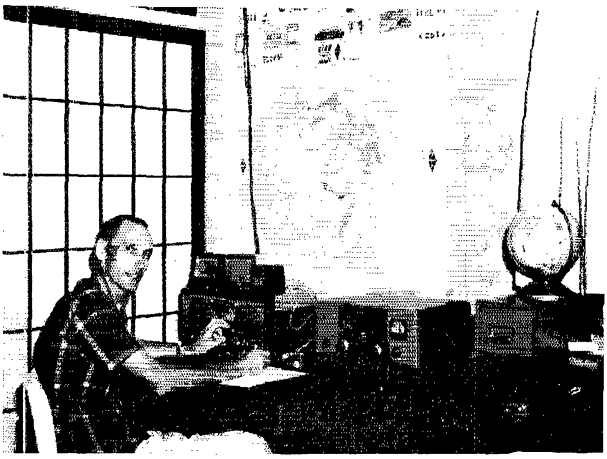
"Now that the NR is over, I can't stop calling 'CQ NR' because it has become a habit." — *KN3KHK*. . . . "The formula NR=BFO proved itself many times over, and I gained a lot of operating experience." — *KN4KJU*. . . . "Fifteen was a FB contest band, but I didn't hear much activity on 40 and 80." — *KN1LLU*. . . . "Glad to hear so many Generals giving the Novices extra multipliers. The most exciting part of the contest for me was when FA9RW came back to my CQ NR!" — *WV2HVA*. . . . "Worked KL7CDF for my 50th state . . . worked 42 states in my 40 hours. Had a great time; why not twice a year?" — *KN8OOK*. . . . "KL7CDF should get a medal for moving down into the Novice bands for the contest." — *WV2IKR*. . . . "I think the Generals had as much fun as the Novices." — *WV2GGB*. . . . "Thanks for a real fine contest! It's enough to inspire any Novice to get his General! Conditions on 40 were excellent. I thought I would get my multipliers on 15, but 40 meters in the early morning couldn't be beat; eighty meters was lousy, although good for South Carolina." — *KN9SRR*. . . . "If there's a booby prize, it's mine, hi. Schoolwork kept the operating time down, but really enjoyed working W1AW in the contest." — *KN1MJT*. . . . "Didn't hear one other South Dakota station working the NR." — *KNØVIZ*. . . . "It's a great help to have a General call you on your own frequency, especially on 40 meters." — *WV2HVR*. . . . "The Novice Roundup was the most fun I've had in my six months as a Novice." — *KN9UBK*. . . . "I didn't do too well in the contest, but the short time I was able to put in repaid big dividends in *enjoyment*. Since enjoyment is my prime interest in ham radio, I consider myself as having won even with the piddling score I got." — *WV2GQX*. . . . "My General test, the NR, a broken-down transmitter, and missing the CP run, all in the same two weeks. Whew!" — *KN9SOI*. . . . "I wish I could take part as a Novice again, but I hope to have my General long before then." — *KN8RBV*. . . . "How come so many Novices don't participate? Just the same, thanks for the FB contest." — *WV2FBF*. . . . "CU in Sweepstakes!" — *KN7HRS*.

Generalizations

"Except for the last two days, 15 meter conditions in Alaska were excellent all the way through; there sure was plenty of activity and FB operating. I was very happy to pass out a new state in so many cases." — *KL7CDF*. . . . "Many fine ops; not much 80 meter activity despite good conditions." — *K2EIU*. . . . "I was very happy to see so many Generals and higher class amateurs turn out to

* Ass't. Communications Manager, C.W., ARRL.

WH6DIT sounds like a call that a c.w. addict would dream up. Well, this is WH6DIT who with new call KN5ZMU (after moving to New Mexico) sent out many *dits* and dahs to outdo all other scorers in the 1960 Novice Roundup with 324 QSOs in 61 sections for 20,679 hard-earned points.



Anyone tuning across 15 meters during the NR couldn't miss hearing WH6DMU who was handing out 50th state contacts right and left. Dave, who now has his General, rounded out his Novice career with 48 states, 5 continents, and 23 countries.

help the Novices. From all looks of things, next Sweepstakes is going to have many more fine operators." — *W6UFJ*. . . . "It was fun QSOing such FB operating Novices." — *K1MOT*. . . . "Had fun, but sure hard on QSL cards with over fifty replied to so far." — *VE7AKQ*. . . . "It looks like some of us old avid SS fans had better watch out for some rough competition. I got a big kick out of the Novice station who had a 'crystal' that drifted. He sure moved several hundred cycles when he applied power to his rig. That was a crystal? I really didn't have the heart to tell him of it; should I have?" — *W9CLH*. . . . "Had to pack up in the middle of the fun to move into another house." — *K9ELT*. . . . "Some of the Novices I worked were FB ops with good fists. Always glad to work a Novice." — *K4HPY*. . . . "Some good ops in this one. CU in the SS fellows!" — *K2OFD*.

As the final statements in both quotes sections indicate, the goal has been set. Sweepstakes here we come!

As usual, it was the non-Novices that "made" the contest. Practically every Novice entry expressed thanks to the non-Novice gang for going out and helping with the scores. Of course, not only did you fellows help out with the scores and multipliers, but also by showing the way to Novices in contest savvy. No doubt many a Novice picked up needed know-how from the Generals he worked. Tops among the non-Novices was K2EIU who scored 19,305 points. As can be seen by "Novice Noise," KL7CDF proved to be the most popular with 11,280 points. Follows the non-Novice calls listed in alphabetical order:

W1AW[1] 3800, W1DGL 1026, K1MOT 352, W1SAD, 306, WA2ANA 12,960, WA2DGA 520, WA2DGG 8600, WA2EFU 4386, K2EIU 19,305, WA2EJZ 1056, W2FAN 330, WA2FFC 658, W2GIX 1525, K2KWZ 11,700, W2NIY 1600, K2OFD 705, K2PDK 2220, K2SBW 288, W3FHR 576, W3MSR 3729, K4BAI 1764, K4GMR 4956, W4KFC 1176, K4PHY 969, K4RIN 12,593, K4SXK 819, K4YGS 1386, W4ZM 360, K6ICS 2128, K6LKD 1650, K6STZ 135, W6UFJ 1560, KL7CDF 11,280, K7CPC 576, K7CTI 4644, K7DVT 19,024, W7IAQ 4100, K8BXT 944, K8HZO 3456, W8JM 5576, K8LOU 3128, K8LWF 1950, K8MJZ 8695, K8MTI 3366, W9CLH 5082, K9ELT 2146, K9RAS 224, K9SPO 2072, KØIDV 4033, KØPFF 2739, KØQXH 860, KØUCH 840, KØUDQ 12,925, VE2AJD 351, VE3DNR 162, VE3RIT[2] 888, VE7AKQ 3237.

[1] Multiple operator; [2] VE3CKA, opr.

Top scorer from Ohio and third over-all high was KN8RFU, who shares rig with son K8MXI. This top scorer is no Johnny-come-lately having built a TV set in 1928, but just now coming around to the joys of having a ham ticket.

SCORES

Scores are grouped by ARRL Divisions and Sections. The operator of the station listed first in each section is award winner for that section. *Example of listings:* KN3JMM 12,512-257-46-37, or, final score 12,512, number of stations 257, number of sections 46, total operating time 37 hours.

ATLANTIC DIVISION

Eastern Pennsylvania

KN3JMM . . 12,512-257-46-37
KN3JGV 7708-154-47-40
KN3KRF 2628- 73-36-28
KN3IPB . . . . 2522- 97-26- –
KN3KLM 2376- 72-33- 8
KN3JJG . . . . 1050- 42-25- –
KN3JFY 300- 20-10- 6
KN3IJF 252- 21-12-15
KN3JCU . . . . .200- 20-10- –

Md.-Del.-D. C.

KN3JYQ 4017-103-39-31
KN3JRR . . . . 3069- 93-33- –
KN3JJA 2727- 91-27-30
KN3KHK 2425- 97-25-17
KN3JIX 1917- 56-27-18
KN3JIQ 1606- 63-22-15
KN3KAK 1300- 65-20-18
KN3LWW 638- 29-22- 2

Western New York

WV2IBJ 2373-101-21-19
WV2EYD 60- 4- 5- 3
WV2GXE 54- 9- 6-15

Western Pennsylvania

KN9RMV/3 . . 9776-208-47-25
KN3JMP 4128-114-32-22

CENTRAL DIVISION

Illinois

KN9SXV . . . 18,360-306-60-26
KN9SRR 6950-139-50-18
KN9UOV 5130-135-38-28
KN9UOG 4902-114-43-28
KN9SNS 3885-111-35-13
KN9ROX 2550- 85-30-25
KN9UJT 2178- 56-33- 9
KN9TOF 1344- 54-21-17
KN9SBC 820- 26-20- 7
KN9SLI 792- 29-18- 9
KN9UOP 406- 29-14- 7

Indiana

KN9UBK 7774-149-46-34
KN9TZH 3332- 88-34-12
KN9UKM 1944- 81-24-19
KN9ULW 1056- 56-16-21
KN9TCL 988- 76-13- 5
KN9SOP 663- 39-17- 4

Wisconsin

KN9TIG 8965-163-55-31
KN9TTQ 3710- 96-35-31
KN9RZB 3094- 81-34-23
KN9SKM 646- 34-19- 4

DAKOTA DIVISION

North Dakota

KNØUXS 8500-170-50-17
KNØVTP 2888- 76-38-28

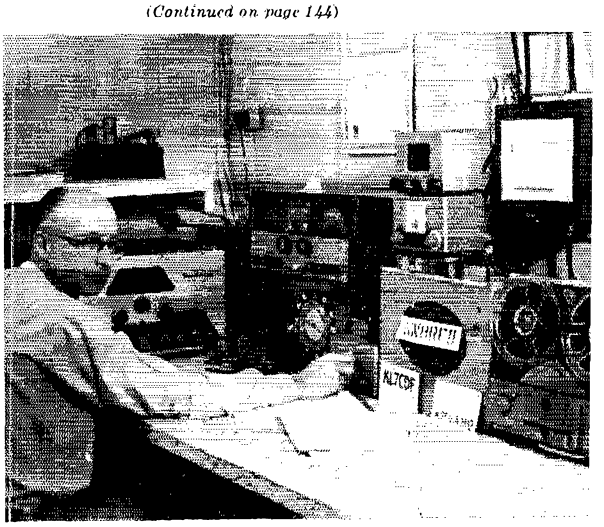
South Dakota

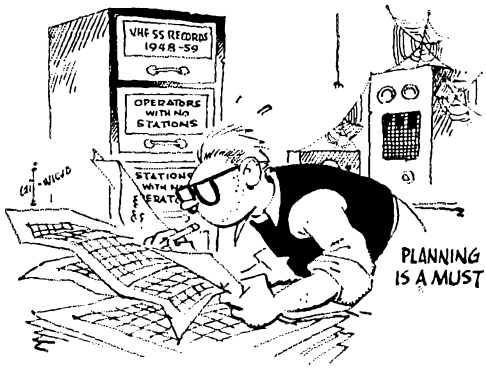
KNØVMG 2145- 50-33-13
KNØVIZ 240- 14-10-14

Minnesota

KNØWNV 7750-145-50-36
KNØVTG 1456- 52-28- 9
KNØUSK 1276- 44-29- 8

(Continued on page 144)





South Jersey Radio Association Gives Out Trade Secrets

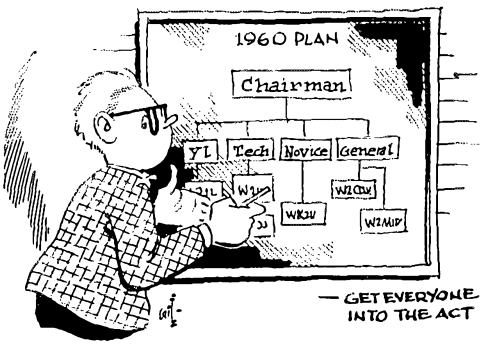
BY STAN KASPER,* K2YIB

How to Win the ARRL V.H.F. Sweepstakes

THE V.H.F. Sweepstakes, like any other contest having a club incentive, is not often won merely by a lot of people getting on the air and working a lot of others. The South Jersey Radio Association receives many queries as to how the club has been able to win the gavel award in the V.H.F. SS so often. At the risk of revealing "trade secrets" SJRA makes this report available to other clubs with the sincere wish that groups interested in this or other club-incentive contests may profit by our experience in 13 years of placing at or near the top of the ever-growing list of clubs taking part in this popular competition.

The selection of a chairman for the management of the club effort is regarded as one of the more important steps that must be taken to get the contest going properly. Contrary to widely-held opinion, long v.h.f. experience is not a particularly important qualification for this office. We feel that the most desirable attribute in a potential contest chairman is the ability to analyze past performances, and implement a forceful, interesting plan that will encourage participation by a majority of club members, in one capacity or another.

* 609 Eighth St., Riverside, New Jersey.



The 1960 chairman for the SJRA effort in the V.H.F. SS, though new to v.h.f. activity, is a member of the armed forces, with some 20 years' experience in preparing and implementing plans of all kinds. It is felt that his lack of v.h.f. background had no adverse effect on the final results of the club's effort. He was appointed late last summer, giving him ample time to examine the club's past performances, study their contest potential, and prepare a coordinated plan of action.

Advance Planning

After a review of historical files and discussions with former contest chairmen a plan was laid out on paper. The "on paper" part is important. It helps the chairman to keep track of his organization, and in case he should be unable to continue at any point a new chairman would be able to take over with a minimum of difficulty. Otherwise, changing chairmen at an advanced planning stage would be disastrous. Once the plan was worked out it was presented to the club's Board of Directors for approval.

In reviewing past results it was noted that less than one-third of the total club membership participated in the V.H.F. SS work. Ours is not primarily a v.h.f. club, but we certainly could do better than that. Also noted in past issues of the club bulletin, *Harmonics*, was mention of "Project X." This involved obtaining surplus military gear that could be converted to amateur use, primarily for those members who lacked v.h.f. equipment, and therefore had not participated in past contests.

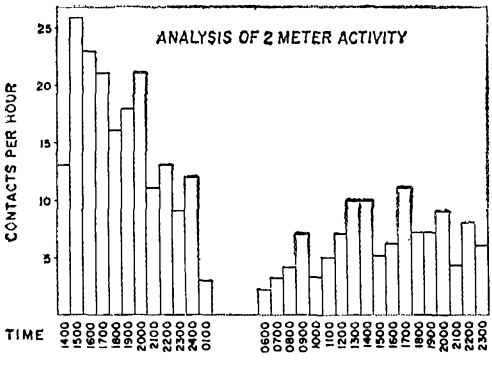
Study of records of past contests in *QST* showed that multiple-operator stations were compiling sizeable scores. Here was a job for club members who did not and would not have v.h.f. gear of their own. Club records also showed that many members were using only one band, yet two-band operation was important in attaining

a really high score. Obviously it would be to SJRA's advantage to: (1) Get maximum member participation. (2) Encourage multiple-operator stations, to bring in non-v.h.f. members. (3) Promote multiband operation. Though SJRA had been a consistent winner in the past, special incentives were set up to insure greater effort along these lines in 1960. These included club trophies for various classes of competitors, such as General, Technician, Novice, YL and multiple-operator stations.

Implementation

The contest effort was talked up in each issue of the club paper, beginning with October. The first publicity outlined the basic plan, stressing the drive for full member participation. The November issue of *Harmonics* showed that the club had a potential of amassing nearly two million points, if all members took part fully. It was pointed out that we *could* lose, if everyone assumed a complacent attitude. In the December issue were excerpts from the excellent advice on contest operating given by W1HDQ in November, 1959, *QST*, page 60. Shortly before the Christmas rush, a special v.h.f. issue of *Harmonics* went out to all members. This included four official logs; a graph for each band, showing the most productive hours for operating, based on previous experience and a complete review of scoring methods, rules and directions for submitting logs. Additionally, at each club meeting the information presented in the club paper was discussed in greater detail.

Just prior to the start of the contest, selected personnel contacted all members in their local calling areas to remind them of the contest. Arrangements were made for the exchange and loan of equipment where necessary. The club call, K2AA, was made available for use by a multiple-operator group. No special instructions were issued once the contest was under way, as it was felt that additional information at this time would only confuse those ready to start, or already underway.



Graph showing contacts per hour by leading SJRA operators in past V.H.F. Sweepstakes. This information was compiled to show the most productive times for operating, in case some members could not be on for the entire contest period. A similar graph was prepared for 50 Mc.

The V.H.F. SS, held each year in January, is by all odds the most popular v.h.f. operating activity ever devised. Its club incentive (a beautiful gavel with engraved silver band for the top club in the country each year) has been a major factor in the intense interest that this contest develops among v.h.f. enthusiasts. One club has consistently topped all others in V.H.F. SS scoring, winning 8 of the last 9 gavels awarded, and leading the pack every year since 1955. For the benefit of other clubs that have tried unsuccessfully to knock SJRA out of the top spot, here is the low-down on how they prepare for battle.

The Windup

Even though the instructions published in *QST* were quite clear, and in addition we had spent many hours in going over contest details, it was noted that many members were careless in preparation of the required information on their contest work. Much time was spent by the contest committee in double-checking logs, to insure that they were properly completed and acceptable to ARRL.[1] In addition, a team of members was dispatched to obtain logs from every known member participant. Logs of the higher scorers were checked carefully for calls of club members who had not submitted logs for club credit, and all delinquent members were contacted before the reporting deadline.

In the past, certificates had been awarded within the club, but the trophies put up in the various categories brought much favorable comment this year. It is believed that these will be remembered when plans are being made for next year.

Was the result worth all the effort? The best answer is the tabulation published in July *QST*. Despite a tremendous surge by three hot competitors, SJRA once again won the gavel award for the country's top score. Our total was 155,898 points above last year, an increase of 45 per cent. We had 11 more logs, and 42 more participants than in 1959. To have rested on our laurels would have been fatal; second-, third- and fourth-place scores all exceeded the 1959 SJRA total. On to 1961! QST

[1] Failure to carry through on the club's responsibility for the correctness of its member entries has cost many clubs dearly, over the years. SJRA has an enviable reputation for accuracy and completeness among contest checking personnel at ARRL Headquarters. — *Editor.*

Strays

Two Dayton, Ohio hams contribute this bit of information: K8TAX is a tax collector, K8RIP is a mortician, K8RUN's last name is Walker.

On Working Ws

BY DALE KENTNER,* W2ZX

RECENT articles by Stan Davies,[1] ex-VK9AD of Norfolk Island; Peter Dodd,[2] VQ1PBD; Max Reynolds,[3] W9EVI, of KS4BB fame; and others; have set forth some very interesting impressions of ham life as seen from a rare DXer's chair. Never having sat in a chair of this kind I have read all these stories with a great deal of interest and a certain degree of awe, and have always learned something new about DX ethics from each one.

Now that the law of "inter-mixture" prevails on 20 meters (and 10 and 15) for W and foreign s.s.b., we Ws would all do well to make a point of studying up on ethics and good practices if we are to prevent 20 meters in particular from becoming a cut-throat bedlam. In studying this whole situation objectively, however, one eventually runs smack into the perhaps not too obvious conclusion that even with indisputably circumspect manners on the part of the W pack, (obviously an erroneous assumption), things can still become quite a melee unless certain methods of operation are adopted by the Rare One.

Let us take the following quite typical situation: 4W1AA opens up with a "CQ DX" on 14,310 s.s.b. on a Saturday morning, long path, around 1400 GMT. The physical and psychological aspects of such an occasion are these:

1. Probably about 15 to 20 Ws would hear his first CQ by direct copy; after 15 minutes 200 to 500 more (depending on propagation conditions) would be attracted to the frequency, most of them by virtue of hearing other Ws calling.

2. Albeit "ethical," a modified "mob rule" prevails. It is mob rule to the extent that without a specific recognized leader each man employs tactics of his own choosing designed (so he feels) to advance his own objectives the maximum amount. Mob rule to the extent that each man is incited to press harder as he hears others on the frequency striving for exactly the same objective. It is unlike mob rule, however, in that the theory of dog eat dog, each man for himself and the devil take those without a kilowatt, prevails.

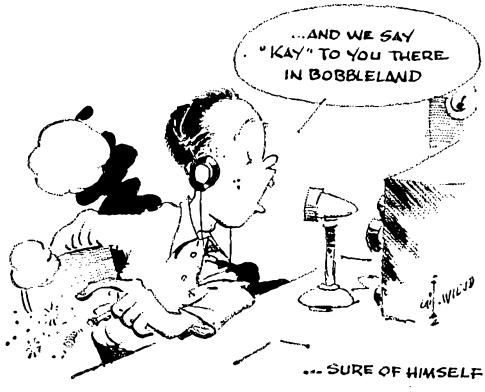
3. Each caller has the typical American amateur's spirit of self-confidence and aggressiveness. He is in there calling with strength and aplomb; sure of himself, of his outstanding signal, and of the overwhelming probability that he will be among the first to get the nod. He remembers what his fellow club DXers were discussing at the last meeting: "You gotta figure *you* are the only legitimate caller; all others are intruders and QRM generators. One way or another, *make* him hear you. Call quickly, loudly, and long, and charge it to pure coincidence if the gain control is a little high! Now when FR7ZD came on that day, I....." The burning desire for quick results relegates teamwork to the category of a virtuous handicap!

4. Each caller is consciously aware of his inalienable right to do what he is doing; to call as long and as frequently and on whatever frequency he feels his chances are best. For is he not properly licensed, with x years on the DX bands, and did he not work that XZ2 last week by similiar procedures? And this, lacking other proscriptions, he will do, for he is a man not easily swayed from his avowed purpose. This is the meat of which all bedlams are made.

It is well for the Rare One to have some foreknowledge of this the situation he has created. He should have some conception of the psychological condition of the minds of his mushrooming "audience" or he is apt to be outraged and/or disgusted at some of the things he hears on the frequency. He must know that at his bidding he has accumulated a large group of individual thinkers, each with his own driving desires, and each with an intense feeling of competition toward each and every other caller on the frequency. This is the situation forced upon all Ws in a pile-up, no matter how normally polite and diplomatic they may be. Ninety per cent of these single-minded individuals follow ethical procedures. Theoretically in every group, if sufficiently large as to be representative, there are 10% who are non-conformists for one reason or another. This will include several sidebanders engaged in a local (W to W) QSO who will wax very indignant when asked to QSY off the Rare One's frequency, and one a.m. who knows whose frequency he is on and will stay there, come hell

* RFD 1, Kresson Road, Marlton, New Jersey

[1] *QST*, February, 1960.
[2] *QST*, January, 1959.
[3] *QST*, October, 1959.



or high water! Be that as it may, the Rare One has brought into being a Monster, for which he, by and large, is responsible. The Rare One should be cognizant of this, and realize that he alone has the position and power to bring some order to the potential chaos. *He must rule the proceedings with an iron hand!* By his unique position of rarity and desirability he automatically becomes the Queen bee and all the pile-up become the workers. There is nothing quite so disheartening as a new or rare country operator who through his own lack of control lets things get out of hand. The W DXer is in some respects like a jungle beast; he can quickly sense the capability and attitude of the Rare One, and the lower the evaluation, the wilder the trumpeting. His reasoning tells him that this one is a must at all costs, but that this method of operating is just inviting chaos; so he must get him quickly and get out before the whole thing collapses! Firm control and exercise of authority will be welcomed and even praised by the great majority of W callers, for here is the organizing and directing force which was lacking before. Psychologically each man is put more at ease and he loses some of the intensity of the competitive spirit, because he realizes all callers are being directed in the same way. He acquires a confidence in the Rare One's ability to sort things out in an orderly manner, and thus to reward him with a QSO; if not immediately, in due time.

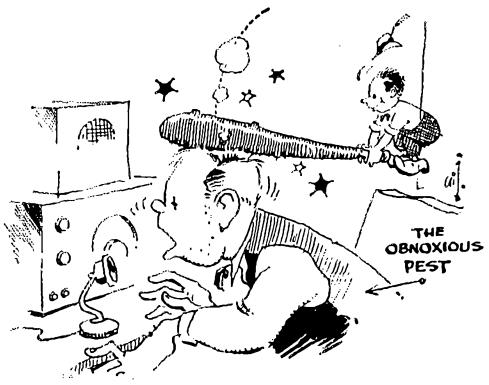
Suggestions for the DX station

From the "W" side of the DX fence then, the following suggestions to the rare DX operator would seem to be pertinent:

1. *Recognize your responsibility and assume command!* Let the size of the pile-up be your guide as to the extent of the authority you must exert; the bigger the pile-up, the more authority. The success of your whole operation may depend on this.

2. Early in the operating session let your "audience" know by example or by calling a short "QST" if you wish, if you desire contest type QSOs or rag-chew QSOs. Remember that there are probably ten times more fellows listening to you than you realize, and they need this kind of information to guide their procedure. Similiarly, give precise information as to where you will listen for replies.

3. Take a tip from recent excellent c.w. DXpeditions and give serious consideration to requiring calls 10 kc. up or 10 kc. down from your frequency. This arrangement may not decrease the QRM in *your* receiver, *but it does permit the callers to hear YOU;* an obviously desirable situation. You can depend upon 9 out of 10 W receivers to be reasonably well calibrated. If you are permitting "on frequency" calls, and you answer the "short caller" (which you should), bear in mind that he may not hear you return to him due to QRM from the very strong "long callers' " signals on the frequency. This problem is inherent in this type of operation. You must be sure to send his call again at the end of your



transmission, or wait until even the long caller has finished before you reply to anyone.

4. Deal firmly with the non-conformists; the excessively long caller; the one with the lousy signal; the one who repeatedly calls while you are in QSO; the palsy-walsy one who wants to make you a life long pal when you are working contest style, the better to get special handling of your QSL; and, yes, the austere Honor Roller who thinks he has a free ticket for every new country expedition! Then there is the one who deliberately tries to be as obnoxious as possible in the hope that you will work him just to get him off the frequency. Remember that if you give him a QSO, you not only may be establishing a bad precedent for your current operation, but you are indirectly endorsing his bad manners and encouraging him to continue these practices in the future. Point out specifically what is going on that is improper and require conformity. Mention calls (un-logged) if necessary and, in extreme cases, keep a black list and let everyone know it! But above all be fair and just in your judgment!

5. If you are a DXpedition, take time out occasionally for a "QST" giving QTH, QSL instructions, and information about other frequencies and operating hours. If you are operating contest style, *don't* sing-song this same information in each QSO. You begin to sound like a phonograph record to the boys who have been standing in line for a couple of hours!

6. If you interrupt the proceedings for a chat with your stateside brother or long-lost friend, let your several hundred listeners know your intentions about resuming contacts. Hari-kari has been seriously contemplated on many occasions by W DXers who after tensely sweating out a 20 minute rag-chew, discover that the Rare One, without a word of explanation, has simply disappeared!

7. Once you make a firm request or establish a precedent by your method of operation, don't allow exceptions. For example don't recognize a "tail-ender" call unless you want to deal with a couple of hundred more of the same kind. Don't hesitate to make frequent broadcast type statements to the pile-up; for instance if you don't like "tail-ending," *say so.* Give them repeat

instructions if necessary, and above all let them know that you are in charge.

8. *Don't* issue an instruction to the multitude such as "I can't copy anyone: please everyone spread out!" Who spread where? Remember the members of your audience are not all inter-comm connected with a directing officer of maneuvers! A smart W DXer *always* calls on the frequency on which he thinks you are listening! It is much better to say "I am now random tuning between x kc. and y kc." In addition recent expeditions have found when identification of callers becomes difficult that calling by districts has permitted relatively easy recognition and has worked wonders in rapidly thinning out the baying hounds. This system is highly recommended.

9. On the other hand, if you find the pile-ups you create are only 3 or 4 deep, govern your actions accordingly; you are probably not a "Rare One" in the stricter sense of the word, and you can just be "one of the boys."

10. It's up to you to figure out how to handle another classification. Whether he is an undesirable non-conformist or an ingenious Boy Wonder is for you to decide. He is the one who anticipates your frequency and operating hours and is on there giving you a long call *before* you open up for the morning's session. He is the one who calls you using your first name only, and waggles an early QSO with you by offering to handle traffic into some place he thinks you might want to contact. He may not belong to the school of "long callers" but frequently is a "strategically late" caller, figuring the fury to dissipate itself, leaving the frequency relatively clear for him. He usually belongs to a secret DX society group who by previous arrangement get QSOs exclusively for all members by using trick substitute letters instead of the Rare One's real call. If you call "CQ W6 only," he probably will, if he is other than a six, get on your listening frequency and call "CQ DX, especially 4W1," signing his call profusely. If you have a good sense of humor, you may enjoy this fellow's antics, and if you don't—well, you devise and apply the cure. In any event a familiarity with the species will aid you in keeping on top of what is taking place on the frequency. QST

High Claimed DX Contest Scores

Logs received for the 1960 ARRL DX Contest have slowed down to a mere trickle, as they come in by slow surface mail from the four corners of the globe. Included in entries received were more than 80 U.S.S.R. logs sent in one batch from Moscow's Central Radio Club. Follows the high *claimed* scores. Following the call is the *claimed* score, number of contacts, and multiplier. Final and complete results are now being compiled soon to appear in *QST*. Listed are only those W/VE *claimed* scores over 400,000 and those phone scores over 50,000. Only those c.w. DX scores over 200,000 and phone scores over 25,000 are listed.

C. W.

Single Operator

VP1JH[1]....1,501,480-4440-114
W3ECR[2].....913,320- 830-354
W3GRF.....832,608- 784-354
W8FGX.....829,224- 792-349
W4YHD.....763,544- 772-334
K2DCA.....749,664- 734-342
W3ALB.....734,064- 746-328
KP4AOO....701,136-2886- 81
W3DHM[3]....698,472- 712-327
W2AYJ.....654,760- 665-328
K2DGT.....631,104- 692-304
W1JYH.....618,696- 661-312
W9WNV.....602,301- 667-301
W9IOP.....588,240- 645-304
W2EQS.....570,654- 647-294
VP5ME.....565,623-2393- 81
W1LOP.....543,996- 657-276
VP7NT.....525,063-2273- 77
W3VAN.....523,125- 625-279
W4RQR.....512,451- 587-291
W1BIH.....500,976- 588-284
W4DQS.....491,550- 565-290
W9LNM.....487,377- 547-297
KP4CC.....485,292-2186- 74
PY1ADA....469,854-2034- 77
KZ5TD.....457,650-2034- 75
W5CKY.....448,800- 544-275
W9ERU.....447,078- 538-277
W4KFC.....436,572- 543-268
W1OGU.....429,768- 564-254
W1GET.....426,750- 573-250
W4JAT.....418,770- 517-270
WØAIH/VE3.413,184- 538-256
W3OCU.....413,094- 569-242
W1VG.....406,362- 517-262
W2SSC.....406,296- 513-264
G4CP.....394,200-1835- 75
YV5GO.....389,781-1883- 69
VK2GW.....341,670-1627- 70
KZ5LC.....310,824-1439- 72
GW3JI.....298,770-1449- 69
ST2AR.....271,719-1589- 57
CE1AD.....260,208-1668- 52
ON4LX.....237,850-1184- 67
ZP9AY.....216,960-1211- 60
G2QT.....210,447-1047- 67
JA1VX.....210,045-1231- 57
OE1RZ.....208,801-1181- 59
OZ1W.....206,848-1092- 64
F8VJ.....205,326-1039- 66
VP9EO.....204,300-1135- 60

Multiple Operator

W3AOH....1,211,418-1002-403
W3MSK....1,204,641- 977-411
W3BES.....745,875- 765-325
W4KXV.....609,030- 670-303
W6RW.....608,304- 667-304
W3KFQ.....591,294- 682-289
W3WV.....553,125- 625-295
KS4AZ.....518,568-2542- 68
VE2WW.....482,232- 566-284
W9IRH.....423,522- 506-279
K6EVR.....418,905- 535-261

PHONE

Single Operator

VP2DX.....506,250-1875- 90
W1ONK.....423,990- 673-210
W3DHM.....318,150- 505-210
KP4AIU.....279,488-1456- 64
W1PDF.....276,774- 566-163
ON4OC.....244,288-1275- 64
W3ALB.....222,855- 415-179
W9EWC.....216,656- 411-176
EA3JE.....196,416-1056- 62
K2GXI.....180,363- 341-177
VP3HAG....177,072- 868- 68
YN4CB.....172,746- 930- 63
W2OKM.....166,582- 377-149
W9NZM.....159,720- 331-165
W8NXF.....151,662- 322-157
K1JTC.....136,456- 316-148
W8ZOK.....134,505- 305-147
W1FZ.....134,332- 316-142
W2ZX.....132,800- 278-160
TI2RO.....119,534- 683- 59
K2DGT.....118,403- 297-133
W2PUN.....118,008- 264-149
DJ1BZ.....114,534- 715- 54
W1AUF.....110,826- 264-141
VP2AR.....109,620- 634- 58
K1LPW.....108,416- 232-121
OH8SM.....106,050- 711- 50
K4QIJ.....105,276- 283-124
K4ZCP.....101,700- 302-113
VE3EHR....100,440- 248-135
ZL1MQ.....93,540- 503- 60
W4USQ.....88,365- 215-137
HK3LX.....86,240- 524- 55
G2DYV.....85,491- 483- 59
CO2DD....85,260- 580- 49
W3KT.....82,320- 245-112
HP1AC.....79,991- 652- 41
LA1JG.....76,986- 546- 47
K9CUY.....71,645- 216-115
KØRNZ.....71,400- 199-120
W6AED.....70,560- 210-112
VE5RU.....70,446- 199-118
W3IMV.....65,205- 207-105
OZ5JT.....64,872- 424- 51
LA4TE.....60,114- 466- 43
LU1DAB.....58,135- 555- 35
W3EQA.....56,964- 188-101
PAØHBO.....55,620- 412- 45
VE2CB.....54,720- 194- 96
W1OKG.....52,920- 168-105
W1DIS.....51,870- 182- 95
VR2BC.....51,435- 381- 45
VK3ATN.....49,396- 313- 53
G3LTZ.....16,440- 434- 36
KA2CB.....46,276- 338- 46
ZD2JKO.....44,064- 432- 34
ZS5OA.....39,060- 372- 35
PZ1AX.....38,650- 258- 50
KG4AP.....33,924- 343- 33
KA2GI.....32,705- 352- 31
VP3YG.....30,788- 240- 43
OA1W.....27,684- 258- 36
VK2AKF....26,445- 215- 41

Multiple Operator

W8NGO.....238,572- 423-188
GB2SM.....178,059- 973- 61
W3KFQ.....145,080- 312-155
W3GRF.....124,614- 301-138
G3NUG.....51,009- 357- 49
UR2KAE....27,454- 253- 37

[1] WØNWX opr; [2] W3MFW, opr.; [3] W3WJD, opr.

Alabama — The North Alabama Hamfest Association will hold its annual hamfest at Decatur High School, Decatur, on Sunday, August 21. For further information contact Paul W. Burks, K4UEC, P. O. Box 9, Decatur.

Florida — The Daytona Beach ARA will hold its annual hamfest on September 4 at the Ellinor Village Teen-Age Recreation Building (pavilion) on the corner of A1A and East Granada Ave. in Ormond Beach (about four miles north of Daytona Beach). Hospitality house at Ellinor Village from 1200 noon 'til closing. Admission free. Hot dogs and drinks available on the premises, or bring your own lunch. Special week-end rates at Ellinor Village, Ormond Beach, and for information on this contact Clyde Mashburn, W4SDR, 25 S. Halifax Drive, Daytona Beach. Auction and swap shop. For further hamfest info contact Jim Campbell, K4RNR, 24 Palmetto Drive, Ormond Beach.

Illinois — The annual Egyptian Radio Club Hamboree will be held on Aug. 21 at the club grounds one block south of the Chain-of-Rocks canal bridge on U. S. Highway 66 on the east bank of the Mississippi Chain-of-Rocks canal. Contests aplenty. Food and drinks on the grounds. No admission charge, so come early and stay late. Mobile talk-in on 29.64 and 50.55 Mc.

Illinois — The Hamfesters Radio Club is holding its 26th annual picnic at Santa Fe Park, 9100 South Wolf Road, on Sunday, August 14. From the East, take Route 4A (Archer Ave.,) to 87th St. in Willow Springs, and turn west, following signs to the park. From the West, take Route 66 to 79th St., then east to Wolf Rd. The park has modern facilities, ample parking, picnic tables, and plenty of shade. There will be radio displays, food and refreshments, events and prizes galore. Swap tables available. For advance tickets and information, contact L. L. Finnan, K9EEC, 6411 South Long Ave., Chicago 38.

Indiana — The Kokomo ARC will hold its annual "Big Bull Hamfest" at Highland Park in Kokomo on Sunday, August 14. Further details can be obtained from George Wagner, K9KBW, 310 Lody Lane, Kokomo.

Indiana — The Tri-State Amateur Radio Society will hold its annual hamfest-picnic on August 28 at Eagles Picnic Grounds, Evansville. There will be games, contests, and prizes. Refreshments available on the grounds. Bar-B-Que chicken or ribs will be served at noon by advance order only — $1.25 for adults and 75¢ for children. Mobiles check in on 75, 10, 6, and 2 meters. Advance registration $2.00 — $2.50 at the gate. For further information contact Dr. Thomas G. Westfall, W9BKQ, 2409 W. Franklin St., Evansville 12.

Iowa — The Iowa 75-meter net picnic will be held at the 4-H Fairgrounds in Nevada, Iowa, on Sunday, August 28. The program features a pot-luck dinner at noon, and various other activities. There are excellent facilities, with a building available in case of bad weather. For further information contact Lawrence E. Smith, KØMFX, RFD 2, Nevada, Iowa.

Manitoba — The Manitoba Hamfest, sponsored by the Brandon ARC, will be held on September 3 and 4 at Brandon, Manitoba. There will be a social get-acquainted party at the Foresters Hall on Saturday evening. The main activities of the hamfest will be held on Sunday, with the banquet on Sunday evening. Advance registration is necessary if you plan to attend the banquet. $5.00 per couple or $3.00 single. For further information contact Fran Haddon, VE4KN, 715 — 7th St., Brandon.

Michigan — The 7th annual v.h.f. hamfest will be held August 7 at Allegan County Park on the shores of Lake Michigan. Games, prizes, swap and shop. For further information contact Lou Gerbert, W8NOH, 3816 Evy Drive N.E., Grand Rapids 5.

Michigan — The 3rd annual convention of the Hair Net will be held on August 21 at the Ceramic Inn, 6 miles north of Kalamazoo on U.S. 131. The convention dinner will be held at 2 P.M., and the price is $2.25 per plate. Barbers, their wives and families, and customers, are invited. Make reservations with Ralph Ziegenbein, W8PLP, 920 Clyde St., Lansing, or check in on the net on Sunday morning at 0800 EST on 3875 kc.

Missouri — The Southwest Missouri Amateur Radio Club and the Missouri Emergency Phone Net are holding a combined annual state picnic on August 28 in the Shrine Mosque on the corner of St. Louis and Kimbrough Streets, Springfield. Registration will be 50¢. Activities begin at 1000. Bring your own basket lunch — ham and drink furnished. Program for XYLs and children. There will be gabfests, a hidden transmitter hunt, mobile talk-in on 3900 kc., and swap table. Everyone welcome. For further information contact Lawrence W. Bakewell, WØCGJ, P. O. Box 328, Springfield.

New Jersey — The East Coast V.H.F. Society will hold its annual picnic and hamfest starting at 10 A.M. on Sunday, August 14, at Saddle Brook Park, Saddle Brook, N. J. (August 21 is the rain date.) Free registration for all, combined with ample picnic, recreational, and free parking facilities, make this an ideal family affair. Food and soft drinks will be available. Mobile talk-in on 2, 6, and 10 meters. For further information contact John W. Johnson, W2YIA, 51 Birch Rd., Dumont.

New York — The Hudson Amateur Radio Council, a group made up of the representatives of amateur radio clubs located in the Hudson Division of ARRL, is sponsoring a one-day convention to be held at the Statler-Hilton Hotel in New York on October 15. There will be exhibits of ham equipment; special programs for v.h.f., DX, sideband, RTTY, traffic, YLs, plus technical talks; and a grand banquet. More information at a later date. In the meantime, for ticket information and pre-registration forms, contact HARC Tickets, P. O. Box 971, New Rochelle.

Ohio — The Warren ARA will hold its third annual picnic and hamfest at the enclosed shelter house, Packard Park, on Saturday, August 27. Bring your lunch for picnic at noon. There will be swap shop, ham auction, entertainment, and all the usual. Registration is $1.50, and activities begin at 1100. Mobiles will be monitored on 29.6 Mc. Plenty of activities for the whole family, and everyone is welcome. For further information contact Don Lovett, K8EXT, 3629 Northwood Drive, Warren.

Ohio — The Green Valley Radio Club of Alliance announces the third annual Dr. Lee DeForest day hamfest and display to be held on August 21 at the National Guard Armory Grounds, 1175½ West Vine St., Alliance. Registration is $1.00. For further information contact Harry E. Pownell, W8PXX, 9140 Pontius St., NE, Alliance.

Oklahoma — There will be a hamfest at Beavers Bend State Park, Broken Bow, from 1800 on August 20 to 1800 on August 21. For further information contact Delma J. Bonner, 607 S.E. Ave. D, Idabel.

Oregon — The Affiliated Council of Amateur Radio Clubs, Inc. (Portland area clubs), will hold its third annual picnic August 7 at Lewisville Park, 15 miles northeast of Portland in Clark County, Washington. The picnic is open to all hams, their families and friends. No admission is charged. Everyone brings his own food.

Pennsylvania — The fifth annual hamfest of the four York County amateur radio clubs will be held on August 21 at Atland's ranch, 10 miles west of York, rain or shine. Registration ($1.00 in advance or $1.25 at the gate) begins at 1030. Plenty of free parking. Picnic tables available. Free soda and games for all. Auction. Talk-in rigs on 145.59 Mc., 50.62 Mc, and 29.5 Mc. Swimming available at a slight extra charge. For tickets write to Dennis L. Strickler, K3DGB, 1485-A Wayne Ave., York.

Texas — The Central Texas ARC is holding its annual hamfest on Sunday, September 4, at the Waco Syran Association Club House. Activities will begin at 1030 and continue until late afternoon. A magic show for the kids, and fashions for the ladies. For the hams a transmitter hunt, tech talk on printed circuits, eye-ball QSOs, and so on. For further information contact the CTARC at P. O. Box 1032, Waco.

Virginia — The Shenandoah Valley ARC will hold its annual banquet and hamfest in Winchester on Saturday and Sunday, August 6 and 7. The Saturday banquet will start at 1830 and will feature guest speakers and entertainment. Banquet tickets are $2.50, and will be sold only in advance. Sunday activities, at the Winchester National Guard Armory, will feature games, displays, swap table, and MARS. There will also be a repeat by comedian Sammy Ross of his previous night's banquet routine. Registration for the hamfest activities on Sunday is $1.00. For banquet tickets and further information write to the Shenandoah Valley ARC, P. O. Box 139, Winchester.

Election Notice

Petition on Examinations Overseas

Executive Committee Meeting Minutes

ELECTION NOTICE

To All Full Members of The American Radio Relay League Residing in the Central, Hudson, New England, Northwestern, Roanoke, Rocky Mountain, Southwestern and West Gulf Divisions:

An election is about to be held in each of the above-mentioned divisions to choose both a director and a vice-director for the 1961–1962 terms. These elections constitute an important part of the machinery of self-government of ARRL. They provide the constitutional opportunity for members to put the direction of their association in the hands of representatives of their own choosing. The election procedures are specified in the By-Laws. A copy of the Articles of Association and By-Laws will be mailed to any member upon request.

Nomination is by petition, which must reach the Headquarters by noon of September 20. Nominating petitions are hereby solicited. Ten or more Full Members of the League residing in any one of the above-named divisions may join in nominating any eligible Full Member residing in that division as a candidate for director therefrom, or as a candidate for vice-director therefrom. No person may simultaneously be a candidate for both offices; if petitions are received naming the same candidate for both offices, his nomination will be deemed for director only and his nomination for vice-director will be void. Inasmuch as all the powers of the director are transferred to the vice-director in the event of the director's resignation or death or inability to perform his duties, it is of as great importance to name a candidate for vice-director as it is for director. The following form for nomination is suggested:

Executive Committee
The American Radio Relay League
West Hartford 7, Conn.

We, the undersigned Full Members of the ARRL residing in the.....Division, hereby nominate.....of..... as a candidate for director; and we also nominate..... .....of.....as a candidate for vice-director; from this division for the 1961–1962 term.

(Signatures and addresses)

The signers must be Full Members in good standing. The nominee must be a Full Member and the holder of an amateur license, and must have been a member of the League for a continuous term of at least four years at the time of his election. No person is eligible who is commercially engaged in the manufacture, sale or rental of radio apparatus capable of being used in radio communications, or is commercially engaged in the publication of radio literature intended in whole or in part for consumption by radio amateurs.

All such petitions must be filed at the headquarters office of the League in West Hartford, Conn., by noon EDST of the 20th day of September, 1960. There is no limit to the number of petitions that may be filed on behalf of a given candidate but no member shall append his signature to more than one petition for the office of director and one petition for the office of vice-director. To be valid, a petition must have the signature of at least ten Full Members in good standing; that is to say, ten or more Full Members must join in executing a single document; a candidate is not nominated by one petition bearing six valid signatures and another bearing four. Petitioners are urged to have an ample number of signatures, since nominators are occasionally found not to be Full Members in good standing. It is not necessary that a petition name candidates both for director and for vice-director but members are urged to interest themselves equally in the two offices.

League members are classified as Full Members and Associate Members. Only those possessing Full Membership may nominate candidates or stand as candidates; members holding Associate Membership are not eligible to either function.

Voting by ballots mailed to each Full Member will take place between October 1 and November 20, except that if on September 20 only one eligible candidate has been nominated, he will be declared elected.

Present directors and vice-directors for these divisions are: *Central:* John G. Doyle, W9GPI, and Philip E. Haller, W9HPG. *Hudson:* Morton B. Kahn, W2KR, and Lloyd H. Manamon, W2VQR. *New England:* Milton E. Chaffee, W1EFW, and Carmine A. Polo, W1SJO. *Northwestern:* R. Rex Roberts, W7CPY, and Harold W. Johnston, W7PN. *Roanoke:* P. Lanier Anderson, jr., W4MWH, and Joseph F. Abernethy, W4AKC. *Rocky Mountain:* Claude M. Maer, jr., W0IC, and John H. Sampson, jr., W7OCX. *Southwestern:* Raymond E. Meyers, W6MLZ, and Virgil Talbott, W6GTE. *West Gulf:* Grady A. Payne, W5ETA, and Robert D. Reed, W5KY.

Full Members are urged to take the initiative and to file nominating petitions immediately.

For the Board of Directors:
July 1, 1960.

A. L. BUDLONG
Secretary

EXAMINATIONS OVERSEAS

Pursuant to a decision of the Board of Directors, the League has filed with the Federal Communications Commission a petition seeking to ease certain restrictions on the eligibility of U. S. citizens overseas to apply for a Conditional Class license. The text, which is self-explanatory, follows:

FEDERAL COMMUNICATIONS COMMISSION

In the matter of

Sections 12.21 (d) and 12.44 (a) of Part 12, Rules Governing Amateur Radio Regarding Eligibility for Conditional Class License.

Petition for Institution of Rule-Making Proceedings

Pursuant to Section 4(d) of the Administrative Procedure Act and Section 1.702 of the FCC Rules, The American Radio Relay League, Inc., requests that the FCC institute

rule-making proceedings to consider amendment to the above referenced Rules, so as to make clear that non-military personnel living outside the United States may take an examination for a Conditional Class License, regardless of whether or not the individual's legal residence in the United States is more than or less than 75 miles airline distance from the nearest location at which examinations are held at intervals of not more than three months for a general class operator license. The proposed amendments are contained in the attached appendix. In support, the League shows:

1. The instant request for institution of rule-making proceedings is filed pursuant to action taken by the Board of Directors of the American Radio Relay League, Inc. As the FCC knows, the Board of Directors of the League is composed of 16 amateurs nominated and elected by approximately 75,000 licensed amateurs who are members of the League to represent them in the formulation of League policy.

2. The requested change in the Rules is apparently necessary because of the existing interpretation of the present Rules. As interpreted, the present Rules impose a discriminatory condition which, the League believes, is unintentional. The present Section 12.21(d) has been interpreted to mean that personnel in the military organizations are eligible to take the examination for a Conditional Class License regardless of their legal residence in the United States. However, their dependents and other civilians whose work or studies takes them out of the country may or may not be eligible to take the examination for Conditional Class License by mail, depending upon the geographical location of their permanent residence within the United States.

3. An example can be cited. Two Navy men are stationed in Argentina, Newfoundland, with their families. There are teen-age sons, dependents of each of the Navy men, who become interested in amateur radio and apply for a license from the FCC so that they may obtain permission from Canadian authorities to operate under the provisions of the reciprocal operating agreement now in effect. One of the youths, as a dependent of a father who has a legal residence in Hartford, Connecticut, more than 75 miles from a city where the FCC conducts examinations at least once every three months, may take an examination for a Conditional Class License from the FCC by mail. The other youth, who is the dependent of a father whose legal residence is in New York City, is not eligible under present Rules, since his legal residence, as derived through his father, is within a city where the examination is held. This youth is required to present himself to the FCC Engineer-in-Charge of a District for an examination. The League believes that such an interpretation was not intended.

4. It is recognized that a comparatively small number of persons is involved. However, the proposed amendments will permit the Commission to handle applicants on an equal basis regardless of the location of their legal residence. Though a license issued by the FCC does not, in and of itself, convey permission to operate in places not under the jurisdiction of the FCC, the FCC license is a pre-requisite for an American citizen to obtain a license issued by some United States Military Jurisdictions and to obtain an authorization from a foreign government, where there is provision for issuing authorizations to U. S. citizens resident in the respective foreign country.

Respectfully submitted,

The American Radio Relay League, Inc.

By PAUL M. SEGAL
Its General Counsel

A. L. BUDLONG
General Manager
May 16, 1960

Appendix

It is requested that:

(1) Section 12.21(d) of the Rules governing the Amateur Radio Service be amended by the addition of the following language: ". . . . or any citizen temporarily resident, for a reasonable period, outside the jurisdiction of the Federal Communications Commission and who maintains a legal residence within the United States, its territories or possessions, without regard for the distance of such legal residence from the Commission examination points listed elsewhere in the Chapter. (Note: Nothing in this section shall be construed as authorizing Commission licensees to operate within the jurisdiction of a foreign government except in accordance with the provisions of sections 12.90 and 12.91 of this Part.)"

(2) Section 12.14(a) of the Rules governing the Amateur Radio Service be amended by the addition of the following sub-section ". . . or (4) if the applicant is temporarily resident, for a reasonable period, outside the jurisdiction of the Federal Communications Commission and maintains a legal residence within the United States, its territories or possessions, without regard for the distance of such legal residence from the Commission examination points listed elsewhere in this Chapter."

(3) The word "or" before sub-paragraph (3) should be deleted.

MINUTES OF EXECUTIVE COMMITTEE MEETING
No. 274
May 12, 1960

Pursuant to due notice, the Executive Committee of The American Radio Relay League, Inc., met at the Headquarters office of the League in West Hartford, Connecticut, at 2:15 P.M., May 12, 1960. Present: President Goodwin L. Dosland, in the Chair; First Vice-President, Wayland M. Groves; General Manager A. L. Budlong; Directors John G. Doyle and Morton B. Kahn; Vice President F. E. Handy and Treasurer David H. Houghton. Assistant General Manager John Huntoon was also present.

On motion of Mr. Kahn, affiliation was unanimously GRANTED to the following societies:

Baldwyn Amateur Radio Klub.....Baldwyn, Miss.
Covina High School Amateur Radio Club...Covina, Calif.
Crossband Communication
Club Inc. of New York....Rego Park, L. I., New York
Delmont Radio Club.....Pennsauken, N. J.
Dutchess County VHF Society.....Poughkeepsie, N. Y.
"Earbenders" Radio Club of the East
Paterson Memorial High School....East Paterson, N. J.
Gibson Amateur Radio Club.....Princeton, Ind.
Jefferson Barracks Amateur Radio Club.....Lemay, Mo.
Lehigh University Radio Society.....Bethlehem, Pa.
The Mahanoy Valley Brass
Pounders Club.....Mahanoy City, Pa.
Miami Valley Amateur Radio
Contest Society.....Centerville, Ohio
Michigan City Amateur Radio Club.Michigan City, Indiana
Mid Mo Amateur Radio Club, Inc.....Jefferson City, Mo.
Old Natchez Amateur Radio Club.....Natchez, Miss.
Tri-College Amateur Radio Club.....Claremont, Calif.
West Medford Community Center
Amateur Radio Club .....West Medford, Mass.
Western Westchester Radio Club.....Ossining, N. Y.
Edison High School Amateur Radio Club....Edison, N. J.
Tower Amateur Radio Club.....New York, N. Y.
Quad Co. Amateur Radio Club, Inc.....Loami, Ill.
Eau Claire Amateur Radio Club.....Eau Claire, Wis.
Tri-State College Amateur Radio Club.....Angola, Ind.
Emergency Radio Communications
Ass'n Inc.....Coal Valley, Ill.

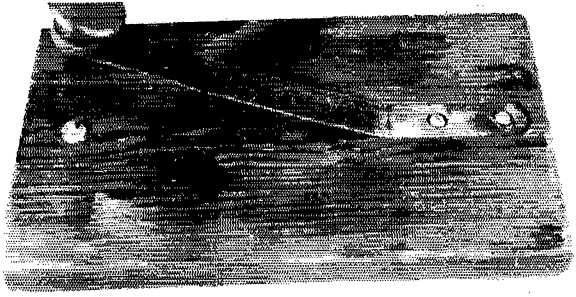
On motion of Mr. Doyle, unanimously VOTED to approve the holding of a Dakota Division Convention in Minneapolis, Minn., on September 16–17, 1960; a Pacific Division Convention in San Mateo, California, on September 2–4, 1960; and a Michigan State Convention in Bay City on March 24–25, 1961.

There being no further business, the Committee adjourned at 2:45 P.M.

A. L. BUDLONG
Secretary

Strays

W8DTY parked his car before going in to his shift at the Chrysler operated missile plant near Detroit and discovered he was bumper to bumper with W8DYT . . . who works on a different shift, so the two men have never met.



This is a replica of the key used by Samuel F. B. Morse for the Washington-Baltimore experiment, May 24, 1844.

BY LOUISE RAMSEY MOREAU,*

W3WRE

The Key to Communication

PROBABLY the most unmentioned piece of equipment in almost any shack is the key. Copy any "inventory transmission" and 99% of the time the proud owner doesn't remember to mention his station key. There is invariably a minute description of the receiver, plus all the additional hearing aids used to give the signal report, a very detailed breakdown of the transmitter and power, and of course, the antenna statistics right down to the last sixty-fourth of an inch. If it is an antenna farm, every single skyhook comes into view with close-up shots, and each is analyzed as to performance. On the other hand, about 75% of phone operators will mention the type of mike, and if they have more than one, there are usually a couple of comparison transmissions.

Strangely enough, even the c.w. fiends, who would sooner be caught beating the kids than touching a mike, rarely comment on the key unless it is not operating as smoothly as they could wish, and then the comment is "This bug is trying to take off" or, in the best Goldilocks and Poppa Bear tradition, "Someone has been tampering with my key!"

In fact, the key is in much the same position as the groom at a wedding: a star in the cast, a vital part of the whole thing (even the 100% fone men sneak one out of a secret drawer to check out or tune up once in a great while), but, like the groom, it is seldom noticed unless it is missing.

Three high points in communications history occurred via telegraphy and it is an interesting fact that while the cast of characters down to the lowliest stage hand is given, weather conditions noted and all the equipment used is itemized for future historians, in only one case is the actual instrument that wrote the story given any notice whatsoever.

The year 1959 marked the 115th anniversary of telegraphy. The story of the successful Washington-Baltimore experiment is almost as familiar as coffee for breakfast. The group of officials surrounding Alfred Vail at Baltimore is just about as well known as the famous register with its heavy magnets and recording tape. And every aspirant to an amateur radio license is only too aware that the characters that appeared on that tape registered the birth cry of the bi-signal code. He no doubt wistfully wishes that the telegraph fraternity had left well enough alone and had not tried to copy by sound, but had continued the original recording methods.

In Washington the details are even more explicit, including a fashion note on Miss Annie Ellsworth who chose the Biblical quotation for Morse to send. But, when Morse sent that first character, he was doing one thing that is scarcely noticed: he was activating the first telegraph key as we know it, for with that transmission the great-grandpappy of all straight keys made its appearance. Prior to that time, there had been numerous devices, some of them exceedingly elaborate, in use for telegraphy in Europe. Morse himself had originally designed a much more intricate instrument, but discarded it when he found, during test, that a simple switch could be used to open and close the circuit.

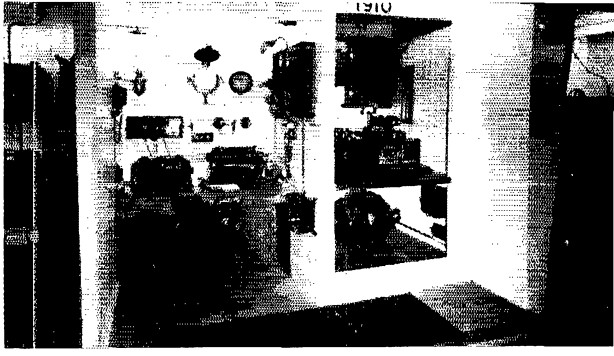
This hastily assembled "Correspondent", as it was called, certainly was not beautiful from a designer's standpoint. Add a bridge near the knob and you have a rough facsimile of today's strap key. Probably it had a very stiff action since that straight lever bent up at an angle, depending on the resilience of the metal for action. It does not give the impression of a Rag Chewer's Special. We still use the flat knob, but the lever has long since curved down toward the table, and pivots and a spring have created an ease of operation not enjoyed by the early telegraphers.

This is a period of "firsts" — everyone seems to want to be the first to work a new country, hear a planet, or get some new certificate. While Samuel Finley Breese Morse was, literally, the first telegrapher, using the key and code for the first time, to amateurs, particularly in this DX-happy time, Guglielmo Marconi also has the distinction of holding a couple of enviable firsts.

Marconi, who often stated that he was "only an amateur", conducted the first DXpedition in radio history when he made his trip to St. Johns, Newfoundland.[1] He could also be listed as the first s.w.l. if the wavelength is not considered.

* 639 Russell Ave., Johnstown, Pa.

[1] Ignoring, of course, that reported on page 14 of *QST* for February, 1957.



By 1910 the rotary spark transmitter had largely replaced the fixed gap, but the 10-inch induction coil was still fitted for emergency use. A multiple tuner and magnetic detector were used for reception. The noise from the 1½-kw. rotary spark transmitter was so great that it was usually installed in a sound-proof cabinet.

This was a DXpedition in reverse since it was the listener who did the traveling, an experience to be duplicated some twenty years later by Paul Godley.

The weather was everything that usually happens on one of these trips — horrible. And of course the wind took over and darned near ruined everything by lousing up the antennas, both "fixed" and "portable". But eventually, at Signal Hill, the big kite was able to support the five-hundred foot receiving wire, and the 170-foot-high fan antenna at Poldhu obediently radiated the well-known letter "S" across the North Atlantic at a touch of the key.

Back in Poldhu, the 25 kw. 45-cycle alternator and the huge transformers and capacitors were activated by the first key used to prove that DX was possible.

Considering the size of the rest of the equipment the ⅜-inch contacts on that key seem small compared to the three-quarter inch brass bar-type lever and the mushroom-shaped wooden knob. The trunnions are set far back on the base to balance the long, heavy lever, and are pulled in close to it. This heavy key was the instrument that made possible the success of the first DX-pedition since none of the equipment could have been activated without it.

The weather that menaced the transatlantic tests in 1901 was mild compared with January, 1909, when the first call for help from a ship in distress went out from the key of the late Jack Binns, radio operator aboard the rammed liner *Republic*. This is another time when the key wrote history — in this case a broken key, now a part of the collection in Davy Jones Locker.

As a matter of record the first CQD involved two keys and two operators. All the elements required to make a first class TV thriller are involved in the story of the collision before dawn in a thick fog in icy January weather, with a high sea running, right through to the radio operator who had to hold his instrument together to transmit, and the fact that until help was almost at hand, everything had to be relayed because the signal from the emergency power of the *Republic* was too weak to be read directly by the rescue ship.

The keys the British Marconi Company installed aboard the ships and in the shore stations were big and cumbersome and beautiful. The knobs were much on the order of those we call (erroneously, incidentally) a "Navy Knob," on the end of a straight brass lever. On the side of the mahogany base was a long knife switch or lever used during operating. In the radio room, the lever was broken, and Jack Binns literally had to hold the key together to transmit in this first emergency.

It usually takes "Jacks or better to open," and in this instance a pair of Jacks was the winning hand against the sea, with human lives as the stake.

Back at Siaconsett, Jack Irwin was operator at the American Marconi coast station "SC", and we AREC and RACES members might well consider him the first NCS on what was probably the first emergency frequency. In fact, he was also an "Official Relay Station" since the auxiliary power of the *Republic* reached only 50 or 60 miles. Irwin relayed the CQD, and maintained the contact link between the *Republic* and the rescue ship until they were able to communicate directly.

These four keys wrote "firsts" in the history of telegraphy, and, of course, all of them were in the pioneer days of art. They are only four of many others: the key that told of Appomattox; the one that flashed the news of Lincoln's death; the historic "It's CQD, OM" from the big beautiful key of the *Titanic;* or the SOS that ripped off the bug of the radio room of the flaming *Morro Castle.*

All keys have some story to them, maybe as a gift, or the one used for the first QSO, or that long desired one that finally is a part of the station. Not all are so spectacular as the four we have described, but whether it is a station key, a rare museum piece, or the little practice set that the Boy Scout uses to earn a Merit Badge, these instruments have one thing in common — they are the fundamental symbol of the art itself. "Key hr is .....", try it. QST

Strays

The other night while working a very slow Novice I asked him how long he had been on the air. He came right back and said, "Since about 9:00 P.M." Gee, a real beginner! But then he added, "In fact, I go on the air each night starting about 9:00 P.M." — *KN4PLD*

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

PROBABLY few potentially more explosive terms exist in ham language than "phone" and "c.w." This is hard to understand, and it is of little credit to our hobby that c.w. men hate phone men, and vice versa. There was more reason for it in the earliest days, when phone meant modulated oscillators, notoriously wasteful of spectrum space in our all-too-narrow bands. We had only 80, 40 and 20 then, so even with low level of occupancy there was some cause for concern. There still is, in these bands, and presumably there always will be due to the limited space available in the h.f. region.

But space in the spectrum, or lack of it, is not the sole reason for the strife between the champions of the two modes of communication. If it were, why the bitter arguments we've had in regard to voice and c.w. assignments at 28 Mc. and higher? Newcomers to the world above 50 mc., who have bristled at the thought of 100 kilocycles of the 6-meter band devoted to A1 emission, were merely following a behavior pattern almost as old as amateur radio itself.

Take 10, for example. Before World War II the band was the same as now, with 28,000 to 28,500 kc. for c.w. exclusively, in the United States. This worked out nicely for both c.w. and phone operators, even though it seemingly represented 29.4 per cent of the band for c.w. By gentleman's agreement, foreign phones, for the most part, stayed out of the first 100 kc., but used the rest of the low end to work Ws. Under this arrangement 10 became the DX phone band supreme.

Between the outbreak of war in Europe in 1939, and U. S. entry into the war at the end of 1941, DX possibilities languished, with amateurs in all belligerent countries off the air. To make best use of the 10-meter band, now become essentially domestic phone territory, FCC moved the phone assignment down to 28.1 Mc. as a *temporary* arrangement. After the war, operation was resumed on that basis, because 10 and 2½ were the only bands available at first.

After other frequencies were released, and ham radio once more became a full-scale world-wide operation, FCC, with ARRL approval, moved the phone band back to 28.5 Mc. For some time before and after this change, there was a tremendous furor among voice operators on 10. ARRL was accused of blindly championing c.w. against phone, and there were arguments and petitions galore. But the move went through on schedule, and almost at once those who had argued so vociferously against the "c.w. expansion" began to see its true merits. With 400 kilocycles in which to work without having to do battle with U. S. phones, amateurs in other countries succeeded in phone DX work as never before, and the greatest beneficiary was the U. S. phone man. It is doubtful if many of them would want to go back to the old 28.1-Mc. low end today.

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

50 Mc. WAS

1 W0ZJB	19 W3OJU	38 W7ILL	57 W1SUZ
2 W0BJV	20 W6TMI**	39 W0DDX	58 W1AEP*
3 W0CJS	21 K6EDX	40 W0DO	59 W5LFH
4 W5AJG	22 W5SFW*	41 K9DXT	60 W6NLZ**
5 W9ZHL	23 W0ORE	42 W6ABN**	61 W7MAH
6 W9OCA	24 W9ALU	43 W6BAZ	62 W8ESZ
7 W6OB	25 W8CMS*	44 VE3AET	63 W2BYM
8 W0INI	26 W0MVG	45 W9JFP	64 W7ACD
9 W1HDQ	27 W0CNM	46 W0QIN	65 K6PYH*
10 W5MJD	28 W1VNH	47 W0WWN	66 W4HOB
11 W2IDZ	29 W0OLY	48 K9ETD	67 K0JJA
12 W1LLL	30 W7HEA	49 W0FKY	68 K6RNQ**
13 W0DZM	31 K0GQG	50 W8LPD	69 W9QWT*
14 W0HVW	32 W7FFE	51 W0ZTW	70 W6EDC**
15 W0WKB	33 W0PFP	52 W6GCG	71 K6VLM**
16 W0SMJ	34 W6BJI**	53 W2RGV	72 K6GOX**
17 W0OGW	35 W2MEU	54 W1DEI	73 W0EDM
18 W7ERA	36 W1CLS	55 W1HOY	74 W9JCI
	37 W6PUZ	56 W6ANN	75 W0LLU*

* 49 states ** 50 states

VE7CN	45	EI2W	37	LU3DCA	27	SM5CHH	20
KL7AUV	44	CO2XZ	36	LU3EX	27	LA7Y	20
VE1EF	42	ZS3G	32	ZE2JV	26	VQ2PL	18
VE4HS	41	SM6ANR	30	LU9MA	26	JA8AO	18
XE1GE	39	CO2ZX	30	CO2DL	25	JA8BU	17
VE2AOM	38	SM7ZN	29	CT1CO	24	JA1AAT	17
KH6UK	37	PZ1AE	28	CO6WW	21	JA1AUH	16
		SM6BTT	28	LA9T	21	VP5FP	7

What was billed as a phone-c.w. argument turned out to be no argument between modes at all, and this is even more true of the 50-Mc. case. We're still getting an occasional letter from an irate Technician who demands to know by whose authority did ARRL and FCC "take away" 100 kilcycles of his band, but on the whole it would appear that moving up less than 100 kc. (2½ per cent of the band) has worked no hardship on any 6-meter operator. Has it done any good?

Unbiased 6-meter men, users of both modes, all agree that it most certainly has. This never was a phone-c.w. argument in the conventional sense, for there are almost no c.w. men on the v.h.f. bands. You will look a long time to find a v.h.f. station with no microphone or modulator, a common sight on lower bands. V.h.f. men wanted a small segment of the band for the exclusive use of c.w. for the good it would do amateur radio generally, and v.h.f. hamming in particular. Now that the move has finally been made (after more than 10 years of discussion) it is paying off handsomely, even in the first few weeks of its history.

The band was asked for in order to permit better exploitation of 50-Mc. DX potential. Being a highly effective weak-signal medium,

c.w. permits many contacts over great distances that are impossible under the same conditions on voice. There is nothing like it for ionospheric and tropospheric scatter, for catching the best DX in the opening and closing phases of any sporadic-*E* or F_2 opening, or for maximum utilization of the potential of meteor bursts.

To the surprise even of many of its advocates, the c.w. subband is doing other things for 6-meter men as well. Fellows in Channel 2 areas, plagued by TVI for blocks in all directions when they use a.m., are working on c.w. without precipitating a neighborhood crisis. Others, using low power through necessity or choice, are reaching out many miles beyond what they were able to do with voice. In the June V.H.F. Party, freed for the first time in any v.h.f. contest from the disastrous effects of phone splatter and blocking v.h.f. men who never before pushed a key found unparalleled opportunities for picking up new sections on 6. Technician-class operators, formerly without incentive or opportunity for c.w. practice, are learning that use of the code can be fun, as well as a stepping stone to a higher grade of ham ticket.

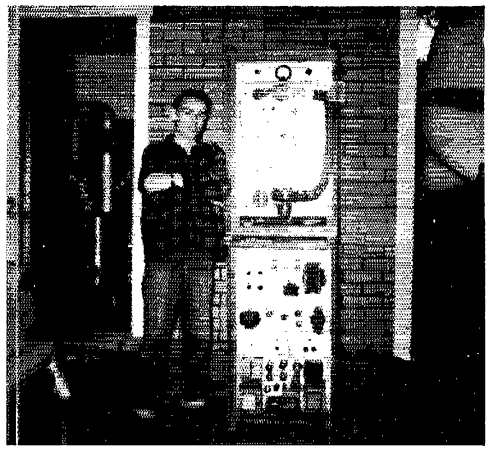
There is not a thing in the world that can be done at 50.0 Mc. that cannot be done 50.1, but moving some phone work by that tiny amount has paid real dividends already. It is unfortunate that we didn't get to it years ago, to take full advantage of the weak-signal possibilities of c.w. for world-wide F_2 DX, but there is still a marked advantage to the phone operator in having a spot in which to look for DX, as well as to the c.w. man who will make use of the new opportunities narrowband techniques afford. A word to the wise: Just because there are no U. S. phones below 50.1 Mc., don't quit tuning the first 100 kc. Remember, there are dozens of countries within sporadic-*E* DX range where voice operators are still using 50 to 50.1 Our friends to the north found the going rough on phone in the June V.H.F. Party, because too many voice-minded 50-Mc. men were "tuning from 50.1 up" after their contest CQs.

What of the c.w. band at 147.9 to 148? As expected there is nothing there. It is unlikely that there will be, unless some disaster strikes down every large 144-Mc. array in the country. The gentleman's agreement to keep the first 100 kc. of the 2-meter band free for DX work on c.w. seems to be working as well as it ever did. Until something better comes along, it will have to do, for the moment. Meanwhile, in the long-sought 50-Mc. c.w. segment we have an asset of great value. Let's see to it that it is used to full advantage.

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

Your conductor was in Toronto the week end of June 18 and 19, attending the V.H.F. Roundup sponsored by the Ontario V.H.F. Association. Starting out with VE3BPR for a round of visiting Sunday morning, we immediately heard talk of a big opening to the south on 144 Mc. The VE3s were beyond the edge of this one, but they heard stations to the south working 4s and 5s. It appears to have been the best tropo session of 1960, by all reports.

K8AXU, Elkins, W. Va., knew that things were promising when a cold front went through the night of the 17th, and



VE1IF, with 445-Mc. amateur TV gear ready for installation at Cape Blomidon, Nova Scotia. Signals from the station were received at Rawdon, N. S., 35 miles away. Other participants in the expedition, which also served as a checkout for a proposed Field Day cite at Rawdon, were VE1ADH VE1IJ and VE1ZZ.

though deep in a valley he found the high TV channels loaded with cochannel interference. Al was at work all day the 18th, but he got on 144 Mc. from his favorite location, Bickels Knob, some 4000 feet above sea level, around 2030 EST. There were many signals coming through, but not much beyond 350 miles until after 2330. W5HTZ, Wewoka, Okla., was worked at 2340, a distance of nearly 1000 miles. At 0010 EST W5AJG, Dallas, was raised on c.w., followed by W5JWL, Gurdon, Ark., at 0020. W5KTD and W5JSW, Louisiana, were worked on 144-Mc. c.w. at 0320.

At 0145 W5AJG was S9-plus on 144 Mc., so K8AXU called him again and they went to 220. Contact was made at once, with S6 signals. This is some 1050 miles, the best DX ever worked over land on 220 Mc. W3RUE, Pittsburgh, heard the preliminaries, so he checked 220 also. W5AJG was heard 529 on c.w., but Ted was unable to raise him. Pittsburgh to Dallas is about 1100 miles. The bands remained good through the early morning, and K8AXU/8 was still audible on 144 Mc. at W5AJG as late as 0600 CST. Stations worked on 144 Mc. by W5AJG include W8KAY W3RUE K8AXU/8 W9IFA W4LTU W3SGA W3GKP W4HJQ W8LOF W8SFG K9SGD and W4HHK. W4LTU and W3GKP are nearly 1200 miles.

W4LTU calls this the best tropo opening he has encountered since moving to the Washington area. W3GKP agrees, citing evidence that he was running only 90 watts input, using an ancient 6J6 converter, and is missing several pieces of his "20-element" beam, yet he worked W5AJG and W5JWL and heard W5JSW consistently for a long time, even when the latter was working stations in other directions. Smitty was on for this big session as the result of a phone call from W4LTU. Walt got no new states, but had a fine time working and logging stations never before heard via tropo. All through the evening, and into Sunday morning, signals from out to 300 miles or so were only slightly above normal.

Our 2-meter records box has many changes this month, as a result of this unusually good tropospheric opening. Please check your listing, and if it is not correct, send us the number of states and U. S. call areas you have worked, plus the call and location of your most distant station. W3SGA, Fairchance, Pa., moved up the most of anyone we've heard from as a result of the session of June 18–19. Bob worked W5AJG W5KTD and W5JWL, for three new ones. These were no scratch contacts either. W3SGA reports W5JWL 589, WØDFK in Missouri S9 on voice, and W4HHK and W4RFR S9-plus.

"Mystery signals" are in the 50-Mc. news this month, a condition not unusual at the height of the sporadic-*E* season. We always want to know of any signals not of amateur origin that appear in any of our v.h.f. bands, so we outline the following procedure for reporting them. First, be sure that they are *in* the band. Spurious receiver re-

sponses may make signals appear to be in the band when actually they are not. Have two or more stations with different receiver intermediate frequencies tuned to the signal, to see if it comes in at the same spot on each. Observation of one's antenna pattern on the interfering signal is usually a good way to tell if it is really on the frequency it appears to be. An appreciable variation in pattern from the normal one for the frequency in question may indicate that the signal is an image or other spurious response.

If the signal is in the band, note its characteristcis (type of modulation, strength, direction of arrival, duration of reception, etc.) and give us a detailed report. Many propagation experiments are being conducted on frequencies near the 50-Mc. band. We are not concerned with these unless they cause severe interference to amateur operation, which they may, in view of the very high power levels occasionally used. Under the almost perfect propagation conditions occasionally encountered in the sporadic-*E* season, such signals may well reach "local" levels at distances of 1000 miles or more. At least as far as 50 and 144 Mc. are concerned, we may be able to help, except where interference is the result of receiver deficiencies. At 220 Mc. and above, our situation may not be so favorable, but we still want to know the nature and extent of nonamateur signals in any of our bands.

KØSHN reports a big signal near the middle of the 50-Mc. band. It has been heard over quite an area, including St. Louis and adjacent Illinois. At times it blocks reception over the whole band, though it peaks near 52 Mc. Not enough information has yet been obtained on this one to track it down, but it might be WWI, at nearby Havana, Ill. In this connection, most propagation experiments identify at least once every half hour. Watch for code identification at 15- or 30-minute intervals.

W2YLM, Endicott, N. Y., says that an intense noise burst was noted on about 51 Mc., May 31, at 1757 EST. This was checked with an APR-4 receiver and a panadaptor, and observed to cover 500 kc. either side of 51 Mc. Interference was widespread. K2SVV, Johnson City, N. Y., and W3BKF, Sayre, Pa., thought their receivers were acting up at first. A variety of beam headings were reported, indicating the possibility of high arrival angle. This would seem to rule out solar noise, which would not be too high-angle at that hour. An undulating band of noise was present out to as much as 3 Mc. either side of the center frequency. The noise ceased abruptly at 1805.

There was a marked increase in 50-Mc. c.w. activity, even prior to the effective date of our c.w. subband, according to W6NLZ. With the removal of phone QRM, always a problem heretofore in the crowded Los Angeles area, scatter contacts of various kinds are made on 50 Mc. at will. After about 0700 PST on week-end mornings one hears W7RDY K7AAN W7QIDJ WØIC W6NLZ W6TNS W6PUZ K6OCH K6RNQ K6APH and others banging away. K6RNQ, Oakland, is worked regularly with ease, under dead-band conditions. Signals run around S6, with S9 peaks. The latter seem to have tropospheric characteristics, though meteor bursts are also noted. This is a 350-mile haul, with mountains practically all the way. W7RDY, Everett, Wash., 950 miles, is a beautiful mixture of ionospheric and meteor scatter, and easy to work in the morning hours.

The Southern Rhodesia–Cyprus *T'E* circuit continued to function through the month of May, though indications of a drop-out in June were showing early in that month. Measurements of the time of travel and angle of arrival of the TE and other types of signals have been made, and some interesting conclusions drawn. These are summarized in "Technical Correspondence," elsewhere in this issue.

Visiting VE3s BQN DIR and HW during our week end in Toronto, we were pleasantly surprised by the caliber and degree of activity on 144 Mc. and higher. Large stacked

2-METER STANDINGS

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

W1REZ	32	8	1300	W5UNH	6	3	1200
W1AZK	28	8	1205	W5YYO	5	3	1330
W1KCS	24	7	1150				
W1RFU	23	7	1120	W6WSQ	14	5	1390
W1AJR	23	7	1130	W6NLZ	12	5	2540
W1MMN	21	7	1090	W6DNG	9	5	1040
W1HDQ	21	6	1020	W6AJF	6	3	800
W1IZY	20	7	1180	W6ZL	5	3	1400
K1CRQ	19	6	800	W6MMU	3	2	950
W1AFO	17	6	920				
K1AFR	17	6	675	W7VMP	15	5	1280
W1CLH	17	5	450	W7JRG	13	4	1040
				W7CJM	5	2	670
W2NLY	37	8	1390	W7LHL	4	2	1050
W2CXY	37	8	1360	W7JIP	4	2	900
W2ORI	37	8	1320	W7JU	4	2	353
K2CGQ	33	8	1200				
W2AZL	29	8	1050	W8KAY	38	8	1020
K2IEJ	27	8	1060	W8SDJ	35	8	990
W2BLV	27	8	1020	W8PT	34	8	985
W2AMJ	25	6	960	W8IFX	34	8	980
W2DWJ	23	6	860	W8LOF	33	8	1060
K2HOD	23	7	950	W8RMH	32	6	910
W2PAU	23	6	753	W8SVI	30	8	1080
W2RXG	22	7	1090	W8SFG	30	8	1000
W2SMX	22	6	940	W8EHW	29	8	860
K2CEH	22	8	910	W8LPD	29	8	850
W2LWI	21	6	700	W8WRN	28	8	880
W2ESX	20	6	750	W8BAX	28	8	960
W2WZR	19	7	1040	K8AXU	27	8	1050
W2UTH	19	7	880	W8NOH	26	8	975
W2RGV	19	6	720	W8DX	26	8	720
K2RLG	17	6	980	W8ILC	25	8	800
W3RUE	32	8	1100	W8JWV	25	8	940
W3GKP	30	8	1180	W8GFN	23	8	540
W3SGA	30	8	1070	W8LCY	22	7	680
W3FDF	29	8	1050	W8BLN	21	7	610
W3KCA	28	8	1110	W8GTK	17	7	550
W3SGA	27	7	700	W8NRM	17	7	550
W3EPH	22	8	1000				
W3BYF	22	6	660	W9KLR	41	9	1160
W3LNA	21	7	720	W9WOK	40	9	1170
W3NKM	20	7	730	W9GAB	34	9	1075
W3LZD	20	7	650	W9AAG	32	8	1050
				W9REM	31	8	850
W4HJQ	38	8	1150	W9ZIH	30	8	830
W2HHK	36	9	1280	K9AAJ	27	8	1070
W2ZKI	34	8	950	W9LVC	27	8	950
W2LTU	31	8	1160	W9EQC	27	8	820
W4AO	30	8	1120	W9PBP	27	8	820
W4MKJ	28	8	850	W9OJI	26	8	910
W4UMF	28	8	1110	W9ZHL	25	8	700
W4VLA	26	8	1000	W9BPV	25	7	1030
W4EQM	25	8	1040	K9AQP	24	7	900
W4WNH	24	8	850	W9LF	22	7	825
K4EUS	24	6	765	W9KPS	22	7	690
W4JCJ	23	6	725	W9CUX	21	7	800
W4VVE	21	6	720	W9OEV	20	7	750
W4RMH	20	7	1080	W9PMM	19	6	800
W4TLV	20	7	1000	W9ALU	18	7	800
W4IKZ	20	6	720				
W4OLK	20	6	720	WØBFB	32	9	1180
W4AIB	19	7	840	WØSMJ	29	9	1075
W4CPZ	18	6	650	WØHD	28	8	1030
W4RFR	18	7	820	WØQDH	24	9	1300
W4MDA	17	6	750	WØRUF	23	7	900
K4YUX	16	8	830	WØINI	21	6	830
W4LNG	15	6	1080	WØUOP	21	7	900
				WØTGC	21	7	875
W5RCI	34	9	1215	WØRYG	20	8	925
W5AJG	29	9	1360	WØIC	19	7	1240
W5DFU	28	9	1300	WØIFS	16	6	1100
W5LPG	25	7	1000				
W5PZ	25	8	1300	VE3DIR	30	8	1330
W5KTD	23	8	1200	VE3AIB	28	8	1340
W5JWL	21	7	1150	VE3BQN	19	7	790
W5FYZ	15	5	1040	VE3DER	17	8	1340
W5ML	12	5	700	VE3AQG	17	7	1300
W5FSC	12	5	1390	VE3HW	15	7	1350
W5HEZ	12	5	1250	VE2AOK	13	5	550
W5CVW	11	5	1180	VE3BPB	14	6	715
W5NDE	11	5	625	VE7FJ	2	1	365
W5VY	10	3	1200				
W5SWV	10	3	600	KH6UK	1	2	2540

220- and 520-Mc. STANDINGS

220 Mc.

W1AZK	9	3	412	W4UMF	11	5	420
W1HDQ	11	5	450	W5AJG	3	2	1050
W1OOP	12	4	400	W5RCI	8	5	700
W1RFU	15	5	480	W6NLZ	3	2	2540
W1UHE	11	4	385	K6GTG	2	2	240
W2AOC	13	5	450	W6MMU	2	2	225
K2AXQ	8	3	230	K7ICW	1	1	250
K2CBA	10	4	325	K8AXU	10	5	1050
K2DIG	4	3	140	W8IJG	9	5	475
W2DWJ	14	6	740	W8LPD	6	4	480
W2DZA	12	5	410	W8NRM	8	4	390
W2LRJ	10	4	250	W8PT	10	5	550
W2NTY	10	4	200	W8SVI	6	4	520
K2PPZ	10	4	190	W9AAG	9	4	600
K2QJQ	10	4	260	W9EQC	11	5	740
W3AHQ	4	3	180	W9JCS	5	2	340
W3FEY	8	4	298	W9JFP	9	4	540
W3LCC	8	5	300	W9OVL	6	3	475
W3LZD	15	5	425	W9UED	4	4	605
W3RUE	6	4	225	W9ZIH	10	5	500
W3UJG	11	5	400	KØDGU	5	3	425
W3ZRF	5	4	112	KØITF	6	3	515
K4TFU	8	4	400	KH6UK	1	1	2540
W4UBY	7	5	320	VE3AIB	7	4	450

420 Mc.

W1HDQ	8	3	210	W2OTA	6	3	150
W1MFT	4	3	125	K2UUR	6	3	110
W1RFU	7	4	410	K3EOF	6	3	250
W1OOP	10	3	390	W3FEY	5	2	225
W1UHE	6	4	430	W4HHK	3	3	520
W2AOD	6	4	290	W4VVE	6	4	410
W2BLV	11	5	360	W5RCI	5	3	600
W2DWJ	7	4	196	W7LHL	2	1	180
K2CBA	5	3	225	W8HCC	3	2	355
W2DZA	5	3	130	W8NRM	3	2	390
W2NTY	3	2	100	W9GAB	7	4	600

arrays, the best in converters and receivers, and medium or high-powered transmitters seemed the order of the day. Ottawa and Montreal have their share of v.h.f. activity, too. VE3DEL, ex-VE1QG, says that he and VE3s DIH BCL CUA BYT and BAG are all on 144 Mc. around Ottawa regularly. Contacts with VE2TT in Montreal, and WA2CEF K2RNX and W2CFY in upstate New York, helped to spark interest. Don copies both VE2TT and VE3BQN readily on their nightly skeds. The gang around Ottawa make a habit of checking the first 400 kc. of the band nightly at 2200 local time, looking especially for c.w. signals from the south and west.

There is VE5 activity on 50 Mc. VE5GI has 25 watts, v.f.o. controlled, and VE5GG runs 50 watts on 50.1 Mc. Both are in Regina, Sask., and are on the lookout for DX of any kind.

The fifth in the series of Shotput firings (Shotput V, May 31) was observed by the same 144-Mc. operators as Shotput IV, details of which were reported in June *QST*, page 73. K4EUS, Chester, Va., heard very weak signals, presumably from W4LTU, but is not sure that these were balloon reflected. K2LMG, South Lansing, N. Y., copied K2GQI, Keyport, N. J., at 1956 and 1957, with a signal strength indicating a target area equal to the theoretical value for a 100-foot sphere. Shotput IV signals pointed to a target area some 100 times this value, indicating the presence of ionization. The fourth firing took place when auroral conditions were present, and it is thought that this may have contributed to the ionization capability of the balloon. K2LMG concludes that the balloon alone is incapable of developing sufficient ionization for the reflection of a 144-Mc. signal, except when the ambient ionization level is above normal already.

Feeling that opportunities for 2-meter DX may have been missed during periods of high-density sporadic-*E* ionization, 2-meter DX enthusiasts have organized a calling and listening schedule for use when conditions appear favorable. Stations west of the Mississippi transmit during the first, third and fifth minutes of each quarter hour, and listen during the alternate minutes. Stations in the eastern half of the country do the reverse. This course, recommended by WØIC after consultation with W2CXY K2GQI and W2TTM, is to be followed whenever very short skip is observed on 50 Mc. or when the f.m. broadcast band or high TV channels show evidence of sporadic-*E* skip.

The sound of a signal emanating from an airborne station can be counted on to set a v.h.f. band on fire. It has always been thus since the earliest days of activity on frequencies above 50 Mc., and it still works. Ask the crew of A3USA/AM, who worked on 143.99 Mc. in a special celebration of Armed Forces Day, May 21. Leaving Ft. Meade, Md., at 0715 EST, in a 6-place Army L-20 training plane, W3NNM K3IYT W4VAB and KN7ETX flew a prescribed route over Maryland, Virginia, West Virginia, Kentucky, Ohio and Pennsylvania, stopping overnight at State College, Pa., due to bad weather. The flight was continued the following day, but curtailed due to the need for instrument flying. Altogether, 138 different stations were worked, tnough many more could have made it but for poor operating procedure on the part of many operators. (Who ever invented the long call without signing, and why does anyone in his right mind still use it?) Special QSLs have been sent to all stations worked.

A similar flight, but this time operating on 143.99 and 49.94 Mc., is planned for the 100th anniversary of the Signal Corps, Aug. 21. This will begin at 1400, again with the takeoff from Ft. Meade. Only amateur stations will be worked, special permission having been obtained for this MARS-amateur communication, for this flight only. Special citations to the most distant stations worked; QSLs to all others, and to listeners logging 3 or more consecutive contacts. Mail reports to MARS Director, Second U. S. Army, Ft. George Meade, Md.

Amateur TV was demonstrated at the May meeting of the Livonia Radio Club by Larry Mueller, W8RLT, right. Barry Turner, VE3EBT/W8, center, electronics instructor in a Detroit school, gave a chalk-talk on principles of amateur television. L. H. Barker, W8QGE, club president, is at the left.

August 1960

Pacific Duct Experiment on 220 and 445 Mc.

The following information was received too late for inclusion in July *QST*, so the basic details were mailed to OES appointees west of the Mississippi, and were put on W1AW and other bulletin stations. As the tests will be less than half completed by the time this issue reaches you, here is a more complete report than was possible in bulletin form.

The U. S. Navy is conducting a series of propagation tests between San Diego and Hawaii on 220 and 445 Mc., to study the trade-wind duct that was reponsible for the record-breaking work of W6NLZ and KH6UK on 144 and 220 Mc. Amateur cooperation in this experiment is solicited. Four c.w. transmitters will be used, one of them airborne along the route between the terminal points of the radio circuit. San Diego will be on 219.987 Mc. with 1 kw. and a 20-db. antenna having a beam width of 20 degrees. Oahu will use a similar antenna with 200 watts output on 220.012 Mc. The 100-kw. transmitter and 40-db. antenna normally used for Navy moon-relay work on 445 Mc. will aim its 1.8-degree beam at San Diego, and also track the aircraft in flight. The plane will carry a 200-watt 220-Mc. transmitter and a 10-db. antenna.

The three ground stations will be on the air for approximately 15 hours each test day, beginning at 1200 GMT July 9, 1500 July 12, 1900 July 16, 2200 July 22, 0300 July 26, 0500 July 30, 0700 Aug. 2, 1100 Aug. 6, 1400 Aug. 9, 1800 Aug. 13, 2100 Aug. 16, 2400 Aug. 20 and 0100 Aug. 24. Note that times are in GMT (PST plus 8 hours). This schedule may be altered for aircraft maintenance, in which case current information will be available from Robert Hopkins, Navy Electronics Laboratory (Code 2222) San Diego 52, or David L. Ringwalt, International Hotel and Motel, 1804 Sycamore St., E. Segundo, Cal.

The first flight and alternate flights thereafter will be from San Diego to Oahu. Other days the flights will be Oahu to San Diego. The airborne station will start transmitting about 2 hours after the ground stations. The Oahu 445-Mc. transmitter will beam on San Diego for the first 2 hours of the transmission period, and track the plane thereafter. Its 1.8-degree beam will illuminate about 80 miles of the West Coast at any one time, and its heading will depend on the position of the plane during the tracking periods.

Please send detailed reports of any long-distance reception of any of these stations at once to ARRL.

The World Above 220 Mc.

Though we have only a few responses to our question regarding a move to the middle of the 220-Mc. band, the general idea seems to be to let the TV oscillators and radars fight it out on the low end. Interference problems vary from one area to another, and there is little agreement as to just what the "low end" of the band should be. Some are satisfied with 221.4 Mc., and the Mt. Airy V.H.F. Club (Philadelphia area) has recommended a move to that spot. Northern New Jersey stations go along with this, using 221.4 to 222 Mc., according to W2PPZ. West Coast operators and VE3BQN favor higher in the band. Others say "Any frequency, but not till after the DX season." Let's hear from more of the 220-Mc. contingent; 10 expressions of opinion, with no unanimity, is hardly enough evidence to support a major move. One thing is certain: in a band 5 megacycles wide, we stand little chance of working DX other than by appointment, if we don't know where to look!

W1UHE, Tiverton, R. I., says that under ordinary band conditions he can hear W2s on 220 Mc. regularly, but with the QRM he has from radars and TV sets he cannot copy any of these stations until band conditions improve. Even using a parametric amplifier and various selective front ends does not help, when the interference is in the band. Norm likes 221.1 Mc. as a "low end."

W2SHU, Rahway, and W2DWJ, Elizabeth, N. J., tune 221 to 222 Mc. for the present. W2DWJ is on 221.67 Mc. W2SHU says that he can hear little at the low edge of the band, though some of the trouble lies in the receiver and can be cured with a good filter, or "beer-can converter" á la W8JLQ, Oct. 1957, *QST*, page 91. With a broad-band converter and no filter circuits, reception above 221.4 Mc. is substantially free of nonamateur interference. Amp says that the new 6ER5, triode-connected, makes a fine neutralized r.f. amplifier at 220 Mc. Connect pins 1, 6 and 7 together for the cathode. Self-resonant coils are used in the grid and plate circuits, with the plate coil by-passed with 47 $\mu\mu$f. at the cold end. A 1.5-$\mu\mu$f. fixed capacitor connected from this point to the grid provides neutralization. W2SHU uses two such stages without instability problems. Coils are wound on 8–32 brass screws and adjusted to be self-resonant outside the low end of the band when the screw is removed. The screw is then run into the coil slightly for tuning. Use Formvar or other well-insulated wire for this purpose, to prevent shorting turns.

During the June 18–19 opening reported above, W4HHK, Collierville, Tenn., was looking in vain for chances to try 432 Mc. Conditions were good again Monday night, June 20. Paul raised W5HTZ, Wewoka, Okla., on 144 Mc. at 2112 CST, and changed to 432 Mc. Duplex contact was established, and W5HTZ transmitted W4HHK's 432 signal back on 144. They then both went to 432 and continued with good signals. W5HTZ has a parametric amplifier working nicely on 432. Paul uses a 416B converter, 50 watts input to a 4X150 doubler, and a 64-element collinear array on a 50-foot tower. W4HHK to W5HTZ is about 425 miles.

A long haul being covered regularly on 432 Mc. is the Chicago–Toledo circuit. W9PBP writes that W9ZIH and W9OJI are keeping skeds with W8RQI and W8JLQ. They nightly hear each other consistently, and at times have good communication over this 225-mile path.

V.h.f. Operation to Resume at T3

Late word from W1FVY: KL7FLC, Fletchers Ice Island, will be back in operation on 144, 50 and all lower bands beginning about Aug. 1 and continuing through October. As it was about this time last year that the as yet unexplained 50-Mc. DX was worked from KG1FN (see January *QST*) v.h.f. men are urged to keep a close watch for KL7FLC, particularly around midnight local time when auroral conditions are present. Please report full details of any v.h.f. reception of KL7FLC at once to ARRL.

Clubs and Nets

The Sunday morning session of the Tri-State 6-Meter Net has been moved to 50.5 Mc. Time still 0800, CST. Control station W4HHK.

The Southern Michigan Net on 50.7 Mc. was activated by Calhoun County EC, K8CIS, upon request of the Battle Creek municipal weather station, June 16, following receipt of tornado warnings. Though no tornado was sighted, heavy rains and winds in excess of 50 m.p.h. did heavy damage to homes and power and telephone lines. The net was in operation (K8AEM NCS) from 1605 to 2144 EST, handling emergency traffic with state police, broadcasting stations and the weather station. There were 22 6-meter stations in all, from South Haven to Jackson, Mich.

At the June 5 picnic of the 6-Meter Emergency Net of Ft. Worth, new officers were installed as follows: K5MTK, secretary, K5PMX, net manager, K5ZPE, net control, and K5VUF K5BBG and K5ZIF, assistants.

The 7th Annual Western Michigan V.H.F. Hamfest (message received said 80th!) will be held Aug. 7, at Allegan County Park. Swap and shop table, games and activities for all. More information from W8JUU W8PUO or W8NOH.

The Michigan 6-Meter Club Contest (April *QST*, page 60) is over and the many prizes distributed. First place was won by K8MAQ, Farmington, 42,892 points, second by W8WPD, Detroit, 26,532 points, and third by K8BOU, Livinia, 16,156 points.

OES Notes

W1AHE, Stow, Mass. — Returning from summer location at Lincolnville, Maine, worked W1FTU, Waldoboro, all all the way to the Massachusetts line, nearly 175 road miles, on 144 Mc. Also heard W1RPH, Deer Island, Maine, nearly 200 miles. This was during the night of May 30, when a sudden drop in temperature of some 20 degrees was encountered north of Portland. The coast route was cool down to around Newburyport, Mass., where warmer weather was encountered suddenly. Several Maine stations report VE1s working around 146 Mc.

K1CIG, Manchester, N. H. — W1HPM, Manchester Radio Club, has 32-element array and 35 watts output on 220 Mc., working from 1450-foot elevation accessible the year around.

K1CXX, Auburn, Maine — Changed from 8 Mc. to 6 in exciter to cure TVI in Channel 6. Tenth harmonic of 8-Mc. v.f.o. or crystals used for 50-Mc. work falls in hot spot in Channel 6. With 6-Mc. excitation no interference develops, so long as f.m. or c.w. is used.

W1LGE, Windsor Locks, Conn. — Sporadic-*E* skip on 50 Mc. seemed better in first half of spring season of 1960 than ever before. Connecticut and Massachusetts stations worked LUs as late as May 21, both afternoon and evening openings presumably F_2 and *TE* modes.

W3RTV, Pittsburgh, Pa. — Added n.b.f.m. adapter to 75A3, to help in receiving the large number of stations now using f.m. in the Pittsburgh area on 50 Mc.

K3JHE, Philadelphia, Pa. — Anyone have detailed constructional information on 144-Mc. quad antenna?

W4CIN, Birmingham, Ala. — Call CQ on 145.17 Mc. most nights on 2200 CST.

K4EUS, Chester, Va. — Calling CQ on c.w., 144.068, at 2200 EST nightly, aiming south. Sked arranged with W4RMU, but will look for others interested.

K4KYL, Knoxville, Tenn. — Sporadic-*E* skip observed 13 days in May. Activity increasing on both 50 and 144 Mc.

K4VWH, Alexandria, Va. — Early summer tropospheric propagation brings in New York area nightly on 50 Mc. Have worked as far north as W1FTX, 300 miles.

K5VCG, Dallas, Texas — Local 6-meter gang using 53.7 Mc. for private-line type QSOs.

K6HCP, San Jose, Cal. — New members wanted for 6-meter emergency net, Mondays 1930 PST, 50.5 Mc.

W6PIV, Sacramento, Cal. — Repeater near Reno puts consistant 2-meter signal into Sacramento, with maximum variation of about 12 db.

W7EGN, Whitefish, Mont. — 50-Mc. DX better this year than last, with aurora early in the year and sporadic-*E* skip almost daily after early May.

W7MAH, Reno, Nev. — Two-meter repeater now in full operation permits contacts with Sacramento area from mobiles in downtown Reno. Cavity filter installed with aid of W6GDO permits operation of repeater by weaker signals than before.

K8BGZ, Lansing, Mich. — Upsurge noted in c.w. and s.s.b. activity on 50 Mc. Work W8GHX, Tipp City, Ohio, over 200 miles, regularly on 50-Mc. c.w.

W8IPT, Benton Harbor, Mich. — Watching 50- and 144-Mc. aurora for shot at 220; no results yet. Checking 50-Mc. Es openings for 144-Mc. DX; no results. But tropo openings on 144 yield fine DX on 220, when activity can be found in right places. New 13-over-13 on 220 working fb. 432-Mc. converter with 416B r.f. stage working well in crossband tests with W9ZIH W9OJI and W8PQO.

K9PGK, Indianapolis, Ind. — Great increase in 6-meter activity; well over 300 stations in Marion County and about 12 regularly scheduled nets operating.

W9SQN, Chicago, Ill. — Monitoring 50.4 Mc. regularly during morning hours, particularly for visiting mobiles. Will be glad to furnish information on routes, replying on 50.46 Mc. Conditions good for Michigan stations after midnight, and they will find Chicago area activity if they look for it. QST

Strays

W3ICH apparently has developed some Christmas traditions in radio. Lowell says he QSOd W3LQQ Christmas morning in 1957, flipped on his rig the following year about the same time and promptly found himself in QSO again with W3LQQ — the first contact with that station since the previous Christmas. On Christmas night, 1957, W3ICH worked W3BUN. This past Christmas night, he again QSOd W3BUN — the same time of evening and the first contact the stations have had in two years.

HOW'S DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Where??

Upon receipt of a fresh ultimatum from the XYL it occurs to Jeeves & Co. that we have operated W9BRD from almost every room in our home over the past decade. This achievement, much complicated by the fact that we function far below the art's technical asymptotic barrier with homely homebrew apparatus at the rate of several QSOs daily, seems worthy of some sort of certification. How about WAN&C, Worked All Nooks and Crannies? Anyway, after consulting our several pounds of logs and experimental notes, we're offering a brief outline guide for the newcomer, possibly the first of its kind. "Be It Ever So Haywire" is a reasonable tag. . . .

Bedroom — Nearly ideal as a hamshack, a natural DX man's vantage. Convenient presence of gear always suggests leading question: "What's coming through?" Pajamas and BVDs are permissible and the atmosphere is relaxed. But when your bachelor days are over you'll consider trying the

Closet — Privacy is gained here at the sacrifice of ventilation, a detail likely to be overlooked under the stress of a ham's nesting instinct. Mounting receiver on back of closet door with rig inside, for operation with door open, is less stifling. This probably puts you back into the bedroom, so we're off to the

Porch — Next thing to Field Day, combining your electronic hobby with meteorology and entomology. Ventilation is superb, especially in winter, but strange noises and lights at odd hours shake the neighbors. On a permanent basis recommended only for fresh-air fiends, Eskimos and Sherpas. You can thaw out in the

Dining Room — Not *too* bad, although you're at the mercy of noise from all sides of the house, to say nothing of the galloping herd. Long leads on your key and headset can keep you in touch with a pile-up while you attend to your Veal Cutlets Parmesan. There's more peace and quiet in the

Cellar — Advantageous in many respects, but the bugs that missed you on the porch will get you here. Further complicated by long feeders and dampness, yet comes equipped with keen ground connections, and high water is avoidable through careful pontoon rigging. Sooner or later the gourmet amateur will head for the

Kitchen — Truly yum-yum-*yum*, especially when strategically situated near the icebox. It's not all gravy, though — you're right in the XYL's clutches. Solder blobs and wire snippings are bound to contaminate the meat loaf. Temporary insanity then may cause you to fire up in the

Front Room — Much can be said for the parlor but we found it an experimenter's Waterloo. Errant solder drippings can trigger divorce proceedings, and casual droppers-in are repelled by the back of a diligent DXer's head. Really recommended only for Chippendale-matched nontinkerers.

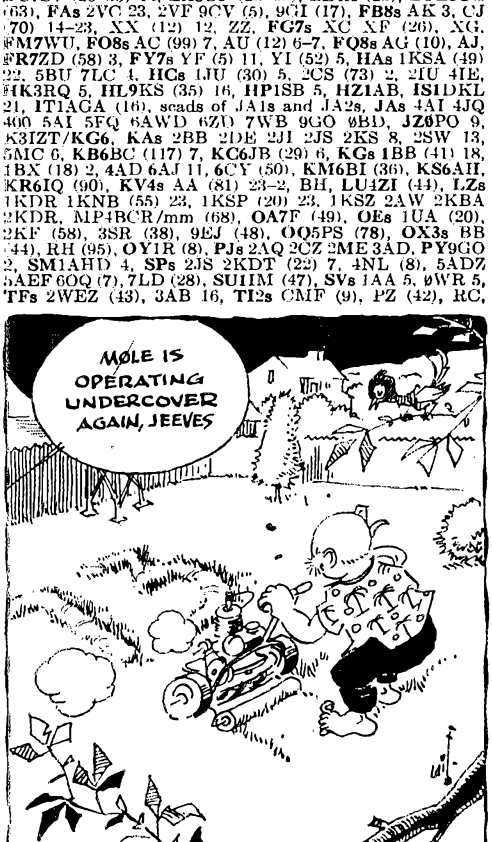
N.B.: Most other regions of any dwelling will fit one or more of the preceding categories. Some certainly try one's ham spirit and determination when the only alternative is QRT.

Which brings us to the pantry, an untested location we're scheduled to try later this month. It appears to combine several of the more favorable features aforementioned. Our pantry is also the family winecellar and pastry file, so future fadeouts may find us fairly philosophical about the whole thing.

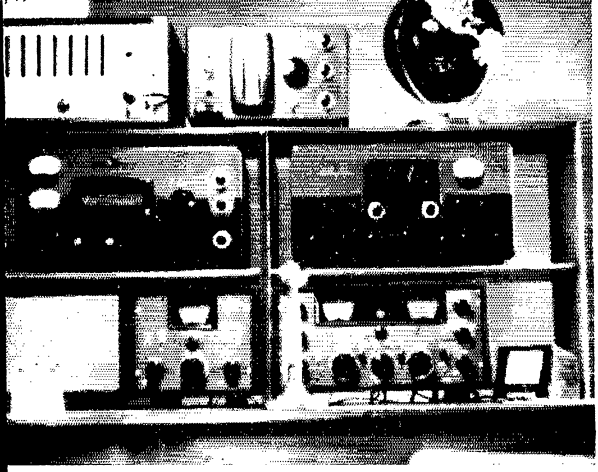
What:

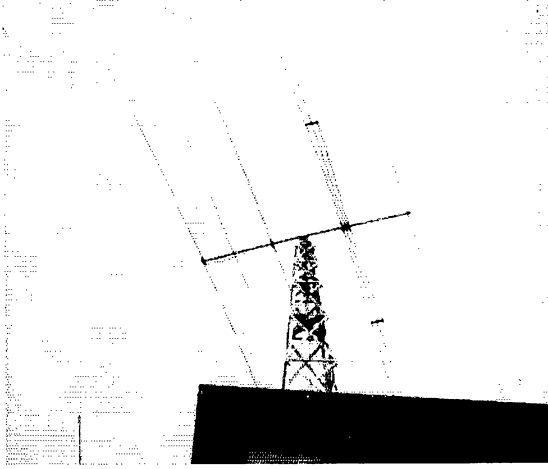
Having aroused scant sympathy but some empathy, perhaps, we swing from the subjective to the prime objective of these pages and tackle a jam-packed "How's" mailbag. We certainly have a much more lively DX summer than that presaged by the magnetic storms of spring. But, like titanic Atlas,

20 c.w. supports the summer DX world almost single-handedly in our latitudes, ably assisted by W1s ASZ (W1DYE operator, 40/11 countries worked/confirmed), AZW (168/162 after a layoff), LAS OPB (119/95), K1s JFF JTL MJC, W2JBL (153/150), K2s UYG YXC, WA2s EFN KMY, W4s IUO UJT, W6s JQB KG, K6s CJF (101/89), LAE (178/169), STZ, WA6FCX (34/23), W7s LZF POU (62/32), YAQ (148/130), W8s IBX KX (186/174), K8NHC (63), W9JJN, K9SRR, KØs JPJ (93/66), OSV (51/37), OSW (57/37), I1ER, KA2GI (108/43), KL7AL and s.w.l. A. Rugg, who put the finger on **CE0AD** (14,064 kc.) 0600 GMT. **CN8s** AF 15, BF BK (78), **COs** 2SW 7AH 7NR, **CP3CN** 0, **CRs** 6CW 7LU (17), **CTs** 1CB 2BO (20), 3AY (34), **CXs** 1DZ 2BT (60), **DL5DG**, **DM2s** ABI, AQB, **DU7SV** (20–30) 14, **EA8CP** (26–80), **EL4A** (23), **ET3CE** (63), **FAs** 2VC 23, 2VF 9CV (5), 9GI (17), **FB8s** AK 3, CJ (70) 14–23, XX (12) 12, ZZ, **FG7s** XC XF (26), XG, **FM7WU**, **FO8s** AC (99) 7, AU (12) 6–7, **FQ8s** AG (10), AJ, **FR7ZD** (58) 3, **FY7s** YF (5) 11, YI (52) 5, **HAs** 1KSA (49) 22, 5BU 7LC 4, **HCs** 1JU (30) 5, 2CS (73) 2, 2IU 4IE, **HK3RQ** 5, **HL9KS** (35) 16, **HP1SB** 5, **HZ1AB**, **IS1DKL** 21, IT1AGA (16), scads of JA1s and JA2s, **JAs** 4AI 4JQ 400 5AI 5FQ 6AWD 6ZD 7WB 9GO ØBD, **JZ0PO** 9, **K3IZT/KG6**, **KAs** 2BB 2DE 2JI 2JS 2KS 8, 2SW 13, 5MC 6, **KB6BC** (117) 7, **KC6JB** (29) 6, **KGs** 1BB (41) 18, 1BX (18) 2, 4AD 6AJ 11, 6CY (50), **KM6BI** (36), **KS6AH**, **KR6IQ** (90), **KV4s** AA (81) 23–2, BH, **LU4ZI** (44), **LZs** 1KDR 1KNB (55) 23, 1KSP (20) 23, 1KSZ 2AW 2KBA 2KDR, MP4BCR/mm (68), **OA7F** (49), **OEs** 1UA (20), 2KF (58), 3SR (38), 9EJ (48), **OQ5PS** (78), **OX3s** BB (44), RH (95), **OY1R** (8), **PJs** 2AQ 2CZ 2ME 3AD, **PY9GO** 2, **SM1AHD** 4, **SPs** 2JS 2KDT (22) 7, 4NL (8), 5ADZ 5AEF 6OQ (7), 7LD (28), **SU1IM** (47), **SVs** 1AA 5, ØWR 5, **TFs** 2WEZ (43), 3AB 16, **TI2s** CMF (9), PZ (42), RC,



*4822 West Berteau Ave., Chicago 41, Ill.





The first full-scale amateur operation from inaccessible Nepal was initiated by 9N1s GW (W2CBD) and CJ (W1CJ) early this year. W5PQA (ZM7DA) snapped these pictures on his recent 'round-the-world tour and they show, from left to right, across both pages, (1) the fourth-floor operating position of 9N1s CJ GW and MD, (2) the four story-high sky-hook, (3) the 25-kw. power source, and (4) OMs Glen and Ralph against a picturesque Katmandu backdrop. Ralph's XYL, Marge, signs 9N1MD as one of the world's rarest DX ladies. Fuel for that generator must be lugged in by native porters, and the unit's hearty appetite is responsible for limited on-the-air time. These folks and other 9N1s are associated with the Cook Electric Company, a Stateside outfit due our thanks for the incidental activation of some truly exotic DX.

UA1KAE/6 of Russia's antarctic area, **UA9s** CM KAB KDL (38), VB (71), **UA0s** BN 21, CC CK 7–9, FE FG FR JD LC 7–9, LN KAE KCA 5, KFM KID 2, KJD (75), KKS (20) 15, KYA (90) 12 of Tannu Tuva, OM (68) 11–12, UB5s galore, **UC2s** AR (29) 3, AZ (27), CS, **UD6**GW (46), UJ8KAA (45) 14, **UL7**KAG (40) 1, **UN1**AE (21) 15, **UO5s** PK SA WN 3, UPOL–8 up north, **UP2**AC (43), **UQ2s** AN (9), DO 5, KBA, **UR2**DZ (60) 3, VEs 8AL 23, 8AP ØNB 16, ØNK (15) 6, **VKs** IJE **9**GK 9RO (90), **9**XK (20) 11, ØPM (75) 8, **VPs 3**YG (5) 8, **4**TF 5BL (50), 6AC (41), **7**BK (34), 7NE **9**BO **9**DL **9**DO **9**EH **9EP 9**G 19, **9**L **9**LV **9**QQ, **VQs** 2EW (86), **3**HZ 4, 4CC 4, 4CW 4, **VR2**DK (31), **VSs** 1AZ 1FZ 1KB (40) 14, 1KG (55), 1KJ (70) 14, **6**BL 6DV (40), **VU2s** KG/**AC3** MD (24), WA2EVV/**CN8** (76) 23, **XEs** 1AAE 1H 1Y 1ZA (80), 2FO 3W, YN4AB (41), **YOs** 2BI (68), 2ON 3FD 3FH 3RI 3RK 3RW 23, 3UM (32), 3ZR 1, 8KAE, **YS1**O, **YVs** 1AD (40), 2AM 4BE 5ADP 4, 5AEZ 5BZ (5) 3, 5HT, **ZBs** 1AC (28), 1FA (40) 1, 2N, **ZCs** 4EX (26), 4IP (46), 4PW (64), 4SS (36), 5BB (51), **ZD2s** IHP JKO JM, **ZEs** 1JU 3JJ, **ZK1s** AK (10), AR (38) 6, **ZP5**AV, **ZS3**DP (45), **4S7**WP (65), **4X4**IE (64), **7G1A** 7, **9K2**AD 4, **9M2s** EB FR (92), GZ and 9N1GW (89) 15 . . . . . **Phone** DX on twenty apparently is estivating under blankets of E_s rag-chewers but W2DY, K2TDI*, W4IUO, K6LAE and KL7AL awakened **BV1**US (190) 13–14, **CR7**LU (120) 14, **EA0**AA (194), **ET2**US (192), **HH2s** W RD, **HZ1s** AB * AL (190), **KB6**BC (173) 7–8, **OE1**DH (145), VE6AAE/**SU** (148), **VK0**AA (70), **VP4**LF (146), **VSs** 1JG (180) 13, **4JT** *, **ZK1**BS *, **9M2s** FX (180) 14 and GA (170–180) 13–15, asterisks indicating single-sideband specialists.

15 Novice results are a pleasant summer surprise with WV2GKX, KN3KHK, KN4MPE (51/25), KN5ZCL (12/5), WV6JVD, KN7KPM (19/6), KN9SRR, KN0s VMZ (43/20) and YIZ skimming the m.u.f. for **CE6**EX, **CM2**WS, **CP3**CN, **CT1**KD, CXs 1FB 2BT, DL9VZ, **DU7**SV, F2MA, many Gs, **GM3**JDR, **GW3**CBA, **HB9**TI, HCWZ, **JAs** 3JM 8AH, **KGs** 4AH 6AII, **KH6**DNY, **KL7s** CDF ZF, **KM6**BP, **KP4**ATO, **KR6s** ZM ZT, **KW6**DB, **KZ5s** DWN MQN, LA4AG, LU5KH, **OA4**JR, OH2AX, **OK3**KMS, **OZ9**N, **PYs** 2AAS 2BTJ 2BYR 4OD 5LJ, **SMs** 6BAL 7QY, **SP9**RF, TI2LA, VE8s CP MC, VO2JM, **VP3**RW, a batch of VKs, **WG6**AJI, **WH6**DJV, **WP4s** AUT AUV, **YVs** 3AS 5AHL 5ANE, **ZEs** 8JO 8JV, **ZLs** 1AHA 4CK, **ZM6**AB and **5A3**CF. KNs 4MPE 9SRR and ØVMZ now are five-year men, by the way.

15 c.w., speaking generally of Generals, encourages W1OPB, K1s JFF JTL, K2s UVQ YXC, W2GVZ, WA2KMY, K3CUI, K6CJF, WA6FCX, W7POU, W8KX, K9SRR, K0s JPJ OSV OSW, 11ER and observer Rugg to dig out CE1DC, **CM2**WS, **CO7**HQ, **CP3**CN (20) 20, EA6AM 22, FA8RJ, **FB8**ZZ, **HC4**IE, **HP1**SB, **IT1s** AGA CDS, **KGs** 4AH **6**FAE, **KM6**BI (30) 21, **LZ1s** KSP 22, WD 22, **OE3**AH 18, **OD5s** CO CQ 22, **OQ5**PS, **PY8**BU (40) 1, **PZ1**AU, **SPs** 3XS 6NF 15, 6YC 16, **SVs** 1AB 14, ØWI 15, **ST2**AR, **TI2**LA, **UA1s** FL KAG 14, KBB 16, MR, **UB5**KIA, **UC2**AD, **VK1**JE, **VPs** 3RW (60) 22, 9L, **VQ4**FK, **VSs** 1DZ 1KL 5PM (75) 17, 9AD (65–85), **WG6s** AIV (118) 12, AJI (130) 12, XE1PJ, **YA1**BW (75) 18, **ZB1**HC, **ZC4**RK, **ZE3**JO, **ZPs** 5DG 5OG 9AY, **4X4**KM, **5A2**TZ, **9K2**AD 21 and **9M2**DW (65) 18–19.

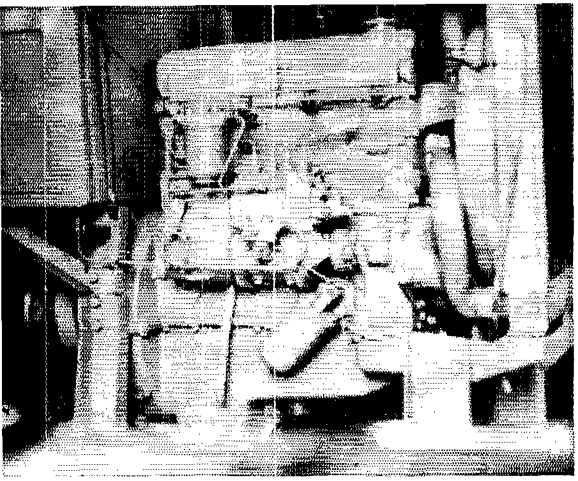
15 phone carries forward with impressive momentum. W1LWV, K1s JFF JTL, W2DY, K2TDI*, W4UWC* (117 s.s.b. on 15), K6s CJF LAE, WA6FCX, W7YAQ, GC2RS, A. Rugg and R. Beitman document activity by CE1DC, CN8JF*, **CP1**CJ * (420) 2–3, **CR6**CA *, **CT3**AN, CX1BY *, **ELs** 11) 4A 4D*, **FG7**XH, GC3KAV, **HA9**OZ, **HC1**KA 4, **HR1**NX *, **HV1**CN *, **HZ1**AB *, K2UOL/-KG6, **KGs** 1FR * 4AD 4AO (265) 0, 4AV 23, **KV4**CC, LA2IG (210), OQ5MA *, **OY7**ML, **PJs** 2AP 3AD, **PZ1**BE, SP1LA, TG5HC, UA4KYA, VE8NII *, **VP2SI** *, **VQ4s** ERR * GK HX, **VR2s** BC (210) 12, DX, **VS5**GS, **YS1**MS *, **ZB1**HC, **ZC4**MO, **ZP5s** OO JE *, **4X4s** EU FV, **5As** 1TN 2TZ * and 3TL (270), the specks going for s.s.b.

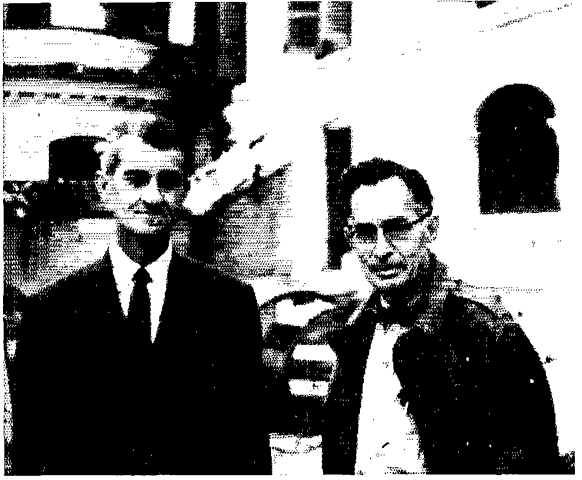
10 phone hangs on by its toenails with W5ERY, K6CJF, K8KZF and GC2RS reporting **RAs** 4KYA 6LGC, **RI8**AAD, VQs 3PBD 4RF *, YV5EX (550) and YL **ZS6**GH . . . . . **C.w.** 28-Mc. "How's" bankruptcy is staved off only through the efforts of K2UYG and WA2KMY with **CX2**BT, **EL4**A, **KZ5**JV, **RB5**YP (100) 18, **UAØ**LA (50) 14 and **ZE7**JF. Whew!

40 c.w. is a different story. Seasonal QRN doesn't seem to cramp the DX styles of W1LAS, K1MJC, W4KEP, K5JVF, K6CJF, W7LZF, K8s GKB NHC, W9JJN, K9UKM and Mr. Rugg, who manage to pull through one AC3PT (2) 6–7, **CO5**RV, **CX2s** BT (5) 7, TF (5) 10, **DMs** 3ZN 4ZNH, EL4A, **HA5**KFR, **HK7**MM 11, **HP1**SB 8, **IT1**AGA, **JAs** 1BOK ICE ICVO ICVV 8AAA 8HO 8LN ØAQ all around 10 GMT, **KGs** 4AD 6, 6CY, **KM6**BM (19) 9, **LZs** 1KBA 1KBB 1KRU 1KSZ 2KPP, **PYs** 1BPJ (1) 1, 4AGA 6, 5MX 9, 7BE 7SW (2) 2, **UAs** 1DZ 1KBB **0**KID 8, **0**KZA 14, **UB5s** EJ KEB KMA, **UD6**AM, **UF6**KAE, **UP2s** AT KBC, UQ2AB, **UR2**KAC, VE8FD 8, **VKs** 2QL (20) 7, 3ADB (9) 8, 3MH (8) 6, 3XB (149) 9, 5JE, **VPs** 7BK 9AK 8, 9DL 9G 7, 9WB (15) 18, **VR2**DK (2) 9, **WH6**DRB, **XE2s** FO SON (66) 5, **YN4**AB (66) 4, **YOs** 2BB 3CN, YU3CC, **YVs** 4CT (12) 6, 5DZ and numerous ZL colleagues . . . . . The story on 7-Mc. **phone** is told by W8GKB: K4GDY/**KH6**, **KH6s** DAK 8–9, DEL 8, DK 9, IW 10, JX 10, PD/**KM6** 9, TO 10, **KL7**AIZ 8, **KP4**ATC 4, **PY7**VBR 8, VO2AD 3–4, XE2MM, **YV5**ANS 9 and **ZL3**ID (135) 8–10 . . . . . **Novice**wise on 40, **KNs** 8SBU and ØYIZ captured **VK3**XB (149) 10, **WH6s** DIG DNO and **ZL3**ID just to demonstrate that the decline of 21 Mc. need not drive a WN/KN/WV back to mere WAS pursuits. Incidentally, W8GKB relays word from ZL3ID that BC QRM dominates 7150 and 7156 kc. Down Under; the wise 7-Mc. Novice DX digger will avoid these spots . . . . . **Eighty?** Well, Andy Rugg says **DL7**BQ, G5MP, **OKs** 1AAE 1KAY 1KCR and 2QR are available but our 3.5-Mc. W/K/VE DX diehards are keeping mum. Those Europeans squeaked through on c.w.

Where:

Africa — "I am ex-SU1AD of Cairo, 1951–'52," remarks K2EGI. "Tell anyone who still needs my card to write me; I still have my old logs." K2EGI wonders about AP5B whose specified Lahore address produces negligible results . . . . . "FD8AMS cards for those who supplied no self-addressed stamped envelopes have been sent through ARRL bureaus," states W6KUT to W1WPO . . . . . South Africa's Union Jubilee Festival will result in issuance of





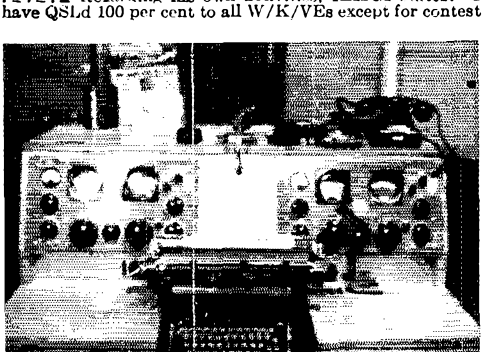
special ZS QSLs worthy of any collector's file, informs SARL secretary ZS1OA. ZS4UF was operated during May in conjunction with observance celebrations in Bloemfontein. The occasion commemorates original union of South Africa's four provinces . . . . . Interesting commentary on the QSL situation in Nigeria from ZD2JKO (G3JKO) who will take over the ZD2 bureau upon the departure of ZD2DCP: "In March *QST* EL4A appears to have been most unfortunate with only 500 QSLs after 9000 QSOs. In five months ZD2JKO has had 4000 contacts and already 800 QSLs, over 500 coming from the U. S. W4MCM is doing a grand job with my cards. . . . For first-class air mail to the States I require four IRCs, for second-class air mail (unsealed envelope) two IRCs, and for surface mail, one. . . . In *QST* it is also mentioned that FQ8AH is a stamp collector. So am I, and I am grateful to W/Ks who use good selections of current commemoratives. Several amateurs in the States have sent me mint Nigerian stamps to the value of 1/9d, which is correct and much appreciated; but they have been the King George VI issue and, as of November 1st, I will be unable to use them. Queen Elizabeth issue or IRCs, please. Three new ZD2s are ATU JSC and RFB; ZD2s CKH GWS and IHP are leaving Nigeria." . . . . . K2UYG has it that CR7LU assists CRs 7DQ and 9AK with QSL chores, and handles LREM's bureau at Box 1234, Beria . . . . . Bill also observes that SUIMS, schooling in Germany, can be reached c/o DL3JJ, although W6QNA continues as his Stateside QSL manager. Mahmud intends a six-year stint up north with some DLØ operation but will be busy with studies for the most part . . . . . "As of May 17th I am QSL manager for FQ8HO," declares K6EC. "The usual self-addressed stamped envelopes will be required for W/K contacts."

Asia — HS1K assures us that QSLs sent via his new address (in the list to follow) will be answered forthwith . . . . . FEARL(M) QSL bureau comanagers KA2s GI and ZZ report receipt of cards for no-account KAs 2GB 2KH and 3AL. Earl and Dave also state that KG6ICD of Marcus will QSL in the usual manner; direct if IRCs or s.a.s.e. are supplied, otherwise via bureaus. W7PHO has offered his services as Stateside QSL agent for KG6ICD . . . . . Regarding his own activities, KA2GI states: "I have QSLd 100 per cent to all W/K/VEs except for contest work where cards were answered as received. However, returns have averaged less than 20 per cent, so future KA2GI QSLing will be based entirely on cards received." Neighbor KA2RA (KØJVD) is another who decries slow returns from the homeland . . . . . OK1JX tells W1WPO that wandering OK7HZ makes QSLs out as he goes along, then ships them in batches to the CAV bureau. If your OK7HZ doesn't show, OK1IH may be able to straighten things out. Otherwise you'll have to chew your nails till Jiri returns to Czechoslovakia . . . . . By the way, OK1JX still sees requests for the cards of JTIs AA and YL despite the fact that all stations worked were QSLd long ago. Persistent JT1AW is declared ungood . . . . . Ex-ZC8PM-KH6ARA (W2AIS) now basks in southern climes as KV4CI. Pat searches for clews on catching up with QSLs for ET3PRS, FL8AC, VR1A, ZD9AB and ZM6BB while he catches up with his own W2AIS/mm backlog . . . . . "I'm deluged with cards for VS9MB," declares K2QXG, "but have received no log data in eighteen months so I must give up the job."

Oceania — K2UYG writes, "Fred of KJ6BV says he leaves KJ6 for a new Connecticut assignment in July. He has sent out 1500 cards since firing up in February of this year and is busy cleaning up past KJ6BV QSL debts. The station will become inactive if no operator is assigned to follow him." . . . . . "I operated W0OWY/KW6 in 1958," recalls K9YJD, intending to confirm all his Wake QSOs . . . . . "Still have a few ZM7DA cards left," reports W5PQA. "Anyone not receiving his for a bona-fide contact should send full data and s.a.s.e. to me and I will see that he gets a QSL." . . . . . "Please let my American contacts know that I have QSLd all VR3Z QSOs via bureaus," writes Jumbo from England to W1TS . . . . . KG6CY apprises W8KX, "I send a QSL for every QSO, though sometimes late. If a station's QTH is in the *Call Book* or otherwise supplied, a card goes out. No s.a.s.e. or Coupons required." . . . . . W5SU is told by ZL2AX that he works no c.w. and participates in no contests, recently received QSLs notwithstanding. Miscopy by people working contester ZL2AXU, perhaps.

Europe — "I now act as QSL manager for ZB1HC," says W4MS to W1WPO. W4MS seeks data on YI2AM confirmation procedures . . . . . Best QSLers? W1TS has 43 QSLs from 44 YUs worked . . . . . "SP6FZ has QSLd 100 per cent since 1925," assures the OM himself. "These go via bureau, but some want cards direct. For the latter I request one International Reply Coupon for surface mail, two or three for air mail." Fair enough . . . . . F9UW, W1UED and others would like to catch up with TA3US for QSL purposes. That station's current *Call Book* QTH is sadly unproductive . . . . . SVØWI (W4EWO) assures W8KX of QSLL which, for you newcomers, signifies "yours first, OM." . . . . . WGDXC hears that *Radio Tirana* s.w.l. veries come through in response to QSLs sent to ZA2BAK. On the other hand, VERON reports delightful results from our April ZA1KC address . . . . . QSLs for FX1PF can go via DARC or direct to DL9PF, s.a.e. and IRCs for direct reply.

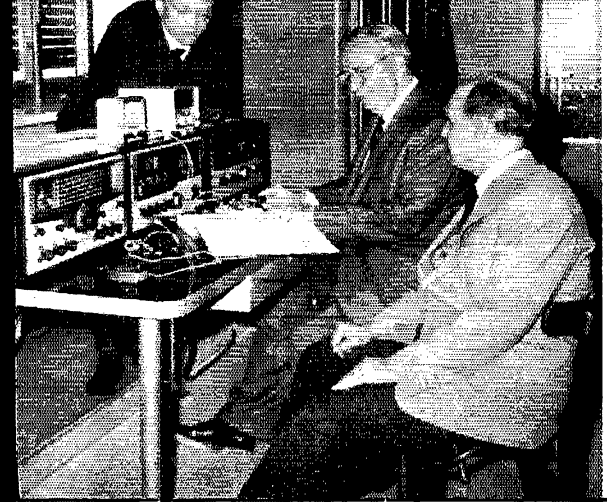
Hereabouts — DX QSL philanthropist W2CTN states for the record: "Not having received logs from FG7XF since the start of his activity around the first of this year, I have packaged and mailed to him all QSLs received. I also have enclosed a supply of FG7XF blanks for him in hope that the boys will still receive their QSLs. Should logs finally come through from him for this period, I'll clean them up via various bureaus." WA2EFN is another who offers assistance as QSL agency for deserving and needful overseas DX operators . . . . . "TG5HC (ex-YN4CB) says someone has been bootlegging his call on c.w.," remarks W1TS of ARRL Hq. . . . . At the behest of K1GUD we iterate that the late W5KF had no association with VP2 QSL matters . . . . . W4IUO fears he has a jinx call. People keep QSLing him as W4IOU, W4IUU, etc., some of this requiring



SVØWT/Crete features this businesslike cockpit, the source of many a "new one" for DXCC aspirants and endorsement collectors. Those SP-600 receivers team up with a BC-610 transmitter just out of view to the right. (Photo via SVØWY/K2RYP)

ZS8I has our QTH of the Month, a location graced here by a G4ZU-type rotary array, the XYLs of ZSs 6IF and 8I, and ZS6IF's harmonics. This picture was taken on ZS6IF's recent DXpedition to Basutoland. (*Photo via W4PLL*)

painful reapplication before DXCC credits can be obtained . . . . . Old 15-meter stand-by XE1PJ tells W8KX he has dispatched over 7000 QSLs. Vulnerably adjacent to tens of thousands of QSL-hungry W/K/VEs, some Mexicans are understandably QSO-shy . . . . . The ex-DL4JC in the list to follow has a KL7 call that was omitted from his notification . . . . . QSLs for this month's St. Pierre sortie by K2s LSU OQA TVY and W2GKE (FP8 suffix unspecified) should go via K2VZJ. The lads intend at least 2000 QSOs, multiband style. Other amatourists are packing for St. Pierre at this very moment, a development becoming traditional to our summer DX scene . . . . . Let us applaud in the direction of W1s BDI HGT HR OPB TS UED WPO, K1s CXP DJM LVW, W2s AXR GVZ JBL, K2s QXG TDI UTC UYG, WA2KMY, W3INH, K3CUI, W4IUO, K5JVF, W6s JQB KG WNE, K6s CJF STZ, WA6FOL, W7s DJU LZF, W8KX, K8NHC, W9s CN JJN, K9HLW, EL4A, ZD2JKO, A. Rugg, CRAG (Guatemala) *QUA*, FEARL(M) *News*, Fiji Radio Club *Splatter*, Hamfesters Radio Club *Ham Gab*, International Short Wave League *Monitor*, Japan DX Radio Club *Bulletin*, Kanawha (W. Va.) Radio Club *Splatter*, Newark News Radio Club *Bulletin*, Northern California DX Club *DXer*, OEM (Austria), Ohio Valley Amateur Radio Association *Ether Waves*, Polar Bears Radio Club *DXer*, Southern California DX Club *Bulletin*, Universal Radio DX Club *Universalite*, VERON (Holland) *DXpress* and West Gulf DX Club *DX Bulletin* for the individual recommendations that follow:



AC5SQ (via AC5PN)
BY1PK (via LZ1AF)
CN2BA, P. O. Box 299, Rabat, Morocco
ex-CN8GD (to K1FAJ)
CO5RV, R. Ponte V, Box 67, Matanzas, Cuba
CX9AW (via RCU)
ex-DL4JC, A/1c N. Talley, jr., Det. 1, 33rd Comm. Sqdn., APO 937, Seattle, Wn.
DL5AY (via KØRNR)
F7AC, J. Kitrow, 51 rue Marshall Joffre, Fontainebleau, France
F7HC, J. Gammon, c/o H. Hodge, Sig. Relay Center, APO 58, New York, N. Y.
FQ8HD, R. Raymond, Box 894, Brazzaville, Fr. Eq. Afr.
FQ8HK, P.O. Box 919, Brazzaville, Fr. Eq. Afr.
FQ8HO (via K6EC)
FQ8HW, F. Largeau, Tchad, Fr. Eq. Afr.
GM3NZI, B. Taylor, St. Margaret's, Irvine Crescent, Bathgate, Scotland
HB1TL/fl (to HB9TL)
HC2CS, C. Solano, P.O. Box 1007, Guayaquil, Ecuador
HC6KA/HC1, J. Lablanc, c/o U. S. Embassy, Quito, Ecuador
ex-HK3IR (to HK3RQ)
HK3RQ, P.O. Box 4468, Bogota, Colombia
HKØAA (via KV4AA)
HP1SB (via LPRA)
HS1K, G. Boross, SEATO-Univ. Hawaii, APO 146, San Francisco, Calif.
JA2WB, S. Numamoto, Box 6, Shimizu, Japan
KA2GL, Navy 3835, Box 42, FPO, San Francisco, Calif.
ex-KA9AR-JA2AX-JA7WX (to KA7AX)
KG6ICD (via W7PHO)
ex-KH6BDV/KJ6 (to KC6JB)
KL7DJM, Box 784, Fairbanks, Alaska
KR6IQ, Intl. Bdcstg. Svc., APO 239, San Francisco, Calif.
KV4CI, Pat Miller, c/o Dayton, P.O. Box 701, St. Thomas, V. I.
MP4TAH, c/o BFPO, Sharjah, Trucial Oman, Persian Gulf
OA4KF, E. Kaleveld, c/o Peruvian Corp., Ltd., Box 1379, Lima, Peru
OK7HZ/ZA-etc. (via OK1IH)
PX1PF (via DL9PF)
PX1RC (to ON4RC)
PY2BYR, F. del Medico, P.O. Box 225, Bauru, S.P., Brazil
PY7SW (via LABRE)
ex-SU1AD (to K2EGI)
SU1MS (see preceding text)
SV0WZ, M/Sgt. S. Horn, Box 518, APO 291, New York, N. Y.
TG8CW, P.O. Box 852, Guatemala City, Guatemala
TG9FI, P.O. Box 115, Guatemala City, Guatemala
UAØKAR, Polar Radio Club, Dickson Island, U.S.S.R.
UAØKYA, I. Chernenko, Radio Club, International St. 49, Kyzyl, Tuvinian Oblast, U.S.S.R.
UF6BX, Y. Berzutsky, Radio Club, Pushkin St. 18, Kutaisi, Georgian S.S.R.
UI8AM, I. Muztarow, 35 Sovietskaja, Tashkent, Uzbek S.S.R.
UM8KAA, W. Milko, Dzierzynskiego 86m2, Frunze, Kirgiska S.S.R.
UR2AR, E. Lohn, P.O. Box 137, Tallinn, Estonian S.S.R.
VE4CA/SU (via VE4LC)
VK3AKN, D. Baulch, Brorowater, Vic., Australia
ex-VKØTF, H. Fuller, VK5TF, Box 41, Darwin, Australia
VP2DO (via VP2DA)
VP2LD, P.O. Box 181, Castries, St. Lucia, W. I.
VP3RW, P.O. Box 239, Georgetown, B. G.
VP8DU, B. Shorey, P.O. Box 103, Port Stanley, Falklands
VP8s FF FG, P.O. Box 207, Port Stanley, Falklands
VP9EP, A. Hilliard, V.P. 45, FPO, New York, N. Y.
VP9EU, M. Lambert, "Bolero", Smith's, Bermuda
VQ1HX (to VQ4HX)
VQ3HZ, P.O. Box 120, Mwanza, Tanganyika
W7WOR/VO2 (to W7WQR)
ex-WØOWY/KW6 (see preceding text)
XE3CP, P.O. Box 35, Campeche, Mexico
ex-YK1AT (via CAV)
ex-YN1CP, Lt. Col. H. Parker, USA, PMS&T, Boston U., Boston, Mass.
YN1OC, O. Guevara, Box 925, Managua, Nicaragua
YS1M, P.O. Box 190, San Salvador, El Salvador
YV4AT, Av. San Agustin nr. 141, Maracay, Venezuela
YV5ANB, Box 594, Caracas, Venezuela
YV5EX, P.O. Box 6269, Caracas, Venezuela
ZB1HC (via W4MS)

Following a recent audience with Pope John XXIII, Bill Halligan, sr., W9AC and president of the Hallicrafters Co., pounds a little brass at HV1CN. At the left is I1CNS, the regular operator at HV1CN, while at the right is I1CL, who also operates the station occasionally. The equipment is just some that Bill happened to have with him.

ZB2R (via ZB2I)
ZC4AK (via RSGB)
ex-ZC4CB (to VQ3HZ)
ZC5BK (via MARTS)
ex-ZC8PM-KH6ARA, W2AIS (to KV4CI)
ZD2ATU, B. Wilbraham, P.O. Box 38, Jos, No. Nigeria
ex-ZD2CKH, C. Harrisson, Kitale, Harthorn Gr., Hayling Isl., Hants., England
ZD2JSC, J. Spencer-Chapman, c/o Total Oil Co., Private Mail 2143, Lagos, Nigeria
ZD2RFB, R. Brown, Electricity Corp. of Nigeria Hq., Lagos, Nigeria
ZD9AM, c/o Post Office, Capetown, S. Afr.
ZS2s NS OB, L. Colson, 85 de Chavonnes St., Port Elizabeth, S. Afr.
ZS3FF, P.O. Box 1601, Windhoek, Southwest Africa
ZS4UF (to ZS4B)
ZS7P, P. J. Lamont, P.O. Mlumbanyati, Swaziland
5A3TL, P.O. Box 385, Tripoli, Libya
ex-9G1BM (to ZD2ATU)
9G1DN, Box 128, Dunkwa, Ghana
9M2FS, W. T. Soon, P.O. Box 60, Malacca, Malaya
9N1MD, Marge Dennis, USOM, Katmandu, Nepal

Whence:

Asia — Like we were saying last month, "to increase the activity of Asian radio amateurs and to establish as many contacts as possible within the periods of the contest between radio amateurs residing in Asia and amateurs in other countries," JARL (Japan) invites your participation in the *First Asian DX Contest* to be held from 1000 GMT on the 27th of this month to 1600, the 28th, a c.w.-only affair. The password is "CQ AA" and bands 80 through 10 meters may be used. Serial exchanges consist of RST plus your age in years; YLs, exempted from such a revealing routine, are entitled to substitute a double-zero for the age gimmick. Scores, obtained by multiplying the total of stations worked (not clear whether each station may be worked once per contest or once per band) by the number of ARRL DXCC Countries List Asian areas worked (not clear whether a given multiplier can be contacted once per contest or once per band), for single- and multiband entries will vie for certifications and six continental cups. Log transcripts should go to Japan Amateur Radio League, Contest Committee, P.O. Box 377, Tokyo Central, Japan, postmarked no later than September 30, 1960, accompanied by this signed statement: "This is to certify that in this contest I have operated my transmitter within the limitations of my license and have observed fully the rules and regulations of the contest." G'luck! . . . . . AC5PN tells K2UYG he expects to become increasingly active this month or next. Bill also lists 4S7s BE EB GR GV LB LM NB NG PJ SN SR and YL as workable on Ceylon . . . . . KA2s GI and ZZ, abetted by KA2s AA AL FF LT and MK, aspire toward further Marcus arrangements as KG6ICD. At their disposal are such weapons as an HT-32A, AF-67, 51-J, SP-600, 75A-4, PMR-6A, R-390 and various antennas for several bands . . . . . MP4BDA hopes to find opportunity to dish out more QSOs from Yemen and other scarce zones near by . . . . . KA7AX reports a pleasant visit from DU1GF of PARA, JA6AV joining in the welcome . . . . . W4IUO finds that VS6AE commenced his ham career as ac1PA in 1925 and also signed XU4B in '34 . . . . . K5CDA/mm, aboard SS *Penn Shipper* bound to and from India in February-May, kept consistent skeds with W9WNB on 20 and 15 meters. Magnetic storms played hob with the longer hauls, however . . . . . ARRL Canadian Director VE3CJ (VP5BP) reports VE3BV due on DX bands from Malaya around this time with Gonset gear . . . . . W5PQA observes 9N1GW (W2CBD) determined to try DX life in AC3 AC5 and East Pakistan regions with a KWM-2. Glen will have a month's vacation available for the purpose before returning our way . . . . . KA2RA looks forward to reactivating KØJVD in a month or two and meanwhile keeps active daily from 0900 to 1500 GMT on 20 meters. Bill expects to become an SVØ in '61 . . . . . VERON reports VS9ARS eager for a fling at the Red Sea's Kamaran isle.

Europe — Mark your wristwatch for the *Scandinavian Activity Contest*, separate c.w. and phone sessions slated for the third and fourth week ends of next month. SSA (Sweden) sponsors this year's brawl and we'll include participation details in September's "How's." And then there's the RSGB 21/28-Mc. Telephony Test to look foward to on the long range. G2AHL tells W1DGL of ARRL Hq. that the 3rd and 4th days of December have been agreed upon . . . . . Dispatch via W1UED: "G3WW plans to attend the 83rd annual meeting of the American Bar Association in Washington from August 29th to September 2nd. W3FMC and ARRL President WØTSN also are expected to attend. An active sidebander, G3WW is Clerk of the Peace, Isle of Ely, and Undersheriff, counties of Cambridge and Huntingdon . . . . . W1s HGT and HR understand that DL9PF's PX1PF doings will be followed by another Andorra endeavor by ON4RC as PX1RC on 20- and 15-meter a.m. around August 13th-15th . . . . . LA4KG/mm becomes a landlubber again this summer. "Working the many W/K hams has been great fun and certainly was a welcome break in the routine at sea." . . . . . "DXCC2" No. 29 is filed by

ZL3VH/3 scored over 400 contacts from the Chatham Islands this year with the 12-watt 6L6 "suitcase portable" layout shown here. Pye has other rare DX cards up his sleeve including a possible jaunt to the Tokelaus. (*Photo via W4GXB*)

DL1QT, the third DL to meet the simple specifications outlined on page 69 of July '59 *QST*. Helmut needs only a QSO/QSL with a Nevada DXCC member to clinch "WAS-DXCC," incidentally. DL1QT is baffled by lack of QSL cooperation by VE8s AW CG and CN, a circumstance thwarting WNACA pursuit . . . . . UPOL-8 tells W6KG of drifting close to the pole. Say, a rotary-beam indicator would be a weird-looking thing up there, wouldn't it? He could never point north — or east or west, for that matter . . . . . Every Tuesday at 0130 and 0315 GMT on 9535, 11,865 and 15,315 kc., also at 0415 and 0500 on 6165, 9535 and 11,865 kc., the Swiss Shortwave Service broadcasts to the U. S. A. a DX program emceed by HB9GX and colleagues . . . . . Regarding the U.S.S.R. W-100-U certification, K3CUI is informed by UA3HK that qualifying contacts need not ail be made in 1959 as heretofore presumed, but on any dates after January 1, 1950. K3CUI also recommends Hungary's WHD diploma for the discerning wallpaper hunter; Ted's is No. 54 . . . . . W8KX salutes SVØWI (W4EWO) for a steady 14-Mc. performance at 0300-0600 and 1800-2100 GMT or later . . . . . Polar Bears Radio Club of Sweden turns out a creditable DX journal as edited by s.w.l. Sven Elfving at Solgardsgatan 15, Ornskoldsvsik . . . . . Continental notes via K2UYG: Summer conditions practically wiped out OY7ML's radiational liaison with North America. . . . UC2AY is the XYL of UC2AR, both active on 20 c.w. . . . RAEM again dashes cold water on early Wrangel or Franz Josef Land possibilities.

South America — Next month is *LABRE* (Brazil) *DX Contest* time again, by golly, 0001 GMT the 3rd, to 2400 the 4th (c.w.), and same times September 10th-11th for phone, 3.5 through 50 Mc. Exchanges will comprise RST- or RS-plus-QSO-number (RST001, RST002, etc.). Contacts made between amateurs in (a) the same country count zero points but are useful to gain multipliers, (b) different countries outside the American area each count one point, (c) different countries in the American area each count two points, and (d) the American area and in all other countries of the world count three points. Work any station for contact points or multiplier or both. LABRE's "American area" is defined by ARRL Countries List entities in North and South America. Multipliers: one for each American-area country contacted per band, and one for each Brazilian call area (PY1-9) likewise. For final score multiply total QSO points by total multipliers. Certificate recognition is possible in single- and three-or-more-band categories if your log is received by LABRE Contest Commission, Caixa Postal 2353, Rio de Janeiro, Brazil, postmarked no later than December 30, 1960 . . . . . OA4KF, whose new QTH appears in the "Where" roster, verges on his third DXCC diploma. You may recall Evert as former PAØXE and OA7I. "As of April 30th foreigners again may get licenses in Peru," remarks OA4KF. But under the present system Yank license terms will be limited to one year . . . . . CX9AW writes, "Got my license a year ago but have been active on 28 Mc. only a few months. I use a homebrew 50-watt rig and a dipole but soon will have a G5ZU-type 3-element beam for more extensive work with U. S. hams." CX9s go well in any log, so Raul should have a lively time on the 28-Mc. north-south paths . . . . . If you confirm QSOs with any six of Ecuador's eight call areas (HC1-8) you may qualify for the WAHC sheepskin sponsored by Associacion Radio Ecuatoriana, Apartado Postal 289, Quito. This hint via League Assistant Secretary W1UED . . . . . After many traffic sessions with CE3GI (ex-CEØZC of Juan Fernandez fame) W1PRR had the pleas-

VS1JG takes his place on the glittering far eastern DX horizon with 807s modulated by 807s, a ZL-Special beam, AR-88, HRO and CR-100 receivers. (*Photo via W6CHY*)

ure of a personal visit from Cesar and XYL in June. The CE3GIs may remain in this country indefinitely . . . . . VERON hears that PY7LJ offers Fernando de Noronha QSOs around 1500 GMT on 21-Mc. c.w., also that Venezuelan DX hawks are eager for another Aves strike as YVØs AA and/or AB.

Africa — Advisement from W1HR: "VQ9TED/mm will depart for the Seychelles this month and should start land-based operations as VQ9TED by August 31st. Then on to the Aldabras and other islands for consecutive two-week stands with a KWM-1." WØAIW and other Statesmen also will be in the Indian Ocean missile area with DXpeditionary intentions this fall . . . . . W8KX received an interesting synopsis of propagation studies by ZS1O who seeks correlation between meteorological, geomagnetic and solar phenomena pertinent to ionospheric abnormalities. DX schedules with W4VNE have resulted in interesting observations; ZS1O and W4VNE have swapped signals on four different bands between sunset and sunrise on 15 occasions, and have contacted on three bands within 26 minutes. If *you* have a clinical interest in things like astral noise, magnetic storms, one-way skip, super-locations, long-delay echoes, etc., we suggest you check in with Ws 4VNE 8KX and ZS1O. The latter fired up 'way back in '33, sticks wholly to verticals, has a 90-watt rig for each band 7 through 28 Mc., and previously signed ZS4U and ZS6HM . . . . . WA6FOL hears that ZS2NS has been joined on 14-Mc. c.w. by the better half as ZS2OB . . . . . WA2KMY finds the ZE7JF 6146 still faithful to 10 phone and pleads, "Let's not be *too* pessimistic in 'How's' — you'll scare DX off the high bands." Works the other way, Henry; if we say it can't be done it certainly will be . . . . . *Diploma Tanger Marruecos* (DTM) is a certification offered by the Tanger Radio Amateur Club, Boite Postal 150, Tanger, to those W, K/VE/VOs who confirm contacts with three CN2 stations. Check with TRAC for the full story . . . . . Commentary from ZD2JKO: "Our Nigerian net is now on 7050 kc., Sundays at 0800. There are sixteen active ZD2s — AMS ARR ATU BRG DCP EHW FNX GUP GWS HJG IHP JKO JSC RJM RFB and JM, eight of these on the air only occasionally. ZD2IHP leaves us at the end of the year, future destination uncertain, but possibly SU TA or EP. . . . In Sierra Leone ZD1AW is the only amateur active at the time of writing, although ZD1CM is due to start up any day now with ZD1AW's old transmitter. ZD1EO is on a two-year course in England and ZD1RO also is there on leave. With the tragic death of ZD3E there still is no amateur in Gambia. . . . ZD2JKO now has 136 countries with 79 confirmed, and 48 states with 43 verified. Still need Montana and North Dakota — every Seven seems to be in Washington state, and every Zero in Missouri! I am usually active around 14,030 kc., 0200-0500 GMT, Wednesdays and Sundays (Tuesdays and Saturdays over there), giving rapid QSOs to W/Ks, also on 15-meter phone or c.w. at 2000-2200 several days weekly for more leisurely QSOs. Forty meters now is too noisy (our rainy season) and 28 Mc. is almost out." Mike closes by pointing out that 9Q5 and 9U5 will replace the old OQ5 and OQØ prefixes as Congo areas now gain their *independence* . . . . . Afrigrams courtesy VERON: CR6CA hints of operational visits to CR5 EAØ and one Annabon island (south of Sao Thome) this month or next. . . . ZD9AM still prefers 21,200 kc. around 1200-1500 GMT with 150 watts and a diamond on Capetown. . . . FB8CD of the Comoros is due to resume less rare status as F2LI.

Oceania — Ex-VKØTF tells W8KX about his enviable *DX location in Darwin* where he helps keep BC station 5DR on the air. Ted anticipates a DX ball as VK8TF or VK5TF on 20 c.w. . . . . Ex-VR3Z reminisces through W1TS: "I was at Christmas for ten weeks, almost all my 500 QSOs being on 14 Mc. using a ground-plane or 4-element beam, the latter giving some protection from your Sixes. Fifty countries and forty states were worked. I hope to be active as G3DAF in the autumn on c.w. and s.s.b. My new rig is progressing slowly. In the RAF we sometimes get the chance to operate a rare 'un such as VR3, and I know that all members of the RAF Amateur Radio Society try to give as many QSOs as they can." Ex-VR3Z bumped into WØGDH at a recent RSGB luncheon in London . . . . . "Personally, I get a kick from just operating without special emphasis on DX or direction," reflects KG6CY in lines to W8KX. "Low power and a long-wire antenna dictate the areas reached by KG6CY. The score stands at 43/30 for WAS and QSL returns are 260 for 500. Twenty is open here 0500-0800 and 1000-1400 with occasional long-path W/K/VE breakthroughs around 2000. Forty is usable at 0700-0800 frequently. A DX-20, Knight v.f.o. and a salvaged BC-779 are assembled in my second-floor bedroom, and the station should be active for another year before I pull the switch here." Hal reminds us that Marianas Amateur Radio Club, Box 445, Agana, Guam, offers a Worked-All-Guam certification to those who confirm QSOs with five KG6s since January, 1949 . . . . . Newly active ZK1AR identifies himself to W6KG as ex-ZL1UY . . . . . VR2BC (ex-VP1GG) was tickled by a QSO with ZL2RP, the previous VR2BC, and learned that the first VR2BC had awarded certificates to two stations who worked him on 100 separate occasions. Greg is intrigued by the idea and feels that five or six W/Ks might qualify right now for "VR2BC-50" awards. Anent our "WAS-DXCC" remarks in a recent column, VR2BC needs only a Century Clubber in South Dakota to make the grade on this one . . . . . WA6GOC is restricted to s.w.l. activity while stationed in the Philippines but can be reached via USNavComFac, Navy 535, Box 4, FPO, San Francisco . . . . . K1MJC advises that VK3XB, famed collector of U. S. Novice QSOs near 7149 kc., requires only Idaho, Me., Mont., N. H., N. C., N. Dak. and Utah for his 40-meter WN/KN/WV-style WAS. Ivor's usual operating periods are 0900-1100 GMT . . . . . ZL2GX alerts K6BX to the probability of a fresh New Zealand DX certification (NZA) . . . . . Now Oceaniana via SCDXC, VERON and WGDXC: ZL4JF offers the Campbells with a.m. on 14,120-14,160 kc., 0530-0700 GMT, but you won't need him if you have a QSL from the ZL2ARB who used an ARC-5 there circa 1955. . . . VK5BA/VR4 was chimerical, but less fanciful Solomons activity is said to be building up. . . . New receiver and all, VR6TC is due back at Pitcairn shortly.

Hereabouts — "Once more it looks as though we'll have Socorro island on the air," writes XE1CV of LMRE. "Plans are being made for a four-day stay between mid-January and mid-March, 1961. The call will be XE1PCV/XE4." And that's what you might call *advance* notice . . . . . KV4CI (W2AIS, ex-ZC8PM-KH6ARA) finds it rough to penetrate the W/K/VE curtain for a little juicy stuff of his own. Evidently there always will be a flock of Statesiders hungry for KV4! Pat's DX tally at KH6ARA sans beam was a laudable 205/195 . . . . . W4BPD's tentative DXcursional itinerary calls for mid-August arrival at DL6ZZ with successive September stopovers in Monaco, Italy, San Marino, HV1CN, OKs 1FF 3EA and Athens. Early October should see Gus hobnobbing with OD5LX, YK1AK and ST2AR in that order, then visiting VQ areas and FB8 . . . . . VP2VB & Co. aboard *Yasme III*, roving DXpeditionary artists in spades, enjoyed riotous pile-ups sessions in June as HKØAA astride little Bajo Nuevo, a speck midway between Jamaica and Serrana Bank. Danny will sign up with the benedicts during a brief KZ5 pause, then chug toward the Galapagos . . . . . W6KG greeted WØZPH with a fast QSO on the latter's return from operations at KG1s BB BO and BX . . . . . Club station W1LAS is given good DX workouts by members W1EQV, K1s ACC HAN and MJC on 20 and 40 . . . . . K4LNM, W4s GD and CWW are prexy, veep and secretary of the newly formed Tri-State DX Club. "Membership involves DXers in Tennessee, Arkansas and Mississippi surrounding the Memphis area," states W4CWW. "'Brassics', 'old-fashioned yackers' and 'ducksters', or any combination thereof, having an active and sincere interest in DX are welcome to the group." . . . . . W3INH notes that VP9EP knocked off 645 Yanks in the Bermuda shindig early this year. Alex, a Navy man, will be there till '61 . . . . . Conditions being what they sometimes are, W1VG of ARRL Hq. found time to establish the fact that his QSL file harbors an "RST599 DXCC." Pete's statistics show 80, 50, 33 and 4 such 599 country-confirmations for 14, 21, 28 and 7 Mc., respectively. By continent it's North America 27, South America 12, Europe 39, Asia 5, Africa 15 and Oceania 4. Anybody with an RST338 job? . . . . . K2LZQ, the happy houseguest of YN1CK this spring, found Carlos, YN1s BS and TAT the only sideband protagonists in Nicaragua at present. Craig was amazed at the chaotic response to YN1CK's 20-meter CQs. "Best part of the trip was when two beautiful YLs arrived to drive me around Managua in their '60 Thunderbird convertible." (Quit packing, Jeeves; we're not quite through with this month's column yet.) [You're not, Boss, but I am. — *Jeeves*] . . . . . K6OZL and DU1OR each live on Easy Street . . . . . Ex-YN1CP awaits his K1 call in

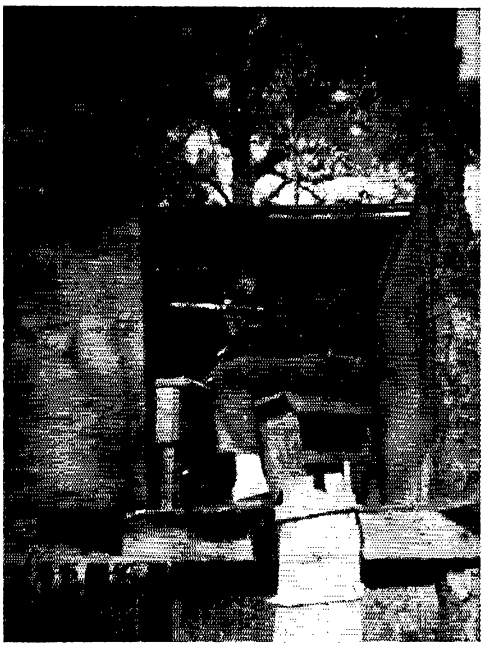
Boston to rejoin his many friends on DX bands . . . . . K6BX, taking up where W3RPG leaves off, offers his *Directory of Certificates*, "the award-hunter's bible," which lists more than 350 sheepskins in over 50 countries. S.a.s.e. to Clif will obtain descriptive details. Also inquire about K6BX's CHC diplomas, available only to those who meet the stiff requirements of membership in the Certificate Hunters' Club. (W8JIN glommed No. 1.) . . . . . K6BX learns that K2QXG has issued over 100 "20-K" tapestries, and urges c.w.-forever men to check with W4ML for interesting possible recognition along that line . . . . . K8s BIT CNB HIO MNG, W8s MLX and PQQ pool efforts to turn out the DX portion of Charleston's Kanawha Radio Club *Splatter* . . . . . Game W4s GNG and KBU relieve reliable W5AZB at the editorial helm of West Gulf DX Club's *Bulletin*, one of the more authoritative organs among a thriving genre . . . . . Ohio Valley Amateur Radio Association operatives detect ex-TA3SO-WØSO-W9SM settling down in Cincinnati. That's a DX hornets' nest, Phil!

Ten Years Ago in "How's "DX?" — Yaw-w-wn and ho-hum; our 1950 summer lull substantially stills long-haul hubbub on DX bands. Even Jeeves has gone fishin' . . . . But W4BRB sticks to his 3.5-Mc. guns to make his tally *80* countries on 80 meters. HB1s FX IS and MP4KW are also there . . . . Nothing new on 40, but 20 c.w.'s calm is ruffled by AR8AB, Cs 3WW 8DA 8DD 8YR, CR1ØAA, EK1RO, FU8AD, M1B, MD2PJ, TA3FAS, VK1AJT, VSs 5CA 7KR 7NX 7SV, WØBFE/KJ6 and YI3DG . . . . Twenty phone is far from flat: EK1AD, HL1US, KH6KQ/-KB6, LX1CD, MD2MD, MI3AB, OE13AA, OY3IGO, PKs 6EE 6FM 6HA 6VK 7HR, UB5BV, VR1C, VSs 2CJ and 5AN break the A3 waters . . . . Ten phone, as expected, swings toward north-south paths with PJ5FN and VS2BD the standouts on voice . . . . "How's" grapevinisms: ZD8B goes back to the U.K. with a fat DX log. . . . The mailbox of XE2N/XE1A bulges to the bursting point after Juan's 4000 ARRL Test contacts. . . . There's a new Colombian certification available for ten confirmed IIK contacts. . . . Germany's ham situation is further complicated by the appearance of more DKs (East Zone?) . . . . SV5UN (Rhodes), ZL3LR's impressive layout, YL PAØZC and well-worked HH2W enter amateur radio's pictorial archives.

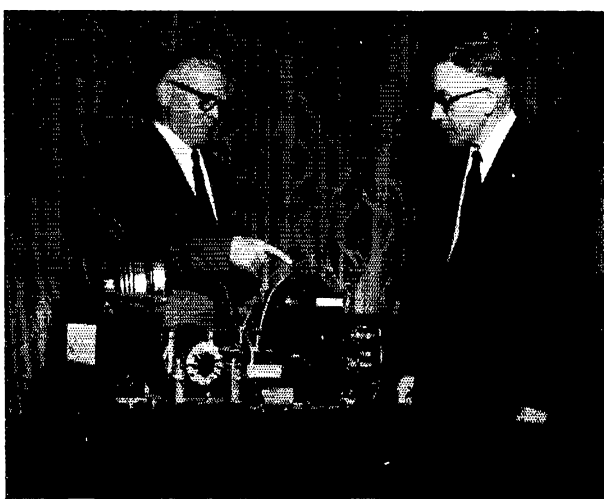
QST

Strays

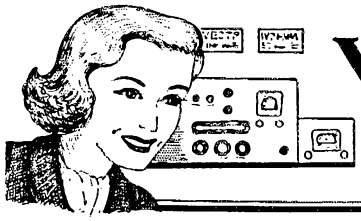
This is the new Certificate Hunters' Club certificate available to hams with 25 awards from recognized organizations. The 14-inch beauty has additional gold seals and colored ribbons for proofs of holding (1) awards from 25 countries (2) awards from six continents (3) 50 awards and (4) 100 awards. The Number 1 certificate was an honorary one to W1AW . . . the first man to earn one was James W. Ringland, W8JIN, who received all five gold seals by presenting proofs of 131 awards. Applications for CHC certification must include a list of your awards with dates, serial numbers (if any) and sources plus your QSL card and $1 or 12 IRCs. Send applications and requests for information to CHC founder and secretary, Clif Evans, K6BX, P.O. Box 385, Bonita, Calif.



K4HDQ doesn't go for these fancy ham shacks . . . just any l'il ole tree, will do. *(Photo via K4HDR)*



Ralph Thetreau, W8FX, left, presented a one-kw. spark transmitter to the Henry Ford Museum in Dearborn, Mich. Frank Davis, curator, accepted the rig. W8FX, Michigan SCM, made the presentation at the Detroit Amateur Radio Association Old Timers' Night.



YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

Do you have a copy of the booklet *Operating an Amateur Radio Station?* No ham should be without one. It's indispensable if you want to be a good operator and if you want to know what you can do for amateur radio and what it can do for you.

The booklet, published by the ARRL and free to League members (twenty-five cents to others), is sent on radiogram request. The Table of Contents lists the following sections contained in the booklet, each with information essential to operating an amateur radio station:

Operating Practice, Emergency Communication, Operating Activities and Awards, ARRL Field Organization, Handling Messages, Network Organization, Abbreviations and Prefixes, FCC Regulations, and Miscellany.

Information contained therein, in clear, concise, up-to-date form, should be at your fingertips. Keep your copy of *Operating an Amateur Radio Station* on your operating desk for ready reference at all times.

ORS, OPS, OES, EC, OBS, OO — we all know what these letters stand for, but do we all know exactly what appointment to each of these posts means and how such appointments are attained? Again, the reference is to that elucidating little booklet just described above. Section IV of *Operating* details the structure of the ARRL field organization and the activities and duties connected with each of the SCM appointments. Summarizing briefly:

ORS — Official Relay Station. Reliable traffic service, high procedure standards, 15 w.p.m. c.w. requirement.

OPS — Official Phone Station. Voice operating

*YL Editor, *QST*₂ Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.

Eight children and eleven grandchildren is only the beginning of the accomplishments of Gladys Biggs, K4LVE of Warner Robbins, Georgia. A recent recipient of a BPL medallion, Gladys is a regular member of 10 traffic nets and has too many certificates and awards to enumerate. An OBS, OTC, and OPS, she is currently president of the Georgia Peaches YL club. (photo via W4HSC)

exemplary operating procedures, dependable traffic activity on voice.

OES — Official Experimental Station. Experimental operating on v.h.f., u.h.f. or s.h.f. bands, OES report propagation data, support v.h.f. nets.

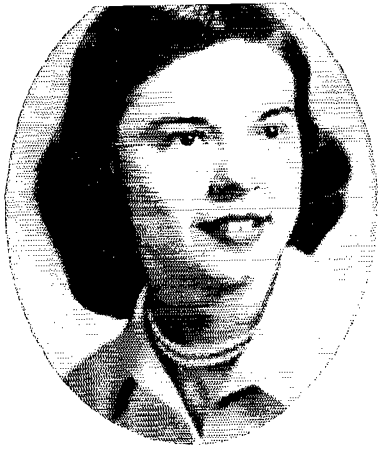
EC — Emergency Coordinator. Recruits and organizes amateurs of a community or other area for emergency radio service; sponsors tests, arranges liaison with officials and agencies served, also with local communication facilities. Assists in RACES implementation.

OBS — Official Bulletin Station. At least three times a week transmits ARRL and FCC information in radio bulletins to amateurs.

OO — Official Observer. Sends cooperative notices to amateurs to help them catch and correct signal difficulties, assist in frequency observance, insure high quality signals, and prevent FCC trouble.

All amateurs are invited to apply to their SCMs for any one of these appointments. ARRL membership and monthly reports are required for such appointments. You will find the name and address of your SCM on page 6 of *QST* each month.

To quote Communications Manager F. E.



Livy Westcott, K3HOC, above, is a research chemist in infra-red spectroscopy by day and a popular member of the high end of 80 meter s.s.b. gang by night. Livy lives in Wilmington, Delaware, but her ham station is set up in Media, Pa. She is currently serving the All Women Transcontinental Air Race as Chairman of amateur operations for the Delaware terminus at Wilmington county airport.

Acclaimed as the only YL in DU land is Aleli M. Jose, DU1AJ, above. At her Manila QTH Aleli operates both phone and c.w., using a Viking II transmitter and BC-779 and BC-348 receivers. (Photo courtesy DU1RTI)

Beloved Sister Mary Emiliana, R.S.M., W2HUH, below, long-time and very active YL from Rhode Island, welcomes W1GSD (seated) and W1CEW as visitors in her ham shack at St. Xavier's Academy convent in Providence. A ham for 27 years, W1HUH was the first religious Sister to receive an amateur license in the world. She was also the first YL in Rhode Island. Sister Emiliana is an Industrial Arts teacher at a boys school in Providence. Dorothea Nutini, W1GSD, is currently president of the R. I. YLRC, and Mary Hinterland, W1CEW, an RN and graduate of St. Xavier's Academy, is a past president of the club. (Photo appeared in the Providence Sunday Journal, April 10, 1960)

Norwegian ham team LA3WG, Reidun, and LA4LE, Egil Indrebo of Oslo, above, operate 10 and 15 phone and 20 and 40 c.w. Of ten women amateurs in Norway, Reidun, or "Peggy" as she is known on the air, is one of the three active ones. (Photo courtesy W6MZA)

Members of the new ALAMO YL Club of San Antonio, Texas include, standing l. to r. below: W5KQG, K5OPV, K5PDI, K5OPS, Secy. Front row: K5YCE, Pub. Chmn; W5TSE; W5WXT, V. Pres.; and K5OPT, Pres. The club offers a certificate to any amateur outside of Texas who contacts three ALAMO YLs and to any Texas ham who contacts four club members on the air. Send list of contacts with date, time, and station and band worked to Inez Cole, W5WXT 320 Meadowbrook, San Antonio 12, Texas, along with ten cents.

Sixty-five year young VE6YW, Elsie Thompson, has been active on 80, 40, and 20 c.w. and 10 phone for almost ten years. The YL from Barrhead, Alberta, particularly enjoys working new hams on c.w., with the hope of helping such neophytes gain confidence.

Handy, W1BDI, in his note to ARRL members that prefaces *Operating An Amateur Radio Station:*

"League organization will benefit you only as you take part in it by your radio activity and contacts with your fellow amateurs and ARRL. Amateur radio is as strong as we all make it through our participation in our organization. League operating activities and awards are all designed to add to the pleasure in and benefit from our hobby, and to our ability to communicate 'in the public interest.'

"Don't be satisfied with plain hamming. Develop your operating, make and take suggestions, take part in your ARRL. Get appointed and make your station known."

CORRECTIONS

A correction in the score of OM W8AJW, second place in OM phone in the YL-OM contest. (Scores published last month.) John's score is revised to 4,450 (instead of the 4,331 listed) with 89 contacts and 40 sections worked.

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K3ALL'S number of contacts under OM c.w. was incorrectly listed as 21. The correct number was 12.

LIFE SAVING

K4ICA, V. Mayree Tallman, of Miami, Florida, performed outstanding service recently when she was instrumental in saving a dying child's life. While on the air, K4ICA was interrupted by Venezuelan ham YV5ACD, who told of the plight of a ten-month-old infant in Havana, Cuba. A rare brain surgical instrument was needed at once. Mayree told her husband, Dr. M. H. Tallman of Mercy Hospital of the plight. Dr. Tallman located the necessary rare instrument at Jackson Memorial Hospital. That same day the instrument was shipped, and the operation was later successfully performed on the baby girl. In a letter to Mrs. Tallman, Dr. Jorge Picaza of Havana expressed deep gratitude for the aid readily extended when it was sorely needed.

KEEPING UP WITH THE GIRLS

CLUBS:

Los Angeles YLRC — New officers installed in June are Pres. K6ANG; V. P. WA6AOE; Treas. K6OAI; Rec. Secy. K6JCL; Cor. Secy. K6LMV.

Georgia Peaches — New officers are Pres. K4LVE; V.P K4GCT; Secy. K4ZZS; Treas. K4KKR; Net Mgr. K4DNL; Pub. Chairman K4HSC.

TYLRUN — The new address of Lyn Ohlson, W5RYX, custodian of the net's YL-OM 10CC certificate, is 8928 Hackney Lane, Dallas 18, Texas.

Floridora YLs — New officers are Pres. K4RNS; V.P. K4RED; Treas. K4HSC; Secy. K4OYB.

LARK — Winners of the club contest were W6PCA-C.W. and K9QGR-Phone (out-of-town participants). K9HGY-C.W. and K9IVG-Phone (local).

MISCELLANY:

VE6BC, Florence Clay, of Paradise Valley, Alberta, has been appointed District Chairman of the YLRL for Canada. . . . K9BWK, Alice, was awarded a certificate as MARS member of the month for the state of Illinois. KH6AUJ, Dotty, is the first YL MARS coordinator in KH6 land, and K4DNL, Olivia, has been appointed Director of Administrative Affairs for 3rd Army MARS. . . . K4s CZR, LVE, MEH, UEZ, ZNK, and ZZS were active in a recent CD exercise. K4UEZ, Jessie, is CD director of Clayton Co., Georgia. . . . W6QMO, NTN manager, is looking for outlets in San Francisco for the Northern California Traffic Net. Jeri made BPL again — for March and April. . . . The Georgia Peaches has published a biographical directory of its 39 members. Pres. K4LVE compiled the information. . . . V.P. of the YLRL W5EGD/3, Lillian, was guest speaker at a meeting of the Baltimore ARC. . . W4VCB/KL7, Evelyn, has been elected Secy. of the Bering ARC. Her OM, W4UTB/KL7, is Pres. As Entertainment Chairman for the Naval Officers Wives Club, Ev is teaching Japanese dances to some of the girls on Adak Island. . . . Evelyn, W6NZP, and her OM are touring hams once again. This time they will spend a year in Europe. . . . K4PPX, Fran, received Floridora YL certificate nr. 100. . . . W9LYU, Betty, is editor of the Tippecanoe ARA newsletter. . . . K9TRP, Rae, has finished building her DX 40 — lack of vision and arthritis handicaps notwithstanding. . . . On June 6th New England YLs W1s HOY, SVN, ZEN, K1HIR, and KN1MJA engaged in an effective demonstration of ham radio on station WHDH-TV in Boston.

W6NAZ, Lenore, made news when she assisted in an unusual project. The Aloha chapter of the United Presbyterian Men, First Church, Honolulu, Hawaii, received their chapter's charter via amateur station W6NAZ located in a car which was parked in front of the Southern California Presbyterian Headquarters in Los Angeles. The charter was received via an amateur station in Honolulu and relayed by telephone to the pastor there.

With regret we report as Silent Keys: Barbara Yoachim, K6PQG, Windsor, California, Carolyn Owen, KØBCQ, Denver, Colorado, Lil Bates, ex-8BPT, Hingham, Mass. and Mary Carmack, K5PDI, San Antonio, Texas. QST

Ruth Lewison, K6KLN, sports a unique record of confirmation of her DX contacts. She engraves the call of DX stations worked and confirmed on discs on a charm bracelet that should be worth its weight in gold and a DXCC certificate ultimately!

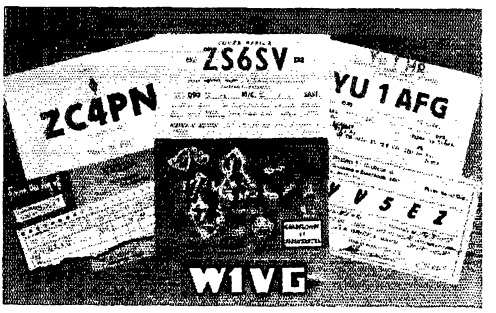
Strays

Samuel Gompers Vocational-Technical High School in New York City is on the air regularly using c.w., a.m. and s.s.b. with the call W2DOW. They would like to compile a roster of all graduates with calls so these can be inscribed on a permanent bulletin board. Please send information to I. E. Binger, W2CMM, c/o the school at 455 Southern Blvd., Bronx 55, N. Y.

Back Copies and Photographs

Back copies of *QST* referred to in this issue are currently available, unless otherwise indicated, from our Circulation Department. Please send *cash* or check — 50¢ for each copy — with your order; we cannot bill small orders nor can we ship c.o.d.

Full size (8 by 10) glossy prints of equipment described in *QST* by staff members (*only*) can be furnished at $1.50 each. Please indicate the *QST* issue, page number, and other necessary identification when ordering, and include full remittance with your order — we do not bill nor ship c.o.d.



Another WAC novelty—W1VG, Pete Morrow, shows QSLs from six other Petes, each using his own language's equivalent of the name. Left to right: Peter, Pieter, Petar, "Pete," Pierre, Pedro.

W1USS reports what he thinks may be the first four-way QSO on 10 meters using light bulbs for transmitting antennae. The group now calls itself the Fully-Loaded Half-Lit Light Bulb Net of Hudson, Mass. and wants to know "Who said dummy loads don't radiate?"

—···—

In the line of repetitive redundancies, consider this call from a W4 overheard on 15-meter c.w. "CQ CQ CQ ANYBODY ANYBODY."

—···—

OM and XYL W3BKE and W3TSC have remarkably similar calls. If you can't figure out why, W4ZM will be glad to tell you all about it.

Congratulations to "Butch" Griswold, KØDWC, who finally made admiral! Butch was recently promoted to admiral in the Nebraskan Navy, and the photo below shows the commission being tendered by WØYVV. This is a fine example of inter-service cooperation, as KØDWC holds down a regular job as vice-commander of the Strategic Air Command.

Phil Haller, W9HPG, was honored on May 19 by the Chicago Area Radio Club Council. At a dinner attended by more than 100 hams and their wives, Haller was presented with a plaque in appreciation of his many years of service to radio amateurs in the Chicago area. Among the guests at the dinner were those shown in the accompanying photo. Left to right: Jack Doyle, W9GPI, ARRL Central Division Director; John Huntoon, W1LVQ, ARRL Assistant General Manager and former secretary, CARCC (circa 1935); Phil Haller, W9HPG, guest of honor and past president, CARCC; and Jordan Kaplan, W9QKE, president, CARCC.

Some of the mobiles lined up at San Luis Obispo.

California Mobilecade Results

On page 57 of the April issue we carried an announcement of the second annual California Mobilecade and Field Trial. Basically, the idea was to establish a method for measuring the efficiency of mobile installations and to hold a competition to select the most efficient mobile. An efficiency factor was computed by squaring the received r.f. volts and dividing by the power input to the final amplifier, with the official competition frequency being 3995 kc.

Interest ran high in the trials, with some 60 mobiles attending the activities at San Luis Obispo, and over 30 actually competing. K6MAU walked away with the trophy and the golden whip, with K6UOK and W6LHV tied for second. W6KLZ was in charge of field-strength measurements, while W6OZS and K6LJA donated the golden whip and the mobile Oscar trophy. The sixth district boys would like to see some challengers from other sections of the country.

Here are the complete results of the field trials:

CALL	I_p	E_p	*Pwr*	*Field Strength*	E_r^2	$\frac{E_r^2}{Pwr}$	*SCORE*
K6MAU	85	550	46.75	6.40	40.96	.876	100
K6UOK	85	660	56.10	7.00	49.00	.873	99.58
W6LHV	77	570	43.90	6.19	38.32	.873	99.58
K6AHG	99	450	44.55	5.05	25.50	.572	65.29
K6LRN	148	510	75.48	6.40	40.96	.543	61.99
K6SKU	80	620	49.60	5.0	25.00	.504	57.53
K6KPD	200	675	135.00	7.62	58.06	.430	49.09
K2SEX/6	62	400	24.80	3.15	9.92	.400	45.66
K6LAT	100	495	49.50	4.38	19.18	.387	44.18
K6OHJ	83	750	62.25	4.89	23.91	.384	42.58
W1NMX/6	50	775	38.75	3.80	14.44	.373	42.58
W6OZD	100	470	47.00	3.75	14.06	.299	34.13
K6GJN	100	440	44.00	3.62	13.10	.298	34.02
K6PQZ	82	430	35.26	3.10	9.61	.273	31.16
K6LJA	80	485	83.80	3.25	10.56	.272	31.05
K6KAR	110	455	50.05	3.50	12.25	.245	27.97
W6BIP	94	560	52.64	3.50	12.25	.233	26.60
K6KEV	74	535	39.59	2.90	8.41	.212	24.20
WA6INI	96	500	48.00	3.19	10.18	.212	24.20
W6QEA	76	680	51.68	3.26	10.63	.206	23.52
K6RQT	120	600	72.00	3.70	13.69	.190	21.70
K6QAY	110	695	76.45	3.70	13.69	.179	20.43
K6GTX	70	580	40.60	2.65	7.03	.173	19.75
W6PEQ	190	640	121.60	4.50	20.25	.167	19.06
K6TRA	123	498	61.25	3.18	10.11	.165	18.84
K6EUD	100	450	45.00	2.71	7.34	.163	18.61
K6LGW	95	620	58.90	2.90	8.41	.143	16.32
K6RDX	200	595	119.00	4.00	16.00	.134	15.30
K6YCS	100	600	60.00	2.70	7.29	.122	13.93
W6DOF	110	540	59.40	2.30	5.29	.089	10.16
W6IWD	63	470	29.61	1.42	2.02	.068	7.76
K6IL	19	350	6.65	.50	.25	.038	4.34

Strays

We tried an experimental type of binding on our 1960 *Handbook*, a type of binding that is beginning to be used widely in the printing industry, and would be interested in comments from readers. The reason for using the new binding was to speed up production and, incidentally, to keep the cost of the *Handbook* down. Do you like the way the *Handbook* opens up? Has it held up well for you? Please send your comments, both pro and con, to W1HKE at ARRL Hq.

Planning to be in Britain during September 15 to 17? Then take in the National Convention of the Radio Society of Great Britain, to be held in Cambridge. There will be technical lectures, visits to factories and the Mullard Radio Observatory, and such. Further information can be obtained from the Secretary, RSGB Convention Committee, 37 Metcalf Rd., Cambridge.

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WA2EQR's very first CQ was answered by W3EQR.

Correspondence From Members-

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

FCC AMATEUR REGS

¶ Recently there appeared in *QST* a letter to the Editor which maintained that a copy of FCC regulations concerning the Amateur Service could be obtained from the Government Printing Office for a paltry sum. However, upon writing that agency to secure my copy I found that a new system of issuance has been instigated and that it is necessary now to spend $1.25 for Volume VI of the Rules and Regulations, which includes the Amateur, Citizens and Disaster services as well as automatic mailing of later supplements. For those who are interested, the catalog number is CC 1.6/6:959.

The only conclusion that may be logically drawn is that at 50¢ the ARRL *License Manual* remains the most economical and comprehensive source of information concerning FCC rules governing amateur radio. — *Larry Guenther, W4UJT, Kingsport, Tennessee.*

PHONE BAND-TV

¶ It has been a pleasure to observe how well the ARRL has protected the interests of the radio amateur. The story of the early problems of spectrum allocation and the danger, so fortunately avoided, that the amateur would be left without any useful spectrum, makes absorbing reading.

A similar turning-point may exist at the present time. I refer not to the need for additional spectrum space, a problem I know you are working on presently, but to the need for additional TV space. While the amateur is permitted to transmit video signals in the highest-frequency ham bands (which have a short range) it is my understanding that slow-scan video which could easily be transmitted within audio bandwidths on the usual phone frequencies, is not permitted.

The present availability of picture tubes such as the Hoffman 9511A VX5075 (3½-inch diameter, electrostatic focus and deflection, definition 150 television lines, storage time up to several hours) makes practical the transmission of slow-scan TV signals over a narrow bandwidth of only, say, 1 kc. Legislation permitting the transmission of this type of television over all the ham phone bands would make world-wide ham TV possible. Amateurs could send TV signals to hams in other countries as easily as voice signals are now sent. No new frequencies would be necessary for this.

This would, of course, cause an enormous jump in the amount of television experimentation and equipment-building by hams and in their enjoyment of this mode of communication. We have all heard remarks to the effect that amateur radio has lost its glamour and experimental fascination and has degenerated into a cookbook procedure of buying a kit or two and going on the air. Legislation permitting television in the phone bands might be the very "shot-in-the-arm" needed to bring back the days of experimentation, imagination and, if I may say so, "high adventure". Also, I firmly believe that amateur radio has always made a valuable contribution to international goodwill which I believe is directly related to the quality of international communications. Regular TV-DX would surely be of inestimable value here . . . — *Stephen Smith, Gainesville, Florida.*

HAM-TOWER VICTORY

¶ The writer and Wint Smith, W6MBA, recently have successfully defended against injunctive actions sought by a sub-divider under his powers of architectural approval. These suits were brought to trial after nine months of legal involvement. Fortunately, amateur radio won out and we have full rights to our respective 66- and 72-foot towers.

It is strongly recommended that amateurs obtain the services of an attorney prior to the purchase of residential property so that binding agreements to permit amateur towers may be made as a condition of purchase. This alone will tend to avoid the potential agony, risk, considerable expense, and publicity which may result at a later date.

These cases did not result in any legal precedent for our hobby but they do serve to warn buyers to beware! — *Marv Gonsior, W6VFR, Fullerton, California.*

CLUB PROJECTS

¶ One of the basic needs of people everywhere is to communicate. Our amateur radio service is based on this need. Consider the thousands of people who do not have the opportunity to communicate with others to the extent they would like, to share their interests and ideas, their hopes and dreams, and even wishful thinking. These people are either partially or completely shut off from the world through accident, disease, blindness, or other infirmities.

Radio amateurs have taken a portion of these people under their wings and have helped them to broaden their horizons through the magic of amateur communication. My plea is for the radio amateurs to seek out and help all the others in any way you can so that they may also enjoy the pleasure of communication. Amateur radio clubs are best equipped to fulfill these duties.

All members can be scouts to locate these people. One or two of your most congenial members should then call on them, explain ham radio and the opportunities it offers, and arrange for a demonstration, if possible. If they are interested, arrange for code and theory classes and help them to pass the examination.

The last step, of course, is to help them get the equipment they can afford and will suit their needs. If they can not afford to buy their equipment either donate your old rigs, in operating condition, or have a fund-raising drive to buy the equipment new or second-hand. Have an antenna raising party, connect it all up and make sure it works before you leave.

Most of the entire project can be handled by committees. Drop in occasionally for an eyeball QSO to make sure that the equipment is working properly and your thoughtfulness will be appreciated. Believe me, their thanks and appreciation will leave a warm glow in your heart long after the time and effort you put into this project is forgotten. — *James Forsythe, K7EZU, Forest Grove, Oregon.*

QRP

¶ I wish to congratulate and thank you for your excellent article, "*QRP, OM*", in the May issue of *QST*.

Operating 15 watts a.m. I have received S9 reports from KX6 land and European stations. I know from experience what low power can do and I fully agree with you. Would not reducing our power levels give us much-needed room in our bands and also improve our relations at the next conference? — *Dale Zobrist, K0HZA, Abel, Iowa.*

¶ A little applause for your QRP editorial in May *QST*. It's a little like fighting a forest fire with a feather, but I'm with you. — *Harry E. Adams, W9JX, Spencer, Ind.*

MEMORIES

¶ I have just read Al Brogdon's (W4UWA/K3KMD) article entitled "Dit-Dit" in May *QST*. My, how I enjoyed it! It brought back now-funny memories of my own Novice days. We often signed in the way Al said he did. I never dreamed "shave and a haircut, two bits" would take hold that way, though. My sincere thanks to Al for a fine, humorous treatment of something which is not life or death, but should be cleared up.

One criticism, however: Al says ESE-EE. I'm no musician but E-EIE-I seems to carry the rhythm better to me, HI! — *Frank W. Gamblin, K4IYJ, Tallahassee, Florida.*

EDITORIAL "WE"

¶ In reference to "Correspondence" in the Nov. 1958 issue of *QST* and prior squawks on the use of "Singular WE": I found the answer! The late Dr. George O. Curme in his book *English Grammar*, published by Barnes & Noble, states:

> Use of Pronomial Subjects. Attention is here called to a few important points: EDITORIAL "WE". This form is sometimes used by a speaker or writer *to avoid the egotism of "I"*: WE would first speak of the Puritans, the most remarkable body of men perhaps which the world has ever produced (Macaulay). It will be easier to explain this later on, when WE have said something about what is called the history of language (Wyld, The Growth of English).

So — when we amateurs say "WE have this — WE did so-and-so", we are suppressing our ego — which is the spirit of amateur radio. — *Walter E. Wilson, K4DBD, Roanoke, Va.*

UR 576 OM . . .

¶ I feel that this is one experience that just has to be passed along to the League. One night, not long ago, I was tuning around on twenty meter c.w. when I found a station calling CQ, his signal about 75% a.c. hum! After listening for a few minutes I could not resist the temptation to tell him about it. I gave him a 576 report and heard no more from him. Two days later I was again up on twenty c.w., and lo and behold there he was again, this time with a T9 signal! I called him again, and we had a nice forty-five minute QSO. He was even glad I called his attention to the tone of his signal two days before.

Maybe all this proves a point: don't be scared to give a critical report. Most of those who have a loused-up signal will be glad to know about it; I know I would be. The future of amateur radio depends on how we operate in our bands, and anything we can do to improve our operating and the quality of our signals should be done. — *Vincent A. Van Der Hyde, KØTKN, Huron, South Dakota.*

HAM SPIRIT!

¶ Recently, I was transferred to Jacksonville, Florida, for Uncle Sam. Upon arriving, I found that my driver's license had expired, so I immediately mailed it to my original home in Ohio for renewal. Meanwhile, the XYL and I had to find a suitable QTH, so we were apartment-hunting as often as possible. During one of those days, we were in heavy traffic, and I made a quick left turn on a traffic light going from green to yellow. After making the turn, I glanced down a side street (guilty conscience) and what did I see but a policeman on a motor-scooter marking parked cars. He finished marking them and came after me. Now I was really sweating! He came up alongside me and asked if he could talk to me, and of course I pulled over. My heart was in my mouth when he asked "What band are you on?" With a sudden, very happy realization that he was referring to the 75-meter whip antenna on the car, I met K4CMT.

Of course, my renewed license has since returned, and if Dale reads this, it will be the first time he will really know the circumstances under which we met! — *Jack Eccleston, K4ZQU, Jacksonville, Florida.*

MALICIOUS QRM

¶ If you ask any amateur what he thinks about the QRM on the bands, he will tell you that it is terrible and that he would rather stay off the air than fight the "stuff." On any band there is a certain amount of it and it is to be expected. But there are some spoil sports who just have to make it worse.

One Saturday night when there were tornado warnings out for this area, I happened to hear an emergency weather net on 40 phone. It was at 7.280 Mc., right in sideband alley. There was very much traffic being handled and the QRN was not helping the matter. Then all of a sudden a sideband station came on the frequency and copy became very rough. One of the members of the net asked him kindly to move, but he would not, no matter what the net director said. I call this a case of malicious interference as stated in the FCC Regulations.

In my opinion, this was a very poor showing by an amateur operator. The frequency two kc. away was no more crowded than on the net frequency and there would have been less QRM from the phone stations. I rank this with cheating on an exam and think that this type of operator should have his license suspended. — *Russ Woirhaye, KØVXU, Independence, Missouri.*

CONTEST FORMULA

¶ Although I have never been a participant, I have watched the scoring of contests and the many complaints about such scoring over a good number of years.

I have devised a formula which, I believe, would be found fit for the scoring in the case of v.h.f. contests,

wherein, $S = \dfrac{CMF}{PALN^2}$

C = Contacts
M = Miles (nearest 10)
F = Frequency factor
  1 for 50
  2 for 144
  3 for 220
  4 for 430
  8 for frequencies above 430
P = Power (nearest 5 watts)
A = Altitude (nearest 100 feet above sea level)
N = Number of operators
L = Power factor and is 1 on portable power and 1.5 on power line.

This formula, I believe, would give the little fellow, the big fellow, the single operator, the group operation, and others an equal break in the scoring system regardless of their accidental geographic location. — *T. K. Riggen, KØHNM, Elmira, New York.*

HBR-16

¶ Heartist congratulations to Ted Crosby, for his HBR-16 and for the fine description article appearing in October '59 *QST*. I have built Ted's HBR-16 and am very enthused with the results. It is a "red hot" receiver and well within the means of any budget-minded ham.

Ted has proved that our wonderful hobby needn't be one of great extravagance, that it is possible to get very good to excellent performance with low-cost home-built gear, certainly an encouraging departure from the materialistic philosophy of today's kilowatts and expensive receivers. I imagine the recent rash of receiver projects and the like have put new heart in the newcomers to ham radio, who no doubt now realize that a little work and ingenuity produce excellent results. — *Joe Morin, K1ELR, Fall River, Mass.*

C.W. STILL WORKS!

¶ I was interested in the relative effectiveness of the NSS transmitters operating just above 4 Mc. during the evening of Armed Forces Day. The c.w. and the s.s.b. frequencies were so close I could copy both at the same time and the c.w. operator was making about 4 contacts to the phone man's one. The difficulty on phone seemed to be identification of the call letters, the operator constantly having to ask for repeats. The tests well demonstrated the ability of c.w. to get through when QRN and QRM is heavy and showed the wisdom of FCC in requiring the code test for amateur licenses. — *Hugh W. Holt, W4TP, Warrenton, N. C.*

A GRIPE IS A GRIPE

¶ For the past few months I have found gripe after gripe in the "Correspondence" section of *QST*. A lot of these have about as much real meaning as two kids fighting over the same swing in a play ground full of swings. I do not mean this as a gripe, but if you think of this as one, think of it as a gripe to end all gripes! . . . — *Robert Wools, K9OCC, Brazil, Ind.*

¶ . . . I have always contended that a griping man is a happy man, for the simple reason that only a happy man has enough energy to gripe. Personally, I would like to see a few more gripes in *QST*. As I mail this epistle, I am proud to join the ranks of those who have "griped their way to good health." — *Vern D. Wall, WA6HOY, Winter Haven, Calif.*

(*Continued on page 146*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
JOHN F. LINDHOLM, W1DGL, Ass't. Comm. Mgr., C. W.
ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Ass't. Comm. Mgr., Phone

Directory of Certificates Goes to K6BX. Bill Clark, W3RPG, is now changing QTH from Pennsylvania to Columbus, Ohio. The Directory that he started, incorporating a quarterly revision service, grew to be an appreciated reference on certificates. Since his new post would not permit him to continue its publication, Bill has made arrangements that it be continued by Clif Evans, K6BX (Box 385, Bonita, California). All success in keeping up this *Award Hunter's Bible*, Clif.

Greenwich Time Urged for Station Logs. In March, *QST*, we cited the desirability of using Greenwich Time in amateur work. Your Board of Directors in annual session in May voted *unanimously* that use of GMT be recommended in reports, communications, and logs, and that ARRL urge wider use of GMT by amateurs. This development isn't exactly a surprise, but rather expresses a popular trend, a way given us amateurs to talk a common time language, whenever we work by radio across different time zones. Even a twelve hour clock is no real handicap to logging, since so many of us now are accustomed to reduce its indications to four-figure entries. *Any* brand of time can be so entered, but using Greenwich Time always involves making entries on the 24-hour basis. Greenwich Time has the chief advantage that it is a universally understood reference throughout our radio world.

About 24-Hour Time. Our newer amateurs may most need to change in following a 24-hour logging system and getting set to use Greenwich Mean Time. Both round dial and direct-reading time-at-a-glance 24-hour clocks are available. Keeping your records by 4-figure entries is recommended for contest logs or FCC records. It is but a step from 4-figure logging in local time to general use of Greenwich Mean Time. Also it's not hard, even without 24-hour type clocks; just follow the simple formula or chart conversion. Midnight on the 24-hour basis is 2400 (or 0000); 2 A.M. is 0200; 10 A.M. is 1000, and noon 1200. Instead of repeating as the 12-hour system does (with 1 P.M.) the clock reads 1300 and under the 24-hour system continues 1400, 1500 etc. until 2359 (11:59 P.M.). Instead of 7 P.M. and 10 P.M. we read 1900 and 2200.

The *Call Book* contains a convenient world time conversion chart. Even without a direct reading clock, you can use a simple two-column conversion chart or table to convert *your* time to Greenwich Mean Time. The following table is such a direct reading table. (Less than 50% of geographical United States uses daylight saving time. However, in making a correct conversion to GMT, allowance must be made in such areas for the temporary setting ahead of the clock one hour. Standard time is shown below.)

TIME CONVERSION

GMT	EST	CST	MST	PST
0000*	1900	1800	1700	1600
0100	2000	1900	1800	1700
0200	2100	2000	1900	1800
0300	2200	2100	2000	1900
0400	2300	2200	2100	2000
0500	0000*	2300	2200	2100
0600	0100	0000*	2300	2200
0700	0200	0100	0000*	2300
0800	0300	0200	0100	0000*
0900	0400	0300	0200	0100
1000	0500	0400	0300	0200
1100	0600	0500	0400	0300
1200	0700	0600	0500	0400
1300	0800	0700	0600	0500
1400	0900	0800	0700	0600
1500	1000	0900	0800	0700
1600	1100	1000	0900	0800
1700	1200	1100	1000	0900
1800	1300	1200	1100	1000
1900	1400	1300	1200	1100
2000	1500	1400	1300	1200
2100	1600	1500	1400	1300
2200	1700	1600	1500	1400
2300	1800	1700	1600	1500

* or 2400. Greenwich Mean Time (GMT) is time at the zero or reference meridian. In general, time changes one hour with each change of 15° in longitude; that is, EST, CST, MST and PST are 5, 6, 7, and 8 hours "earlier" time than Greenwich and corresponding to the 75th, 90th, 105th, and 120th meridians west of Greenwich.

Concerning Applications for the Rag Chewers' Club. The popularity of RCC has been coming on apace with the records showing 6,006 QSL-card matchings and certifications issued by ARRL in 1959. Check the rules, page 7, of *Operating an Amateur Radio Station*. Ask stations contacted "RCC?" If not already certified, you can enjoy a full half-hour of radio contact getting acquainted; afterwards this RCC member can qualify you by sending in your "nomination." It should be plainly marked RCC NOMINATION unless a standard ARRL form is used. In applying for RCC mark your card or letter plainly RCC APPLICATION. Give the date and time of starting and finishing the RCC QSO as well as the other fellow's call. We have had fellows who wanted RCC and who neglected to give their own call with their application, making it impossible to match. An ordinary QSL that doesn't mention RCC is neither a proper recommendation nor application for RCC. Every so often we have to write a letter to fellows who have neglected the basic idea that *you have to work an RCC member* and get *him* to make the nomination. Also, lest there be further misconceptions, a nomination (alone) doesn't become operative until the prospective member takes enough interest to apply for RCC, so the reports can be matched. We're happy to keep RCC rolling along, in its increased dimensions, since it means so much fraternalism to so many. Bear with the fellow making the nomination, however, since he sometimes uses an RCC form sent out with the certificates and holds this until he has worked four or five fellows to be recommended or nominated; he then can send them all in to "The Old Sock" at the same time. —*F. E. H.*

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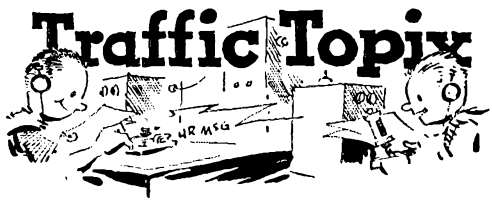

In traffic nets, it's pretty hard, sometimes, to reconcile the surging enthusiasm of the young squirts with the blaise casualness of the old timer. The fact is, these two kinds of operators constitute the majority of traffic men these days. There aren't too many who fall in the middle. The former are likely to consider the latter as a bunch of old fogeys so set in their ways that they don't want to give anyone else a chance; while the latter may consider the former a bunch of upstarts who think they know it all and have to be stepped on. This is what causes the youngsters to form teen-age nets and the oldsters to clan together into pipe-smoking groups of their own.

This is natural enough, and to be expected. The only thing is, in traffic nets our job is to handle traffic, and the operator who can do it should be put to work. Who cares whether he's a high school lad or an octogenarian? There aren't enough traffic men for them to be segregated into old ones and young ones, phone ones and c.w. ones, fast ones and slow ones. We all have to work together, each in his proper place, to keep the traffic moving. Nothing delights the non-traffic amateur more than to be able to cite an instance of poor traffic handling. Let's see if we can't make this impossible by keeping our own ranks tight.

So what if that young whippersnapper grabs the NCS job when he's not really capable of doing it? He's giving it a try. What if an old veteran NCS does refuse to send you to liaison with a faster net? Maybe he knows what he's doing. When a newer operator goofs things up it's okay to jack him up on it, but don't, literally or figuratively, call him a squarehead while you're doing it. Give him credit for being in there trying. If an old timer offers you some advice, *listen to him; he's been around longer than you and may just know something.*

Finally, let's remember that it takes at least two people to make an argument, and in most cases they are *both* wrong. One of the finest attributes of a successful leader is the realization that *he* could be the one who is wrong.

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This month's quote is from *Pacific Area Net News:* "With present day receivers with all their selectivity, crystal phasing, and amplification, one would think that there should be no troubles, but Mother Nature with her static, and all the mad-made noises and the adjacent QRM help none at all. The only thing that helps get the traffic through is the dogged determination of the individual operators to make solid copy despite all these noises. Without that we would be back in the days when the nets closed down for the summer, with the first of October being the opening date of most nets."

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May Net Reports:

Net	*Sessions*	*Check-ins*	*Traffic*
Eastern Area Slow	31	122	33
Early Bird Transcon	—	—	415
Hudson Traffic	31	251	125
20 Meter SSB	22	624	2846
Mike Farad Emerg. & Tfc.	33	437	601
Wolverine SSB	31	836	145
Eastern States	31	366	406
Transcontinental Phone	31	—	2144

National Traffic System. Some of the boys out west have been heard muttering darkly about establishing a Mountain Area NTS organization on an equal status with the other three areas. You older NTSers may remember that in 1949 we started out with four NTS areas instead of the present three, but that the Mountain Area just didn't materialize through lack of traffic men; not only that, but the two region nets in that area also flopped and the whole area had to be attached to the Pacific Area for NTS purposes. Now that we have a region net in the Mountain Area (TWN) that looks as though it's here to stay, there is talk of organizing another region net in the northern mountain states and VE mountain provinces, an area net for the mountain time zone, and another unit of TCC to serve it.

Fellows, we're all for this, but we urge caution. Let's proceed slowly and with care, one step at a time. The first step is organization of the Thirteenth Region Net comprising the states of Idaho, Montana, maybe Wyoming (if they want to break away from TWN) and the VE provinces of Alberta and Saskatchewan. Once this is accomplished and the net is running smoothly (as a part of Pacific Area), complete with adequate representation from all its sections, we can think about organizing the Mountain Area Net (MAN) and, at the same time, the Mountain Area division of TCC. MAN would draw representatives from TWN and TRN and operate on a status equal with PAN, CAN and EAN. The area net and TCC organizations would have to be activated at the same time, because there isn't much point to having an area net without liaisons to the other areas; and here the outlook begins to look a bit doubtful.

With four areas in operation instead of three, each area net session would have to have three TCC representatives instead of two, and this would mean that the entire TCC organization would have to be revised to add representatives to serve the new area net. Assuming that area nets adjacent to each other can report directly into each other rather than conduct out-of-net schedules (not always a practical assumption), this would require the addition of eight functions to the TCC setup, making a total of 18 functions per day instead of 10 as at present. Of these eight, the new Mountain

The North Texas Emergency Net congregated at the ranch of K5ENL on May 22 and had this picture taken. This net has been active for more than 10 years and now has 94 members. It has a long history of participation in emergencies.

BRASS POUNDERS LEAGUE

Winners of BPL Certificate for May traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
K2UTV	250	2930	2840	81	6101
W3CUL	374	2693	2075	501	5643
K5FIW	702	982	997	51	2732
WØLGG	757	680	812	62	2111
K1FDP	137	944	856	83	2020
W7BA	22	894	870	23	1809
WØBDR	81	832	740	14	1667
WØLCX	30	615	573	42	1260
K2THC	45	543	490	33	1111
W4PL	10	558	481	58	1107
WØSCA	16	532	531	1	1080
W8UPH	18	517	456	58	1044
W7DZX	10	520	477	26	1033
W6GYH	165	423	415	5	1008
WA2CIG	69	466	458	9	1002
WØOHJ	5	485	475	10	975
W9DO	19	429	61	387	896
K1MMQ	377	252	219	27	875
W9DYG	29	424	378	37	868
K6YBV	25	360	352	4	741
WØTU8	98	222	363	24	707
W3IVS	17	335	297	35	684
K2YZI	25	309	315	12	661
K6BPI	76	283	195	98	652
K4SJH	125	268	212	33	638
W3VR	58	295	271	7	631
W6EOT	15	324	277	14	630
KØLTJ	207	161	170	91	629
W9MM	4	299	297	2	602
WØBLI	2	290	289	1	582
WØWAL	8	279	257	22	566
K5B8Z	7	276	213	48	544
W9IDA	14	273	254	3	544
W7HUT	2	270	256	14	542
K2UCY	19	240	259	12	530
W1SMU	26	267	230	5	528
KØKBD	15	265	224	10	514
K8LVR	7	262	231	11	511
W2EZB	3	253	241	11	508
K1CAU	11	250	224	19	504
W6GQY	225	34	231	10	500
Late Report:					
K4CNY/4 (Apr.)	166	185	158	27	536

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
K6MCA	249	461	426	35	1171
W6ZJB	370	414	328	40	1152
K6WAH	58	280	140	138	616

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

W6YDK	319	W9DGA	127	WA6EEO	112
K4QLG	227	VE2WT	126	W8DAE	109
K2UBG	175	K1MJN	122	K4F8S	105
K2DEI	169	W2VDT	121	W4ZMH	105
WA2CN8/VE8	164	K4PGH	121	W3AEQ	104
W9IMN	159	W5GY	117	K6ZCR	103
W2EW	141	K4MXF	115	K4QIX	102
W1TXL	140	W3TN	113	W5ZHN	102
W9TT	138	W6DEF	113	K6EA	101
K7BKH	130	W9VAY	113	Late Report: WØKQD (Apr.)	119

More-Than-One-Operator Stations

W1AW 104

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: WA2CCF, K4BQP, K4EJI, K6SXX, K6ZCR, KØFCT, WØQDL.

The BPL is open to all amateurs in the United States, Canada, Cuba and U. S. Possessions who report to their SCM a message total of 500 or more or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

Area TCC would require four and two each would have to be added to the Central and Eastern Area TCC organizations, making six TCC functions per day for Eastern Area stations (put down that pistol, W1SMU!).

Thus it is in NTS: a change in one area can affect all other areas and the entire system. Thus it is in *any* organization worthy of the name. Yes, it would be "nice" to have a Mountain Area setup; certain advantages would obtain. But there's more to it than meets the regional eye. So let's not bull into it. Let's plan carefully, methodically, systematically, step by step so that each beachhead is thoroughly established before we try to set up another one.

May reports:

Net	Sessions	Traffic	Rate	Average	Representation (%)
EAN	31	1429	.851	46.1	96.2
CAN	31	1080	.715	34.8	97.8
PAN	31	1376	.641	44.4	100.0
1RN	59	631	.365	10.7	71.4
2RN	62	769	.520	12.4	96.8
3RN	62	682	.341	9.9	97.3
4RN	62	784	.340	12.6	91.7
RN5	62	1022	.433	16.5	92.9
RN6	55	1046	.348	19.0	92.9
RN7	62	504	.254	8.1	35.1
8RN	56	238	.169	4.3	80.4
9RN	62	1033	.605	16.7	60.9
TEN	62	792	.574	12.7	65.3
ECN	18[1]	50	.151	2.7	55.6
TWN	53	474	.425	9.0	65.2
Sections[2]	1183	7314		6.2	
TCC Eastern	103[3]	424			
TCC Central	62[3]	1015			
TCC Pacific	119[3]	1069			
Summary	1951	21774	EAN	9.9	PAN
Record	1751	20229	.909	22.1	100.0

[1] Region net sessions based on one session per night. Others are based on two or more sessions.

[2] Section nets reporting: WSN (Wash.); Colo. Emerg. Phone, Colo. HNN, BEN, WIN, WSSN (Wis.); Tenn. CW; AENP Morn, AENP, AENT, AENO, AENB (Ala.); Iowa 75 Meters; QKS (Kans.); QMN (2), BRN/MEN (Mich.); BCEN (B.C.); KYN (Ky.); TLCN (Iowa); MSN, MJN, MSPN, MSPN Evening (Minn.); BUN (Utah); SCN (Calif.); SCN (S.C.); MCN, CPN (Conn.); SDN (S.Dak.); S. Dak. 40 Phone; S. Dak. 75 Phone; FMTN, QFN, FPTN, GN, GSSN (Fla.); NEB (Nebr.); NHN (N.H.); MDDS (Md.-Del.-D.C.); GSN (Ga.); NJN (N.J.).

[3] TCC functions reported, not counted as net sessions.

Only two records bettered this time: the number of net sessions reported and the total traffic. We fell a little short on others. Past records will become increasingly harder to beat as we approach our zenith, but there is still plenty of room.

A CAN certificate has been earned by KØONK; W9DYG hopes to put out an occasional CAN Bulletin. KØEDK starts out right with a very complete PAN Bulletin to all

concerned. W1BVR has had to abandon the late 1RN session for the summer. W2PHX says "give me 28 good operators who will each work one night a week and I'll show you a *real* net!" "Regulars" who jump in to fill vacancies are keeping 3RN in the upper brackets. W4SHJ has issued 4RN certificates to *K4s* BAI MXF YEP and ZHV. RN5 certificates have been issued to W4PTR and K4ZXX. W6RSY is having a rough time on RN6 because of illness, overtime work and technical difficulties. W8DSX is moving to sunny Calif. and has to relinquish the 8RN reigns. KØKBD submits his last TEN report; WØLCX takes over with the June report. The ECN gang is having discussions on the status of this region net; VE3AUU has tentatively resigned. Both sessions of TWN have moved to 7060 kc. for the summer.

Transcontinental Corps. A new TCC function has been created — Station K, located in the Eastern Area, who will have the function of meeting Station C to receive traffic from the Central to the Eastern Area after CAN has QNF. Station K becomes an assignment of the TCC-Eastern director, while Station C now becomes an assignment of the TCC-Central director. Station C reports into CAN, takes all eastern traffic during the net session, then sends it to Station K later, by special schedule. Station K distributes it in the east as soon as possible thereafter. So we now have 11 TCC functions per day, instead of 10.

May reports:

Area	*Functions*	*% Successful*	*Traffic*	*Out-of-Net Traffic*
Eastern.....	103	96.1	1486	424
Central.....	62	98.4	2030	1015
Pacific.....	119	91.6	2128	1100
Summary...	284	94.7	5644	2539

The TCC roster: Eastern Area (W1SMU, Dir.) — *W1s* AW NJM OBR SMU WEF VE2AZI/W1 *K2s* QBW SSX THC UTV WA2APY W2FEB W3WG K4KNP K4QES W8PGW K9DAC *W9s* DYG DO CXY; Central Area (WØBDR, Dir.) — *WØs* BDR SCA LCX; Pacific Area (W6EOT, Dir.) — W4DNU/6, W5ZHN *W6s* EOT HC WPF QMO *K6s* LVR SXX GID, WA6ATB, *W7s* ZB BDU GMC DZX *WØs* ANA KQD *KØs* DTK CLS/6 EDH EDK.

A.R.R.L. ACTIVITIES CALENDAR

Aug. 3: CP Qualifying Run — W6OWP
Aug. 16: CP Qualifying Run — W1AW
Sept. 1: CP Qualifying Run — W6OWP
Sept. 16: Frequency Measuring Test
Sept. 17–18: V.H.F. QSO Party
Sept. 21: CP Qualifying Run — W1AW
Oct. 15–16: CD Party (c.w.)
Oct. 22–23: CD Party (phone)
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.

Aug. 27–28: First All Asian DX Contest, Japan Amateur Radio League (p. 71, this issue).

Aug. 27–28: First New Jersey QSO Party, Garden State Amateur Radio Assn. (p. 112, this issue).

Sept. 3–4: LABRE DX Contest (C.W.).

Sept. 10–11: LABRE DX Contest (phone), LABRE (p. 71, this issue).

Sept. 17–18: Scandinavian C.W. Activity Contest.

Sept. 24–25: Scandinavian Phone Activity Contest.

Sept. 24–25: VE/W Contest.

Oct. 1–2: VK/ZL Phone DX Contest.

Oct. 8–9: VK/ZL C.W. DX Contest.

BRIEF

Note the following corrections for the Sweepstakes Contest as reported in May and June *QSTs*. W2III's c.w. score is 32,970-240-56-A-25. K2TAQ's phone score is 11,288-89-43-A-13. The Mohawk Amateur Radio Club of N. Y. aggregate score is 109,208 points. K2HFL is the Technician winner for NNJ.

ELECTION NOTICE

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

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

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

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

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

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

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

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

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

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

— F. E. Handy, Communications Manager

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon *	Aug. 10, 1960	W. R. Williamson	Mar. 17,1949
West Indies	Aug. 10, 1960	William Werner	Aug. 10, 1958
Santa Barbara	Aug. 10, 1960	Robert A. Hemke	May 9, 1960
Kentucky	Aug. 10, 1960	Robert A. Thomason	Aug. 16, 1960
Nevada	Aug. 10, 1960	Charles A. Rhines	Oct. 10, 1960
Arkansas	Aug. 10, 1960	Ulmon M. Goings	Oct. 15, 1960
Santa Clara Valley	Aug. 10, 1960	William C. Smith	Oct. 15, 1960
Kansas	Aug. 10, 1960	Raymond E. Baker	Oct. 29, 1960
Vermont	Aug. 10, 1960	Harry A. Preston, jr.	Resigned
Southern Texas	Oct. 10, 1960	Roy K. Eggleston	Dec. 10, 1960

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Noel B. Eaton, VE3CJ, R.R. 3, Burlington, Ontario. To be valid, petitions must be filed with him on or before closing dates named.

ELECTION RESULTS

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

Alberta	Kenneth G. Curry, VE6KC	May 1, 1960
Western New York	Charles T. Hansen, K2HUK	Aug. 10, 1960

In the Eastern Massachusetts Section, Mr. Frank L. Baker, jr., W1ALP, and Mr. David J. Strout, K1CIF/K1MMQ, were nominated. Mr. Baker received 755 votes and Mr. Strout received 107 votes. Mr. Baker's term of office began June 15, 1960.

Meet these SCMs who have been doing a topnotch job. Above left is Thomas J. Morgavi, W5FMO, Louisiana SCM who is a U. S. Army Corps Engineer. *Above right* shows B. Riley Fowler, W4RRH, N. C. SCM at his rig; numerous public service awards and an Edison Award Citation are among his credits. *Right* is past TEN manager WÜKJZ, Mrs. Lydia S. Johnson, energetic SCM of Minnesota. *Lower left* finds William D. Dotherow, K4AOZ, Alabama's SCM; some of the vitality of playing semi-pro baseball must have rubbed off onto Jack's AREC/RACES emergency work, yielding eight public service awards. *Lower right*, B. W. Southwell, W6OJW, East Bay's SCM is a radio engineer with NBC and holds DXCC, WAC, WBE, WAS, and others. This "ball of fire" section leadership displayed by these and other SCMs promotes healthy section activity.

Meet the SCMs

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made August 16 at 2130 Eastern Daylight Time (0130 GMT, August 17). Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,800 kc. The next qualifying run from W6OWP only will be transmitted August 3 at 2100 PDST (0400 GMT, August 4) on 3590 and 7129 kc.

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

Code-practice transmissions are made from W1AW each evening at 2130 EDST (0130 GMT). Approximately 10 minutes' practice is given at each speed. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with W1AW.

Date	Subject of Practice Text from June *QST*
Aug. 2:	*U.H.F. Coaxial S.W.R. Bridge*, p. 30
Aug. 5:	*100 Years of Army Signals*, p. 11
Aug. 8:	*Feeding Grounded Towers as Radiators*, p. 32
Aug. 12:	*I.F. Noise Limiter*, p. 16
Aug. 18:	*D. F. Loop for 75*, p. 36
Aug. 25:	"*What's Up Top?*", p. 38

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Five amateurs assisted in the rescue of a man and his two daughters lost on the slopes of Larch Mountain in Oregon, May 2. Communications were carried on in connection with rescue activities from 0100 to 0500, when the missing parties were found safe. These amateurs engage in such activity regularly for the Mountain Rescue Council of Oregon. Amateurs taking part: *W7s* DGE/mobile WFO HDN RVN/mobile WFP. — *W7WFP.*

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On May 6, two mobiles and a base station provided an emergency 6-meter link between Derry and Manchester, N. H., when a bad fire destroyed 15 buildings in Derry. W1WYZ operated at Manchester Red Cross headquarters with K1NQB as net control and K1CIG operating from temporary Red Cross headquarters in Derry. Communications were maintained with no trouble. — *K1CIG.*

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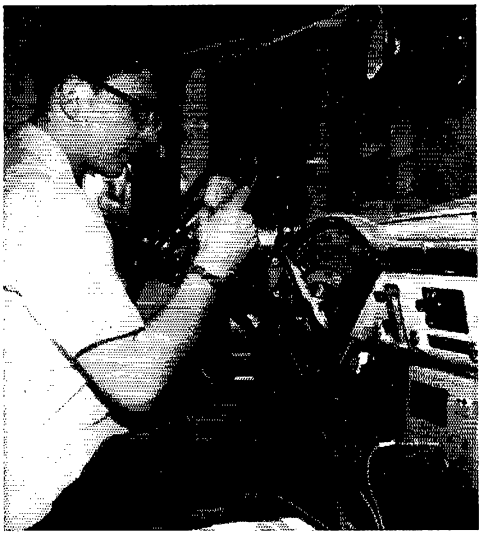
The search for the body of a hunter who disappeared last fall in the wilds of Montana, impossible at that time because of heavy snows, was conducted on May 8. K7DFS/7 was in charge of communications at the search headquarters, using a 150-watt transmitter and a dipole hung high in the pines. A gas-driven generator provided power. This equipment was installed the day prior to the search by the AREC of Great Falls and Missoula. A full 12½-hours of perfect communication was provided with Missoula, Kalispell, Anaconda, Helena and Great Falls. Other amateurs participating included *W7s* KPB ZQA NDG NOZ YFU KJX NCS, *K7s* DCI CVK DCH IMZ. — *W7KUH, SEC Montana.*



One of the most active AREC groups in Eastern Penna. is the Lycoming County (Williamsport) unit, which recently received a fine publicity spread. Skip Leitzell, W3CHC (above, operating his mobile rig) serves as EC of the 31 amateurs in this group.

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Great Falls, Mont., amateurs on their way to participate in a fishing derby on the Missouri River were able to perform an emergency service when they came upon a house trailer jackknifed and overturned across the road, completely blocking traffic. A hand-carried unit was sent ahead to investigate. This unit transmitted the information to a mobile, who contacted K7CYT, who contacted a mobile who was in a position to contact the Highway Patrol. The triple relay was necessary because of dead pockets along the river; however, as a result of the prompt action of the amateurs, the Highway Patrol arrived on the scene in a short time. — *K7CYT, EC Great Falls, Mont.*

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On May 8, while listening on 20 meters, K2SVM overheard a distress call from YV5AGU. It seems a dying man needed a certain kind of rare medicine, not available in Venezuela. With the assistance of a number of stations the complete information was obtained and the police department in Long Beach, N. Y., notified, who notified the Red Cross and the medicine was rushed to Venezuela by jet plane. Other amateurs participating included *K2s* JSO YSK, WA2COQ and WV2LYQ. — *WA2COQ.*

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On May 19 a tornado struck from Topeka to Leavenworth, Kans., in rural areas. Local amateurs sent mobiles to the scene and maintained communication for over two hours. Amateurs who took part included *KØs* YSL MAC OCS, *WØs* OJT VZG OAQ. — *WØOAQ.*

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K6UYO/mobile was proceeding along U. S. Highway 30 near Pendleton, Oregon, in a blinding snow storm on a very slippery road when he came upon an accident involving several cars and one injury. He immediately sought assistance on 3875 kc. and was heard by stations in the Oregon AREC Net. The Highway Patrol arrived on the scene within fifteen minutes as a result of this call, and the injured lady was taken care of after the amateurs made an additional call for an ambulance and wrecker. K6UYO had many nice things to say about the alertness, discipline and cooperation on the Oregon AREC net. Stations who participated in the operation: K7CJC, *W7s* FLJ TMF GNC TOV UQI. — *W7UQI, SEC Oregon.*

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On May 20, W6GPC/aeronautical-mobile disappeared from the air after completing a contact with another amateur on two meters. Amateurs instituted a search using two meters and the local 2-meter repeater station, but the mountainous area hampered their efforts. At the request of the CAP, K6CUK organized a search group of 75-meter mobiles. Liaison with CAP aircraft overhead was maintained on two meters. The search, covering 1500 square miles, was fruitless (W6GPC and his wife were found wrecked on a mountain peak some time later, both apparently killed on impact). The following amateurs participated; *W6s* NYC WAW, *K6s* KBF PUZ YCS LAT KXR CUK. — *K6CUK.*

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A lost 12-year-old girl was the object of an intensive search in Campbell County, Ky., on June 1, which brought

many amateurs into action. K8GYK and K4MVB were the principal instigators of amateur participation when they obtained the services of mobile W8HAL and he in addition contacted K4SUU and K4IPC while proceeding to the scene. W4RHZ went up in a plane with K4IPC piloting. W8UAR, at considerable personal difficulty, also took a plane up. The girl was eventually found unharmed. W4RHZ lists the following additional amateurs as having participated in search communications: W4YWH, W8PBU, *K8s* GYH RIZ NXX.

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We regret that accounts of AREC non-emergency activities have had to be left out of this column in recent months for two reasons: (1) a great many reports of actual emergency operation and (2) lack of space. We hope those who sent them in aren't getting discouraged. If we can't get them in soon, we'll at least run a list of them. It's better to have too much material than too little, and you fellows have been swell. Thanks a million.

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April produced *twenty-seven* SEC reports, representing 10,039 AREC members, a sizable increase over the same figures for April of 1959. *Western Mass.* reported for the first time this year, bringing our total sections for 1960 to 36, just half of all the sections. Other sections reporting for April: Minn., Ga., NYC-LI, Wis., Nevada, Santa Clara Valley, S. Texas, N. Mex., Wash., San Joaquin Valley, E. Mass., E. Pa., N. C., Utah, Ore., S. Dak., Ill., Va., E. Fla., Ala., E. Bay, Ind., Me., Wyo., Ont., N. Texas.

RACES News

At 1515 on June 7 a BOMARC missile burst into flames at its base near Maguire AFB in eastern Burlington County, N. J. At 1715, c.d. officials were advised to place their staffs on a stand-by alert. W2WKI, Burlington County Radio Coordinator, alerted key RACES personnel who maintained contact with their county control station until 2000, when an "all clear" was announced. Although there was no explosion and only insignificant release of Alpha-particle radiation, most of the Philadelphia and south-central N. J. area had been falsely alerted to an atomic explosion.

DX CENTURY CLUB AWARDS

HONOR ROLL

ZL2GX....299	W6EBG....294	W8BKP....292
W1FH....299	W6CUQ....294	G2PL....292
W6AM....298	W1ME....294	ZL1HY....292
W3GHD....297	W9YFV....294	W1GKK....292
W8HGW....296	W6ENV....293	W6ADP....292
PY2CK....296	W5ASG....293	CR3AG....292
KV4AA....295	W7GUV....293	W8DMD....292
W2HUQ....295	W3KT....293	W9NDA....291
W8JIN....295	W9RBI....293	W6DZZ....291
W2AGW....295	G3AAM....293	ZS6BW....291
W6SYG....295	W4DQH....292	W8UAS....290
W8BRA....295	W7GBW....292	W2BXA....290
W4BPD....295	W7AMX....292	W6TT....290
W3JNN....295		W3BES....290

Radiotelephone

PY2CK....296	W9RBI....287	W6AM....284
VQ4ERR....291	W3JNN....287	W8KML....283
ZS6BW....291	W8HGW....285	4X4DK....283
W8GZ....289	W6YY....285	CX2CO....283
W1FH....288	W8PQQ....285	ZL1HY....282
W8BF....287		W7PHO....279

From May 1 to June 1, 1960 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

W1QJR....215	DJ4TZ....117	W7HJU....102
5A5TO....213	G3KAY....116	W1ZJJ....101
W7PQE....211	UB5AQ....112	K2OUS....101
W3QJJ....143	K2LBB....111	LA5QC....101
W1CJU....141	UQ2AS....111	UA6LF....101
K1MLJ....134	ZS5JU....108	UA9CL....101
VQ2RB....134	SM3BHT....107	W1YU....100
CN8IF....129	DL6FR....105	W4ORT....100
UR2BU....129	SM7AHT....105	W9HJQ....100
OQ0DZ....127	W5BVG....104	K9ELT....100
UQ2AN....125	DL6EQ....104	W0LJW....100
XE1AX....125	G2CZH....104	K0SLD....100
8M6APH....123	ZS1SP....104	F8DF....100
K9OTR....121	W4MWH....103	OH6AA....100
W0VXO....121	W2TXV....102	UA9VB....100
ZS5LU....120	W4NYF....102	ZS5KU....100

Radiotelephone

5A5TO....201	K9ECE....106	K4DRO....101
W3HUG....126	ZS5DW....106	W8VVD....101
OQ0DZ....125	K6HFZ....105	W9IXW....101
UR2BU....125	DL9PV....105	W0YZQ....101
W1ORV....113	DJ2BW....104	UQ2AN....101
VE3JI....111	K2JXY....103	XE1JP....101
YS1IM....109	K2TAP....103	K4SJU....100
ZS1DC....109	ZC4SC....103	W7EEF....100
1T1SMO....107	K4STY....102	VQ2RB....100
	W2GSC....101	

Endorsements

HB9J....282	K6CQM....251	W2ICO....231
W2KUW....280	W2RWE....250	W5PM....230
W2DEC....273	W0MLY....250	W1OOS....223
W1GXR....270	ON4DM....250	W3JKO....222
W9WHM....270	W4OPM....243	W8WT....220
W6KZL....264	W2IRV....241	W3KFQ....219
W2TVR....262	DJ2BW....241	W4BBR....210
W5MMD....262	W2LSX....240	W6BIF....210
DL3LL....261	W6UOV....240	W0QVZ....210
W2SUC....260	W3KZQ....234	ZS1DO....210
W6NJU....260	W6OBH....233	K2SHZ....207
W6BSY....251		W9BPW....204

W9IRH....203	K1CCA....164	K1DMG....135
W1HGT....201	W9DIB....163	W4UHC....135
W3KVQ....201	W0FLK....163	W3PN....131
K5KBH....201	K2ZKU....161	W4REZ....131
G3BHW....201	W1CTW....160	W2BTG....130
W1WLW....200	K1JDN....160	W8ETU....130
W4YWX....200	W6PHF....160	W9BZW....130
W8ZCQ....200	487NX....159	W9KXZ....130
W0CDP....200	K6OYD....157	W1QQV....127
W0HX....199	K8KAE....155	F9TV....125
W4YWX....194	KH6DKA....154	G3ASG....125
V2SHC....193	K4BCN....153	K2TQC....124
W8NJC....190	K4DKE....151	ZS1ACD....122
W7ZAS....190	W4JZQ....151	W4REZ....121
AA2W....184	W1UCA....150	G2DCG....121
W9LQF....183	W3CLP....150	WA2DIG....120
VE7CE....183	K4AL....150	W4RVW....120
K4SXO....182	K4RJN....150	K6ANP....120
W4AIS....180	K6BX....150	VE7KX....120
W4WDI....180	W9QFC....150	K9GOQ....119
W5PSB....180	VE1WL....150	W1ICV....115
W6MUM....180	VE3CDI....150	WA2GWF....112
VE3HB....180	ZS6IW....150	K0EUV....112
W1FQA....174	W0MAF....149	K0RAL....111
W1UU....174	PY2AK....147	DJ4OP....111
W5ACL....173	K8LSG....142	W3TEC....110
VE2AYY....172	HZ1AB....142	K5GOE....110
G3JZK....172	W4MS....141	W0LNI....110
W4KPK....171	W4PDP....140	K0MTO....110
W3IPO....170	K9BGL....140	VE3UOT....110
W4BFR....170	W9TPA....140	G3GMY....110
W4KAC....169	W1ORV....138	ZB2I....110

Radiotelephone

LU4DMG....260	W9JAV....169	W4MS....134
W9YSQ....257	OE2YL....167	W2FXN....133
ON4DM....248	K4SXO....162	K2MHC....133
HB9J....245	W1PMZ....161	K5GOT....133
W1PST....230	VR2BC....161	K4BCN....132
W6OBH....230	W9ZSZ....160	W6YMV....132
CX2AX....230	K0CTL....160	W2YBO....131
W4JGO....223	IIRIF....154	G3JZK....131
W6MBD....220	W1OHJ....152	W1HOO....130
9K2AZ....216	ZS5PG....150	W0SFU....130
DL3LL....213	W2TVR....147	W0MAF....128
W2IV....210	W2SUC....144	F9TV....123
W1OOS....202	VE1PQ....142	W8ZNO....121
W6NJU....192	IITHZ....142	F9MD....121
W0FUH....192	SP7HX....142	HR2MT....121
W2DEC....181	W1FAB....141	K1UXG....120
ON4PJ....180	W9RVM....141	W2CGJ....120
DL7AA....178	W2HMJ....140	W1ICV....114
W6BBY....175	W6HYG....140	W2RWE....114
MP4BBW....175	W0DIB....140	K9GOQ....114
W0MLY....171	CX2CN....140	W1AW....111
W4BOC....170	W7ZAS....136	K1BDP....110
W1LIB....169	IIASO....136	K6HZP....110
W5RNG....169		XE1SN....110

U.S.-Canada Area and Continental Leaders

KH6CD....261	VO1DX....220	VE6NX....256
KL7PI....231	VE2WW....271	VE7ZM....283
W0ELA....287	VE3DIF....260	VE8AW....195
VE1PQ....249	VE4XO....180	4X4DK....288
	VE5JV....200	

Radiotelephone

W2BXA....271	W0AIW....270	VE4RP....102
W4DQH....273	VE1DR....143	VE5RU....178
W5BGP....260	VO1DX....102	VE6TF....160
KH6OR....254	VE2WW....213	VE7ZM....264
KL7AFR....190	VE3KF....224	G2PL....266
	VE3QA....224	

Station Activities

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

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Allen R. Breiner, W3ZRQ—SEC: DUI. PAM: IVS. RM: AXA. New Novices reporting are KN3LSC and KN3LBE. New appointments are K3IPA as ORS and K3JSX as OPS. New club officers for the Abington ARC are K3GCW, pres.; VAP, vice-pres.; K3HCS, secy.-treas. Germantown Boys RC officers are K3EUJ, pres.; K3JGL, vice-pres.; K3HEG, secy. The latter club has applied for League affiliation. The Bucks County ARC's officers are K3EGP, pres.; K3IDK, vice-pres.; K3GSV, secy.; K3BKP, treas. North Penn ARC elected DHJ, pres.; JSA, vice-pres.; GTC, secy.; NOW, treas. Aug. 7 has been picked by the "Knuckleheads" for their annual picnic at Lancaster. K3HAQ is operating portable in the N.N.J. section this summer. K3CVF is sportin' new 20-watt rig, antenna and QSL card. K3ATX is using a new 417-A preselector for satellite monitoring. He also informs us that a satellite schedule may be obtained from Prof. T. A. Berham, Haverford College, Haverford, Pa. BNR/6 is now keeping skeds with an s.s.b. rig. EAN and OY have been spending some time on transmitter hunts. The latest scheme of the Lancaster Area is to hide the rig in an Amish horse-drawn buggy wagon and using two Amish boys as a front. HNK is putting his extra time on 20-meter phone when not keeping regular traffic skeds. UZO built a 2-meter station for TAT and calls it the "UZOTAT." K3AHT is now up to 101 countries and again active as an ORS. GYP made contact with WAR, NSS and AIR. ZRQ accomplished the same on 80 and 40 meters in less than 27 minutes. The Ed Hartman W3OK Award for 1960 was presented to K3AXH. EML constructed a new v.f.o. and is QRL in the garden for the summer. YLL completed a QRP rig for the Short Skip RC Field Day. SAD, of the Mt. Airy V.H.F. RC, and CUK of the Mahanoy Valley Brass Pounders, each received a new mimeograph machine for printing the club bulletins. The RM, AXA, informs us the EPA C.W. Net made 100 per cent attendance to the 3rd Regional Net sessions for the month of May. The Eastern Pennsylvania Section Picnic Committee was GEU, publicity; IVS, registration; K3BHU, secy.-treas.; and ZRQ, chairman. Traffic: W3CUL 5643, IVS 684, VR 631, HNK 305, MFW 172, AEQ 115, K3IPA 95, W3KMD 91, K3HLU 81, W3-AXA 72, ZRQ 51, BUR 46, BFP 31, K3HEX 31, HXC 29, ANS 27, W3EML 25, K3CAH 24, W3FKE 21, OY 20, K3DCB 15, W3ZLP 15, K3AHT 14, BHU 12, ANU 8, W3AMC 6, K3JSX 6, W3NQB 5, GYP 4, DUI 3, BPZ 2, ELI 2, EU 2, K3IAZ 2, W3BNR 1, MAV 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Thomas B. Hedges, W3BKE—SEC: PKC. MDD Traffic Net meets on 3650 kc. Mon. through Sat. at 1915 EST; MEPN (phone) on 3820 kc. Mon., Wed. and Fri. at 1800 and Sat. and Sun. at 1300 EST; MDDS and MSN (slow speed) Nets on 3650 kc at 1845 and 2030 EST. New appointments: K3JET as OO. Net certificates this month went to EEB, WDI and K#PIV/3. BPL: TN. AHQ continues his outstanding OO activity and has made a real dent in the number of signals on 7.4 Mc. K3AZC is building a transistor rig to continue his low-power activities. BUD reports he and K3ANE, BCP, FMR and FUR were active during "Operation Alert." Ex-SCM BWT and XYL AKB are back on the air. K3BYD is active on the V.H.F. Net. CDQ is planning another trip to Italy. K3CXX reports new officers of the Baltimore Polytechnic Inst. RC are KN3-DRU, pres.; K3BYX, vice-pres.; and MOU, secy. K3-DCP has a G4ZU beam at his new QTH. It is a pleasure to welcome DVO back into this section. EFZ divides time between DX and OO work. EIS gave a talk on receivers at the recent I.R.E. meeting. K3EJF reports OES activity in Laurel. K3GBV has his 40-ft. tower up at last! K3GKF has a 40-meter quad. Nice work. K3-GZK continues his phone traffic. K3HJD is a new OES reporter. HKS helps with Delaware traffic. K3IZM reports a new 50-Mc. beam and nice v.h.f. DX. BOM continues OO activity. A new tower is now up at JME's. KA still is swamped with KS4AZ QSLs. The 2nd Army MARS is having a hamfest and open house at Ft. Meade, Md. Aug. 19. All are invited. DIW/3, of FCC, and K4MEV, of FAA, were recent speakers at the Free State ARC meeting. This is a real active Maryland club. K3ADS/3 reports working Cuba on 50 Mc. K4IIT/3 is a new reporter from Johns Hopkins U. The Bethesda-Chevy Chase High School station has completed an active season and elected K3HTE, K3GJB and KN3LLX as officers for the coming school year. KLA continues his very active OO reporting. KN3LLR is a new reporter. K3LNH has a nine-element 50-Mc. beam and reports 19 states in two months. MCG and 4GF helped operate NSS on Armed Forces Day. MSR has antennas up at the new dream QTH. OYX continues his outstanding bulletin for the Hagerstown boys. TN reports that JWN/4 now checks into the MDD Net from N.C. TSG leads the section in traffic activity. UE continues to inspire the 3RN. WG reports in from Prince Frederick. K3WBJ sends another good traffic total from Walter Reed Hospital. CIZ, of the FCC, spoke at a recent Nat'l. Cup. V.H.F. Soc. meeting. ZAQ reports he now has a new antenna farm location. ZNW continues EC/ORS activity. Traffic: (May) W3TSG 324, UE 238, TN 163, K3WBJ 153, W3MCG 109, AHQ 65, ZNW 45, K3LNH 43, W3BUD 33, BKE 24, K3GZK 21, W3BWT 6, K3DCP 3, KFM 3, W3JME 1. (Apr.) W3MCG 153, WG 59, K3EJF 11, W3EFZ 2.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: W2YRW. RMs: W2BZJ, W2HDW and W2ZI. N. J. Phone and Traffic Net totals for May are sessions 31, attendance 508 and traffic 163. W2ZI is net manager. The 15th Annual Old Timers Nite, sponsored by the DVRA, was well attended. The Grand OM Cup was awarded to Ed Latta and oldest-licensed cups went to W3PW and W2FG. K2DEI, Maple Shade, again was tops on the traffic list, making the BPL. George received a very nice award from KGIFR for his traffic work. W7MQU will replace WA2CNS/VE8 at the Baffin Island station. Burlington County's CD Exercise "Exodus" was well supplied with RACES operators, mostly members of the Burlington County Radio Club, augmented by mobile units from Camden County. W2-WKI is Burlington Co. Radio Officer. The SJRA's Hamfest plans are in the making. It will be held the same place as last year on Sept. 11. K2KCI is chairman. The Levittown (N. J.) Radio Club and the Burlington Co. Radio Club are both holding weekly classes in theory and code. The Levittown Club is planning a picnic in August. K2RXB, Margate, is new on the traffic list this month. W2ZX, SJRA's DX Contest Chairman, has increased the club's interest in DX with his informative DX news published monthly in *Harmonics*. WA2GNQ, Delaware Twp., has many ex calls including 8ACK, W9ZZF, W9LIJ and W5TCN. W2HDW, Somerdale, is the section c.w. winner in the 26th ARRL Sweepstakes with 175,950 points. K2JJC, Pitman, is breaking in a new receiver. W2HDW also reports having received WAC and DXCC. Ed's country totals are 140/105. W2RG, Merchantville, in addition to c.d. drills and NJN-2RN QNIs is giving Novice examinations. Clubs in the section not reporting are urged to do so. We welcome the Delmont Radio Club, Pennsauken, into the fold of League affiliated clubs. WV2HWX is the club's secretary. Traffic: K2DEI 301, W2RG 188, K2RXD 79, W2TLO 56, W2ZI 29, W2BEI 12, K2SNK 9, W2BJZ 8, K2JGU 8, K2JJC 8.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2LXE. RMs: W2RUF and W2-ZRC. PAM: W2PVI. NYS C.W. meets on 3615 kc. at 1900, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3510.5 and 3993 kc. at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, 1PN on 3980 kc. at 1600. The WNY Hamfest held by the RARA was the best ever, with over 600 in attendance. Speakers included K2TKN, KH6IJ, W1HDQ, W3YA and K2HUK. The code championship goes to W2TPV (40 w.p.m.) followed by K2UZJ (32 w.p.m.) with K2KNV and W2EUP tied for third (30 w.p.m.). All are members of the NYS C.W. Net. W2RUF did her usual fine job of conducting the contest. The Rome Radio club had its

(Continued on page 100)

THE LOGIC OF RECORDING RADIO COMMUNICATION TIME

WHEN you press your key, your signal is in space. Operators in Hawaii, England and Timbuctu hear you at the same instant.

BECAUSE of its very nature, radio communications are not confined to a unit of geography. Since there are no appreciable time lapses in radio signals traveling from one point to another (your signals make 7.75 revolutions per second around the earth), we can, for all practical purposes, say it's instantaneous -- that space time is exactly the same all over this earth. This obviously dictates that every radio operator has exactly the same time as his brother operator. His location on this earth has no bearing upon this time.

WHEN one *records* the time that a key is pressed, it should be in universal time, GMT. This has nothing to do with local or any type of U.S.A. time.

IF ALL radio operators used 24-hour clocks, and all set their clocks with WWV's MCW GMT time signals (sent every five minutes), every one of those clocks would read the same.

IT's really very simple. When you make a date with your neighbor to meet him at such and such a time after work, you meet on the dot. Why? Because both of you are using the same *time*. The same is true with radio operators using the same time, even though they are separated by half the earth.

THE advantages of using GMT in times of disaster, or even in periods of national peril, are obvious. Think how simple logging, bookkeeping, schedule dates, contest time records and the announcement time a transmission is to be made would be if all concerned used the same time system. Then why shouldn't all radio operators, magazines, and any and all references to the time of a radio communication be stated in GMT?

When you press your key, your signal is in space.

—HARRY R. HABIG, K8ANV

Bill Halligan Jr. W. J. Halligan W9AC

Come to Western SSB Convention at Santa Barbara, Calif., Sept. 30-Oct. 2; for registration write W6ZHH, Box 568, San Pedro, Calif.

for hallicrafters

Outstanding flexibility and performance... Viking "Valiant" transmitter!

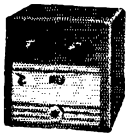
Here's effective power, wide flexibility, and many advanced operating features combined in a compact desk-top transmitter! Delivers a full 275 watts input on CW and SSB (with an auxiliary SSB exciter) — 200 watts on AM Bandswitching 160 through 10. Final amplifier utilizes three 6146 tubes in parallel. Built-in VFO or crystal control — wide range pi-network output. With tubes, less crystals.

Cat. No. 240-104-1 . . Kit . . . . . Amateur Net $349.50
Cat. No. 240-104-2 . . Wired . . . . . Amateur Net $439.50

Popular Johnson station accessories...

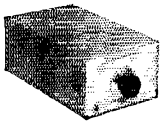
CRYSTAL CALIBRATOR — Provides accurate 100 kc. check points to 55 mc. Requires 6.3 volts at .15 amps, and 150-300 volts at 2 ma. With tube, military-type crystal, power cable and extension leads.

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

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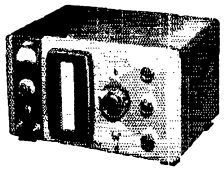
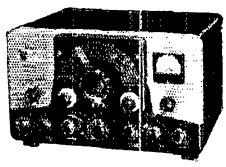


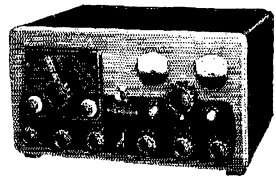
"COURIER" AMPLIFIER – Class B linear rated 500 watts P.E.P. input with auxiliary SSB exciter; 500 watts CW; 200 watts AM. Continuous coverage 3.5 to 30 mcs. With tubes.

Cat. No.	Amateur Net
240-352-1..Kit	$244.50
240-352-3..Wired	$289.50



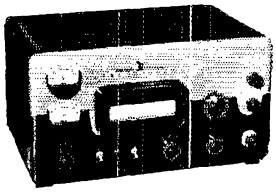
"RANGER" – 75 watts CW and 65 watts phone input. Bandswitching 160 through 10 meters. Built-in VFO or crystal control. With tubes.

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



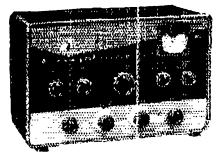
"FIVE HUNDRED" – 600 watts CW input; 500 watts phone and SSB (P.E.P. with aux. SSB exciter). Bandswitching 80 through 10. With tubes.

Cat. No.	Amateur Net
240-500-1..Kit	$749.50
240-500-2..Wired	$949.50



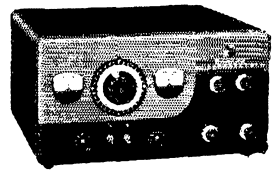
"THUNDERBOLT" AMPLIFIER—2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear. Continuous coverage 3.5 to 30 mcs. With tubes.

Cat. No.	Amateur Net
240-353-1..Kit	$524.50
240-353-2..Wired	$589.50



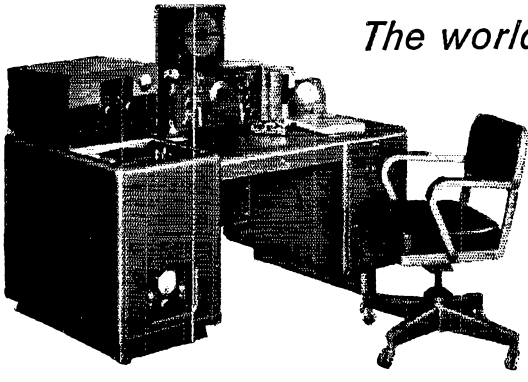
"6N2"—Instant bandswitching coverage of both 6 and 2 meters. Power input rated at 150 watts CW, and 100 watts AM phone. With tubes.

Cat. No.	Amateur Net
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 AB_1; 1000 watts CW, Class C; 700 watts AM linear, Class AB_1. Continuous coverage 6 and 2. With tubes.

Cat. No.	Amateur Net
240-362-1..Kit	$524.50
240-362-2..Wired	$589.50

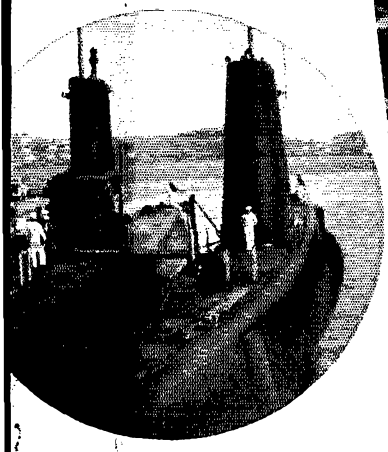


The world at your finger tips!

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.	Amateur Net
240-1000..*Wired and Tested*	$1595.00
251-101-1..Matching desk top, back and 3 drawer pedestal, FOB Corry, Pa.	$132.00

*The FCC permits a maximum of one kilowatt average power input for the amateur service. In SSB operation under normal conditions, this results in peak envelope power inputs of 2000 watts or more, depending upon individual voice characteristics.



FIELD ENGINEERING WITH A BRIGHT FUTURE IN RAYTHEON'S SONAR SYSTEMS PROGRAMS

■ Some of the newest and most challenging field engineering programs are under way at Raytheon in the sonar field. ■ Just completed was a seven week technical evaluation trip in Bermuda waters where the newest underwater communications system developed by Raytheon was tested. These tests proved very successful. ■ Among the Raytheon field engineering group assisting on this trip aboard the submarines were three "Radio Hams". They were A. C. 'Doc' Aulwurm, K1LXZ; Claude Stogsdill, K1NXS; and Milton Levy, K1KIT, shown in photo above in conference with Ed Dodge, W1CMU. ■ Ham radio electronic experience has helped many engineers advance within the Company. ■ You may qualify as a Raytheon field engineer if you have previous experience plus an E.E. degree or the equivalent in practical experience with guided missiles, fire control, ground and bombing radar or sonar. ■ Benefits include attractive salary, assistance in relocating, insurance, and the opportunity of participating in educational programs. For details, please contact Ronald Guittarr.

Electronic Services Division
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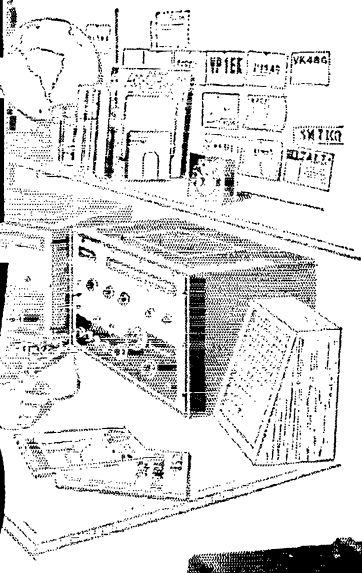
RAYTHEON

FROM HEATH ...9 NEW RADIO AMATEUR KITS



GC-1

$109.95

$11.00 dn.,
$10.00 mo.

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 transfilters. The amazing, miniature transfilters 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: is 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 6½" 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**

HD-20

$14.95

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 .005% crystal furnished. Measures only 2½" x 4½" x 2⅝". 1 lb.

7 more kits on following pages

HEATHKIT®. . . WORLD'S FINEST HAM GEAR

KL-1

$399.95

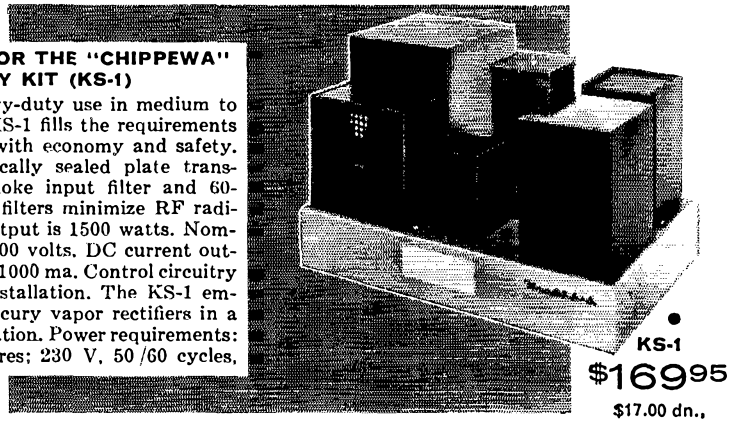
$40.00 dn.
(Write for time payment details)

"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 AB1 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 bandswitch, 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 compatability 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.

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.

XC-6

$26.95

XC-2

$36.95

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.

2-METER CONVERTER KIT (XC-2)

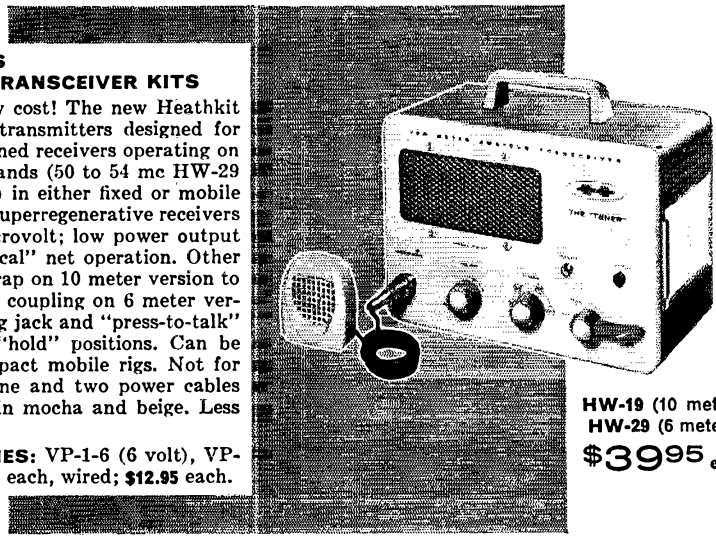
This top-quality 2-meter converter may be used with receivers tuning any 4 mc segment between the frequencies of 22 and 35 mc when appropriate crystal is used. Converts 144-148 mc signals to 22-26 mc with .005% overtone crystal supplied. High quality parts used throughout. Silver plated chassis and shields.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

IN KIT FORM TOPS IN TRANSMITTING POWER

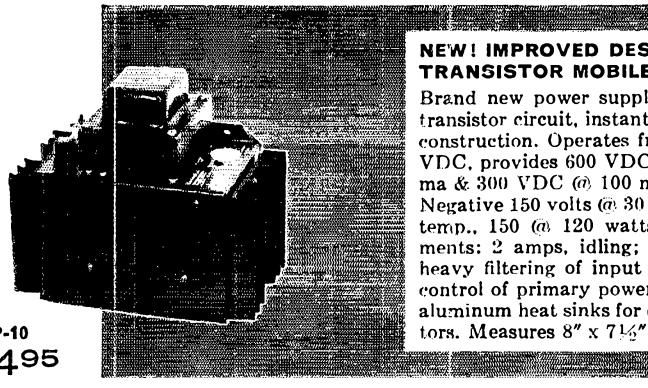
TWO BRAND NEW MODELS
HEATHKIT 10 & 6 METER TRANSCEIVER KITS

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 superregenerative 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.



HW-19 (10 meter)
HW-29 (6 meter)
$39.95 each



HP-10
$44.95

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 6⅛". 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
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All prices and specifications subject to change without notice. Please include postage on orders to be shipped parcel post. 20% deposit is required on all C.O.D. orders. All prices are NET F.O.B. Benton Harbor, Mich., and apply to Continental U.S. and Possessions only. Dealer and export prices slightly higher.

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ITEM	MODEL	PRICE

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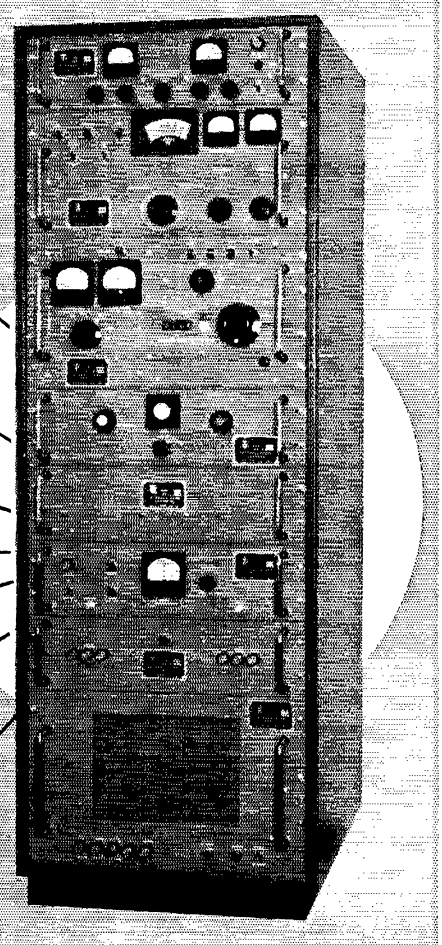
ADDRESS _____

CITY _____ ZONE _____ STATE _____

STABILITY



1 PART IN 10^8 PER DAY

DIRECT READING 320,000 FREQUENCIES

COLOR CODED CONTROLS

BOTH METER AND NEON SYNC INDICATOR

SPECIAL CRYSTAL FILTERS

15 KC BAND WIDTH (7.5 PER SIDEBAND)

PULL-OUT FLIP-OVER DRAWER CONSTRUCTION

AN/URA-30

SBG-1 SINGLE SIDEBAND GENERATOR

For full detailed information write for **BULLETIN 228**

The Model SBG-1, Single Sideband Generator, is a stabilized direct reading exciter system adjustable to 320,000 frequencies over the range of 1.75 to 33.75 megacycles in 100 cycle steps with a basic stability of 1 part in 10^8 per day. The generator is an all purpose device providing SSB, DSB, ISB, and AM.

All frequency determining elements in the SBG-1 are derived from a 1 mc source which has a phasing control for correction to an external standard. Also, the unit may be connected to an external standard of greater stability without degeneration to the standard. When the sideband exciter unit is bypassed, the Model SBG-1 may be used as an ultra stable R.F. frequency source.

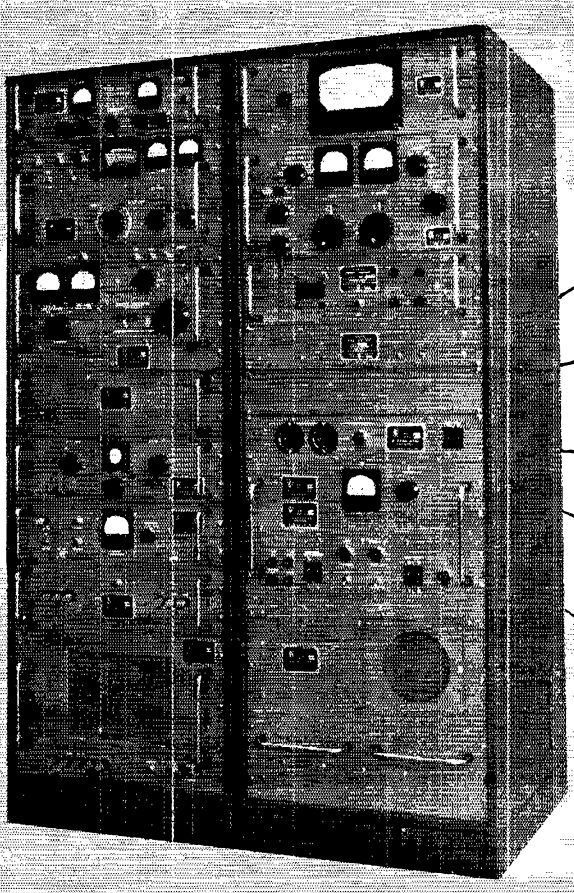
Housed in a standard relay rack with 60 inches of panel space, the control portion requires only 29½ inches of rack space. The other components may be housed separately in the event this makes for a more convenient installation.

The TECHNICAL MATERIEL CORPORATION

IN CANADA
TMC Canada Ltd., Ottawa, Ontario

Main Office MAMARONECK NEW YORK

and POWER



1000 WATTS PEP 2 to 32 MC

AM, CW, SSB, ISB, JSB, FS

COMPLETELY BANDSWITCHED

SYNTHESIZER CONTROLLED 1 PART IN 10^8 PER DAY

ALDC FULL INTERLOCK PROTECTION

SBT-1K SINGLE SIDEBAND TRANSMITTER

(SERIES E, F, G, H)

"ON FREQUENCY" WITHOUT CHARTS OR FORMULAE!!

Simplicity of tuning is a major feature of the SBT-1K as all frequency controls are direct reading with digital indication.

The unit was designed to meet an ever growing need for an intermediate power, synthesized, single sideband transmitter in the 2 to 32 megacycle range.

It is a combination of the well known TMC 1000 watt transmitter and the new TMC synthesizer Model SBG-1 (described on left hand page). The unit features both a single sideband exciter and an FS exciter; a standing wave ratio indicator or an antenna tuning unit which also indicates SWR. Each model is supplied with a coaxial antenna changeover relay and a directional coupler.

Signal/distortion ratio is 40 db down from full PEP output. Second harmonic suppression is down at least 40 from full PEP output. Carrier insertion is from —55 db to full output.

Power Input: 115/230 volts, 50-60 cps, single phase.

For full detailed information write for **BULLETIN 237**

The TECHNICAL MATERIEL CORPORATION

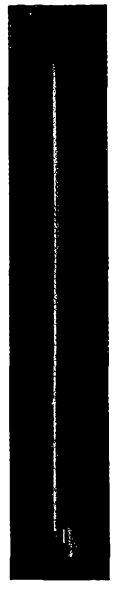
IN CANADA
TMC Canada Ltd., Ottawa, Ontario

Main Office: MAMARONECK NEW YORK

FACTS
ON THE GOTHAM
V-80 VERTICAL ANTENNA

- 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 straps 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 the world over.
- Simple assembly, quick installation.
- Withstands 75 mph windstorms.
- 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.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price. ONLY $16.95.

73,
GOTHAM



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FILL IN AND SEND TODAY!

Airmail Order Today — We Ship Tomorrow

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Enclosed find check or money-order for:

☐ 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 LICENSE 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.....

Station Activities

(*Continued from page 88*)

Eighth Annual "Ham Family Day" with over 250 attending. The Niagara Radio Club will hold an ARRL convention in Niagara Falls in the fall of 1961. The Niagara Frontier DX Club nosed out the Rochester DX Club in the recent contest. The clubs held joint meetings in June in both cities. K2GUG got married. W2MQA and K2QDT are doing fine jobs as NCS of NYSPTEN. A new General Class licensee in Gowanda is WA2JRL. Club officers of the Greene ARC are W2JVA, pres.; K2HWW, secy.; K2GEK, treas. The club meets each 2nd Mon. Officers of the Jericho ARC (Bainbridge) are K2UZM, pres.; K2QHK, vice-pres. and treas.; WV2IWC, secy. It meets the 1st Thurs. Sidney ARC's officers are W2AEP, pres.; K2MQA, vice-pres. and treas.; K. Wilson, secy. It meets the 3rd Mon. The Ogdensburg ARC established Nutmeg Loop, a phone net which meets Thurs. at 2100 on 3910 kc., reports WA2FKK. W2SAW received the W-Conn Award. W2LXE reports that the Erie County RACES drill had 258 operators participating (all hams). The NYS net will have a picnic at Taughanock State Park Aug. 13. WV2JWX reports Bishop Timon HS ARC has the call W2QZR with WA2BFO, pres.; WV2ITD, vice-pres.; WA2IJW, secy.; and T. Stafford, treas. Do any clubs monitor for mobiles? Let your SCM know for future publication in this column. Does your area have a calling frequency? Ditto. Congratulations to WA2CIG and W2EZB on making the BPL. Appointment: WV2LPI as OES. Traffic: (May) WA2CIG 1002, W2EZB 508, K2IYP 224, WA2DSC 191, WA2BEX 163, K2SSX 148, W2RUF 147, K2AOQ 88, W2FFR 83, K2JBX 78, W2OE 61, K2RWV 57, K2KIR 52, K2QDT 49, K2BBJ 35, K2RQF 34, K2OFU 33, K2RYH 30, W2PGA 26, K2EQB 23, W2PVI 22, K2MIY 18, K2UZJ 18, WA2JKL 17, W2QQK 14, W2BKC 13, W2TPV 13, K2RTQ 11, WA2HEC 10, W2MTA 8, W2ZRC 8, K2EE 7, K2RTE 7, W2EMW 6, K2OQO 6, W2QCI 5, K2DXV 4, WA2FKK 3, K2JPM 3, K2TXB 1, W2ZDL 1. (Apr.) K2UZJ 108, K2JBX 71, W2TPV 23, K2TXB 9, W2ZRC 8, K2EE 7.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN SEC: OMA. RMs: KUN, NUG and GEG. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The PFN meets Mon. through Fri. at 1800 EST on 3850 kc. New appointee: K3HWL as ORS. Our sincere sympathy goes to OMA, who recently lost his XYL. The Monessen ARC received its station license, CSL, which was the call of deceased member Ernie Dils. K3GHH has received 3RN and EAN certificates. FBX has been released from the hospital. LIV has a portable generator. CA is working DX on RTTY. Ed Tilton was guest speaker at the May meeting of the Amateur Transmitters Assn. The Horseshoe RC reports via *Hamateur News:* ISZ got his WAA award; UBP has all districts worked on 6 meters; ROA has a Communicator in his car on 6 meters; at the June meeting the club had a very fine collection of DX QSL cards on display. The H-CAR Club, via *Huntingdon News*, reports: K3IGF has a new Valiant rig and an HQ-160; the RACES members of Huntingdon County did a swell job during the recent c.d. alert; KN3GRD was awarded a scholarship. New officers of the Radio Association of Erie are K3GAO, pres.; YWL, vice-pres.; K3KPM, secy.; K3HFD, treas. The RAE Hamfest date is Sept. 10. The South Hills Brass Pounders & Modulators RC will hold its Annual Hamfest Aug. 7 at the Museum Bldg., South Park Fair Grounds. The Mon Valley ARC reports via *Parasitic Press* that WKN and SYR now have Apaches on the air. The Cumberland Valley ARC (K3GFW), located at Chambersburg, reports via *Valley QRM:* Mobiles PDW, ZUX, RIH, ACH, HSU, UMY, RFO and ZQU aided the local cancer drive; K3JJK received severe high voltage burns from his power supply; ZQU is having success on 2 meters; members of the CVARC held their monthly meeting at WCBG studios. The Washington County ARC has reactivated its net on 3850 kc. on Sun. at 1330. Congratulations to AOH and his multi-operator group on taking first place in the ARRL International DX contest. The Nittany ARC reports via "QST de K3HKK": SYY, JIS, K3AKR and WFZ were successful in the v.h.f. contest; the dipole antennas at the club station are progressing. New officers of the Greater Pittsburgh V.H.F. Society are RTV, pres.; OMY, net mgr.; K3BAK, secy.; K3AZY, treas.; HFE and BWU, directors. The PENOWVA Net elected K8EWW, net mgr.; K8QPA, asst. net mgr.; K8OXY, secy.; K3AXO and YDG, advisors. K3JXE and K3LIE operated 6-meter areonautical mobile recently. The Etna RC reports via *Oscillator:* TOC and GJY took in the First Annual Dinner-Hamfest of the B & O Railroad ARC at Baltimore. The Steel City ARC, through *Kilowatt Harmonics* reports: MPK is going to Bell Tel Transistor School; MJC gave a talk on modulators and transistors at the recent club meeting. Traffic: K3GHH 237, W3MFB 173, WRE 119, KUN 90, LSS 77, K3HWL 76, W3UGV 28, UHN 25, K3COT 4.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME. SEC: PSP. RM: USR. PAM: RYU. EC of Cook County: HPG. Section net: ILN 3515 kc. Mon. through Sat. at 1900 CDST. Net traffic for the month follows: ILN 205, North Central Phone Net 187, No Name Phone Net 32, Interstate S.S.B. Net 2846. K9CIL, DZB, HPG, HKA, IFA, K9ISP, K9JIR, JJN, JUV/K9OSO, K9KIM, NN, K9PJQ, TZN, K9OCU, VOX and WYB were participants in the recent Frequency Measuring Test. ILN net certificates were awarded to K9PLF, K9JMA, K9UGY, K9IMN and K9HNM. K9OZM finally snagged his WAC certificate. K9TKY is DXing with a new TO keyer and reaching his DXCC goal. K9AMC is now s.s.b. on 2 meters. K9KHZ has a new Valiant and antenna system. K9BTE's new s.s.b. rig is a 20A. The McDonough County 6-Meter Emergency Net participated in a 48-hour emergency practice run on June 11-12 with power furnished by generators for the duration of the run. KN9WMD and K9ILP now are on 2 meters, and K9MMH is readying for 6 meters. K9ESP has a new Telrex beam after winds destroyed his old one. K9BCI recently went aero mobile with his Gonset on 6 meters and put out an FB signal according to SXL, EC of McLean County. Now that Field Day activities have come and gone the results have been very pleasing, and when the final totals are compiled officials of the c.d. and other emergency services can be sure that amateurs are capable of carrying on communications under any circumstance. This column extends deepest sympathy to the family of Lil Bates, the XYL of 9FO of 1932-36 *Call Book* and the only XYL operator on the staff of USA at the Chicago World's Fair. Also our sympathies go to the family of KX, Westville, Ill. A new radio telescope is being built southeast of Danville, Ill., and will be the largest of its type, twice the size of the one known as Jodrall Bank in Manchester, England. New Generals heard were K9EWY and K9TBA. IEU is back in W9-Land after being 6IEU and 5IEU for many years and is on the air with an Eimac 4 CX1000A AB linear. A RACES 6-Meter C.D. Net is being formed in Tazewell County (Pekin) and K9EMJ, K9DYD, IUI, K9UNB, K9ITV and IOG turned out to help K9QYW, the newly-appointed Radio Officer. K9MHF has a new HT-37 and K9KKL has an HT-32. Both report fine results in their s.s.b. attempts. QLZ reports that the Starved Rock Radio Club Hamfest had the largest turnout in its history and the weatherman cooperated to make it a fine outing which was enjoyed by all. Make an attempt to attend the Central Division Convention to be held in Indianapolis Sept. 10-11. It promises to be a very fine affair with plenty of exhibits of new gear and also some fine guests on the forum panels. DO, IMN and IDA are winners of BPL Awards for this month. Traffic: W9DO 896, IDA 544, USR 412, IMN 407, MAK 145, JXV 113, SXL 73, UQT 62, K9JMA 38, BTE 30, QYW 26, OAD 25, UGY 24, IVG 22, MDK 22, RAS 20, W9PRN 17, KN9UJT 16, K9BIV 14, W9WPC 11, K9TKY 8, DUE 7, W9LGH 7, K9LXG 7, IUM 6, W9JUC 5, K9OZM 2, QPJ 2, W9SKR 2.

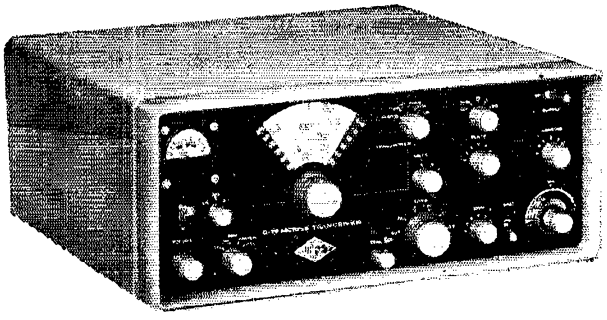
INDIANA—SCM, Clifford M. Singer, W9SWD—Asst. SCM: Arthur G. Evans, 9TQC. SEC: SNQ. PAMs: K9AOM BKJ, RVM and UKX. Rms: DGA, JOZ, TT and VAY. Net skeds: IFN 0800 daily and 1800 M-F on 3910 kc.; ISN (s.s.b.), 1900 daily; QIN, 1900 daily and RFN, 0700 Sun. on 3656 kc.; QIN (training), 1800 M-W-F on 3745 kc.; CAEN (160 meters), M-F at 1900 on 1805 kc. New appointments: K9GEO as EC for Vanderburgh County and K9VRU (Notre Dame Amateur Radio Communications Club) as OPS. The Columbus ARC held a very successful hamfest and swapfest on May 22 with 175 present. The Hoosier Amateur Women's Klub was hostess to the Midwest YL Convention in Indianapolis on May 20 and 21 with about 50 present. EHZ is going s.s.b. K9UOF is handling traffic on 6 and 2 meters like a veteran. K9MZV snagged Utah in an E skip. RTH now is mobile with 30 watts on 147.3-Me.t.m. NZZ is back in the traffic circuit. K9OXA has formed the Hoosier 2-Meter Net, which meets at 2000 each Thurs. for the purpose of traffic and training. The Indianapolis RC held another FB swap shop and auction that attracted horse-traders from far and near. Newly-licensed in Culver is

(*Continued on page 102*)

GONSET G-76

FULL-FEATURED
AM TRANSCEIVER
For 6-band operation...

Now... a powerful 100 watt AM transmitter and a sensitive, dual-conversion receiver, a handsome 6-band combo.—integrated—working perfectly together—within a handsome modern housing designed to be just right in size and shape for easy installation in your car.



Your mobile operation will be more enjoyable with G-76! First, excellent 2-way communication on any of 6 amateur bands—80, 40, 20, 15, 10 and 6 meters! Performance has of course been the foremost design objective but flexibility and operating convenience has not been overlooked. Receiver tuning dial... "S" meter... any element that occasionally requires a quick glance while driving, is fully visible. And because the entire front panel is only 5" high and 12½" wide, every control—including transmitter VFO and Band switch—is conveniently at the driver's fingertips.

Those important "extras" have not been overlooked either. For example: Spotting switch of VFO to "zero in" station being received—Hi-Lo power switch for tune up —Switch to cut transmitter filaments when not needed— Crystal calibrator provisions for receiver with panel In- Out switch.

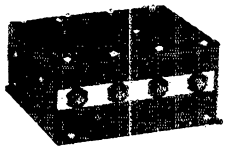
Use G-76 both in your car and home station. Simple to do. Transistorized 12 volt DC supply remains in car. 117V AC supply with speaker is optionally available for home use.

HIGHLIGHTS:

Receiver is dual conversion, 1st IF at 2065 kc; 2nd IF at 262 kc. Features includes BFO for SSB and CW reception, and ANL. Unit has excellent selectivity and sensitivity. Transmitter and receiver oscillators temperature compensated. Transmitter has stable VFO for all bands except 50 mc.* Crystal-control is optional. Power input of transmitter is 100 watts AM phone, 120 watts CW. Final tube is 6DQ5 operating into pi-network output. Control is push-to-talk, or T-R switch on panel. Meter facilitates tuning. Dimensions: 12½"W, 5"H, 10½"D.

* Crystal-control

POWER SUPPLIES



G-76 Power Supply, *transistorized*—for 12 VDC.

G-76 Power Supply and External Speaker unit—For 115 VAC.

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KN9VCM. The Michigan City ARC publishes an FB newsletter, *Harbor Beam*. The editor is K9SFY, assisted by TWU. K9IJT has won a full scholarship to Valparaiso Technical Institute. EDO has perfected a means for HKI (blind) to QSY up and down 75 meters and hopes to work out a device permitting the changing of bands. AYW is on 6 meters with a Gooney Bird. *Amateur radio exists as a hobby because of the service it renders.* May net reports: VAY reports QIN traffic at 357; RFN totaled 188, as reported by TT; K9AOM reports a ISN total of 199; IFN's traffic total was 507, reports RVM; and QIN (training) handled 54 messages, as reported by JOZ. Those making BPL were DGA, MM, TT and VAY. Traffic: (May) W9MM 602, JOZ 497, TT 454, ZYK 446, VAY 227, DGA 187, GJS 186, FJR 140, SWD 133, EHZ 123, NZZ 105, BKJ 88, BDG 81, K9GBB 64, W9RVM 64, K9LXD 52, ORZ 52, UOF 45, W9EGV 39, LZJ 37, RTH 36, SNQ 33, K9BSU 32, W9FWH 31, BUQ 28, CC 28, DOK 26, K9LBD 23, W9YYX 20, K9GEL 19, MAN 18, W9EJW 17, K9RMQ 16, ILK 14, W9BDP 12, IMU 12, K9PTS 9, CRS 7, W9WTY 7, K9HMC 5, UBK 5. (Apr.) W9QWI 12, WTY 6.

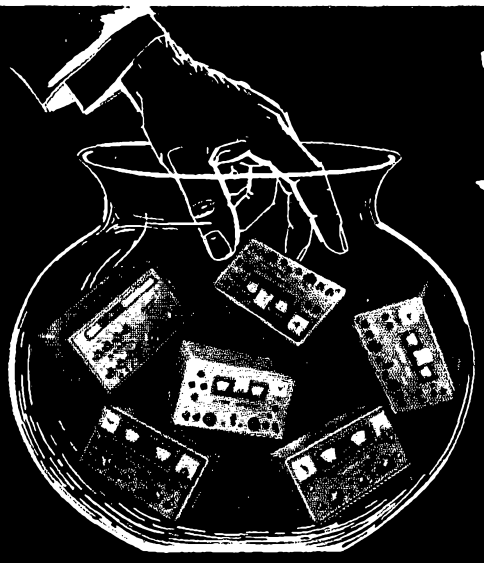
WISCONSIN—SCM, George Woida, W9KQB—SEC: YQH. PAMs: NRP and GFL. RMs: VIK and VHP. New appointees: K9GYF as EC, VIK and VHP as ORSs. UGT was reappointed as EC. K9UTN now is mobile with an AF-67 and a Regency converter. K9DAC joined the TCC and became NCS for the CAN. A WAC certificate was received by K9GDF. NLJ is trying for DX on the golf course. New officers of the Badger Amateur Radio Society, U. of Wis., YT, are K9AYU, pres.; K9EOP, vice-pres.; K9EZY, secy-treas.; K9CYD, chief engineer. SZR is checking the traffic nets from his mobile. ZQA now is in Alaska signing KL7FBI. To the Eau Claire Amateur Radio Club, congratulations on their recent ARRL affiliation. The Milwaukee Radio Amateurs Club elected QYW, pres.; ZAN, vice-pres.; KQD, 2nd vice-pres.; LVR, secy.; K9CUI, treas. LVC now is operating on 1296 Mc. with GAB. The Racine Megacycle Club has 3980 kc. as its working and monitoring frequency. News from the Oshkosh Club includes the following list of new officers: ELY, pres.; K9RPM, vice-pres.; and UEB, secy-treas. A 2-meter c.d. project is now underway. Twenty-seven delegates at the Wausau meeting of the Wisconsin Council of Radio Clubs elected PFK, pres.; KQB, vice-pres.; YNR, secy.; K9TFZ, treas. Seventeen clubs were represented. Our section is in need of OBS operators for all bands and modes. Details on the Wausau Hamfest show an increase in attendance. More on this later. DKH, now c.d.-minded, is active on 6 and 2 meters. Four Wisconsin OOs sent 119 notices during May. Be sure of your signal and its frequency. Traffic: W9DYG 868, CXY 472, K9DAC 360, W9SAA 176, K9JQA 161, ELT 96, PDJ 63, W9VHP 59, CBE 57, KQB 47, NRP 35, LFK 29, K9GSC 18, DOL 14, GDF 14, W9VIK 11, YT 10, MWQ 7, SZR 4, K9UTN 4, W9NLJ 2, K9OXY 2, UBC 1.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold A. Wengel, WØHVA—SEC: KØKBV. PAM: KØKJR. RM: KTZ. The North Dakota 75-Meter Net reports 26 sessions with a total of 519 check-ins; highest number of check-ins 29, lowest number 3; 86 pieces of formal traffic and 41 pieces of informal traffic were handled with 11 relays. Those who attended a MARS meeting in Redfield, So. Dak., on May 29 were KTZ, KØGGL, HVA, KØGRM and KØPEO. KØGRM is working in Bismarck for the summer and will be operating mobile. KØRLF has a 6-meter mobile rig in his car. Traffic: KØITP 82, WØYCL 57, KØADI 56, GRM 45, TYY 25, WIM 24, MPH 16, PVH 15, KJR 14, GGI 12, WØBHF 9, PHC 8, KTZ 6, BHT 5, IHM 2, KØOMA 1.

SOUTH DAKOTA—SCM, J. W. Sikorski, WØRRN—SEC: SCT. Brandt, S. Dak., (population 211) has four new Novices located in one city block—KNØs ZMP, ZMQ, ZMR and ZMS. KNØZTW is new in Clear Lake. KØs TVK, TXW and TWT, of Clear Lake, have received General Class licenses. KØLKH, Gettysburg, has moved to Sioux Falls. KNØZWX is newly-licensed at Lead. The Huron ARC has moved to new quarters with the CAP and Air Force Reserve. The Sioux Falls ARC has moved to CAP-CD quarters. The Huron ARC is doing an excellent job publicizing amateur radio with newspaper publicity and demonstrations and exhibits in schools and hobby shows. KØLKH has a new Globe Chief 90A and an SM-90. KØEYY has completed his hitch in the Navy and has returned to Sioux Falls. The Sioux Falls ARC swapped the old HQ-129X for an SX-111. Traffic: WØSCT 443, KØBMQ 171, WØDVB 83, KØHSW 61, DUR 19, WØFJZ 12, ZWL 8, KØACJ 8, VYY 6, LKH 4, RQY 2, SEJ 1.

(Continued on page 104)



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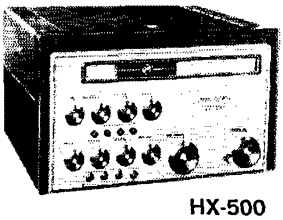

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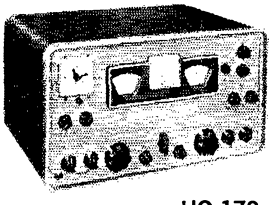

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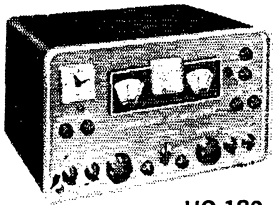
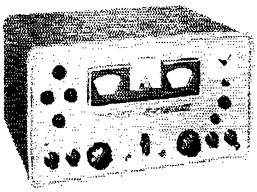


HQ-180

A fine quality general-coverage, SSB receiver offering commercial performance at amateur price **$429.00**



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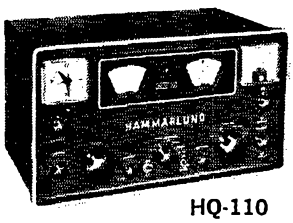

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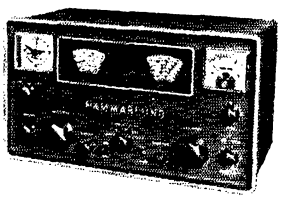

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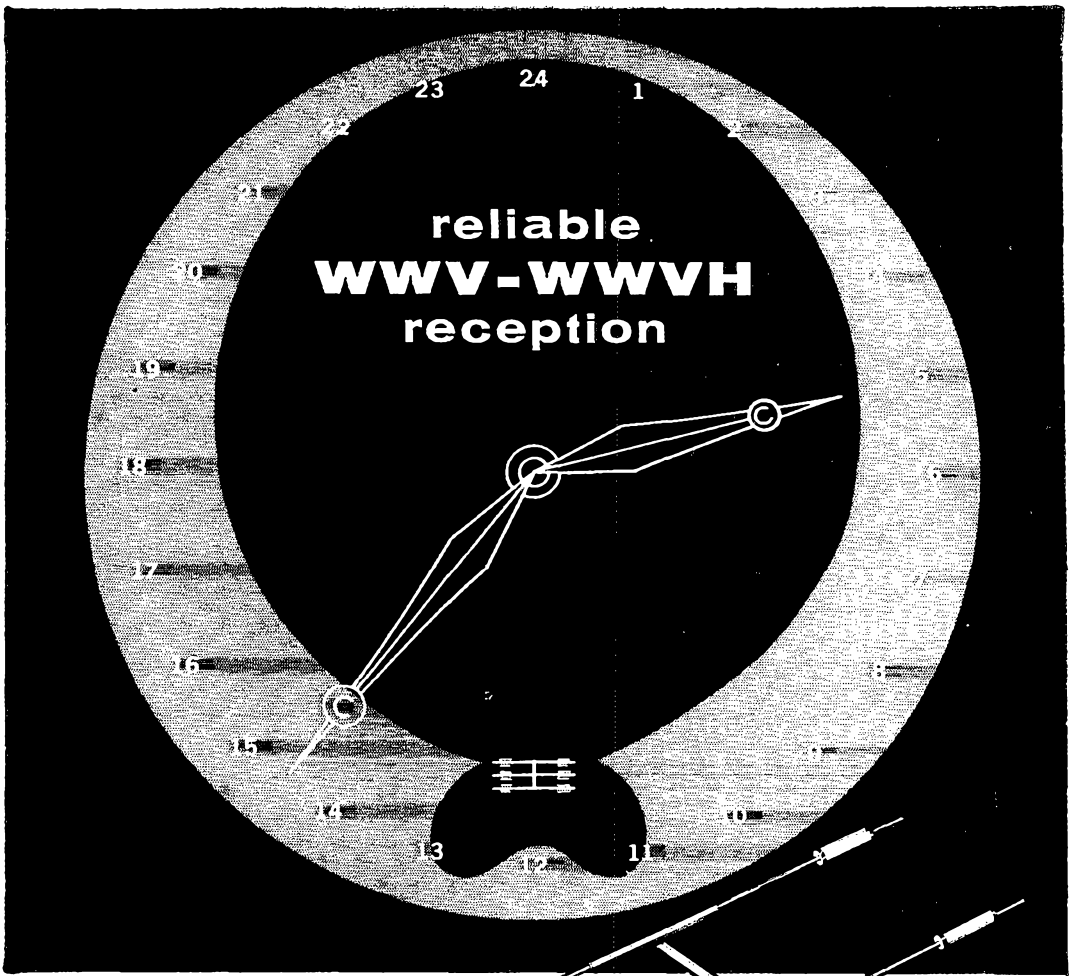
MINNESOTA—SCM, Mrs. Lydia S. Johnson, WØKJZ—Asst. SCM: Rollie O. Hall, ØLST. SEC: TUS. PAMs: OPX and KØEPT. RMs: RIQ and KØIZD. The Dakota Division ARRL Convention will be held at the Leamington Hotel, Minneapolis Sept. 16-17-18, sponsored by the MRC. Dakota Division Director BUO spent a week in West Hartford. Congrats to first place winner KØRGP in the WAM QSO Party, with 136 contacts and 40 counties. Naval Officer ØTRH visited Dubrovnik, Yugoslavia, and was a guest at the YU2BHI Radio Club. KØTQJ visited his daughter and son-in-law in Russia. KØBIT has DXCC-194 and WAZ. Novice ZDX has a new HQ-110. UYR states that the 6-meter SRAC meets every 3rd Mon. KØUKU advises that Rochester has these newly-licensed hams: KNØs AIJ, AIL, AIX, AJD, AKA, AKM, AKX, AIW, AOZ, ZWV, ZZS and KØZZT. New MSN member KØOTH now has complete break-in and uses a Navigator and a 75A-2 receiver. PAM OPX reports that Aitkin's new Novice is KNØAAL. The new officers of the SPRC are KØMVB, pres.; KØMVF, vice-pres.; KKO, treas.; and KØRSJ, secy.; were guests of honor at the Annual Club Banquet attended by 75 members. KØUMY received his Gen. Cl. ticket. RM KØIZD graduated from high school and plans to enter into electronics. HEN is mgr. of the Minn. s.s.b. Net. NYM was appointed OES. RQJ renewed his ORS, and BUO, OJK, OPX and WMA their OPS appointments. RIQ and OPX were hosts at the MJN-MSN Annual Net Party. KØSBB received OPS appointment. ECs TWG, MAH, EWC, ICG, THY, CPW and OQT report successful participation in the '60 OPAL Alert. OOs WMA and LST reported one violation each: KLG two. MVH is home from military service. KØPAU made WAM. KØLNE was elected a new board member of the SPRC. RVO appeared on a TV quiz show. KØOQT uses the Collins S Line gear and a KWM-2. KØSNC earned CP-30. KØSNG has an HBR-16 receiver. KØUKU uses a Valiant and a 6N2. Traffic (May): WØTUS 707, KØQBI 146, WØORK 134, KLG 130, PET 128, KØMAH 121, WØQDL 108, KØQYY 103, WØKJZ 86, OPX 86, HEN 81, ALW 69, KYG 67, KØSNC 64 WØWMA 62, RIQ 61, KØEPT 58, WØVPO 52, KØIZD 48, WØPML 43, OBP 42, LWK 39, NYM 34, KØICG 33, WØIKU 30, BUO 27, GIW 27, UMX 27, KØUKU 24, WØTHY 23, LST 21, MGT 18, RHN 18, KØSSB 18, WØYHR 17, KØJCF 16, WØJYJ 14, UXT 13, VXW 13, QLM 12, ISJ 11, KØSNG 10, WØOQT 5, UYR 5, KØKYK 4, KNØWYV 1. (Apr.) KØGIW 82, EPT 43, WØTWG 29, ALW 27, KØUKU 27, WØDYC 5, KØOQT 4, UVC 1.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: K5CIR. PAM, DYL. RM: K5TYW. K5GXR has an ARC-5 on c.w. and is using full break-in with a t.r. switch. The MCARA has purchased a 10-B s.s.b. exciter for the club station. The club invites all amateurs in or near Miss. Co. to meet with them. Attention is called to the fact that in the near future nominations for the office of SCM of this section will be in order. Your present SCM will not be a candidate for a third term. All clubs and collective groups are urged to get in a nomination for your favorite man to fill this office, as per rules in *QST*. May we encourage you to support the NTS Ark. Emergency Net, which meets Mon. through Sat. on 3885 kc. at 0600. The OZK C.W. Net meets Mon. through Fri. on 3700 kc. at 1900. Traffic: W5SZJ 104, WZN 50, RYM 25, K5CIR 8, W5ZVG 8, K5ABE 6, W5DYL 6, K5GXR 6, W5TSP 6, K5PYD 4, W5SMN 4, K5TYW 3, W5PME 2.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—Traffic totals in the Louisiana section are scheduled for a dip as CEZ will take a three-week vacation to California, Colorado and Nebraska. In spite of a two-week layoff because he was out of town, Carter turned in a June traffic count of 372 to top the section. K5AGJ turned in a nice total of 200. You can always hear him taking or passing traffic on the s.s.b. nets. The Greater New Orleans ARC is completing plans to hold a hamfest Oct. 8-9 at Jackson Barracks. MXQ put up a new antenna but the results were not so good. *4LDM/5 said,* "never seen QRN any worse. if you can't hear 'em you can't work 'em." and he turned in the lowest traffic count since he has been reporting. The team of K5LKC and K5SBF had a death in the family and had to make a trip to Virginia so activity was at a low EBB. EA reports, "been knocked out and just ain't active." That Baton Rouge ARC is going hot stuff. The club has a nice bulletin, with lots of activities and advance programs on meetings, etc. FMO has his version of the sideband package working OK and recently tried the p.p. 810 final amplifier that has been on a.m. for about 15 years as a Class B Linear. It worked fine and is now being incorporated into a sideband unit which will run about a kw input. The Dixie Early Bird Net held a hamfest on the beach in front of the American Legion Home near the V.A.

(Continued on page 106)



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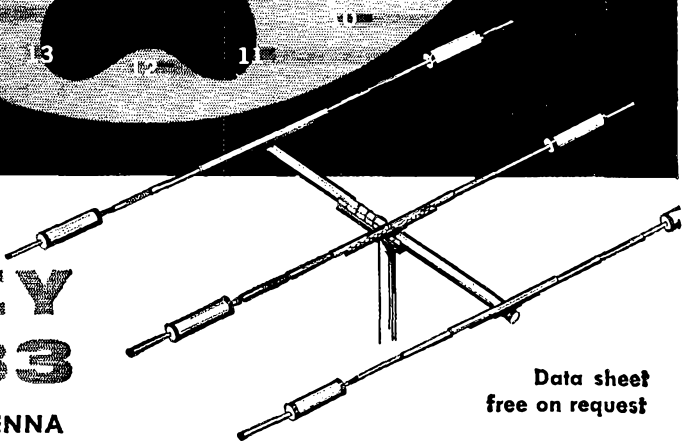

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Hospital in Gulfport, Miss., on July 10. Traffic: W5CEZ 372, K5AGJ 200, W5MXQ 82, W4LDM/5 15.

MISSISSIPPI—SCM, Floyd C. Teetson, W5MUG—The University of Mississippi has formed a new club with NM, pres.; K5SHB, vice-pres.; K5QLF, secy.; K5QLE, treas.; and K5DZE, act. mgr. A recent s.s.b. dinner was held at Gulfport. A fine time was had by all. The Biloxi Club held its Annual Hamfest. There were several fine prizes. The fine attendance and program speaks well of your fine effort, fellows. Congratulations. I'll be looking for many of you at the Jackson Hamfest. K4LET has moved to Natchez and is now W5AUS. I am open to meetings with your clubs. Please contact me. Traffic: K5MDX 114, QNF 68, W5JHS 48, RIM 12.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—SEC: K4EJN. RM: FX. PAMs: UOT and PAH. The C.W. Net is beginning to sound like a roll call of Oak Ridge and Clinton. OUK reports that HPN has a new son and K4UUY a new YL. K1LSM/4 says his traffic report from Memphis is for ten days. UVP is using the Heath Tenner and Sixer for mobile and says they cover the area well. K4LPW reports that he and K4LTA attended the joint meeting of the Frankford and Potomac Valley Radio Clubs. New appointment: K4FNR as ORS. Renewed: TZG as EC. Net reports were received from FX, PAH and UOT; OO reports from TDZ and K4RIN; OES reports from TZD and K4KYL. Traffic: W4PL 1107, EIN 152, CXY 136, VJ 115, K4OUK 80, K1LSM/4 65, W4PQP 64, FX 63, UVP 30, PFP 20, UIO 19, UVL 15, SGI 13, K4KYL 12, W4TYV 8, K4LPW 6, W4PAH 6, K4FNR 4, VOP 4.

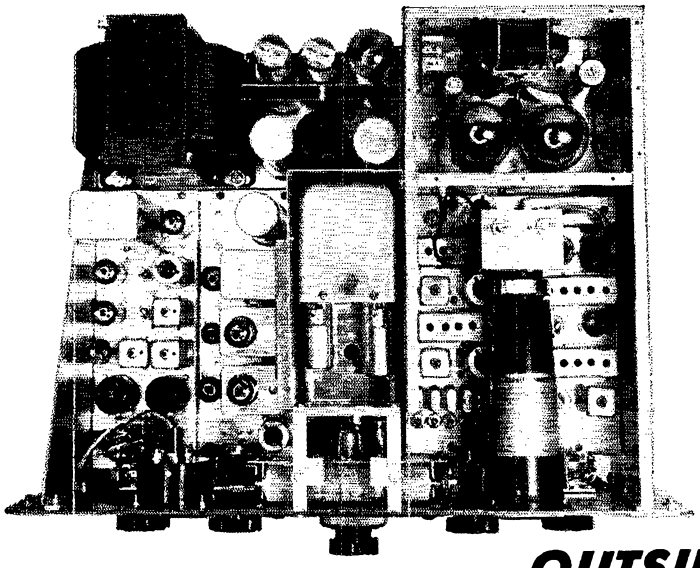
GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thomason, W4SUD—Asst. SCM: W. C. Alcock, 4CDA. SEC: BAZ. RM: K4CSH. PAMs: SZB and K4HCK. V.H.F. PAM: K4LOA. Operation Alert 1960 again demonstrated our weakness in emergency communication readiness. Your help is needed to keep your Director informed of the amateur's value as an emergency communication link. As usual the Mammouth Cave Hamfest was a tremendous success. The Mammoth Cave MARS meeting had 50 members in attendance with Major Scott, Mr. Goodman (Chief Mars tech. advisor) and A4RPF as principal speakers. Campbell County was the scene of the largest search ever made in this area for a 12-year-old girl lost for 25 hours. RHZ reports amateurs in the area helped by furnishing communications for the searchers. Six-meter-equipped mobiles and planes were used. K4OLT and KWE are new on MKPN. QCN is missing from the nets because of illness. JUI is overhauling his 14-year-old antennas. K4PGH is shooting for the BPL Medallion. KWE is working DX. ZLK has a new E.E. degree from U.K. EJA has 6-meter gear for v.h.f. OO work. It took ZQR three hours to get through the c.w. pile-up on WAR Armed Forces Day. ADH has a new high-efficiency 6-meter final. OO reports were received from K4BUB, ZRA, DFO, ZQR and W4SZL. Traffic: K4PGH 255, KWQ 233, W4SUD 117, K4AVX 73, W4CDA 55, BAZ 51, K4KWE 33, VDN 29, W4SZB 22, KJP 19, K4SBZ 18, UCS 17, ZBA 17, VDO 16, QHZ 15, DFO 14, JOP 13, W4SZL 13, ADH 11, YYI 11, UVH 10, K4ZQR 8, LOA 4, W4WVU 4, K4CC 2, W4JUI 2, K4MPV 2.

MICHIGAN—SCM, Ralph P. Thetreau, W8FX—SEC: YAN. RMs: SCW, OCC, QQO and FWQ. PAMs: AQA, K8KCD, K8JUG, ATB, NOH and PT (v.h.f.). EC appointments went to LAE, UTE and K8DNV; ORS to OCC and K8DJO; OPS to OCC; OO to K8EWI; OBS to K8OTJ. OO EMD, who recently broke a leg trying to put the "antenna farm" back up, found that ham cooperation is not dead. On May 8 RTY, SEY, K8s AFJ, AHX, DVL, HHX, INQ, JZR and SBH all came and put EMD's antennas back up. AKR brought test equipment. Now EMD is back on all bands, all modes! The Detroit O.T. Nite was a great success with the first showing of AWA slides, "Marconi, First Ham"; and 6SAI slides "Hams Along Riviera." A 1-kw. spark demonstration was put on by the DARA and Ford Museum. Lil Bates (ex-8BPT-1930), the YF of Art Bates (ex-9FO) IONV, died May 25. Michigan OTs will remember her and Art, of *Call Book* fame. SWN will be inactive for 2 years—college. NOH worked Maine on 144 Mc. NXE, OQN, QAT, K8s EGU, EUS, IHR and PQI are all building for 220 Mc. The St. Clair Co. Emerg. Net is doing very well. The new 50.5-Mc. Petoskey Net includes EFD, RHD, RPH, K8HNQ and NOO. Kazoo Co. AREC had a splendid c.d. drill, with a news write-up participated in by 46 hams. PDP had another heart attack, K8BGZ says, "Great upsurge of c.w. and s.s.b. on 50." All Wolverine NCSs are asking for and getting OPS appointments. CQU is now Asst. Director. TBP put a '17 Signal

(Continued on page 108)

INSIDE . . .



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WRITE FOR LITERATURE ON THE COMPLETE MULTIPHASE LINE

Corps spark in the Michigan Museum. K8CKD, JUG and GJD are running a c.w. round table each Wed. at 1900 on 3685, kc. for phone men who have lost their code speed. EMD reports: There are about 100 in S.W. Michigan mostly using 52.5 and 52.6 Mc. with 15-kc. f.m. deviation in use 24 hours per day. There are many 50- to 50.1-Mc. stations on c.w. K8GUE says his dad got his General Class license; K8IVG. MGQ/MMB were QRL on OT Nite. K8LOS says Wayne State U. is not on, and because it gets into WDET (f.m.) recorders but will be on after WDET moves soon and is after the call W8UA in memory of Geo Carter. Active on 220 Mc. in S.W. Michigan: CVQ, GOV, KSZ, GGK, PYQ, PT and K8JZR. Most picnic information was received too late for *QST* this year. It must be received by Apr. 1. Traffic: (May) W8OCC 218, FWQ 150, JKX 131, FX 114, ELW 94, JTQ 90, K8OTJ 84, DJQ 68, W8NOH 67, K8EPZ 66, JUG 65, W8QQO 54, K8GJD 52, W8YAN 40, TIJ 39, DSE 27, K8KMQ 26, W8CQU 21, K8CWG 21, W8EU 17, K8JED 16, W8TBP 16, K8AEM 15, BZL 15, EXE 13, NAW 13, W8PXA 12, K8CKD 11, W8QIX 11, K8EWI 8, LPV 7, W8QPO 7, ALG 5, AUD 5, EGI 5, HKT 4, SCW 3, K8BGZ 2, LZF 2, W8PDF 2, K8KCO 1. (Apr.) K8BZL 27, CKD 26.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. Cliff Erickson, 8DAE. SEC: HNP, RMs: DAE and VTP. PAMs: HZJ and WYS. K8s: KPK, LGH, KTM, MZS, MZT, NWZ, OZK, PDF, PJH, PSM, PXN and QHY received their General Class tickets. The Ohio Intrastate QSO Party had its poorest year because of bad band conditions, and because we didn't get the announcement in *QST* as usual, with the following scores: K8HDO 6818, MHO 2847, FEM 1785, K8MTI 651, EQN 308, AL 96, VZE 90 and IGE 40. In May many old timers joined the Silent Keys, namely, BXB, with members of the Cleveland Wireless Assn. acting as pallbearers, and NP, president of the Massillon ARC and DXC. IIV and K8DGO have new all-band verticals. OHP is back on the air on 10 and 20 meters. K8KSB is in Italy with the Armed Forces. Your Great Lakes Director UPB, 1HDQ and your SCM attended the Annual Banquet held by the Springfield ARA with 32 members in attendance. Talks were given by UPB and 1HDQ. Then next day we attended the Dayton Hamvention with more than 2500 registered and 900 at its banquet. IVE was named the outstanding amateur for work he did to help interested people become amateurs. The banquet speaker was 6SAI, who spoke on "Ham Radio on the Riviera" and showed colored slides. SSF is in the hospital. The Cuyahoga County AREC sponsored a talk on amateur radio by AEU to the East Cleveland Kiwanis Club, with K8DBF assisting in the mobile and hand-carried portable demonstration. An order to bring the club president's wife in to the meeting was given and the president was very much surprised to see his wife walk into the meeting room. The Lorain County ARA's 1960 officers are GDQ, pres.; TXZ, vice-pres.; K8DNS, secy.; and OYN, treas. Toledo's *Ham Shack Gossip* tells us that GJS was named as its "Ham of the Month." K8BJL is mobile on 160 meters, new Novices are KN8s QCR, QHI, QHK, SEY and TAT. The Columbus ARA's *Carascope* states that the club held its annual auction and swap, RPG moved to Columbus and NVI has 56 Ohio counties on 6 meters confirmed. We have two large hamfests coming up, so mark your calendars. The Cincinnati Stag Hamfest will be held Sept. 25 and the Great Lakes Convention will be held in Cleveland Oct. 7 and 8. Hope to be able to give you more information as to where the convention will be held next month. BAH, who writes the "*Ham Antenna*" printed in the *Cleveland Plain Dealer* every Sunday finished its first year of telling its 506,000 subscribers all about amateur radio. We believe it is the first Ohio newspaper to tell the amateur radio story with 850 words in 52 weeks. As I have mentioned before, anyone who thinks he can get his local newspaper to tell its people what public services we give the people, write me and I'll send the clippings on loan only. In an earlier issue of *QST* I told all who had held appointments to check their certificate to see when it was last endorsed and if it was more than a year to send it to me by June 1 or I would cancel the appointment. Don't blame me if you can't operate in CD Parties. New appointments in May were K8s LTA and MFY as OPSs and K8SNG as EC. Those who made BPL in May were DAE and UPH. The Warren G. Harding High School ARC's station, CMZ has a new HQ-170, on SX-99 and a DX-20. EIC is now K4ULU. IBX received the Kroonstad RC award. The Warren ARA will hold its picnic and hamfest Aug. 27 in Warren. Traffic: (May) W8UPH 1044, DAE 454, BZX 112, DQG 105, K8MTI 84, ONQ 76, DHJ 75, W8CXM 48, YGR 42, CTZ 35, K8MFY 33, W8FNI/8 29, HZJ 26, AL 20, K8LTA 19, W8QCU 19, BEW 17, LMB 16, LT 14, WYS 11, K8BNL 6, W8IBX 5, K8MYG 5, W8BLS 4, K8HEJ 4, NCJ 3, W8GQD 2, K8SNB 2, (Apr.) W8DQG 143, K8MMO 10, W8WRH 6.

(*Continued on page 110*)

ANTENNAS SINCE 1921

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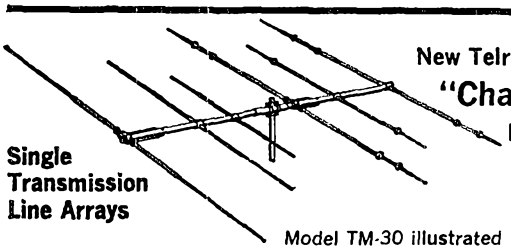

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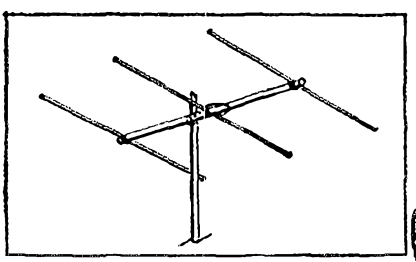
26 pounds of educated aluminum—Telrex "Tri-Band" is World Renowned for performance, excellence and value.



Model TC-99	$159.50
Model TM-30	$328.00
Model DP-3 (10-15-20 Meter Dipole)	$38.50
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2 Meter Arrays

Telrex offers 12 models in the 2-meter band. Prices range from $6.95 to $115.00.

2, 6, 10, Citizens Band, 15 and 20 meter Ground Plane

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The very best money can buy!

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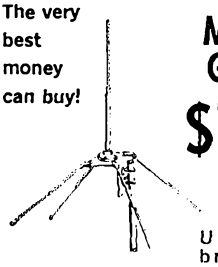
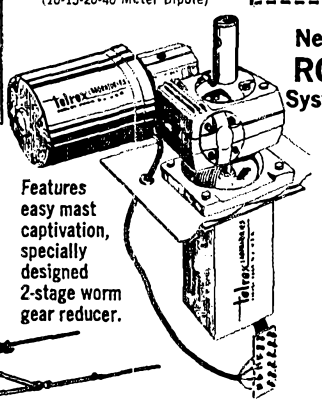


Unity gain, broad-band ground-plane omni-directional pattern antennas.



Features easy mast captivation, specially designed 2-stage worm gear reducer.

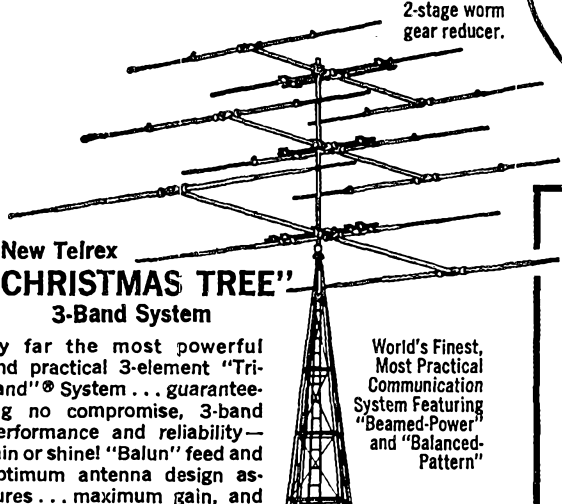
New Telrex

ROTATOR/INDICATOR

System Model 175-RIS **$198.50**

Designed to out-perform and outlast any other beam rotator in its class. Will hold and rotate beams in winds up to 110 mph. Control Housing is Telrex quality thru-out. Black japanned aluminum housing. Tri-colored azimuth rose and reciprocal readings. Has selsyn indication and limit of rotation circuitry.

Also available—Extra Heavy Duty Rotator Models



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3-Band System

By far the most powerful and practical 3-element "Tri-band"® System . . . guaranteeing no compromise, 3-band performance and reliability—rain or shine! "Balun" feed and optimum antenna design assures . . . maximum gain, and impedance bandwidth, plus pattern symmetry with minimum TVI, BCI and harmonic radiation qualities not possible with so-called "Tri-banders".

World's Finest, Most Practical Communication System Featuring "Beamed-Power" and "Balanced-Pattern"

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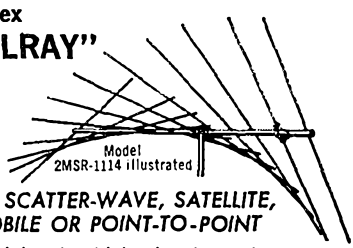

Model 2MSR-1114 illustrated

FOR SCATTER-WAVE, SATELLITE, MOBILE OR POINT-TO-POINT

Extremely high-gain, high signal-to-noise, practically no fade, all radiation planes — horizontal, vertical or oblique! 50, 108 and 144 megacycle models available.

All prices FOB Asbury Park, New Jersey, subject to change without notice

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W2KGC. RM: W2PHX. PAMs: W2IJG and W2NOC. Section nets: NYS on 3716 kc. at 1900; NYSPTEN on 3926 kc. at 1800; ESS on 3590 kc. at 1800; ENY (emerg.) on 29.490 (Thurs.) and 145.35 Mc. (Fri.) at 2100; MHT (Novice) on 3716 kc. Sat. at 1300. Our congratulations to our two BPL winners for May: K2UTV and K2YZI. K2UTV has made BPL for 15 consecutive months. Both BPLers are teen-agers. We all appreciate the fine work performed by W2APF in sponsoring "Operation Good Will" on May 1. New officers of the Schenectady Club include K2IOW, pres.; K2SDU, vice-pres.; K2QJL, secy.; K2DMR, treas.; K2HNW, K2LKI, K2PEF and W2LCB, directors. Recently celebrating his 40th anniversary on the air is W2AWF. The winner of the "Broughton Award" for Public Service given by the Schenectady Club was W2GTB for his fine work in settling interference complaints of all kinds. The Ulster County Mike and Key Club has a complete list of planned activities through the end of the year. His many friends will miss W2TIY, a Silent Key in May. K2RYG has moved to the Binghamton Area. The EC for Schenectady County, K2HNW, Professor of Physics at Union College, spoke on "Radio Propagation" at the May meeting. W2AZH won an RCA vacuum tube voltmeter. Take a listen to the statewide Red Cross Mutual Aid Net the 1st Sun. of each month on 3875 kc. at 1200. Traffic: K2UTV 6101, K2YZI 661, K2MBU 155, K2BIG 112, W2PHX 99, K2RKY 68, K2OZT 49, W2EFU 23, K2LZW 15, WA2DWU 14, W2PKY 7, WA2ALO 1.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2VDT. PAM: W2UGF. V.H.F. PAM: W2EW. Section nets: NLI (early session), 3630 kc. nightly at 1815 EDT. NLI, 3630 kc. nightly at 1930. NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EDT. NYC-LI AREC, 3908 kc. Sun. at 1730 EDT. V.H.F. Traffic Net, 145.8 Mc. Tue. Wed. Thurs. at 2000 EDT. BPL cards were earned by K2UBG, W2VDT and W2EW —all on originations plus deliveries. It was the first BPL for K2UBG and the third for our V.H.F. PAM, W2EW, who receives the section's first traffic medallion earned via our v.h.f. nets. Activity on all of the section's traffic nets continues to be excellent. Newcomers are always welcome and traffic-handling is fun! Please note the new early session of NLI. W2DSC, the NYURC is sporting a new half-kw. on 80, 40 and 20 meters. New officers of the club are K2UMO, pres.; K2IRS, vice-pres.; and K2SXB, trustee. W2UD, one of the old-timers, is retiring to Lima, Peru, where he will be active on s.s.b. with an OA call. K2RHG is building an s.s.b. rig. K2OEI is enjoying work on 144 Mc. with his new 100-watt final and 417A converter. Openings on 50 Mc. have kept the v.h.f. boys busy. A new 2-meter v.f.o. is in use at K2IRS. K2MFQ has built a mobile rig for his bicycle. K2IBJ passed the General Class exam. Mobiles W2KFV, K2ABQ, K2DYS and K2KSP/2 provided communications for the West Hempstead Armed Forces Day Parade and the Lakeview Memorial Day Parade. K2OFD is on 40-meter s.s.b. with a 10-A and a 100-watt linear. New officers of the Bronx High School of Science ARC are WA2ECN, pres.; WA2COG, vice-pres.; Janet Joseph, secy.; and K2PNK, act. mgr. W2OTA reports increased activity on 432 Mc. Mike says there is plenty of room for visitors! The newly-formed radio club at Servo Corporation of America has named R. Wengler, pres.; F. Gardner, secy.; and WA2HVL, treas. W2YPT is now active on 2 meters. A Ranger is on the air at W2YHP. K2IDB returned to the air with a Viking I. K2JNE moved to Los Angeles. Ex-TF2WBU has his old call, W2FGD, on the air from Riverhead. K2QBW/1 reports from Cambridge, Mass., where his Gonset and halo have worked six states on 144 Mc. Ray's dad now signs WV2MIM. The Grumman ARC has received the call WA2LQO. WV2KHS is active from Rockville Center with a DX-20 and an SX-111. Ex-K2AED is signing K1MUO from Massachusetts. K2RHN has an NC-100 and a Valiant on the air. WA2MRG is active from Baldwin on 2 and 6 meters with plans for u.h.f. work. K2AZT vacationed in the White Mts., N. H., with his trusty 6-meter Communicator along for the ride. WA2AFX has an excellent signal from his Valiant, TA-33 beam and NC-300. The boys at the Third Naval District Hq. are active from WA2KUY, their club station. Operators are W2TTF, K2RWK and WA2AFX. Ex-KZ5EE hopes to join in soon. An error in the June column has been noted. WA2GPT was the persevering amateur seeking the elusive QSL card. A Thunderbolt linear is now on the air at W2TUK. Please check appointments for renewal and forward for signature. Traffic: (May) K2UBG 420, K2RBW 269, W2VDT 265, K2SJP 251, W2EW 236, K2UFT 159, W2DUS 145, WA2GPT 88, W2UGF 48, W2DSC 46, K2YQK 32,

(*Continued on page 112*)

the FIRST Low cost CARDIOID

SPECIFICALLY for SSB

NEW E-V® 729 CARDIOID MICROPHONE

To fully obtain all the advantages of single sideband communication, it is vital that the microphone be a *cardioid type*. The ability to reject unwanted sound from the rear of the microphone is the key to better VOX reliability. Response also must be tailored for best articulation in the presence range to insure greatest intelligibility. You get all this, and more, in the new E-V 729 at only $14.70, amateur net.

The pick-up pattern of the 729 greatly increases the distance you can work from the microphone. Virtually dead for any sound pick-up from the rear, it removes annoying room reverberation, and assures smoother VOX operation. Response is peak-free in the useful communications frequencies. High output level is ample for use with all modern transmitters.

The generating element is indestructible ceramic (lead zirconium titanate) which guarantees years of efficient operation in any climate under wide variations of temperature and humidity.

The 729 in rich two-tone gray makes a handsome addition to any station. *Feels* good in the hand. Instantly lifts out of desk stand (supplied with microphone) without any hardware adjustment.

The very features that make the 729 outstanding for SSB insure superlative performance for AM, PA, and other general-purpose applications.

Model 729. Complete with desk stand, plug-in floor stand adapter and 8-ft. cable. Amateur Net, **$14.70**

Model 729S. Same with built-in on-off switch to deaden the microphone. Amateur Net, **$15.90**

Built with E-V's traditional quality, satisfaction is guaranteed or your money back.

See your Distributor or write for literature to Dept. 80-Q.

Cardioid polar pattern. Frequency response 60-8000 cps. Output level –55 db. High impedance can be used with any amplifier employing high impedance input. Two-tone gray.

No Finer Choice than

Electro-Voice®

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K2THY 29, K2MFQ 27, K2CMJ 24, WV2KWZ 22, W2PF 13, K2RHG 12. WA2BST 10, K2OEI 10, W2UAL 10, W2EC 9, W2IVN 9, K2ADL 8, WA2HEU 8, WA2-DXH 6, W2OKU 6, K2AZT 5, WA2EUL 4, W2HNG 4, WV2KAK 3, W2ER 2, W2IN 2, K2LHA 2, W6MLZ/2 2, W9PVD/2 2, WA2EEI/2 1, K2IRS 1, W2ZRA 1. (Apr.) W2UGF 25, K2MIG 19, W2OME 18, WV2IMO 10, W2AEE 3. (Mar.) W2AEE 3.

NORTHERN NEW JERSEY—SCM, Edward Hart, jr., W2ZVW—SEC: WA2APY. RM: W2RXL. PAMs: K2SLG and K2KVR. NJN held 31 sessions, had 571 stations and handled 303 messages. All WA2COO has to do to win a five-dollar bet with W2QEX is put down 45-w.p.m. code with a stick. K2PVH bought a Gonset, made one contact and sold it at a profit. K2VVL now has a KWM2 mobile and fixed. WA2BLP has a new electronic keyer and works with c.d. a lot. WA2GQZ and WA2GQI, father and son, have it made on traffic. K2AGJ added a filter to the 75-SL. K2THC now is a member of TCC, a crack operating outfit, and also made BPL with 611 left over. NJPN held 31 sessions; 508 checked in and handled 163 messages. K2PTI operated a display station at the high school for the "Festival of the Arts." W2NIY received the Worked All Mass. Counties Award. Officers of the Apple Pie Hill ARC are W2ENS, pres.; W2CFB, vice-pres.; K2VFT, secy.; K2MOH, treas.; K2PZV, act. mgr. NJ6 had 11 sessions, 135 actives and 21 messages. K2PQR is working on 220-Mc. gear. K2BWQ again entered the hospital. WA2APY stopped using his electronic keying monster and immediately became a member of TCC. K2EQP complains of inaccurate and late traffic. It's getting better, John. K2MFX has a Viking Courier. W2BVE will be working in New Mexico this summer. Watch for him on 15 meters. The NJ2 Net had 4 sessions with 18 check-ins and 2 messages. K2YBC added a Chippewa KW to her rig and in spite of this K2UCY, who lives in the same apartment building, made BPL. WA2GUI is the v.h.f. traffic hound. K2DSW has entered the Armed Services. Traffic: (May) K2THC 1111, K2UCY 530, WA2COO 224, WA2GUI 139, WA2APY 137, K2VNL 118, K2VVL 115, K2ETS 101, W2-RXL 74, WA2CCF 61, K2LWQ 49, W5FKL/2 38, W2EBG 33, W2DRV 32, K2MFF 32, W2ZVW 30, W2BSC 25, WA2GQZ 25, K2PVH 23, WA2BLP 21, K2JTU 20, K2QGD 18, W2BVE 14, K2SLG 13, K2BWQ 12, K2MFX 12, K2PQR 12, K2AGJ 6, W2NIY 6, WA2EJZ 4, K2EQP 4, WA2GQI 2, W2CFB 1, W2EWZ 1. (Apr.) K2UQY 121, K2ETS 77, K2SLG 11, K2CBG 4.

FIRST NEW JERSEY QSO PARTY

August 27 and 28

The Garden State Amateur Radio Association, W2GSA, invites all amateurs the world over to take part in the First New Jersey QSO Party.

Rules: 1) The time of contest is from Saturday, August 27 at 1800 EDST (2200 GMT) to 2359 EDST (0359 GMT, Aug. 29) Sunday, August 28. 2) Phone and c.w. are considered separate contests. 3) General call is "CQ New Jersey." N. J. stations are requested to identify themselves by signing "DE NJ" on c.w., and "New Jersey calling" on phone. 4) Exchanges consist of QSO number, RS(T), and QTH (state, VE province, or country). N. J. stations send QSO number, RS(T), and N. J. county. 5) A station may be worked once per band. Only c.w. to c.w. and phone to phone contacts count. 6) *Scoring:* Each completed contact counts one (1) point. Outside stations multiply number of contact-points by number of N. J. counties (21 maximum number). N. J. stations multiply number of QSO-points by total number of states, VE provinces, and countries. 7) Certificates will be awarded to the highest station in each state, etc. (2nd and 3rd places where deemed necessary). First and second place certificates will be awarded to highest stations in each N. J. county. Technician and Novice awards will be issued where three or more logs are received. 8) Logs must also include time, band, and emission and be postmarked no later than Sept. 12, 1960. Logs go to GSARA, Red Cross Building, Broad Street, Shrewsbury, N. J.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—The TLCN held its Annual Party in Marshalltown with 27 attending. PZO was elected the new manager. The Coon Valley Club held its Annual Picnic at Bayard with

(*Continued on page 114*)

NOW — A 400-WATT BEAM PENTODE DIRECTLY INTERCHANGEABLE WITH THE 4-400A!

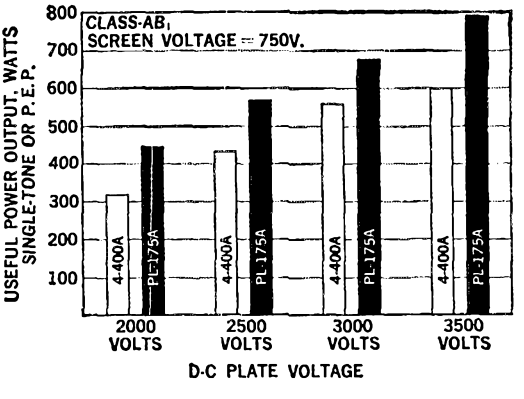
The advantages of Penta's exclusive vane-type suppressor beam pentode design are now available to the majority of 4-400A users. Simply plug the new PL-175A into the socket, retune slightly, and enjoy increased efficiency and lower distortion. The PL-175A, an improved version of the PL-175, requires no change in operating voltages when substituted for the 4-400A, and will deliver substantially more output in most applications.

Most tank circuits designed for the 4-400A will easily accommodate the slightly higher input and output capacitances of the PL-175A. The lower grid-plate capacitance reduces neutralizing problems.

The chart below shows the actual measured 14-Mc. power output performance of the PL-4-400A and PL-175A when operated in the same amplifier, which was adjusted for maximum output from each tube at maximum rated plate current, with identical plate, screen-grid, and control-grid voltages.

Other PL-175A advantages include a sturdy, solid, one-piece plate cap and seal with no set-screws or separate parts to loosen or fall off, and an electrode geometry which puts an end to annoying negative screen-grid current.

PL-175A



CHARACTERISTICS AND RATINGS

	PL-4-400A	*PL-175A*
Filament Voltage	5.0	5.0 volts
Filament Current	14.5	14.5 amperes
Direct Interelectrode Capacitance		
Input	12.5	15.1 mmfd
Output	4.5	9.8 mmfd
Grid-Plate	0.12	0.06 mmfd
Screen-Grid Amplification Factor	4.9	4.5
Maximum Plate Voltage	4000	4000 volts
Maximum Plate Current	350	350 ma
Maximum Plate Dissipation	400	400 watts

For complete details write for the PL-175A data sheet. Also, ask for your copy of "Transmitting Tubes for Linear Amplifier Service," a nine-page bulletin which shows in detail how and why Penta's pentodes out-perform conventional tetrodes.

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TRADE MARK REG. U. S. PAT. OFF.

96 attending. The club officers are KØTOO, pres.; EJN, vice-pres.; and SEW, secy.-treas. The Atlantic Club had 26 attending its picnic. VWF, State RACES Radio Officer, reports a successful Operation Alert with 165 messages handled. The five participating stations, KØLBJ, LDN, MSY, VWF and PZO, sent in reports. New appointees are KØYJP, USP and BTG as OESs and BTG as OPS. Renewals: YDV and KØGXP as OPSs and AZJ as OO. New officers of the Luther College Club are KØRTF, pres.; RLK, vice-pres.; KØHXI, secy.; and 9BQV, treas. The 75-Meter Phone Net reports 27 sessions with 989 QNS and 120 messages handled. The Hawkeye 75-Meter Net reports 46 QNS and 3 messages handled. DEN, at Iowa City, is on 432 Mc. The Annual 75-Meter Phone Net Picnic will be held Aug. 28 in Nevada. LCX reports that he was appointed manager of the Tenth Regional Net. DWD has a new SX-101 and YDV has a new Collins 30S-1 final. Traffic: (May) WØLGG 2111, BDR 1667, LCX 1260, SCA 1080, DUA 101, NTB 95, KØBSZ 83, WØPZO 74, KØBLJ 73, WØVWF 72, BLH 42, KØHBD 38, WØQVA 38, KØMSY 30, WØLJW 28, KØQKF 22, MMZ 19, KAQ 18, LDN 17, SEW 16, GXP 15, POI 13 EAA 12 AUU 11, WØMEL 11 YDV 9, KØEXN 8, WØNYX 7, PTL 7, KØKTP 6, MFX 5, WØEEG 4, KØKBX 4, OTV 2, BRE 1, RTF 1. (Apr.) WØBTX 28, KØOTV 10, BRE 1, KBX 1.

KANSAS—SCM, Raymond E. Baker, WØFNS—SEC: VZM. Asst. SEC: LOW. RM: QGG. PAM: UTO. V.H.F. PAM: HAJ. OAQ, OCT, VZG, KØMAC, OCS and YSL were active during the tornado emergency in the vicinity of Leavenworth. KØWUD now has a new DX-40 with a VF-1. The Hi-Plains Club (5VVW, pres.) Hamfest had 381 present, 275 registered and 150 emergency mobile units. The Topeka KVR Club (WIZ, pres.) Hamorama had 325 present, 279 registered and 78 emergency mobile units. The CKRC of Salina (Joe Addison, pres.; Hank Salmans, act. mgr.) had 555 present, 308 registered and 125 emergency mobile units. All three of these were of the best with plenty of prizes and eats. FHT will take a well-earned rest NCSing duties on KPN. KØTNW, IZM and others are busy setting up communications for the Boy Scout Camporee to be held at Wellington Lake. The SKEN will be on a stand-by basis through the summer. Dot, KØGIA, advises that 6 meters is at a low ebb in Kansas. Traffic: WØOHJ 975, BLI 582, KØGHI 148, BXF 136, WØQGG 125, FNS 123, ABJ 119, TOL 85, KØIZM 63, UAX 37, WØUTO 37, SYZ 33, KØQKS 28, WØIFR 22, KØHVG 18 WØAXZ 9, KØTNW 9, WØFDJ 8, KØQKS 8, WØVZM 8, BBO 5, FHT 5, KØQWN 5, EFL 4, QOB 2.

MISSOURI—SCM, C. O. Gosch, WØBUL—SEC: KØLTP. RMs: OUD and QXO. PAMs: BVL, OMM and KØKLQ. Net reports: MON (3580 kc., 1900 CST M-S) 23 sessions, QNI 114, QTC 110. NCSs, OUD 19, KØQCQ 3, ONK 1; SMN (3580 kc., 1600 CST Sun.) 5 sessions, QNI 14, QTC 3, NCSs, OUD 4, KØONK 1. HBN (7280 kc., 1205 CST M-F) 18 sessions, QNI 481, QTC 357, NCSs, WAL KØJTW, K5JXD 3, QJU, KØLTJ 2, KØBFH, ONK, LTP, FCT, WMQ 1. MEN (3885 kc., 1800 CST MWF) 13 sessions, QNI 379, QTC 91, NCSs, OVV MSN (slow-speed net) 16 sessions, QNI 31, QTC 7, NCSs KØOLW 4, OHC, OMM 2, DFK 1; KØVXU 15, ONK 1. Daytime operation has been affected by complete and by partial "black-outs" of the low-frequency bands at net-time. Congratulations are offered to those members of the section who have been receiving various awards, published in other columns of the periodical. The SCM would like to receive monthly reports from them as well. How about an "Old Plug" Award (with medallion) for the old dependables who never do anything spectacular, but without whom the big show could not be made. Appreciation is extended to the HARC (Kansas City) for the hospitality shown during the visit to their organization by the SEC and the SCM, during their regular monthly meeting. A slide-audio tape on AREC organization was shown at this meeting and at the regular meeting of the Tri-State Radio Society (Joplin). KNØUTX reports the formation of a Forty-Meter Slow Speed Net (FNS) on 7.155 Mc. at 1630 CST with KØVXU as net control. New officers of the Missouri School of Mines RC (Rolla) are: KØLGZ, pres.; KØOHO, vice-pres.; KØDHU, secy.; KØWKI, treas. Traffic: (May) KØLTJ 629, WØWAL 566, KØKBD 514, ONK 280, LTP 103, WØOVV 96, OMM 92, ZBR 86, KIK 85, OUD 62, KØQCQ 48, MMR 42, WØRTW 41, BUL 38, TPK 31, BVL 21, KØSGJ 20, WØPXE 9, KNØUTX 7, KØLGZ 4, PCK 3, WØEPI 2. (Apr.) KØKBD 480, VBU 53, RXD 17, PCK 4.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—The Western Nebraska Net, reported by NIK, has QNI 663, QTC 132. The April report for the 75-Meter Emergency Phone Net, received late, was QNI 436, QTC 41; the May report, sent in by ZOU for the same, was QNI 494, QTC 29. HXH reported 29 days, EXJ 27 and VZJ and LEF 26 days. The Nebraska 75-Meter Morning

(Continued on page 116)

Webster BAND SPANNER

THE STREAMLINED MOBILE ANTENNA
for effective 5-band operation

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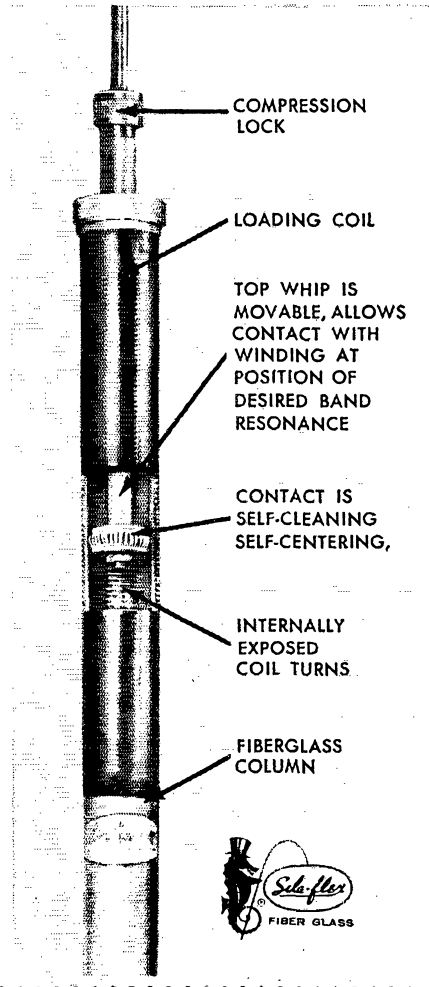

Two models—Short Band Spanner, 37″ telescoped, 93″ extended. Long Band Spanner, 63″ telescoped, 117″ extended. Both models have standard ⅜-24 threading (M) on base fittings.

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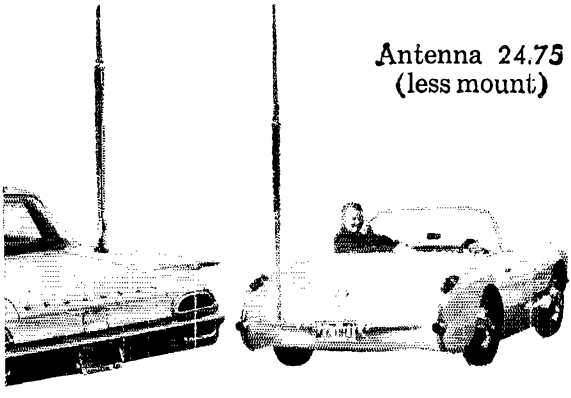

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Phone Net, as reported by KØDGW, had QNI 817, QTC 227. The Nebraska Section Net (C.W.), as reported by NYU, had 26 sessions, QNI 142, QTC 134. RDN is attending the University of Wyoming until late October. KØOUL reports some very good openings on 6 meters during May. Your SCM attended the Annual Western Nebraska Hamfest held at the Chadron State Park at which there was a very good attendance and a lot of interest shown in AREC and c.d. work. The North Platte Radio Club's Annual Picnic will be held in Cody Park Aug. 7. Everyone is invited to come and bring the family. Traffic: (May) KØIJW 156, WØNYU 146, ZJF 142, KØMSS 126, QFK 124, RRL 95, DGW 90, WØNIK 49, KØKUA 42, KJP 35, WØBOQ 34, HTA 28, KØMZV 27, KTZ 24, VIA 24, CDG 21, UQN 19, WØVZJ 18, GGP 17, HDW 14, OCU 14, VEA 14, UQK 12, KØUWK 12, WØEGQ 11, KØROP 10, ELU 8, WØZOU 5, WKP 4, KØTUH 4, WØHOP 4, RJA 3, KØRMS 3, BRQ 3, WØMYT 2. (Apr.) WØNYU 280, RDN 109.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—SEC: EOR, RM: KYQ, H.F. PAM: YBH, V.H.F. PAM: FHP. Traffic nets: CPN, Mon.-Sat. at 1800, Sun. at 1000 on 3880 kc.; CN daily at 1845 on 3640 kc.; CVN, Mon., Wed. and Fri. at 2030 on 145.98 Mc.; CTN, Sun. at 0900 on 3640 kc. AW made BPL. BDI is busy with his annual antenna check-up. OBR is too busy at work for much operating. FHP reports CVN had 68 stations check in 13 sessions and handled 18 messages. High QNI goes to FHP, 12; K1KEA, 12; JZA, 7. K1KRY is on 2 meters from Torrington. JJL has a new mobile s.s.b. rig. K1GEH is mobile on 50 Mc. with a Heath rig. The XYLs of the CQRC members raised $50 from a cake sale to buy new drapes. Three hundred amateurs enjoyed the New London Hamfest on May 7. K1GIP received the W-Conn Award on phone. APA is in the hospital and would like to hear from his old friends. Address him at Box 508, Norwich, Conn. K1HTV has a new Viking II which should help his 83/56 country total. KYQ reports CN handled 312 messages during 31 sessions and has an attendance average of 11 stations. The second session handled 49 messages during 13 sessions. High QNI were K1JAD, K1GGG and RFJ. QAK has given up DX in favor of boating during the summer. K1LKC is planning a two-year electronics course in Kansas City, Mo. K1BML is selling out in preparation for going s.s.b. The first picnic of the Conn. 6 Meter Beer and Picnic Society was held at West Peak, Meriden, with K1IJW, K1MNE, K1JVS, K1BOI, MEO, MEK, IGG, WU, HHA, DAG, KAC and ECI attending. K1KSK gets good results on 160 meters using a 2000-ft. antenna. K1MBH is eager to try s.s.b. K1MOT left for the Navy May 1. YBH advises that CPN met 31 times, handled 323 messages and had an average daily attendance of 25 stations. High QNI goes to IHG, 29; FHP, VQH, 28; K1AQE, 26; TVU, YBH, 25. K1JAD is vacationing in Western Penna. Busy K1MET won a full tuition scholarship for two years at Ward Technical School, passed his Conditional Class license, helps out at W1AW and is building an Apache. DNJ has moved to California. The Southington ARA enjoyed a visit to AW. MWB has moved to New Rochelle, N. Y. Former SCMs VB and KQY are frequently on CN. LGE worked a maritime mobile near Bermuda on 50 Mc. FVV had a number of Midwest QSOs on 50 Mc. New appointments: K1LFX as OO. Appointments renewed: K1JAD, APA, AVS and WPR as ORSs; APA and EBW as OPSs; FOR and LGE as OESs; IOW as OO. Reports received: OES from FVV and LGE; OO from K1EFI, K1GUD, K1IVR, K1LFS, EQV, TYQ, VW and ZKQ. Traffic: W1AW 278, KYQ 277, K1JAD 245, W1EFW 189, OBR 180, YBH 129 K1GGG 66, IVR 63, W1FHP 61, BDI 59, K1CAK 58, HWF 48, CBV 45, W1CUH 33, K1IWW 30, W1RFJ 27, K1AQE 26, DGK 24, W1WAZ 23, K1ANV 22, W1EBW 22, TQY 22, K1BSB 17, W1VIY 15, CHR 9, ETF 7, K1MUT 6, W1BNB 5.

MAINE—SCM, Jeffrey I. Weinstein, W1JMN—Official Bulletins are aired through JMN on 3950 kc. The MSSN is receiving an excellent response to its recent call for new recruits. All Novices and interested General Class operators are urged to attend the MSSN sessions to improve their traffic-handling ability. Patient, competent General Class operators are conducting the sessions and assisting the newcomers with friendly hints and advice. Occasionally, the Novices themselves conduct the proceedings unassisted, which helps to promote a feeling of personal independence and accomplishment so necessary today within any efficient traffic-handling system. I'm pleased to say that the SGN is reporting fine response as usual, further illustrating its meritorious standing as one of the most efficient section nets in the Northeast. NCSs have informed me that cooperation among the SGN members is outstanding, which has definitely helped them conduct the sessions. After careful thought and consultation 3940 kc. has been desig-

(*Continued on page 118*)

From Polytronics:

THE NEW, POWERFUL POLY-COMM 6-2, VHF TRANSCEIVER

For Novice, Technician and General

COVERS BOTH THE 6 AND 2 METER BANDS

Rugged...dependable... feature by feature the Poly-Comm 6-2 outclasses them all!

This is it! Built for continuous heavy-duty service, the Poly-Comm 6-2 has a V.F.O. or crystal controlled transmitter plus a triple conversion superheterodyne receiver!

All weatherproof steel cabinet and chassis . . . equipped with weatherproof fittings and teflon wiring for operation under the toughest conditions.

LOOK AT THESE ADDITIONAL FEATURES! 18 watt power input . . . S meter doubles as tune-up meter . . . 100% plate modulation . . . V.F.O. or 2 crystal positions for transmitter control . . . built-in 115 V AC/12 V DC power supply . . . triple conversion with second and third conversion oscillators crystal controlled . . . squelch and automatic noise limiter . . . sensitivity: better than 1 microvolt for 10 db S/N/N ratio . . . selectivity (6 Kc @ 6 db pt.) and stability assured by triple conversion and Hi-Q IF stages utilizing 12 tuned circuits... single knob bandswitching . . . B and filaments regulated on oscillators . . . complete with under-the-dash bracket and ceramic microphone.

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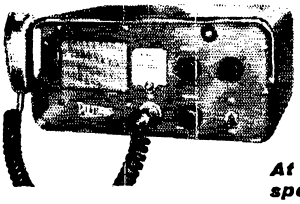

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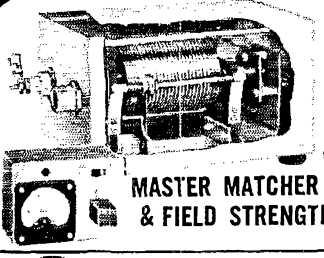
nated as the Maine State Emergency Calling and Working Frequency. During times of domestic disaster (forest fires, floods, etc.), this frequency will be used to supplement normal communications services such as c.d., police and fire departments. It is suggested that all stations make a note of this frequency for future reference. Next month, an important announcement concerning the Maine State AREC organization will be carried in this column. Traffic: K1KSG 219, MJN 201, BDQ 78, KN1-MBM 50, W1EFR 32, K1MZB 30, W1GRG 27, K1GVQ 21, JMB 16, DYG 12, W1JMN 10, K1MES 7.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—SEC: AOG. K1KTK is a new OES. Thanks for your confidence in reelecting me SCM and all I ask is that you give me and our other officials your cooperation. Our sympathy to ONV on the death of his wife. KMQ is a Silent Key. NF is experimenting. K1IMD has the Gonset Mobile twins in his car for all bands. K6YRF is ex-1DHX. K1HTN, at Otis AFB, has a Ranger and an HQ-100. K1MOQ/W8IWK is at Harvard Medical School. KN1OJQ, Quincy, has a DX-20 and an SX-100. K1BUR has back trouble but is on the air. K1CBB is making an s.s.b. unit. BW bought an HT-32-SSB. VM has an HT3 on s.s.b. KYC is busy on MARS. K1ODC, Acton, has a DX-40 on 40 meters. The Cape Cod & Islands group had a large turnout at its annual picnic. K4DYU is living in Onset while at Otis AFB. AKC and CMT keep a sked on 2 meters. KN1-NWW, an 8-year old boy in Centerville, had a write-up in a Boston paper. PLJ, OGU, PXH, K1KBO, K1HCH, TZ, WAJ, K1LJK, MNK, K1GUU, HJP, IRH and K1MMQ took part in the Feb. FMT. K2QBW/1, at M.I.T., says he did very well on 2 meters and will be back in September. The T-9 Radio Club met at TYP's QTH. The QRA had Mr. Hallenstein, JMA, as a speaker. The Yankee Radio Club elected EES, pres.; MCX, vice-pres.; SAK, treas.; K1BJZ, secy.; KYR, GHD, K1s III and DYC, board members. TY is hamtamer. K1LWZ has the General Class license. K1DYC is on s.s.b. The West Medford CCARC is now affiliated with ARRL. AQV is act. mgr. K1BYV is through high school. K1JCC has an SX-100 and a BC-457A. The Yankee Radio Club held its Annual Banquet at the Hotel Hawthorne, Salem. LQG has moved to Newburyport. 2VZG has a new job in New York. ELP has worked 2000 stations on 6 meters and over 1200 Ws and K1s. K1s KTK and MKX are new NCSs on the 2-meter net. OFK is doing some fishing. K1GVR now is in Cambridge. On 2 meters: EGY, K1s MMR and MZE, YTB, K1s JHT and DRG are in the 2-meter net. The El-Ray ARC had as a speaker K. Thomas Call on "Play For Your Life," a presentation of the Liberty Mutual Fire Ins. Co. AHE has some real beams at his two locations: In Stow he has a 24-element beam up 60 ft. for 2 and a five-element up 50 ft. for 6 meters. In Maine he has a 24-element for 2 and one for 6 meters being built, also mobile. K1s KUY and JML report band openings to the South on 6 meters. K1KZU is moving to Lincoln and is on week-ends at horse shows in N.E. on 6 meters. K1KZV has 10-Mc. crystals for the Heathkit on 6 meters. K1MHC reports a band opening on 2 meters. K1JAW worked No. Dakota for his 49th. AUQ is on 40 meters. K1MEM has a Hornet Tribander and he and K1CZX have 2-meter rig and beam for mobile. AOG and LVK are going to the Augusta Hamfest. K1JIU made an electronic key. K1IXT says the first joint Army-Air Force MARS Net is on Sun. 8 to 9 P.M. on 27.974 kc. SSU is on the Mass. Phone Net and is on 220 Mc. and 10, 6 and 2 meters. K1JBL is going to Florida mobile on 6 meters. K1KBO is off the air now. W2MVK is in California. K1HCH is in Germany. Appointments endorsed: AHE as OES; AOG and MME/NID as OPSs, MME/NID as OBS and EC for Hull. K1LJK moved to Mansfield. The Mass. Phone Net held 30 sessions, with 616 check-ins and traffic of 346. The Eastern Mass. 2-Meter Net held 30 sessions, with 449 check-ins and traffic total of 340. The HTN held 31 sessions, with 251 check-ins and traffic of 125. Traffic: (May) K1MMQ 875, W1PEX 486, K1GNR 245, W1EMG 149, OFK 148, ZSS 134, K1JAW 103, W1AUQ 60, HGO 56, K1BGK 54, MHC 52, MEM 49, DTJ 36, W1AOG 35, K1GYM 34, DIO 32, W1TWG 32, K1JIU 31, W1SIV 31, K1KTK 29, W1RQL 29, K1IXT 25, W1-VYS 20, KN1NGI 19, W1SSU 19, K1JBL 11, W1AAR 10, K1LLX 10, MKX 10, CMS 5. W1NJL 5, K1GTX 4, LJK 2 (Apr.) K1BYL 120, IXT 50, MEM 33, GTX 16, W1NJL 4.

WESTERN MASSACHUSETTS—SCM, Percy C. Noble, W1BVR—SEC: BYH. RM: DVW. PAM: DXS. WMN meets on 3560 kc. at 7 P.M. Mon. through Sat. MPN meets on 3870 kc. at 6 P.M. daily. WMNN meets on or near 3744 kc. at 630 P.M. Mon., Wed. and Fri. WMN section coverage out of 26 sessions: Springfield Area 26, North Central Area 26, Worcester Area 24, Pittsfield Area 19. WMN stations with highest attendance were YK, K1CAU, K1IJV, and W1DVW. During

(Continued on page 120)



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96" WHIP

FOR 10, 11, 15, 20, 40, 80 METERS

SIZE 1⅜"x 19"

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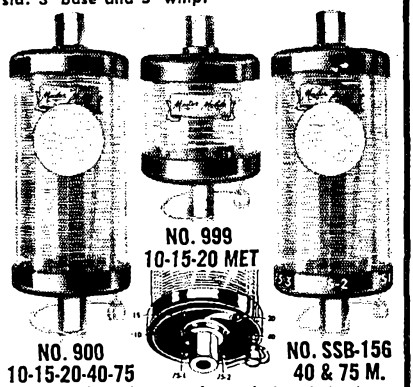

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NO. SSB-156 40 & 75 M.

- Rigidly tested & engineered—found to have "Q" of 525
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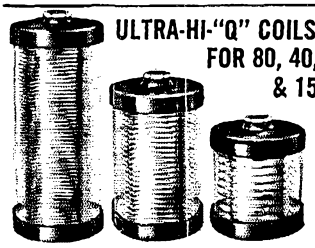

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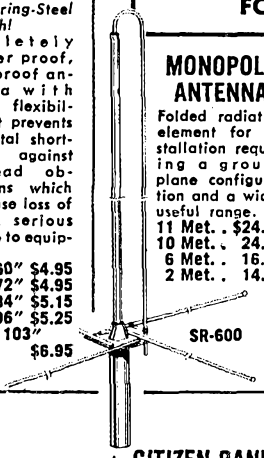

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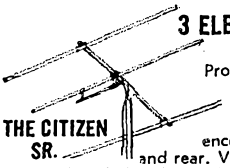

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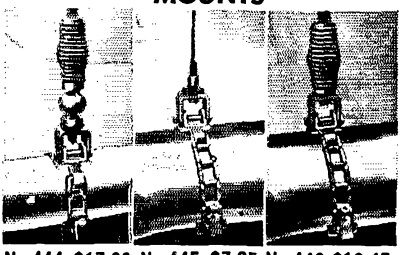

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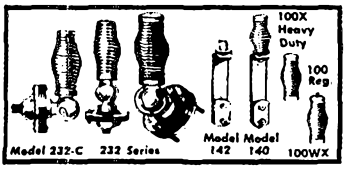
Adjustable to any bumper. No holes to drill.



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Gets your signal through where others fail. Concentrates signals at the lowest angle, provides omni-directional pattern for best coverage. Matches RG 59/U Cable. SM-700

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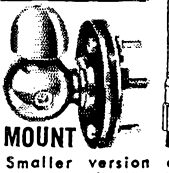

MOUNT

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No. J-11 **$2.95**

11M. CITIZEN BAND ANTENNA

40" base loaded S.S. whip antenna. Fitted with a ¼" dia. brass slug for all-purpose mounts. Low standing-wave ratio on most of band when fed with a 52 ohm coax.

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CITIZEN BAND ANTENNA 26.960-27.225 MC

VSWR under 1.5:1 at resonance. Complete with 50' RG 58/U Cable. Swivel type antenna base for flat or peaked roof installation.

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Master Mobile Mounts, Inc.

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AT LEADING RADIO JOBBERS EVERYWHERE

May MPN handled 346 messages, averaging 11.53 messages per session, with an average attendance of 20.53 stations. WMINN had the following in attendance: KN1MGK, KN1MEB, K1MFS, KN1MZW, and K1IQZ, with KN1MGK top man. K1GCV turned in a very fine OO report. DXS has been getting excellent results from various mountain tops with his Heath Sixer. YK (Worcester Tech.) is off the nets until next fall. IPN, the Mt. Hermon Radio Club, knocked off 130 QSOs in its special contest. AGM is back from a long vacation. During 1959, 9 reports were received from the SEC; only 3 of our 13 ECs submitted reports, giving our section a percentage of 23.1 (you sure couldn't pass any course in school with a mark like that!). Among the 72 ARRL sections, however, we rank No. 24—still in the upper third, by cracky! Let's do better than that! BVR was dinner guest and speaker at a meeting of the Pittsfield Radio Club. Sure a swell gang there. I expect that as of Aug. 1, BVR will be located at 8 St. Dennis Street, Westfield (first change of address in 43 years). Pardon so much about BVR, but not enough information from any others to fill out the column! Traffic: K1CAU 504, W1BVR 165, YK 126, WEF 124, DVW 102, K1LBB 92, IJV 77, W1ZPB 37, DXS 18, K2PHF/1 9, W1AGM 6, K1GCV 2.

NEW HAMPSHIRE—SCM, Robert H. Wright, W1RMH—RMs: K1BCS and K1IIK. PAM: HQ. V.H.F. PAM: TA. The GSPN meets at 1900 Mon. through Sat., and at 0930 Sun. on 3842 kc. The NHN (c.w.) meets nightly at 1830 on 3685 kc. New appointments: K1s GQK, GRU and NBN as OOs Class III and IV; K1GQK as OES. Renewals: K1JDN as OO and OPS; W1s EVN and YHF as OPSs. K1IIK has received GSPN Award certificate No. 4. V.h.f. activity at the Manchester Radio Club station, HPM, should be picking up as they have new 32-element arrays for 220 and 432 Mc. at their mountain top location. I have cancelled a good many appointments for lack of reporting and interest. I would like to see some of the really active stations hold ARRL appointments, as we could use some replacements. For information and application forms, drop me a line or send a message over the air. Anyone needing VO2DB for DXCC (prior to July, 1948) can get confirmation from K1JDN, if QSO is verified. Traffic: (May) K1FDP 2020, IIK 182, W1TA 72, AIJ 29, K1CIF 29, W1QGU 28, BCO 11, K1GQH 11, W1JNC 6. (Apr.) W1BCO 11, K1CIG 8, W1AIJ 7, K1GQH 6.

RHODE ISLAND—SCM, John E. Johnson, K1AAV—SEC: PAZ. RM: SMU. PAM: TXL. Endorsements: PAZ as SEC. Appointments: SIK as OO Class IV, K1JNJ as OES. LII has passed the General Class exam. For their part in the recent Operation Alert, Col. James C. White, *Newport Civil Defense Director*, thanked the following hams: DPY, EGE, KN1MQN, JFF, TXL, MMX, VOS, JHF, TXH, LUO, TXG, BBN and ETM. On Armed Forces Day, K1BDN, CZB, HMN and CZD maintained a communications center at Fields Point. This center was to inform the visitors about the Base and to handle any traffic. CPV and BGA are now working 6-meter c.w. evenings and week ends. A new 6-meter net has been organized and meets on 50.6 Mc. at 1930 EDST. TXL or K1GRC will welcome any who would like to join in. The net meets daily including Sun. The newly-formed Tiverton Radio Club has elected UHE, pres.; K1HND, vice-pres.; JOD, secy.; JNO, treas.; EZL, SFX and JXA, board of directors. The club has 23 members and anyone wishing information should contact the secretary. The RISPN held 18 sessions with 77 stations reporting, traffic 54. The RIS6MPN held 15 sessions with 37 stations reporting, traffic 39. Reports were received from K1HZN, LPL and JNJ. *Traffic:* (May) W1SMU 528, JXD 378, TXL 257, K1BBK 83, AAV 24, W1WED 9, K1CZB/1 7. (Apr.) K1GOX 4.

NORTHWESTERN DIVISION

IDAHO—SCM, Mrs. Helen M. *Maillet*, W7GGV—The WIMIU Hamfest, will be held at Big Springs, Idaho, Aug. 5, 6 and 7. CU all there! FB reports were received on OPAL, '60 from DHL, DPD, DWE, GCO, VQC, OA, PCP, QEL, RKI and K7KBU. Officers of the new Treasure Valley Radio Assn., Payette, are TYG, ODB and GTK. New Novices are KN7s LLT and LNM, Payette; LGS, LGP, LZU, LZZ, LSZ and MEU, Preston. New Conditionals are K7ENY and K7LGQ. A ham family from Troy is GHY, son AKH, daughter WSU and son-in-law ZER. The Eastern Idaho Radio Society has a new club house on a hillside near Pocatello. K7BWV, new manager of the NSN c.w. training net, on 3700 kc. at 2100 PST, invites beginners to learn traffic-handling. K7BWV upheld the State by winning the VE/W and SS Contests. VQC made several contacts into Japan. K7BKU got 10 DX QSLs through the W7-Land Bureau! Filing your envelope pays off!

(Continued on page 122)

RADIO AMATEURS!

DIAMOND BREAKS THROUGH THE BEAM BARRIER

WORK OUT OVER 100 MILES EVERY DAY ON SIX AND TWO METERS. WITH DIAMOND'S NEW "SATELLITE BOUNCE BEAMS" MULTIPLY BOTH YOUR TRANSMITTER AND YOUR RECEIVER SIGNAL BY OVER 50 TIMES ON SIX AND OVER 100 TIMES ON TWO.**

MOVE INTO KILOWATT ALLEY and try for Satellite Bounce (100 ft. aluminum surfaced spheres being orbited by NASA). Also use them for Scatter, Aurora, and DX you've never worked before.

Using new materials, new methods, and thorough mechanical as well as electrical engineering on the entire complete arrays, for singles, duals, and quads, Diamond now offers to 6 and 2 meter amateurs a brand new lightweight line of absolute maximum gain beams, **AND ALSO TWO RED HOT PORTABLE BEAMS** that easily fold into packages approximately 72" long by 4" diameter, for hill-topping.

Note these top features • Exclusively designed for amateurs by experienced radar engineers • Quality manufactured by antenna craftsmen • Lightweight construction • Easier mounting because center of gravity is close to or below your rotator position • Excellent front to back ratio • Engineered to give absolute maximum gain for given boom length without crowding high number of elements • Beams are prephased and pre-matched and ready to use with 50 ohm cable • No calculations required • Portable as well as fixed beams available.

"SATELLITE BOUNCE BEAMS" — 2 meters

Model No.	Elements	Multiplies your Trans.-Rec. signal by*	Gain DB	Type of Assembly	Approx. Boom Lengths	Amateur Net Prices (FOB Factory)	
						Beams	Cross Arms, H'dware, & Harness for duals and quads.
DS-P27	7	16 times	12	Portable, in-line array. Folds to 6 ft. long by 4" diameter.	12′	$ 34.95	—
DS-F210	10	31 times	15	In-line array.	18′	$ 32.50	—
DS-F212	12	41 times	16	In-line array.	24′	$ 37.50	—
DS-F220	20	63 times	18	Two arrays side by side.	18′	$ 65.00	$20.00
DS-F224	24	82 times	19	Two arrays side by side.	24′	$ 75.00	$22.00
DS-F240	40	121 times	21	Four arrays in square.	18′	$130.00	$63.00
DS-F248	48	164 times	22	Four arrays in square.	24′	$150.00	$67.00

"SATELLITE BOUNCE BEAMS" — 6 meters

DS-P64	4	8 times	9	Portable, in-line array. Folds to 6 ft. long by 4" diameter.	12′	$ 39.95	—
DS-F65	5	12½ times	11	In-line array.	18′	$ 32.50	—
DS-F66	6	16 times	12	In-line array.	24′	$ 37.50	—
DS-F610	10	25 times	14	Two arrays side by side.	20′	$ 65.00	$45.00
DS-F612	12	31 times	15	Two arrays side by side.	24′	$ 75.00	$50.00
DS-F620	20	50 times	17	Four arrays in square.	18′	$130.00	$90.00
DS-F624	24	63 times	18	Four arrays in square.	24′	$150.00	$95.00

**Reg. T. M. & Pat. App. For. *Gain over half-wave dipole (not theoretical isotropic) based on curve on p. 22, Jan. '56 QST

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COMMUNICATIONS DIVISION • RIVER ST., WINCHESTER, MASS.

The FARM Net is meeting Tue. and Fri. on 3935 kc. at 2000 for the summer. VAC acquainted the Boy Scouts with ham radio. FARM Net Traffic: 47. Traffic W7VQC 36, GGV 20, K7BWV 19, W7LIQ 17, K7GHX 11, KBX/7 6, W7EMT 5, DHL 4.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH. PAM: YHS. RM: K7AFZ. MPN meets M-W-F at 1800 on 3910. TSN meets M through F at 1200 on 7225. MSN meets T-T-S at 1830 on 3530. TPE received WPX certificate No. 111 and is the first W7 to earn the award. FIS became a member of the Old Timers' Club. K7BKH earned her 11th consecutive BPL. IOC is now with VOA in Greece and is awaiting a SVØ call. BDB is going to school in New Mexico. K7GWB and K7GWD moved from Lewiston to Billings. The Harlo Ham Picnic had a registration of 70. A new radio club is the South Eastern Montana Radio Club at Miles City. New calls: FO (club station at Butte), K7LYY (club station at Kalispell), 5LWR (7FDH, Socorro, New Mex.), KN7MGX (Kalispell), KN7MEG (Havre), KN7LGM (Belt), KN7s MEK, MFU, MFV and MGE (Harlowton). K7GVZ and K7GWA have a new Viking Ranger. EEO has a new Heath Mohican. OIQ has a new KWM-2. K7DNV, FTO, K7GVZ, K7GWD and LVJ have new mobile rigs. Recent appointment: FIS as an Official Observer. Traffic: K7BKH 241, DCI 237, W7SFK 126, K7BYC 97, DC'H 22, GHC 15, DNV 5, GWA 5, W7NPV 5, YQZ 4, CQC 2.

OREGON—SCM, Hubert R. McNally, W7JDX—DTT has a new DX-100. GUH is making a good frequency measurement showing. DEM still is looking for salmon for JDX. By the way, the SCM's bursitis is better and he should be back on the air again soon. K7CLL and K7IWU expect to live in Salem this fall after summer school session in California. ZB says he has to have higher power for those BPL awards. UQI and K6UYO had a QSO sometime ago while the latter was stranded in snow in Eastern Oregon which resulted in quick police and ambulance response. The Willamette Valley DX Club now is an ARRL affiliated club. K7EZP sends in a nice OES report. WKP is busy fishing. K7JSJ took part in the June V.H.F. QSO Party. RXJ has left for summer school and will be missing until September. GWC and GLJ are busy in Clatsop County with AREC duty. The Affiliated Club Council in Portland is planning a picnic for Aug. 7. A nice report on OSN was received from ZFH but we would like to see more c.w. operators. AJN is working too hard. Hi. Fine activity reports from the AREC folks include two from DEM covering activity in Jackson County, one from WFP covering rescue activity on Larch Mt., one from Lane County EC K7CJB on AREC activity at the Boy Scout Camporee. Thanks, fellows and gals, for the swell response. If you send in the dope to the SCM, he will forward it along to ARRL for their handling. Traffic: W7BDU 451, ZB 261, K7AXF 150, W7ZFH 80, MW 59, K7CLL 31, W7DEM 24, MTW 21, GUH 20, LT 12, DTT 6.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—SEC: HMQ. RM: AIB. PAMs: LFA and PGY. The response to the AREC drive for membership is very gratifying. As of this date the membership has increased over 130 per cent from last year. There still are vacancies for ECs. If interested get in touch with your SCM or SEC. KN7IAF received her Technician Class ticket, K7CHH blew his DX-100B and is QRL with a new 4-400 final. IST has 80 watts on 220 Mc. GIP was active in the recent CD Test. VPW is using a new homebrew T.O. keyer on the c.w. nets. AIB received his DXCC certificate. KN7HZN passed the General Class exam. BTB had ZS6RT and ZS6ASR as visitors. They will fly a Boeing 707 back to ZS-Land. IEU has taken up archery as a new hobby. JEP is off the air and is moving to Seattle. EVW still is troubled with his eye and is awaiting an operation. New Novices in the Dayton Area are KN's LQX, LVT and LQJ. New calls in the Seattle Area are K7MBG, K7LYT and KN7MBZ. New EC appointments in the section are W7s. AXH for Cowlitz Co., DZX for Chelan Co., IVI for Yakima Co. and URM for Pacific Co. The following renewed their certificates: WHV as OBS and OIV as EC for the Sumner and Puyallup Areas. QLH is going to college at Michigan State for the summer months. K7s BBO, ATA, KUO and CZT participated in the Scout Jamboree at C.P.S. in Tacoma. MCU has returned from Panay Island after 16 months with the Coast Guard and has hundreds of feet of 16 mm. movies. K7ASY now is working for NP in Ellensburg. IYU has a new Volkswagon. K7DQV is holding regular skeds with KH6SP. OIV renewed his EC appointment. K7GBW is a new OBS and K7GZB a new OES. There were over two hundred at the Bremerton Hamfest, one of the largest crowds attending in many years. KN7JOH has joined the ranks of Silent Keys. Bruce was staff

(*Continued on page 124*)

The Ham from Harvey says:

YOUR FIST IS "LETTER-PERFECT" with the HALLICRAFTERS 'TO' Electronic Keyer

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.

Model HA-1

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in 7" x 7" x 5" two-tone gray finish metal cabinet

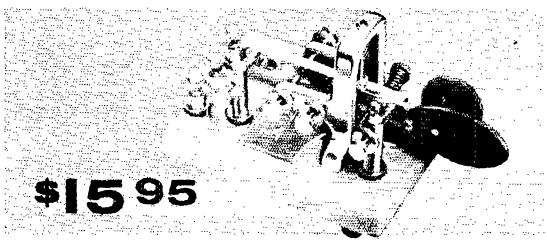
The 'TO' Electronic Keyer

forms dits, dahs, and spaces **electronically,** at any speed from 10 to 65 wpm. Employing digital computer circuitry, it opens and closes the circuit in perfect rhythm, regardless of what the operator does. Holding the key closed will result in a stream of dits or dahs, all properly spaced and perfectly formed.

If you should deviate from the pre-set speed of the Keyer, a dual neon indicator on the front panel flashes a warning. Pre-set speed remains constant regardless of temperature or line voltage variations.

The 'TO' Keyer installs in an instant. Just connect it to your transmitter's key terminals, and plug in the Keyer's AC line.

Match your 'TO' Electronic Keyer with the VIBROPLEX



VIBRO-KEYER

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Oversize contacts are mounted on a sturdy main frame and compound lever. Bearing movement minimizes friction and wear . . . lets you send for hours without developing a "glass arm". Accurate adjustment settings tailor the VIBRO-KEYER to your individual fist. Smooth, red paddles and heavy beige base make the VIBRO-KEYER an attractive addition to your rig. Base dimensions: 3½" x 4½" with skid proof feet.

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meterologist for KOMO-TV and was killed in an airplane accident in Idaho. OEB renewed his ORS appointment. JPH has the new final nearly completed. GKS has a new vertical on 3885 kc. Traffic: W7BA 1809, DZX 1033 HUT 542, QLH 399, APS 142, IST 117, K7AFL 102, W7GIP 86, JHS 59, EBU 40, AMC 38, VPW 38, AIB 36, ZDQ 33, GYF 29, BTB 20, IEU 8, GAT 7, JEY 6, OMO 6, EVW 3, ITP 2.

PACIFIC DIVISION

NEVADA—SCM, Charles A. Rhines, W7VIU—JLV, CX, MAH, K7HRW and ILB are active on 6 meters from Reno Area for summer openings. MAH and 6GDO installed a cavity in the 2-meter repeater allowing weaker signals to activate it. Reno-Sacramento contacts on 2 meters are now commonplace. OPAL '60 found the following, among others, active in the section: 7HJ, JU, TKV, PC, ZT, KOI, QYK, KOA, VIU, IWT, ZHW, K7BVX, HYP, ADD, LBQ and DNE. HRW and ADD both lost towers in the high winds. HYP, Las Vegas High School, is active, sponsored by DNE and LBQ. LBQ, ex-KØOEI is a new AREC member. CPO has moved from Hiko to Starr Valley. KOI has had bad eye trouble. We wish you a speedy recovery, Earl. VIU still has final troubles. JU is assembling a Mohican. How about some news from the rest of the State? Traffic: W7JU 64.

SANTA CLARA VALLEY—SCM, W. Conley Smith, K6DYX—SEC: W6ZRJ. PAM: W6ZLO. RMs: W6PLG and W6RSY. Many stations report the acquisition of new equipment, beams, etc. Could it be to combat the worsening band conditions which are upon us? K6HCQ has a new Seneca transmitter. Derrol also is looking for someone interested in v.h.f. RTTY. W6PLG is erecting a new Hy-Gain tower. WA6CTF is operating an HT-32A. W6YHM has acquired a gas-driven generator. W6VZT has moved to a new home in Los Gatos. WA6HRS plans a vacation trip East. K6LSG is home from Bainbridge, Md., and will be leaving for USAFA in Colorado soon. Meanwhile Kurt is in traffic with both feet and we do not refer to his FB keying! K6ZCR is the newly-appointed editor and publicity chairman for NPEC. New members of the PAARA include W6CBE, OPS, and W6WX, ORS. Dave also is trying to throw a saddle on a new electronic key. WA6BKN was in charge of an amateur radio display at the San Jose Scoutorama. W6ZLO, PAM, became a grandfather on June 1 by virtue of a son born to his daughter Margaret. The boy's name is William Joseph Vandyke and Glen says he has the lungs of a phone man. W6RSY reports a Nevada outlet is sorely needed on RN6. A new Official Observer appointee is K6MZN, of Daly City. Traffic: (May) K6ZCR 485, W6RSY 433, K6DYX 308, W6DEF 131, K6VQK 94, K6LSG 84, K6GZ 82, W6FON 72, W6AIT 67, K6GID 60, W6OII 44, W6YHM 44, W6ZLO 44, W6RFF 36, W6HC 28, K6YKG 15, K6TEH 7, WA6CLT 6, W6WX 5, WA6CTF 4, K6HCQ 2. (Apr.) K6ZCR 60.

EAST BAY—SCM, B. W. Southwell, W6OJW—The South Alameda County Emergency Net meets Mon. at 2100 PDST on 3985 kc. The HARC now has its own club station, with a Globe Scout 680-A and an HQ-120. W6ZF still is house-hunting for a place to put the big rig on. W6IZF was NCS on the AREC drill on May 15. K6GK is the mainstay on NTL and is working over his SX-28. W6NBX is on NCN and is liaison to RN6. K6IGN puts out Official Bulletins on the 7-Mc. Novice band. K6DMI is on MARS as AFA6DMI and will be mobile W7/ Arizona during July and August. K6OSO set his sights on the FD sheepskin this year. The EBRC took a tour of the Telco Transcon u.h.f. relay station at its meeting in May. The HARC had a talk and demonstration on Decibels by K6ZBG. W6DWI, W6MJF, K6ZBW and K6RER operated as a unit in FD. WA6HNT is a new General Class licensee in the Richmond Area. W6HBF is working on a 300-watt carrier-control mobile rig. K6ZRQ is rebuilding his Globe Chief. K6TYF is moving his QTH to Orinda. K6SCS and WV6JCS are new HARC members. W6IPY is working on a circuit for the HARC transmitter. WA6BBJ got his WAS certificate using a DX-100, an S40B and a vertical antenna. WA6CSK is on d.s.b. W6NCQ is the father of a new OM harmonic. K6QFT and WV6JYB took the General Class exam. W6RPR wrecked his car but was not seriously hurt. K6JNW has a new vertical for 10-15-20 meters. K6QLF and K6JZN have new Valiants. K6TKL has a new 2nd-class commercial ticket. The EC for Contra Costa County called a simulated emergency drill on May 2 which was very successful. WA6CNW got a new beam rotator from the OM, WA6CNV, for Mother's Day. K6TWJ and K6TWK operated an amateur station at the Boy Scoutorama. Traffic: W6NBX 214, K6GK 110, K6OSO 51, W6OT 38, K6ESZ 17, W6IFZ 10, W6ZF 6, WV6LBB 2.

(Continued on page 126)

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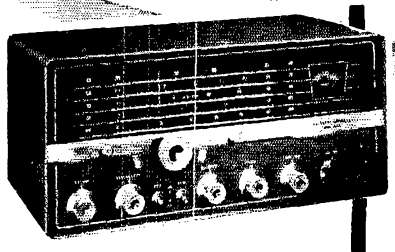

$10 DOWN AT RADIO SHACK
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SX-111 RECEIVER
$17 monthly
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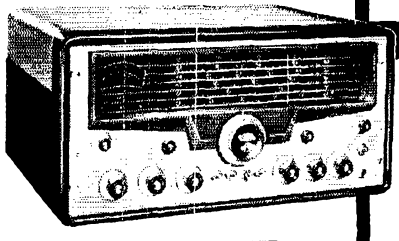
No cash needed!



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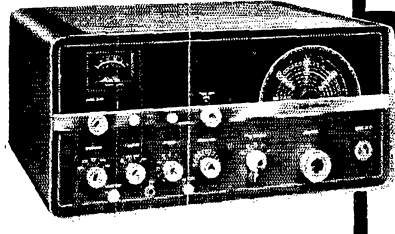
SX-101A RECEIVER
$25 monthly
$399.50

Use Trade-in as Down Payment!



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HALLICRAFTERS NEW
HT-37 TRANSMITTER
$29 monthly
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Low monthly payments!

$15 DOWN AT RADIO SHACK
HALLICRAFTERS
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$34 monthly
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- ☐ SX-111 Receiver @ $249.50
- ☐ SX-101A Receiver @ $399.50
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- ☐ Send Free Bargain Catalogs for one year
- ☐ Send 1960 Electronic Buying Guide, Free!

- ☐ Check
- ☐ Money Order
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Address _____

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SAN FRANCISCO—SCM, Leonard R. Geraldi, K6ANP—Asst. SCM: Jeri Bey, W6QMO. RM: W6GQY. PAM: W6PZE. ECs K6EKC, W6OPL and W6JWF. OOs: W6GQA Class I, K6OHJ, W6OKR and W6PHS. OBSs: W6GGC and W6MXJ. ORSs: W6GGC, W6QMO, W6OPL, W6BIP and W6GQY. OPSs: W6PZE, W6GGC and W6FEA. K6TWJ and K6TWK, operating under K6TWK /6, set up an amateur radio station at the recent Scoutorama in San Francisco. This demonstration of amateur traffic handling was under the auspices of the Explorers Post. The boys cleared traffic to all points in the United States and the Pacific Islands. Equipment consisted of a Geloso receiver and transmitter and was furnished by courtesy of the Daly City Amateur Radio Supply. YN1CAR was a recent visitor at the San Francisco Radio Club meeting. New nets heard recently in the Bay area are the Fingertip Net on 7117 kc. Tue. at 1500 PDT; also a Phone Net on 3850 kc., Sat. at 1000 PDT. W6OKR reports that quite a few v.h.f. stations are giving the new c.w. section on the 6-meter band a try. This month's report from W6GQY will be the last for the next few months, Joe will be back with us again in the fall. Traffic: W6GQY 500, W6QMO 284, W6GGC 56, W6FEA 22.

SACRAMENTO VALLEY—SCM, Jon J. O'Brien, W6GDO—Asst. SCM: William van de Kamp, W6CKV. SEC: K6IKV. RM: W6CMA. The GEARS had its Field Day gathering for members only and offered such goodies as a Mohican receiver, grid-dip meter, mike and VOM. The SARC had its usual FD feast for those who made early reservations. The RAMS continue to have regular rabbit hunts with good turnouts. Thirty-three members mobiled to Bethel Island for the annual Coffee Cup Net Picnic. W6EKP and K6JXX are touring the U.S. visiting with friends made on 10 meters. W6WLI, who was transferred from Sacramento Valley to East Bay, will return to our section in September, we are happy to say. Norm was top OO in the Pacific Division in 1959 and fourth high in the nation in sending OO notices to fellow hams to help keep them out of FCC trouble. Operation Sacto-Able, held in Sacramento May 21, was a full-scale disaster test planned by local doctors in which many hams provided communications from the disaster site to hospitals and c.d. and Red Cross Hq. The test was very successful in pointing out the weak points in all services involved which, of course, was the purpose of the whole thing. Traffic: K6YBV 741.

SAN JOAQUIN VALLEY—SCM, Ralph Sarovan, W6JPU—The Fresno Amateur Radio Club held its 18th Annual Hamfest May 14 with 325 in attendance. W6OWL won a box of Sun Maid Raisins, W6QQE a Jennings Vacuum Relay, W6SMS a much-needed mike, W6NKZ a mike and speaker and the XYL of W6OUX a set of code records. W6IFE was a recent visitor to Fresno. W6BLU, who is living in Southern California, attended the hamfest here. W6SMS burned out the plate transformer on his final. K6LKJ has 4-811 as a linear driven with a KWM-2. W6LOS has a new final with a pair of 813s. W6PPO is having exciter problems. K6QPE has an AF-68 and a KE-93 receiver mobiling. K6ZCD has a transistorized converter on 40-meter mobile. The Stockton Local C.D. Net meets every Tue. at 8 P.M. on 146.8 Mc. In putting up a 2-meter antenna, W6DBH got into a patch of poison oak. K6OZI has a new 6-meter rig. W6BSK has a 24-volt system in his car. The San Joaquin Valley Net had 25 sessions, 509 check-ins and a traffic count of 78. There will be a championship West Coast transmitter hunt on 75-6-2 meters at the Annual Picnic of the SJV Net in Turlock, Sept. 11. The Stockton Club meets the 1st Fri. of each month at 3847 No. Sutter St., Stockton. K6ROU has an HQ-145 and a DX-100. On Mar. 1 there was a train-truck accident in Kern County and the following hams did a very fine job handling communications from the scene of the accident to the various hospitals: WA6BDT, net control, W6RQU, W6KQU, K6UIM, K6APE, W6QWU, K6SGI, K6OOW, K6REZ, WA6CUN, W6UZG and K6RZM. Traffic: K6ROU 2.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—PAM: DRC. V.H.F. PAM: ACY. RM: PNM. CPI, Winston-Salem Area EC, sends a nice report on activity in that area. The fellows participated in Operation Alert May 3 with their very fine mobile center on Saeratown Mountain; also they participated in Armed Forces Day with the mobile unit at the Winston-Salem Air Force Radar Site. The following participated: RXG, CAV, CPI and ALQ. This group participated in the Sports Car Mountain Climb at Grandfather Mountain. The boys used Gonset Communicators to time the climb. Operators were YSB, CPI, CAV and YJG. On June 11 and 12 they took the mobile unit to Mount

(Continued on page 128)

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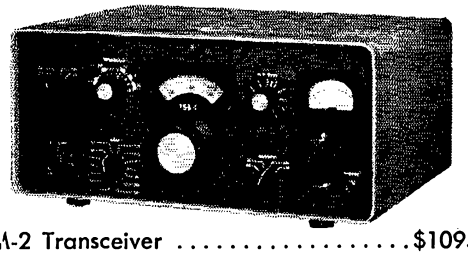

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Mitchell to participate in the V.H.F. QSO Party. K4HGX reports very fine activity on 6 meters, with the Thomasville Area going mobile on 6 meters. Some 10 units have been ordered. In the Burke, Caldwell and Avery Counties Area some 14 mobile units are on 6 meters with three base stations. WID is doing the chore of getting all stations on the same frequency. ACY, V.H.F. PAM, sends a good report. New stations on 6 meters are LYN, SZY and QWL, with LWU of Goldsboro keeping the eastern part of the State active on 2 meters. K4YCL QNIed the N.C.-C.W. Net 28 times during the month. PNM got out an excellent bulletin on the C.W. Net. Congratulations. All persons interested in traffic and net operations should check in with Ken on 3547 kc. at 1900 daily. Ken has worked hard and long on this phase and deserves support. ØVIR/4 made BPL in April on 2 meters.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE. RM: K4AVU. PAM: K4HE. VIW received his WAS certificate and is busy building a variety of new rigs. K4HDX, besides winning his SCN certificate, has a "home brew" 500-watt rig going with a pair of 4CX250Bs in the final. K4YJI reports new members of the Mike & Key Club of Greenville are K4EOX and EOS and that the club is busy building 2-meter gear for e.d. work. K4BMS has a new 300-watt rig to use as NCS. TLC has completed a 4X250B amplifier for 144 and 220 Mc. KNI, DAW and K4VVE have been awarded 4RN certificates. The "Gold Star List" of 4RN members who have been active for five or more years includes AKC, ANK and CHD. New hams in Barnwell are OFP and KN4IJA. HDR, after a strenuous trip through South America, ended up in Fort Jackson Hospital for a rest but is now out and on the air. Renew your League membership now. The SEC is unhappy because several ECs in particular have been lax in doing so. Traffic: K4HDX 105, ZHV 93, GAT 85, AVU 80, WCZ 73, W4FFH 57, K4LNJ 52, W4VIW 35, K4BMS 14.

VIRGINIA—SCM, Robert L. Follmar, W4QDY—SEC: K4MJZ. RMs: K4JKK, K4KNP, K4QER, SHJ, K4EZL and QDY. PAM: BGP, PK, OO, had a bang-up month with 67 notifications. Our other OOs are K4KMQ, FJ, K4LPR, K4ARO, BGP, K4QER and BRF. DVT, from Lynchburg, indicates considerable activity on 2 meters. K4CHA from Buena Vista is on 6 meters. Norfolk has a great 6-meter potential but it is not registering where it counts! Carol, K4AJL, vacationed for a couple of weeks. W4KFC, the GIB Contest winner, took part in the USSR DX Test. RIM, in Fairfax, is ex-HS1C from Thailand. K4TFL had her share of troubles with mumps, a cracked blocking cap in the transmitter and a burnt-up coil on the 80-meter receiver. K4LPR is back from his travels. He and NJF are modifying their G4ZU beams to make them three elements on 20 meters. K4AL received his "150" DXCC sticker. Your SCM has a lettering set and has been getting compliments on the quality of work on the new certificates. Thanks. Some are able to be active during the summer, others inactive. Well, that's the way the wind blows. ZM says, "had fun going 4RN and EAN—Didn't realize how rusty I have become handling traffic." Hope more of you fellows try your luck along these lines. OWV reports that the Harrisonburg Radio Club is starting code and theory classes and that K4IIX now is mobile on all bands. Traffic: (May) K4QIX 445, MXF 392, W4DVT 291, QDY 282, K4KNP 216, W4ZMH 213, SHJ 153, K4AIR 137, SGQ 117, FSS 115, W4ATQ 106, OOL 93, BZE 83, PRO 71, CXQ/4 65, ZM 49, GOF 41, OWV 37, BGP 30, KX 17, K4AL 16, CHA 14, W4JUJ 11, LK 10, K4AJL 9, ARO 9, IAJ 5, W4KFC 3, K4LHB 3, IEU/4 2, LPR 2, RBQ 2, TFL 2, YWK 2. (Apr.) K4AIR 115, W4PRO 61, CWT 45, K4JKK 28, CHA 20, W4BRF 6, K4LFO 4, W4KFC 3, K4IKF 2, W4ZM 2.

WEST VIRGINIA—SCM, Donald B. Morris, W8JM—K8MWN and HYX placed first and second in the Annual West Virginia QSO Party. K8OQW, K8KML and K8SXD are active on 6 meters from the Eastern Panhandle. JUE may be found on 7-Mc. c.w. during the summer months. K8QYG is quite busy on 75-meter phone supplying Berkeley County contacts. K8JLF renewed ORS and OO appointments. K8BLR works Texas regularly on 6 meters. NCSs for the C.W. Net are K8LGX, K8JPV and FNI. K8GBX, K8QMU and K8PFK are active on 6 meters. K8CSG and ADD operated Net Control Stations during the 1960 Alert. K8PPA, K8QKC and K8MXJ received their General Class licenses. K8LUS, as OO, monitors 7 Mc. regularly. K8ELH worked his brother-in-law, K7ELJ, cross-country from Oregon on 75- and 40-meter phone. ORT worked mobile while on a trip to Florida. K8BHW operated portable in Morgan County. K8GMG checks into 8RN. K8HEX and K8HAI have a new 40-meter

(*Continued on page 130*)

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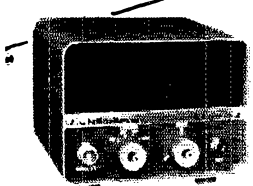

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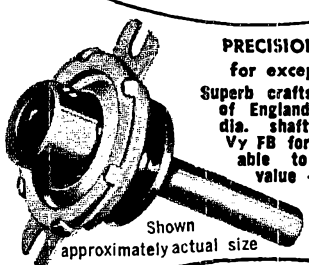

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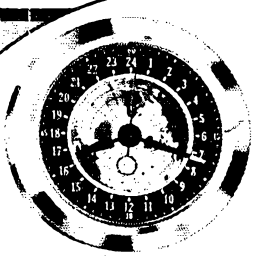

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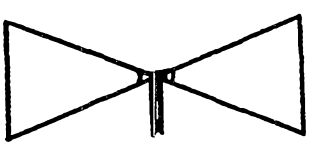

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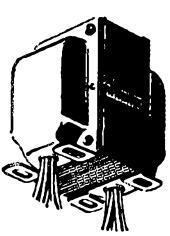

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beam. VMP. K8DNY, GTQ, K8BCH, HQR and K8BIT have been working mobile on 28 Mc. in the Kanawha Valley. K8KDK plans a new s.s.b. rig. Traffic: K8JLF 123, HID 68, WSELX 44, K8GMG 39, KFK 39, W8HZA 30, K8BIT 23, CNE 17, JSX 5, MQB 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, Carl L. Smith, WØRWJ—Asst. SCM: Howard Eldridge, KØDCW SEC: NIT, RMs: EDK and WME, PAMs: CXW and IJR, OPSs: KQD and DCC. Congratulations to the Colorado section on its showing in the 1959 Sweepstakes. Special plaudits go to the El Paso, Montrose and Denver Radio Clubs for their high national ratings in total club scores. A new National Frequency Standard at 20 kc. has been put into operation at the Bureau of Standards laboratories at Boulder. The DRC had an equipment sale in May that was a huge success. Pueblo, Colorado Springs and Denver were well represented in providing communications for the Arkansas River White Water Boat Races at Salida on June 10-12. Traffic seems to be down for the month of May but check-ins on all nets are steady. Not much to report this month so think we should give mention to the net managers who keep things perking in this area. For TWN: Walt, KØEDK. CWXN: Gene, IA. CEPN: Shreve, CXW. CCW: Bernie, MYB. HNN: Howard, KØDCW. Sorry to report that KØUKK has joined the ranks of Silent Keys. Late BPL for April: KQD 456. Traffic: (May) KØEDK 458, EDH 357, WØKQD 230, ANA 201, WME 166, MYB 156, KØDCW 135, RTI 92, EVG 22, LCZ 11. (Apr.) WØKQD 456.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 7OCX. V.H.F. PAM: SP: RM: OCX: A meeting of the Net Control Stations and the Net Manager of the Beehive Utah Net was held during May. K7WHE and K7HIO are new Net Control Stations. The net certificate is now a little easier to earn, only 60 per cent check-in for four consecutive months. QWH and OCX earned BRAT Awards in April and K7BDX, OCX, VEO and QWH did it in May. QDJ has been having trouble with winds up in Northern Utah. Vic's 32-element 2-meter beam came down again. He had been holding schedules with several stations on 6 and 2 meters. Vic now is willing to lend a slightly bent and patched 32-element 2-meter beam to a 2-meter DX station in Idaho, Nevada or Wyoming. Write QDJ for details. Traffic: W7OCX 217, HIO 41, QWH 9.

NEW MEXICO—SCM, Newell F. Greene, K5IQL—Asst. SCM: Carl W. Franz, 5ZHN. SEC: CIN. PAM: ZU. 10-meter PAM: LQM. V.H.F. PAM: FPB. RM: ZHN. The New Mexico Brass Pounders and TWN have moved to 7060 kc. NMBP meets Mon., Wed., Fri. at 1900 MST. TWN meets daily at 2000. The Breakfast Club meets Mon. through Sat. at 0630 MST on 3838 kc. NMEPN meets on Sun. at 0700, Tue. and Thurs. at 1800. Reports on OPAL '60 are gratifying. The v.h.f. nets proved their value as local links, with 75 and 40 meters covering the inter-city distances. The Sandia group worked in blizzard conditions on Pajarito Peak (elev. 9640 ft.) Traffic: (May.) K5FIW 2732, W5ZHN 386, K5GOJ 65, DAB 61, W5UBW 57, VC 38, YSJ 32, K5GYZ 22, W5GB 12, K5DAA 8, LWN 6, W5GD 3, CIN 2. (Apr.) W5YSJ 50, K5DAB 35, DAA 18.

WYOMING—SCM, Lial D. Branson, W7AMU—SEC: CQL. The Pony Express Net meets Sun. at 0800 MST on 3920 kc. The Wyoming Jackalope Net meets Mon. through Fri. at 1200 MST on 7255 kc. for traffic. The YO Net is a c.w. net on Mon., Wed. and Fri. at 1830 MST on 3610 kc. LKQ, Casper, made high score in the Sweepstakes for Wyoming. Thanks. Wayne! CQL is going on high power with an 813 final. YXM transferred to Portland Ore. Sorry to lose you but best from all the Wyoming hams, Pat. PVN is spending his summer vacation on his sheep ranch. MAT, Torrington, is a new ham. AXG is on a trip back East. WNY, at Newcastle, passed away after a bad car accident. Traffic: W7BHH 60, K7KLE 18, W7AMU 5, ABO 1, K7GMD 1, W7NMW 1.

SOUTHEASTERN DIVISION

ALABAMA—SCM, William D. Dotherow, K4AOZ—Asst. SCM: K4BTO. SEC: JDA. RMs: RLG and OCV. PAMs: PHH, BTO and JJX. New appointments: PTR, as ORS; RQS as OO Class II. Congratulations to PTR and K4BAI on receiving an AENB Net certificate. We welcome to AENB, K4UPL of Birmingham and VHX and KQX from Georgia. Congrats to K4RJM on making 100 per cent in AENB May. Alabama was 100 per cent on RN5 in April. Thanks to K4SAV and PVG for RM duties while RLG was on vacation. PTR and

(*Continued on page 132*)

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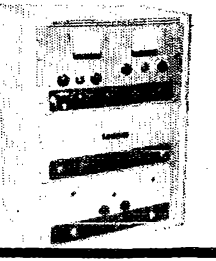

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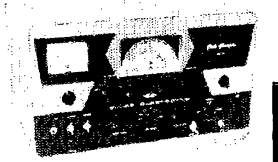

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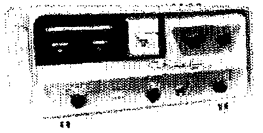

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SEND FOR YOURS TODAY

K4ZXX received RN5 Net certificates. TSN is operating portable from Evergreen. FDZ now is active on 75 meters. The Muscle Shoals ARC, JNB, operated on emergency power during the c.d. drill. OOJ is a new ham in Dothan. K4ZNI reports there are 15 hams now in Dothan. K4MMO and PTR participated in the FMT. PTR has a 20-15-10-meter beam on a 46-ft. tower and worked NSS and WAR on AFD. K4AJG graduated from the U. of Ala. and was commissioned 2nd Lt. in the Signal Corps. K4AOZ was initiated into the Royal Order of the Wouff Hong June 4. The officials and net managers have completed revision of the AEN Manual. Contact your net manager, as these manuals will be issued only upon his request. We want every active AEN member to receive one. *Notice:* Form 1 reports received by the SCM after the 7th of the month will be put in the following month's report. *Six Meter News:* K4JSP worked Argentina and Cuba in May. JJX reports AAU, MEQ, UMO, HAG, JSP, EFM and JJX operated in the Red Cross Drill Apr. 29. K4ZBX is on 6 meters with a home-built Heath 6-meter rig. CIN is looking for 2-meter contacts on 145.170 Mc. at 10 P.M. nightly. Congrats to EFF, the new net manager of AENX. AENX's new net frequency is 51.150 Mc. Traffic: (May) K4PFM 243, W4RLG 194, PTR 97, K4SAV 81, PHH 48, W4PVG 45, K4JDA 44, BTO 43, RJM 36, SPP 36, W4CIU 32, K4CZK 28, AOZ 26, W4MI 26, OKQ 23, ZRQ 23, K4RIL 17, TDJ 15, HFX 11, ZNI 11, HVN 10, W4WHW 10, K4JSP 9, W4USM 8, K4TSN 7, OCV 6, W4RTQ 6, K4BQU 4, ZBX 4, RIX 3, IQU 1, W4ZSH 1. (Apr.) K4SPP 12, OCV 4, W4JJX 2.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: K4SJH. PAM: SDR. V.H.F. PAM: RMU. Section nets are FPTN, 3945 kc, Mon. through Sat. at 0700 EST; FMTN, 7230 kc, Mon. through Sat. at 12 noon; TPTN, 3945 kc, daily at 1730; GN, 7115 kc, Mon. through Sat. at 0830; QFN, 3650 kc, daily at 1830; and FEPN, 3910 kc, Tue. at 1830. If you have the time and can help out then pick one of our nets and be of service to your fellow ham as well as to your country. The Floridra YLs held their 3rd Annual Meeting in Orlando at the Cherry Plaza. New Officers for 1960 are K4RNS, pres.; K4RED, vice-pres.; K4HSC, treas.; K4OYB, secy.; BIL, membership chairman; HRC, historian. WPD, certificates; K4PPX, publicity. Congratulations to K4ICA for her part in getting the needed medical instrument to the dying child in Havana. Would you believe it a message was sent to the SCM from Jacksonville by way of 50 Mc. and arrived in less than thirty minutes, thanks to RMU, K4IXC and K4ZDV. FNR, OES this section, received a beautiful IGY certificate for his work in the past program. He now has 30 KP4s confirmed on 6 meters. Thanks to the St. Petersburg ARC for a fine hamfest. K4COO has a new Globe Scout Deluxe and 755A v.f.o. K4LCD does her traffic-handling now on s.s.b. The Sunshine Wireless League is having some fine outings up Pompano Beach way. LHU reports a fine turnout at the meetings. The Clearwater ARS meets the 2nd and 4th Tue. at 2000 EST in the Flight Compents Bldg. Officers are K4UBF, pres.; K4VRU, vice-pres. and corr. secy.; K4TAI, secy.-treas. The Ft. Myers ARC will take an active part in future c.d. activity. Traffic: K4SJH 638, K4QLG 414, KDN 320, LCD 230, W4FFF 216, K4LCF 214, W4SDR 192, K4YOQ 187, W4LMT 144, K4SLR 137, W4GJI 86, K4ILB 83, BY 72, RNS 67, COO 58, AX 53, ODS 52, BHL 43, W4HRC 42, K4BLM 29, W4FE 27, CNZ 26, IYT 26, BKC 25, K4BOO 25, BZ 20, W4NDJ 20, JTA 18, K4TDT 16, EHY 12, MTP 12, W4LSA 11, K4JJZ 8, W4JRJ 8, K4IWT 6, W4LHU 6, K4OSQ 5, DAD 2, W4GGQ 2, K4LDF 1. (Apr.) K4LCD 263, EHY 239, W4FFF 156, EHW 22, K4DAD 5.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: HKK. PAM: K4RZF. RMs: AXP and UBR. Pensacola: K4HYL is mobile with an FB signal and is listening on a home-built converter. EWG is working mobile on all bands from a new station wagon. Flash: AXP finally has gotten on phone with a DX-40. RKH was a guest at the May election meeting of the NAS Club. New officers are EWG, pres.; John Frame, vice-pres.; K4BET, secy. The station call is NBF. A number of Pensacola hams, plus RKH from Ft. Walton, made up a caravan to Mobile, Ala. for the hamfest. Also attending were K4HXV from Crestview and K4MAP and K4REE from Panama City. New officers of the PARC Auxiliary are Lynn Shartsis, pres.; Vivian Saucier, vice-pres.; Sally Dennis, secy.; and Ann Wiggs, treas. Gulf Breeze: K4RIV prepared an FB report on ham activity in that area. Among those in Gulf Breeze are K4AEP, AJK, K4KSG. K4RIV and K4ZMV. Fort Walton: K4UBR, RM, is starting a drive to recruit new C.W. Net members. Panama City: The PCARC is going all out to make its first Annual Hamfest a big success. Traffic: (Apr.) K4CNY/4 536 UBR 141.

(*Continued on page 134*)

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S-38D	34.00
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S-85	79.50
S-86	79.50
S-102	34.00
SX-62	209.00
SX-71	139.00
SX-96	139.00
SX-99	109.00
SX-100	209.00
SX-101	239.00
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HQ-100	129.00
HQ-110	174.50
HQ-120	99.00
HQ-129X	129.00
HQ-140X	169.00
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HQ-150	199.00
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HRO-50T	229.00
HRO-50T-1	275.00
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NC-66	59.50
NC-88	79.00
NC-98	99.50
NC-109	119.00
NC-125	119.00
NC-173	119.00
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GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: PMJ. PAMs: LXE and ACH. RM: DDY. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs. 0800 on Sun.; GSN Mon. through Sun. at 1900 EST on 3595 kc., DDY as NC; GTAN on Sat. at 1000 EST on 7290 kc.; the 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc., K4JTC as NC; the Atl. Ten-Meter-Phone Net each Sun. at 2200 EST on 29.6 Mc.; BGE as NC. The GPYL Net each Thurs. on 7260 kc., at 0900 EST, K4DNL as NC. Georgia has an s.s.b. net now that meets Mon. through Fri. at 8 P.M. with K4AUM as net mgr. and net control. It has outlets to Texas, South Carolina, Tennessee, Alabama and many other states. Lets give them all the support we can. The Greater Atlanta Hamfest was the greatest here in a long time. Sure enjoyed having Perry Williams here from the League. SCMs and SECs were present from all the southern states. Many factory reps. put on fine displays of their latest equipment. MARS held a fine meeting of all its members. The GPYL held its get-together with approximately 75 per cent present. The Cartersville High School now has the call ONU. Officers are K4BYK, pres.; K4OMV, vice-pres.; K4MIH, trustee of license. YE now has his big rig on the air and will be checking into the nets soon. Sure glad to have YE back with us again. LNG is working on conversion of the BC-453. K4PYM is back on the air. Many appointments have been cancelled because of non-membership in ARRL. Keep your membership up so you won't lose your appointments. Also watch your expiration dates. Traffic: K4EJI 217, W4DDY 150, K4BAI 145, UJS 123, BVD 59, W4JWO 35, K4VTH 30, W4MKN 24, K4MIH 22, CDF 9, W4YE 9.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: AAA. WT renewed his AREC membership. KD renewed his ORS appointment. WD and YT applied for DUF-4 certificates. CC and KD received Worked Hungarian Districts certificates and the Colonial America Award. KD also applied for WAE-1 and has 255 DXCC confirmed on c.w. and 99 confirmed for DXCC phone. KD has WPR-475 and is trying for WPR500 with KP4 QSLs hard to get. KD finally has all the cards needed to apply for the SARL All Africa Award. KP4WLU is going back to Panama. HV and ATM are attending FAA school in Oklahoma City. WT was on 24-hour alert during the C.D. Test. The Antilles Weather-Net, on 7245 kc. at 7 A.M. AST, has been running two sessions since June, when the hurricane season officially started. MP built a product-detector into his HRO-7. 50-Mc. activity has taken a seasonal drop. AMG has a new Hy-Gain Tribander. Traffic: KP4WT 78, ID 20, AKB 9, OA 3, AHQ 2, ALS 2, AQT 2, ES 2, K4VAA 2.

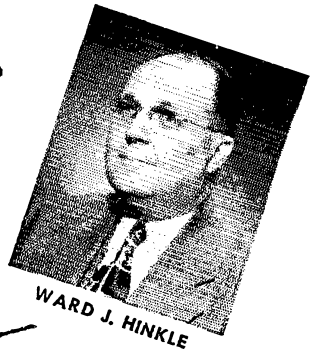
CANAL ZONE—SCM, Ralph E. Harvey, KZ5RV—The main topic of interest during the month of May was the earthquake in Chile. BS was in Santiago at the time of the disaster and was sent to the devastated area to establish communications. SW, DS and many others were sent from the Canal Zone to install transmitters, receivers, antennas and portable power units, so that communications could be established with the Canal Zone. This was soon accomplished and messages were flowing back and forth between the quake areas and the Canal Zone. Hospital equipment and water purifying equipment were flown from the Canal Zone and a steady stream of Globemasters brought in other supplies as needed. A station was erected at the National Airport in Panama to facilitate operations, maintaining contact with Chile. While all operations were on MARS frequencies, the majority of the operators were licensed KZ5s, and they are to be commented for a job well done. Traffic: KZ5KQ 81, VR 57, JW 53.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP: RMs: W6BHG and K6HLR. PAMs: W6BUK and W6ORS. The following stations earned BPL certificates in May: K6MCA, W6ZJB, W6GYH, K6WAH, K6LVR, K6EA and WA6EEO. Congrats, fellows! K6CXI/6 operated during the California State Hobby Show in L.A. Bob at W6ZJB has a broken ankle from antenna work! W8WVK is a new operator at K6MCA. K6COP has a new 100TH final going. W6SRE is putting a new modulator in the GP7. W6EA was the guest of W2ZI in New Jersey. W6FB made the Armed Forces Day message OK and is a member of the OOTC. Congrats, Fred! K6LJY rebuilt a v.f.o. in the DX-100. K6HLR is back on 40 and 80 meters with 500 and 275 watts. W6NKR is teaching radiological classes two nights a week. K6OZJ reports increasing activity on 220 Mc. W6ORG and WA6AST have new sixteen-element co-linear beams for 2 meters up. K6KUB did an excellent job of passing traffic to Hawaii during the Tidal Wave. K6CLS/6 is breaking in a new elec-

(Continued on page 136)

A Word from Ward . . .



WARD J. HINKLE

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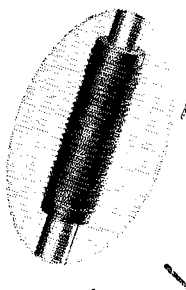

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tronic key! W6PCX is reported living in KH6-Land. The San Gabriel Valley Radio Club visited the Goldstone Tracking Station near Barstow. New officers of the LAYLRC are K6ANG, pres.; WA6AOE, vice-pres.; K6JCL, rec. secy.; K6LMV, corr. secy.; K6OAI, treas. The California Interstate Net meets on 145.08 Mc. at 1100 PDST Mon. through Fri. High scorers in the YL-OM Contest for the sixth district were both in the L.A. section, K6OQD on phone and K6OWQ on c.w. Congrats, gals! New officers of the Tri-County Amateur Radio Assn. are W6OP, pres.; K6QWO, vice-pres.; K3HWS/6, secy.; W6GID, treas. Support your section nets. On c.w., the Southern California Net meeting on 3600 kc. at 1900 PDST daily; on phone, the So-Cal Six Net meets on 50.4 Mc. at 1900 PDST daily. Traffic: K6MCA 1171, W6ZJB 1152, W6GYH 1008, K6WAH 616, K6LVR 511, K6OZJ 370, W6WPF 370, K6EA 364, WA6CKR 221, WA6EEO 205, KØCLS/6 203, W6BHG 178, K6LJY 81, K6JSD 72, K6SIX 44, W6CK 41, K6HLR 32, W6USY 31, W6BUK 16, WA6DWP 13, K6COP 5, W6NAA 1. (Apr.) K6TPL 44, K6KMJ 43, W6NAA 4. (Mar./Apr.) W6QR 885.

SAN DIEGO—SCM, Don Stansifer, W6LRU—W6OFT and W6KVB vacationed in Oregon for two weeks in July. A new ORS in Fullerton is WA6KGK. A new OES in Santa Ana is WA6GOE. W6EOT, RM and ORS, needs only one more card for his DXCC. W6DEY, in Santa Ana, has been elected TVI Chairman by the Orange County Amateur Radio Club. Your SCM enjoyed the Orange County Club meeting in late May, and received a number of applications for appointments after the meeting. WA6FJD has dropped the "V" in his call. WV6IPS won a top award in the greater San Diego Science Fair with a Tesla Coil. K6BTO is looking for local contacts on 1220 Mc. W6IEY, OES in La Mesa, sent in another nice OES report showing his continued activity on 2 and 6 meters. K6RYI is doing a good job as EC in the northern section of San Diego County, and checks into the American Legion Net. W6WSW and his XYL, W6WSV, are vacationing in Europe. W6WPN vacationed in the East and visited his former club, the Northern New Jersey Radio Association. K6LDN vacationed in KH6-Land. K6RYP has a portable 440-Mc. rig now in operation. W6EVU helps the Sea Scouts in Newport Beach. If your club or call does not appear in this column it is because your SCM has not received any information about your club or your doings. Traffic: K6BPI 652, W6EOT 630, W6YDK 433, K6LKD 282, WA6ATB 232, WA6CDD 200, WA6DJS 46, W6KVB 36, W6ELQ 26.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—First thing I want to do is to apologize to all of you who have written me or sent in applications for reappointment for the delay in answering. I can understand now what a ham means when he writes, "Sorry, Les, nothing to report, no activity here due to remodeling the house." I have just gone through that ordeal and tried to live with it. As a result I have not been able to be on the air and get any news. AFJ, NCS for NTEN, and THI organized a picnic for May 22, and as a result 47 hams and their families swarmed in at the ranch home of K5ENL, near Grandview. There was a total of 120 in attendance. YUO set up a portable rig to assist mobiles in finding the location. K5ENL is the new NCS for NTEN. YUO and K5PJB operate homebrew kw. s.s.b. mobile. VYY is in Orleans, France, with a 30-meter rhombic beamed on Northern Texas and operates Fri. and Sat. 1700 to 2300 CST with the call F7HC. The XYLs in Brownfield have organized a GAB (Gals in Brownfield) Club with 8 members, 5 of whom are licensed. IBU has been released from the Air Force after a short stay in Greenland, where he was an assistant operator of KG1BB. The Tarrant County Disaster Control Net held an emergency drill May 14. The problem—to establish communication with an assumed c.d. hq. at Benbrook Lake and other points in the county. The drill was very successful with 12 mobiles and 7 fixed stations participating: FJP Net Control, WKH, HWT, VEZ, K5TVQ, DOI, EGB, MUX, SXK, RHZ, PIO, MTS, IKK, MZW, TLW, LBG, RAV, YPO, TGI and VKN. Traffic: (May) W5BKH 374, GY 174, K5PXV 39, JSN 25. (Mar.) K5PXV 185.

OKLAHOMA—SCM, Adrian V. Rea, W5DRZ—The SCM's new address is 917 Osage, Muskogee, Okla. In the confusion of moving, it is hoped that no reports have been left out. The Weather Net got quite a workout in May. CZB did a fine job as net manager. AZO, HHG, KY and others were busy keeping liaison with the Weather Bureau. Wilburton, Sapulpa and Oklahoma City were the largest centers of emergency work, although other places also got into the picture. The Tulsa mobile group, in cooperation with K5CCO, EC

(Continued on page 138)

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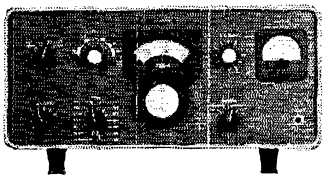
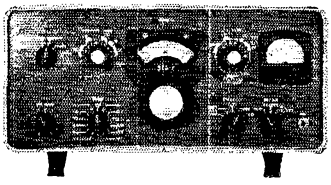
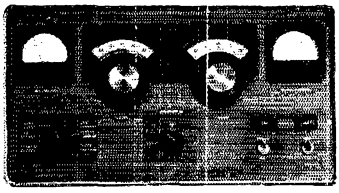


75S-1 Receiver



32S-1 Transmitter



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of Creek County, was busy in Sapulpa. The McAlester AREC set up operations at Wilburton, where UAO furnished the only communication for many hours. AZO, HHG, SKA, UYQ and the 6-Meter Club keep busy in Oklahoma City. Amateurs in every section of the State got in on the emergency in one way or another. Thanks on behalf of Oklahoma amateurs for the fine work of PAMs HXK, VCJ, EJK and K5DLP and RMs K5JGZ, VVQ and JXM. Also thanks to all NCSs and the many others who made the past season such a good one as well as to UYQ and our ECs for an outstanding AREC. MFX has kept OPEN going in fine shape. Traffic: (May) K5JGZ 188, W5OOF 94, K5QEF 56, DUJ 54, ELG 54, W5DRZ 52, K5DLP 48, W5KY 47, K5QJD 37, CAY 36, BAT 29, JOA 29, W5MFX 29, WDD 27, K5LYM 21, W5ESB 20, K5IBZ 18, OOV 16, W5CCK 15, K5ZZA 15, W5VLW 12, JXM 11, K5BBA 10, REH 10, W5EHC 8, K5EZM 6, W5WAF 6, GIQ 3. (Apr.) W5UYQ 48, K5QAK 9.

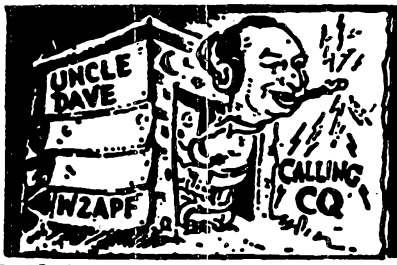
SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. PAM: ZPD. RM: K5BSZ. HQR and YCV are vacationing up Chicago way. FND and K5PDI have a new Elmac AF-68. K5TFO has a new AF-68 and a 6 and 2 Johnson Converter to go with his 75S-1 receiver. I am sorry to report Silent Keys for CCL. I am glad to be receiving OES reports from MVL, HEH and QDO, also several nice OO reports the last few months. How about some of you others getting busy? You know I am forced to cancel appointments for non-reporting. Our sympathy to ALV and AXN in the loss of their mother. Thanks to K5BSZ, K5ABV, K5WIC and TFB for a good job on RN5 and the NTX nets. K5MMF is mobile c.w., but only when he is standing still. The 7290 Traffic Net had 43 sessions, 1336 stations checking in and 590 messages handled. K5AMC is being heard from Corpus Christi during the summer. K5ABV is building a new 813 final. He also has a new ORS appointment. PAR was heard mobiling in Corpus Christi. Good to see you, Tiny, come over to visit us more often. K5YAW has been working some nice openings on 6 and 2 meters the last month. Traffic: K5BSZ 544, WIC 321, ABV 213, W5ZPD 104, K5MXO 48.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB. Asst. SCMs: A. D. Solomon, VE1OC and H. C. Hillyard, VO1CZ. SEC: BL. The annual meeting of the Nova Scotia Amateur Radio Association will be held in Truro Sept. 3 at 1500 ADT. The location will be the civil defense rooms in the Margaret Rose School. All members are urged to make a special effort to attend. The Amateur TV Expedition of VE1s ZZ, ADH, IJ (VEØNI) and IF has made history in this section. The experiment, which was carried out between Rawdon and Blomidon on 440 Mc., was successful despite heavy rain. Credit also must go to AFQ, who assisted in the preparations but was unable to be present. Congratulations, and we look forward to hearing more about your experiments. VO2AW has moved to a new QTH. VO2AB is now in Ottawa while 2RH has been transferred to Mont Joli, P. Q. New calls at Goose Bay include 2 RN, 2 AV and K5YZY/VO2. Many clubs are just getting back into action after a summer layoff. It would be appreciated if club secretaries would pass along items of interest to this office in order that they may be included in this column. No traffic was reported for the month of May.

ONTARIO—SCM, Richard W. Roberts, VE3NG With sincere regret we record the passing of RH. Bob ran the Swap-Club and was one of our PAMs. He also was a member of the Ontario Section Initiating Team of the Royal Order of the Wouff Hong. The big news in May was the election of Alex Reid, 2BE, to the office of ARRL vice-president. The office of Canadian Director is now filled by Noel Eaton, 3CJ. RN is the Metro Coordinator for the Worked Ontario Counties Award. Any applications or information pertaining to this award should be addressed to Lee Foster, RN, 42 Ann Dale Dr., Willowdale, Ont. CFR is working FB with his glove-compartment 3-watt mobile station. RW is in the hospital in Toronto, IB is in Sunnybrook Hospital also in Toronto. Get well quick, men. We heard from Ex-3FT, Danny Welch, who is now K2AXA. DMT had the mobile antenna swiped from his car. BCA and BTI were in on the c.d. exercise. We hear that CMR was the cog behind the free QSL cards from the Dept. of Travel & Publicity. EII is departing for VE1-Land soon. Tnx for an FB job, Millie. Good luck. ENU is mobile. BEK and EAY are maritime mobile. Your SCM was the recipient of an LARC Award by the London Club, also an award from the Metro Club, the WOC. The Nortown ARC elected the following for 1960-61: CTL, pres.; D. Roblin, vice-pres.; CMR, rec. secy.; DLS, corr. secy.; DXN treas. KA had his receiver stolen, an Air Force RCA CR9IA, serial No. 925.

(*Continued on page 140*)



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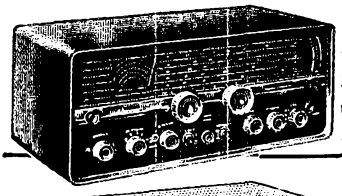
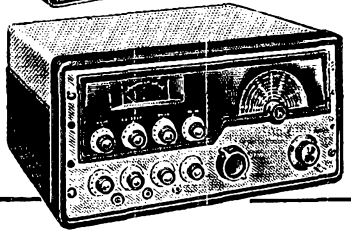


HALLICRAFTERS MODEL SX-110

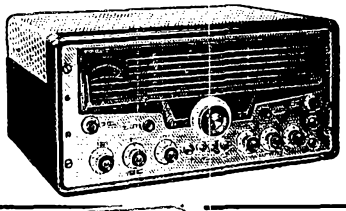
FREQUENCY COVERAGE: Broadcast Band 538-1600 kc plus three short-wave bands covers 1550 kc-34 mc.

FEATURES: Slide rule bandspread dial calibrated for 80, 40, 20, 15 and 10 meter amateur bands and 11 meter citizens band. Separate bandspread tuning condenser, crystal filter, antenna trimmer, "S" Meter, one r-f, two i-f stages. **$159.50**



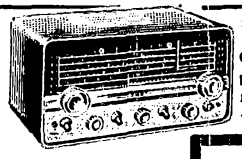
HALLICRAFTERS MODEL HT-32-A

FEATURES: 5.0 mc. quartz crystal filter — rejection 50 db. or more. Bridged-tee sideband modulator. C.T.O. direct reading in kilocycles to less than 300 cycles from reference point. 144 watts plate input (P.E.P. two-tone). Five band output (80, 40, 20, 15, 10 meters). All modes of transmission — CW, AM, S.S.B. Unwanted sideband down 50 db. or more. Distortion products down 30 db. or more. Carrier suppression down 50 db. or more. Both sidebands transmitted on AM. Precision gear driven C.T.O. Exclusive Hallicrafters patented sideband selection. Logarithmic meter for accuracy tuning and carrier level adjustment. Ideal CW keying and break-in operation. Full voice control system built in. **$695.00**



HALLICRAFTERS MODEL SX-101-A

FEATURES: Complete coverage of six ham bands — 160, 80, 40, 20, 15, 10 meters. Large slide rule dial. Band-in-use scales individually illuminated. Illuminated S-meter. Dual scale S-meter. S-meter zero point independent of sensitivity control. S-meter functions with AVC off. Special 10 Mc position for WWV. Dual conversion. Exclusive Hallicrafters upper-lower side band selection. Second conversion oscillators quartz crystal controlled. Tee-notch filter. Full gear drive from tuning knob to gang condensers — absolute reliability. 40:1 tuning knob ratio. Built-in precision 100 kc evacuated marker crystal. Vernier pointer adjustment. Five steps of selectivity from 500 cycles to 5000 cycles. Precision temperature compensation plus Hallicrafters exclusive production heat cycling for lowest drift. Direct coupled series noise limiter for improved noise reduction. **$399.50**



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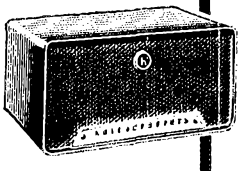
COVERAGE: Standard Broadcast from 540-1630 kc plus four short wave bands over 2.5-31 and 48-54.5 mc. Intermediate frequency; 455 kc. **$94.95**



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MODEL S-108

FREQUENCY COVERAGE: Broadcast band 538-1600 kc plus three S/W bands 1550 kc-34 mc.

FEATURES: Slide rule bandspread dial calibrated for 80, 40, 20, 15 and 10 meter amateur bands and 11 meter citizens band. One r-f, two i-f and separate bandspread tuning condenser. Temperature compensated oscillator and built-in speaker. **$129.50**

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If located, please call the local RCMP. Traffic: (May) VE3BUR 157, AML 133, NG 126, DPO 89, AIL 85, RN 79, KM 61, AUU 60, NO 44, EHL 37, CFR 25, DH 15, DZA 11, DWN 9, DFE 6. (Apr.) VE3DH 29.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—The big news of the month was the appointment of VE2BE as vice-president of ARRL. Years of faithful devotion to our cause has thus been aptly rewarded. 3CJ now becomes Canadian Division Director. AOQ is operational from a new QTH in Montreal. Petitions have been circulated for an increase in phone frequencies but the c.w. fraternity wished to preserve the status quo. The D.O.T. canvassed the entire VE list and it is likely that a compromise solution will be reached. It is with deep regret we record the death of IM. He was an ardent ham and always helpful to beginners. BK to meet old friends G2NA, 3AWZ and 8KW while in England. Several requests have been received to thank YA officially for the outstanding work he is doing as QSL Manager. VI and EC operated 10 consecutive hours during the "Tocsin" emergency. TI, AUH, AOL and ADF are regulars on 3740 kc. They accept traffic. BG reports a very pleasant visit by 3CNT and his XYL. YB, *maritime mobile*, is *off* to Goose Bay. BE picked up a new SX-111. HI's mobile may get some rest as her home station is perking again. The ever popular Lake Shore Radio Club was honored by a visit from 4NI at its June meeting. WT continues to gather BPL certificates. The DX brigade, AIO, NV, WY and YU, were hosts at a pleasant get-together when ZE7JV paid a brief visit to Montreal. During a fishing trip DR "shot" a moose, getting an interesting rear-end snap with his camera. Traffic: VE2WT 388, WA2CNS/-VE8 233, VE2BG 55, EC 51, DR 32.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—During the month of May activity was slightly curtailed because of conditions. We hear that ALE is planning a DXpedition to faraway places with the help of some of the DX boys but we don't have all the dope as yet. The BCEN still is expanding and will *gladly enroll* all c.w. *operators from* any and all locations in British Columbia. The members would especially like all new licensees to join them, and they will help you along in message-handling and net procedure. The BCEN gang planned a get-together hosted by JQ. Hope you all had good Field Day scores from some of those "choice" locations that only FD committees can find. The Nanaimo gang will hold a family basket picnic at Newcastle Island on Aug. 14 and we expect would like to see as many Island and Mainland hams as can be there. Sorry to hear that TF has been under the weather. Hope he gets back in the track and gets on the air, c.w. and RTTY. The BCEN had 52 sessions in May with 467 check-ins and 212 pieces of traffic handled. Traffic: VE7AAF 144, JQ 59, BAZ 53, AOT 52, AQD 25, ALZ 18, FK 18, AEC 15, BAV 10.

MANITOBA—SCM, M. S. Watson, VE4JY—Acting SCM: *Jim Elliott, VE4IF*—KB has been on the air with his little 4 watter, but as yet hasn't had much luck. CX is back on 75-meter mobile after a trip Down East. JB has a new Collins 32V-1 and a 75A-4, and has been working lots of DX. While on their wedding anniversary trip throughout the U. S. and Canada VP9-DC and his XYL spent several days in Winnipeg. While here they visited 1F. GE and PE and many other Winnipeg friends. AI operates most consistently on 20 and 10 meters. AP has been putting a very FB signal into Winnipeg lately. NB is now up in VE8-Land. WR is putting out a very FB signal with his new KWM and S/Line combination. LC raised his antenna another 5 feet higher and is going after DX. PH is very active on 20 meters. BF is the proud possessor of a new Heathkit Cheyenne rig. KR has been putting out a real solid 20-meter c.w. signal. IF has an antenna up at his summer cottage and has been getting good reports on 75 and 20 meters. 6GC spent his vacation back home in Winnipeg. CB and BR, Ethel and Bris, spend most of their spare time fishing. The Manitoba Hamfest will be held Sept. 3 and 4 in Brandon, Manitoba. Traffic: VE4SL 37, AY 16, PE 14, AN 12, PA 8, RB 8, QD 6, CK 4, AI 2, FI 2.

QST

The Electromonimuter

(Continued from page 25)

between transmissions by auxiliary contacts on the antenna relay. After this change, I began to get the T9X reports I was looking for.

Checks did not disclose the spike in the keying

(Continued on page 142)

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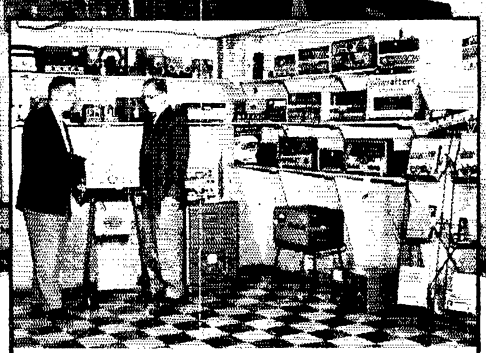
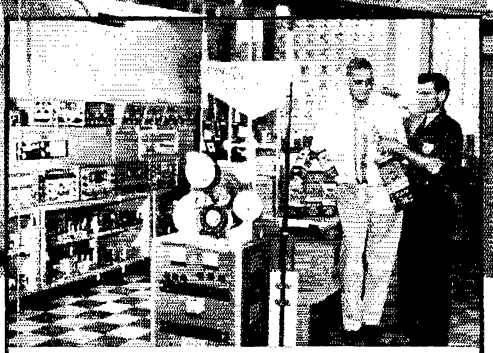


Bob Woodrow, WØVVL, Manager of the HAMateur Department, discusses Lew Bonn's huge inventory which includes the complete line of RCA Replacement tubes.



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characteristic described by W5HTB.[4] The Challenger includes a shaping circuit and it is possible that this removes the spike. In transmitters not having such a shaping circuit, the measures suggested by W5HTB may be desirable.

It is amazing how much a unit like this can add not only to the enjoyment of c.w. operation but, I am convinced, to the effectiveness of the transmitter as well. Once mastered, operating with the electronic key is effortless at almost any speed. If you have never used one before, you can try it out on the side-tone oscillator. With the transmitter turned off, it makes an excellent code-practice oscillator. I am sure the simultaneous improvement in my fist and in the transmitter's keying characteristics was a major factor in the good luck I had with my 120 watts in the last DX contest, even in the pile-ups. QST

[4] Huff, "Technical Correspondence," *QST*, December, 1959.

Technical Topics

(Continued from page 26)

preempt the frequency for s.f. purposes until a really high-power station can be constructed. (A 300-kw. station is to be built, eventually, on a location "in the clear" on the Colorado plains.) However, the range of the Sunset station should be such as to cover the continental U. S. and Hawaii.

The 60-kc. transmissions that were initiated two years ago at Boulder will be continued from the Sunset location with higher power, eventually 40 kw. The transmitter for this frequency has been assigned the call WWVB. — *G. G.*

Featherweight Array

(Continued from page 39)

system of matching is that we can forget about feed impedance. The system was adjusted for 1:1 s.w.r. on the coaxial line at 50.33 Mc., the customary operating frequency of the portable. This spot was chosen to be close to (but not right on) the 6-meter net operating in our part of New England. Adjustment can be made very roughly by the use of a field-strength meter, but the right way is with an s.w.r. bridge. The Micromatch used for this purpose at W1HDQ hardly more than quivers on the forward-power position when the portable job is fed into it, so adjustments were made with 10 watts from the home-station exciter. Once the antenna coupler adjustment is completed it is left alone, and it is assumed to be good enough at the portable location, without check or change. The frequent "rave" reports given our 1/10-watt signal indicate that this is a valid approach. QST

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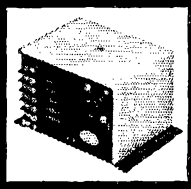

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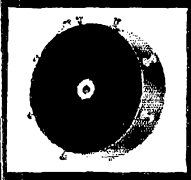
RATING	25W	60W	120W	25W
PRICE	$32.50	$48.50	$57.50	$32.50
OUTPUT Voltage Current	250V 100ma	300/150V 200ma total	500/250/—60V 200/100/10ma	115/26VAC 25W—400cy
INPUT No Load Full Load	0.5 amp 3 amp	1 amp 7 amp	1.5 amp 12 amp	0.5 amp 3 amp
REGULATION Full Load/No Load Full Load/½ Load	86% 92%	88% 93%	85% 91%	70% 85%
OVERALL DIMENSIONS Width Length Height	3 in. 4¼ in. 3¼ in.	4¼ in. 5¼ in. 3¼ in.	4¼ in. 5¼ in. 3¼ in.	3¼ in. 5 in. 3¼ in.

Precision wound Toroidal Transformers. For use in construction of Transistorized Power Converters and Inverters or as a replacement part. Encapsulated for ruggedness and long life. Easy to install and wire. Designed for operation in ambient temperatures from −55° to 130° C.



TOROIDAL TRANSFORMERS FOR 12 TO 14 VDC INPUT				
MODEL	TT-25W	TT-60W	TT-120W	TIC-25W
RATING	25W	60W	120W	25W
PRICE	$8.10	$11.25	$15.25	$14.75
TRANSISTOR POWER RATING	3 amp	6 or 12 amp	12 amp	3 amp
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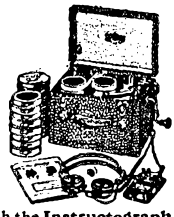

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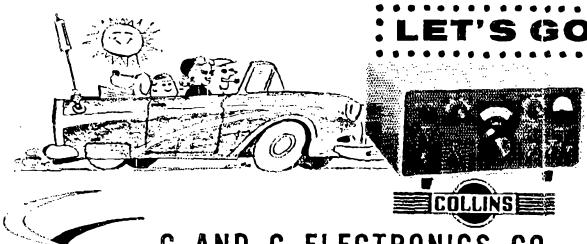

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Novice Roundup

(*Continued from page 61*)

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KN8OOD....4956-118-42-20
KN8RNP....4182- 92-41- –
KN8QLL....3920- 83-40-36
KN8ROJ....1450- 58-25-20
KN8SJQ....1166- 53-22-15
KN8RBY....312- 26-12-16
KN8PYW....231- 21-11- 5
KN8OZU....230- 23-10- 3
KN8ROY....90- 15- 6- –
KN8OIB....76- 9- 4- 2
KN8QCK....65- 13- 5- 1

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KN8RFU...16,500-290-55-32
KN8ITM....8000-150-50-19
KN8OAX....7840-181-40-33
KN8QBQ....3157- 77-41-15
KN8PUR....2821- 76-31-21
KN8QBG....1750- 55-25-12
KN8PCL....1235- 50-19-26
KN8PKY....420- 15-14-10
KN8QUA....187- 17-11- 6
KN8PMW....9- 3- 3- 2

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WV2FYE....7238-144-47-38
WV2HLH....676- 42-13- 4
WV2JTK....102- 7- 6- 4

N. Y. C.-L. I.

WV2HVR...11,883-218-51-37
WV2FNA....8010-158-45-27
WV2GKX....6300-165-36-31
WV2FNP....5643-151-33-20
WV2IKR....2800- 80-35-14
WV2GJO....2640-117-20- –
WV2GGB....2349- 71-29-16
WV2GWG....912- 33-19-19
WV2JSV....576- 32-18- 8
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WV2IVS....2108- 58-31-23
WV2GDP....704- 29-16- 4
WV2GQX....663- 24-17-10
WV2HNI....476- 24-14- 8
WV2FEP....425- 25-15- 5
WV2JTM....261- 19- 9- 9

MIDWEST DIVISION

Iowa

KNØYEY....3154- 83-38- –
KNØUPH....2376- 88-27-24
KNØWGY....1890- 53-30-16

Kansas

KNØVQE....2275- 76-25-27
KNØWUD....308- 22-14-16
KNØTCG....297- 12-11-15

Missouri

KNØVMZ...11,286-198-57-31
KNØVXR....1955- 70-23-18
KNØULB....247- 19-13- 9

Nebraska

KNØTVD....1984- 62-32-16

NEW ENGLAND DIVISION

Connecticut

KN1MQW...4056-141-26-36
KN1MGX....2813- 87-27-14
KN1KRY....2244-102-22-28
KN1MJC....1188- 39-22-32
KN1MNY....900- 35-18-10
KN1MZG....264- 12-12- 4
KN1MJE....198- 18-11- 6
KN1LOY....168- 11- 8- 4
KN1LOM....114- 9- 6- 3

Maine

KN1MZB....1650- 51-25-11

Eastern Massachusetts

KN1LLU....11,271-211-51-30
KN1KPS....11,076-198-52-39
KN1LNT....1452- 44-33-23
KN1MTY....1272- 53-24-19
KN1LAD....980- 55-14-18
KN1MJT....161- 13- 7-10
KN1MZH....105- 15- 7- 3

Western Massachusetts

KN1LLF....629- 37-17-10

New Hampshire

KN1KTO....120- 15- 8- 3

Rhode Island

KN1MIJ....7661-148-47-37
KN1LPL....816- 48-17-33

NORTHWESTERN DIVISION

Alaska

WL7DEM....210- 14-10-14

Oregon

KN7IWD....5264- 97-47-31

Washington

KN7JCA....5929-106-49-18
KN7IQI....4251- 94-39-15
KN7IYI....1764- 58-26-15
KN7JAL....1344- 48-28- 6
KN7IAE....1128- 47-24-10
KN7JRE....544- 34-16- 8
KN7IUQ....465- 31-15-12

PACIFIC DIVISION

Hawaii

WH6DMU..10,488-169-57-40
WH6DMV...3783- 87-39-24
WH6DIG....405- 45- 9-30

Santa Clara Valley

WV6IVP....6110-120-47-19
WV6HZM....2736- 66-36-24
WV6FCG....150- 10- 6- –

East Bay

WV6HWO....4944- 93-48-15
WV6FKN....2201- 51-31-20
WV6FLD....152- 9- 8- 3

Sacramento Valley

WV6FOF...13,230-210-63-29

ROANOKE DIVISION

North Carolina

KN4MPE..13,310-215-58-25
KN4MPJ....2405- 50-37- 8
KN4KJU....1250- 50-25-15
KN4ITX....1166- 38-22-21

South Carolina

KN4JUK....1537- 43-29-20
KN4KYK....956- 43-22-10

Virginia

KN4OHI....3600- 75-40-25
KN4QZY....2184- 68-28-16
KN4IKW....1806- 71-21-39
KN4PXH....160- 16-10- 5
KN4LHB....24- 6- 4- 2

West Virginia

KN8QKC....7320-168-40-29
KN8QXS....570- 23-15- 3
KN8QYG....4- 2- 2- 1

ROCKY MOUNTAIN DIVISION

New Mexico

KN5ZMU..20,679-324-61-36
KN5YEZ....30- 6- 5- 3

SOUTHEASTERN DIVISION

Alabama

KN4HMZ....7471-189-39-32

(*Continued on page 146*)

Eastern Florida

KN4GLI	589	31-19	2

Western Florida

KN4IQN	9861	173-57	13

Georgia

KN4HQI	12,426	218-57	28
KN4OGG	7968	151-48	37
KN5JN8	5236	139-34	22
KN4PHB	770	70-11	–

West Indies

WP4AQY	110	40-22	19

SOUTHWESTERN DIVISION

Los Angeles

WV6FVL	4500	90-45	32
WV6GDS	3456	96-36	16
WV6GDM	1056	32-22	5

Arizona

KN7HOF	4370	100-38	12
KN7HRS	4080	102-40	20

Santa Barbara

WV6JQG	90	10- 9-	8

WEST GULF DIVISION

Northern Texas

KN5YAA	7488	156-48	16
KN5WQM	6627	131-47	36
KN5UIJ	984	41-24-	7
KN5WZT	126	8- 7-	3

Oklahoma

KN5VYA	12,485	212-55	36
KN5WZJ	4602	103-39	20
KN5JCJ	2784	87-32	27
KN5WSB	320	20-16-	–

Check logs: KN1LQD/1, KN8RGA, KN9SCE.

Correspondence

(Continued from page 80)

THE NOVICE-NOVICE

¶ Congratulations to you and K8OEQ ("Togetherness," June *QST*). May I point out another argument heard on the amateur bands many times? It's the so-called "novice-Novice" or "young squirt" who has the audacity to check into a roundtable with some old-timer who has forgotten that he ever had fuzzy cheeks. Give the youngster a break. If we can't have a little confidence in his abilities and his future, God help this great country! — *Eldon L. Sanders, KØYGH, Colorado Springs, Col.*

QRM CUTTER

¶ I would like to comment on the courtesy I have received when sending my official bulletins. When I begin, the QRM is always unbelievable. However, within five minutes, nearly every station has cleared the frequency. I hope that this is the way all bulletin stations have found it — and hope it continues this way. — *Fred H. Maas, WA2EBR, Murray Hill, New Jersey.*

TREATMENT AND CURE

¶ Have read over the editorial in April *QST* with great interest and believe something should be done about the situations you mention and many more that could be mentioned.

In the first place I have already done something about it and I am now doing the second thing about it: that is, writing the ARRL my views on the subject.

Our location is far enough away from Seattle so amateurs can take the Conditional exam by mail. I have been more or less appointed by the club to act as examiner here and in the past several years have probably acted as such for 50 or more of the local hams. I don't know of any of them that have appeared for the General Class license after they once had the Conditional.

The editorial was brought up at our last club meeting and it was like dropping a bomb when I suggested that, like the Novice license, the Conditional should not be renewed but at some time in the 5-year period the licensee be required to appear and take the examination before the FCC in its office. It doesn't seem that this would throw a great load on the FCC and it was thought that the Conditional Class license holder could make the trip at least once in a 5-year period.

There were ever so many reasons brought up about the fear of not passing and being without a license at all. This seemed to stem from the fact that when they get the Conditional — that is, their "fone" license as they call it — then they trade the key for a mike and proceed to forget the code at once.

So if there is some cheating going on it would clear up by the time the Conditional license expired; the one acting as the examiner would not be left hanging on a hook. — *D. Wayne Pascoe, W7TZ, Hoquiam, Washington.*

(Continued on page 148)

FRIENDSHIP

¶ To the newcomer to ham radio the QSL card is an important element of the hobby. I have noticed that many amateurs disregard the newcomers' pleas for a QSL mainly because they are not rare DX stations. The QSL is not only for DX confirmation, but the confirmation of friendship and respect for the fellow amateur. I suggest that amateurs who have been following this selfish QSL policy mend their ways. — *Lester Shapiro, K2MKI, White Plains, New York.*

A Critique on DXing

BY RICHARD J. TLAPA,* K9DNR

THANK GOODNESS I am not a rare DX station! By now I think that I would have been utterly mad.

Impoliteness, or may I say even "crudeness," has permeated the DX bands to such an extent that many times I have thanked the stars above for being on c.w. and not on fone! To quote 'Enry 'Iggins of "My Fair Lady" fame, I have "used language that would make a sailor blush." And now, lest I seem a bit prissy at the same time, let me interject that I love a pile-up as well as the next DXer. There is a tremendous sense of accomplishment in garnering that elusive DX station in the midst of such a panting, howling mob. A rare DX station giving vent to a general CQ must expect a pile-up. At least I would, were I such. It must be a glorious feeling to know that literally thousands of stations desire contact, and although many may call, few are chosen. And to grab your key and sneak around the W6 line in a foxy end-run to score a contact — wow!

But I feel so sorry for that DX station, when, on the occasion of his calling "CQ Utah or Nevada," a score or more of W2s and W5s come like hounds on the scene and start baying for all they are worth! Just a few days ago I heard such a one — a rare Oceania station — give up in total disgust. And my heart went out to him. Certainly I also would have enjoyed working him for a new country to add to the total, but I *knew* from his CQ that he needed those two states for

(*Continued on page 150*)

* Box 183, Cicero, Ill.

his WAS. Couldn't some kindly old teen-ager in those respective states have been given a chance to give him such elusive Stateside DX? No! Across the moors and mountains of Utah and Nevada had to come the loping hounds of the Baskervilles to kill those puny little 100 watters!

Or the idiot, who, after hearing hundreds of his fellow Stateside operators make contact with that rare DX station, spitefully locks his key right plunk on the rare DX frequency — I think Dante has had reservations for him in the furthermost nether regions of his infamous Inferno! And the poor, little, wretched DX station, held to his usual 100 watts (as customarily prescribed by most foreign governments) cannot break that sound barrier! Even the Voice of America cannot be jammed more effectively by you-know-who.

And then there are the local twenty-meter rag-chewers. Oh yes, I belong to the Rag Chewers Club! And on the evenings that I am not overly tired, perhaps armed as I am with my trusty little J-38 Army surplus key, I may hit as high as twenty and be able to copy (on those spasmodic occasions of extreme alertness) as much as sixteen words per minute, in very delightful rag-chews with my fellow amateurs here on the continent. *But not on twenty meters!* To hear two W9s rag-chewing on twenty meters, clear across town or the state, kilowatts loaded to the muzzle and blasting out of three-element beams right smack on top of an elusive VS9 — this is too much!

Having been a Novice, occasionally I switch to the doublet, run the HT-32 barefoot, and slide down to forty meters, just to rag-chew with the younger element in hamming and swell my chest with pride as he comes back with "UR 589 HR OM ES TNX FER FIRST K9". It's wonderful! And I say this, not that I have anything against rag-chewing (you should hear me on s.s.b. on twenty meters!), but imagine how the DX station in the c.w. portion of the band feels? How futile! No doubt he is trying to read your "UR 339 HR OB ES TNX FOR FIRST VS9 BK HW DX?", but it probably comes out of his speaker as "UE V U O HI 9 H, etc.", not because you are QLF, but because your own brethren are too busy asking each other how the orange-juice supply held out at the last meeting of the Neurotic Sidewinders Club! Big deal!

And then there is the CQ artist. With a bug, yet. Forty words per minute and youhaveatoughtimetryingtofigurehimout. And of course he is calling "CQ DX". The fact that three kilocycles below him is a wonderful UD6 in contact with a very polite K8 doesn't bother him in the least. He is looking for DDDDXXXX! And here I am, patiently standing by to get my two cents worth of r.f. in, but the genius with the bug is too busy. I have counted — truthfully! — as many as *fifty-six* CQs before a signature. The old adage of DX is scarcely practised any more: listen . . . listen . . . listen . . . and when one gets tired of listening, then he listens some more. For every two or three *minutes*

(Continued on page 152)

NEW MULTI-ELMAC PMR-8

Mobile or Fixed Station RECEIVER

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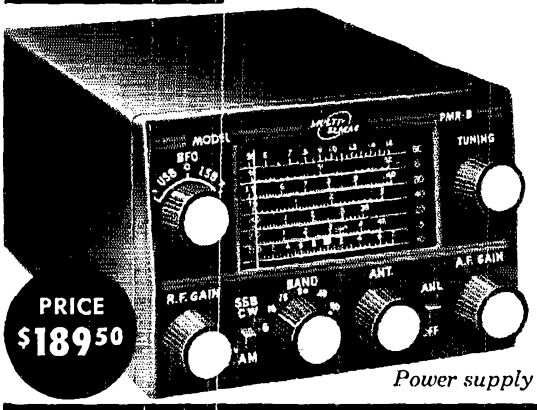

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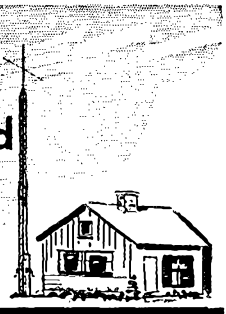

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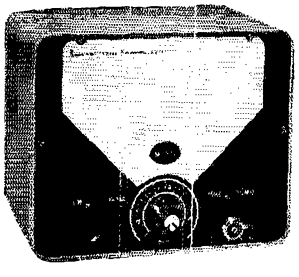
Model M-100



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Write for complete technical information. Send check or money order to:

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of pressing my key down, I have estimated that I listen eight to ten *hours*. And my DX score as of today stands at more than 148 worked and 118 confirmed. But patient listening has paid off admirably well. The DXCC certificate is hanging on the wall. QST

Hear That Meter Reader?

BY BILL RICHARDSON,* K6VVM

When the ARRL's Southwestern Division held its annual convention in Pasadena, California, last year, many members were surprised, while walking around the exhibits, to come upon a booth with the following sign:

WA6GLN

Braille Institute Radio Club

(operated by blind persons)

On display were some unusual gadgets not at all common to most ham operators. What particularly aroused interest were several pieces of equipment that enabled the blind club members to operate with the same efficiency and dispatch as sighted operators.

One item, called an Auditory Circuit Analyzer, detects circuit defects and gives a reading on the basis of sound rather than sight. The usual meter-needle arrangement common to this type of equipment has been replaced by Braille-marked dial faces with plastic pointers. The same is true of the 2-meter AMR (auditory meter reader) which sets up an aural tone for the blind operator.

Also of interest were a frequency oscillator controlled by crystals marked in Braille and a transistorized "auditory gimmick" which enables a blind ham to tune for peak r.f. output.

The first two items were on loan, the circuit analyzer from the Technological Research Division of the American Foundation for the Blind in New York, and the meter reader from a blind ham living in Cleveland, Ohio.

The frequency oscillator was adapted by merely superimposing a brailled cardboard identification on the crystal while the auditory gimmick was developed from instructions given in one of our Braille technical publications.

Braille Institute, incidentally, has plans to completely outfit the newly formed club with a full complement of equipment. Most items, including the recently installed tower and antenna, on the roof of the loom room, were donated by individuals, clubs or business groups since the Institute is a nonprofit organization supported by contributions and bequests.

The Club's first signal was sent out on August 5 and was directed to "Biscailuz Center" which is

(*Continued on page 154*)

* 8844 Greenwood Ave., San Gabriel, Calif.

the Los Angeles Civil Defense Headquarters. Braille Institute was thus officially hooked into the area's civil defense net. I was pleasantly surprised that the person receiving my transmission turned out to be my old friend, Jerry Kunz, who was my fellow student in one of the early classes for the blind radio hams.

Only recently Braille Institute asked me to take over their new class of eight people. Three have won their General licenses and two others have Novice licenses. We look forward to an increased enrollment as interest increases in the Club's functions.

Our students get a fairly comprehensive instruction, including a general background in theory of amateur operating. We learn code from oscillators on magnetic tapes. Also on tapes are the FCC regulations and other pertinent information.

In addition we have available a monthly radio electronics magazine in Braille. The *Braille Technical Press*, as it is called, is provided for by Library of Congress funds and includes most of the informational and technical material usually found in the national ink print publications. QST

Strays

KØOAL submits this hint for hazy hams: — Do you have trouble remembering schedules, names, calls, etc.? Or do you remember everything but the time of schedules and frequencies? So, you start tearing things apart at the last minute, trying to find out where you made notes of this important detail (it *had* to be important or you wouldn't have made a note of it). Out come the log books, notebooks, waste paper baskets, your hair (if you have any). Finally you decide it's too hot to meet a sked anyway (you're steaming by now).

The solution is to get yourself a blackboard, size depending on your needs, and spike it to the wall next to your prized certificate, DX contact or ham license. Then your notes are right in sight, convenient for use at the last minute.

—•••—

When a high wind flattened his antenna, K2VQL in Moonachie, N. J. strung a wire from his antenna tuner to the handle of an aluminum casement window and made QSOs on 14-Mc. c.w. as far away as Chicago and VE1-land with 579 reports. "Remember," says K2VQL, "if it conducts, it will radiate."

—•••—

Answer to word puzzle on page 156

1. ACCURATE
2. LAMINATE
3. PRACTICE
4. NEGATIVE
5. VARIABLE
6. GENERATE
7. INCREASE
8. PORTABLE
9. STEATITE
10. REACTIVE
11. SATURATE
12. AUTODYNE

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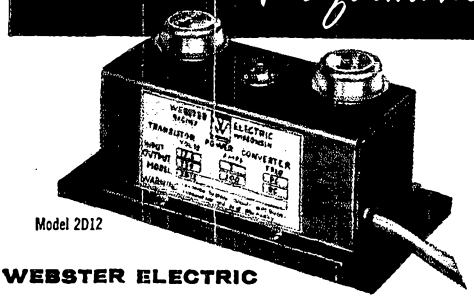

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To receive amateur or commercial teletyped messages by radio, you need only the following equipment: 1. Communications receiver. 2. TELEWRITER CONVERTER, which converts radio signals into d.c. pulses, and is connected to the speaker terminals of your receiver. 3. Teletype printer, which is an electric typewriter designed to be controlled by an electromagnet. Teletype machines are obtainable from us at $75 and up. TELEWRITER CONVERTER complete with polar relay and selector magnet power supply, $155. For additional information write Tom, W1AFN.

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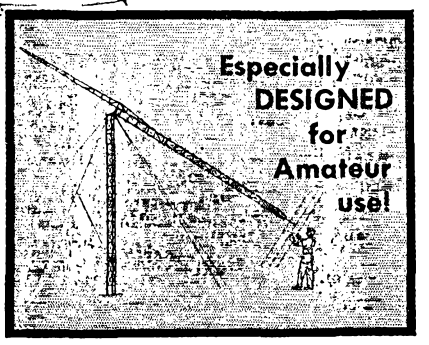

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A Word Puzzle

A _ _ _ _ _ _ E
_ A _ _ _ _ _ E
_ _ A _ _ _ _ E
_ _ _ A _ _ _ E
_ _ _ _ A _ _ E
_ _ _ _ _ A _ E
_ _ _ _ _ A _ E
_ _ _ _ A _ _ E
_ _ _ A _ _ _ E
_ _ A _ _ _ _ E
_ A _ _ _ _ _ E
A _ _ _ _ _ _ E

Fill in the blank spaces of the words above with the definitions listed below. If you score 7 or better correctly without looking up any answer (which is on page 154), you are doing fine.

1. You can be sure that the frequency is _ _ _ _ _ _ when you tune to WWV.
2. Eddy-current losses can be reduced when you do this to the iron core of a transformer.
3. There is no better way to get this than listening to W1AW.
4. The kind of electricity associated with the electron is called _ _ _ _ _.
5. This kind of frequency oscillator can be used after you get your General License.
6. You might say that a dynamo will do this to electricity.
7. A *Q* multiplier will do this to the selectivity of your receiver.
8. You hear this on phone after the call letters when the ham is away from home.
9. Webster says this is "a mineral — a massive variety of talc"; you can find it in the *Handbook* listed as a dielectric with a constant of 4.4.
10. The unit of this kind of power is called the volt-ampere.
11. In an air-core coil, the inductance is independent of current because air does not _ _ _ _ _.
12. Designating a type of heterodyne in which the auxiliary current is generated in the rectifying device.

— *K3DCP*

Strays

K7KME says that he held the call W7EOD from 1934 to 1940, operating from 112 19th St. North in Great Falls, Mont. Now he finds that W7RLL is operating from the same address 20 years later . . . and using the same northeast corner of the basement that K7KME used before World War II.

—···—

A novice who had not yet received his license from the FCC found a batch of QSL samples in his mail, neatly addressed to him with his call, KN8UML. It's pretty hard to get ahead of those *QST* advertisers.

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 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.

W2, K2 — North Jersey DX Ass'n, Box 55, Arlington, N. J.

W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.

W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.

W5, K5 — Brad A. Beard, W5ADZ, P.O. Box 25172, Houston 5, Texas.

W6, K6 — San Diego DX Club, Box 16006, San Diego 16, Calif.

W7, K7 — Salem Amateur Radio Club, P.O. Box 61, Salem, Oregon.

W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.

W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.

WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.

VE1 — L. J. Fader, VE1FQ, P.O. Box 663, Halifax, N. S.

VE2 — George C. Goode, VE2YA, 188 Lakeview Avenue, Pointe Claire, Quebec.

VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.

VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.

VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.

VE6 — W. R. Savage, VE6EO, 833 10th St., N., Lethbridge, Alta.

VE7 — H. R. Hough, VE7HR, 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, Newf.

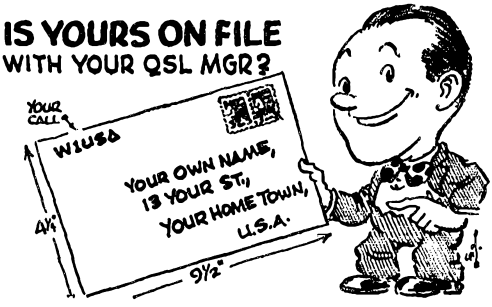
VO2 — Douglas B. Ritcey, Dept. of Transport, Goose Bay, Labrador.

KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.

KH6 — Andy H. Fuchikami, KH6BA, 2543 Namanu Dr., Honolulu, Hawaii.

KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.

KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.



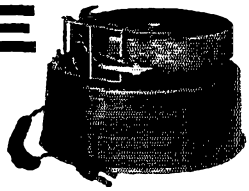
Emblem Decals

Attractive black and gold ARRL emblem decals are available to League members from Headquarters. They measure approximately 4 by 2 inches, will adhere to almost any surface, metal, glass, wood, plastic, and come complete with directions for applying. Use them to dress up your car, station equipment and shack. They're supplied at 10 cents each — no stamps, please — to cover costs.

AMERICAN RADIO RELAY LEAGUE

West Hartford 7, Connecticut

CODE

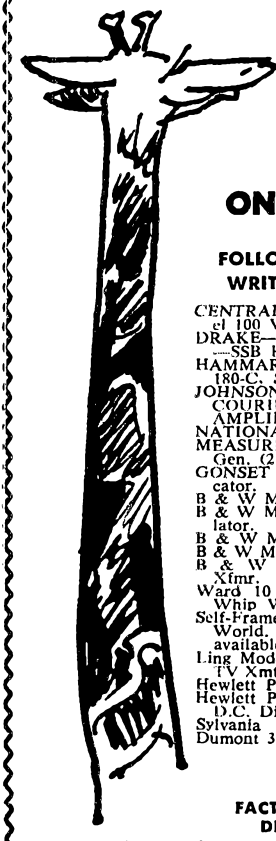


TELEPLEX METHOD trains you to hear Code signals just as you hear spoken words — *because it teaches* Code SOUNDS and not dots and dashes. Thirty words with ease...fifty words not unreasonable! Starts beginner or advances your present speed. Try it for yourself and compare with anything else. 40 years' experience teaching Code have made the Teleplex Method far superior to all the cheap "gimmicks" on the market. **Write today for details and free trial.** You be the judge! (Improved cabinet design allows new low cost.)

TELEPLEX CO.

739-D Kazmir Court, Modesto, Calif.

Canadian Representative: THE HAM SHACK
1269 Granville St., Vancouver, B.C.



KEEP AHEAD OF THE CROWD ON VALUES

FOLLOWING IN STOCK. WRITE FOR BEST DEAL!

CENTRAL ELECTRONICS—Model 100 V—SSB Xmtr.
DRAKE—Model 1A and Model 2A —SSB Receivers.
HAMMARLUND—HQ-145-C, HQ-180-C, SP600-JX.
JOHNSON CHALLENGER (KIT), COURIER (WIRED), AUDIO AMPLIFIER CAT. #250-33.
NATIONAL CO. NC-60 Receiver.
MEASUREMENTS Model 80 Sig. Gen. (2 to 400 Mcs.)
GONSET G-50 6 Meter Communicator.
B & W Model 850-A Turret.
B & W Model 600 Grid Dip Oscillator.
B & W Model 650 Matchmaster.
B & W Model 800 RF Plate Choke.
B & W Model TT-120W Toroid Xfmr.
Ward 10 Meter & Citizens Band Whip W/Base & Spring.
Self-Framed Relief Maps of USA & World. Beaut. colors. (Brochure available)
Ling Model 2050 (420 to 450 Mcs) TV Xmtr.
Hewlett Packard 623B Test Set.
Hewlett Packard 405AR Automatic D.C. Digital Voltmeter.
Sylvania Model 402 Synchroscope
Dumont 303/303A Scope.

FACTORY AUTHORIZED DISTRIBUTOR *for:*

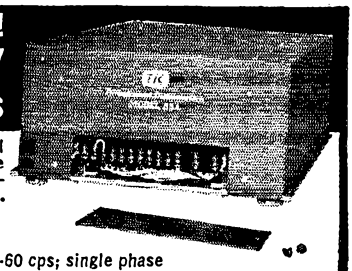
Adjust-A-Volt, B&W, Central Electronics, Drake, Glas-Line, Hammarlund, E. F. Johnson, National Radio Co., Vibroplex, Sonotone.

SEND FOR YOUR COPY OF THE GREEN SHEET CATALOG TODAY. *DEPT. Q-8*

Chock-full of values on gear, tubes and equipment.

WAlker 5-7000
BARRY ELECTRONICS
CORPORATION
512 BROADWAY, NEW YORK 12, N.Y.

NEW Especially Designed for Single Side Band! HIGH VOLTAGE POWER SUPPLY DELIVERS 3500 or 4200 VOLTS DC AT 500 MILS



The high-voltage power supply you've been waiting for! All the power you'll ever need—even for that Alaskan Kilowatt! Especially designed for single side band by one of the leading manufacturers of precision electronic equipment since 1947...No transients due to poor dynamic regulation...No chokes. Write for complete descriptive literature.

MODEL 65A — 4.2 KV — $365.00
MODEL 65B — 3.5 KV — $335.00
Send check or money order only—no C.O.D.'s

Amateur Division
TIC Tel-Instrument ELECTRONICS CORP.
728 GARDEN ST., CARLSTADT, N. J.

Specifications:

INPUT: 115, 208, 230 V. AC; 50-60 cps; single phase
OUTPUT: Model 65A—4200 V. DC @ 500 mils, cont. duty
Model 65B—3500 V. DC @ 500 mils, cont. duty
(350, 750 or 1050 V. screen voltages)
REGULATION: 15%, no load to full load **RIPPLE:** Nom. 1% at full load
WEIGHT: Model 65A—150 lbs. net **SIZE:** 17"x17"x8½" high
Model 65B—130 lbs. net

CHAPTER 6

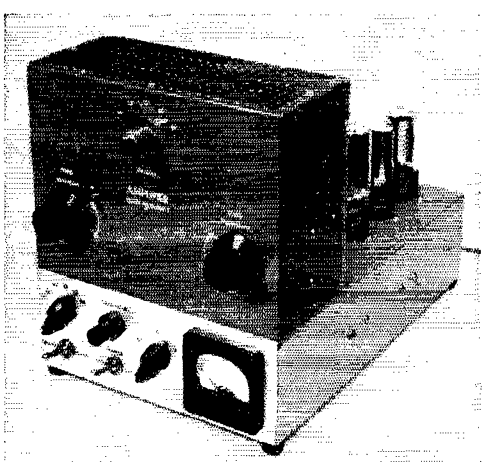


Fig. 6-47—Front view of the 6146 all-purpose amplifier The upper panel is part of an 8 × 6 × 3½-inch . . .

A 90-Watt Amplifier

THIS neat and compact all-purpose r.f. amplifier can be used on c.w., a.m. or s.s.b. from 3.5 through 28 Mc. It's self-contained, including power supply, band-switching and pi-network output. Complete details on construction appear in the 1960 *Radio Amateur's Handbook*. The twenty-five chapters of this edition cover the entire field of amateur radio communications: receivers, transmitters, v.h.f., antennas, mobile, operating, etc. Get your copy of the big 1960 Handbook now: 728 pages, over 1300 illustrations, charts, diagrams and tables.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 35¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

(5) Closing date for Ham Ads is the 20th of the second month preceding publication date.

(6) **A special rate of 10¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature.** *Thus, advertising of bona fide* surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 10¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 35¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) **Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

2ufd 4000v DC capacitors, $5.00 each, or 2 for $9.00. F. G. Dawson, 5740 Woodrow Ave., Detroit 10, Mich.

COAXIAL Cable. New surplus RB-54A/U, 58 ohms impedance —30 ft. prepaid, $1.00. Radio magazines, buy, sell, trade. R. Farmer, 3009 No. Columbia, Plainview, Texas.

ALL types of transmitting and receiving tubes wanted. Also aircraft or ground receivers and transmitters. Hamgear or test equipment. For immediate action for cash write or phone Ted Dames, W2KUW, 308 Hickory St., Arlington, N. J.

MOTOROLA used FM communications equipment bought and sold W5BCO, Ralph Hicks, Box 6097, Tulsa, Okla.

WANTED: Military or industrial laboratory test equipment. Electronicraft, Box 399, Mt. Kisco, N. Y.

WANTED: Commercially built Single Sideband transmitting and receiving equipment like Collins or equivalent. Al T. O'Neil, Lake City, Minn.

ANTENNA 80-40-20-15-10, $21.95. Patented. W4JRW, Lattin, Box 44, Owensboro, Ky.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP. Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmany 8-8262.

HAM TV Equipment bought, sold, traded. Al Denson, W1BYX, Rockville, Conn.

CASH for your gear. We buy, trade or sell. We stock Hammarlund, Hallicrafters, National, Johnson, Gonset, Globe, Hy-Gain, Mosley and many other lines of ham gear. Ask for used equipment list. H. & H Electronic Supply, Inc., 506-510 Kishwaukee St., Rockford, Ill.

SSBERS! Keep up with SSB news and views! Join the Single Sideband Amateur Radio Association, dedicated to furthering good SSB operating; promoting advancement of SSB equipment; and disseminating SSB technical information. Read "The Sidebander", official publication of the SSBARA. Dues $3.00 yearly. Write for membership application, sample "Sidebander", to SSBARA, 12 Elm St., Lynbrook, N. Y.

"PIG-IN-A-POKE"? Not if you visit Ham Headquarters, USA and see and choose from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-in Center. More for your money, because tremendous turnover makes lower overhead! Terms, trades. Send postcard for mouth-watering photograph and price list Q-6. For the best in all new and used equipment, it pays to come to "Ham Headquarters, USA"! BCNU, 73, Bill Harrison, W2AVA, 225 Greenwich St., New York City, N. Y.

KWM1 and a few high plate dissination tubes wanted. 304T1/TH 4-1000A, 4PR60A, etc. Ted Dames, W2KUW, 64 Grand Place, Arlington, N. J.

CASH for used short-wave ham receivers, transmitters and accessories. Treger, W9IVJ, 2023 N. Harlem Ave., Chicago 35, Ill. Tuxedo 9-6429.

CHICAGOLAND Amateurs! Factory authorized service for Hallicrafters, Hammarlund, Globe, Gonset. Service all amateur equipment to factory standards. Heights Electronics, Inc., 1145 Halsted St., Chicago Heights, Ill. Tel. SKyline 5-4056.

FREE Bargain list, Box 575, New York 8, N. Y.

UNBEATABLE QSLS? SWLS? Variety samples, 25¢ (refunded). Religious QSL samples, 10¢. Callbooks, $5.00. Sakkers, W8DED, Holland, Mich.

QSL-SWLS. Reasonable. Samples 10¢. Glenn Print., 1103 Pine Heights Ave., Baltimore 29, Md.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples, 10¢ with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glensdale Ave., Toledo 14, Ohio.

QSL'S New design, lower prices, fast delivery. Catalog 25¢ (coin only), refundable. Dick Crawford, K6GJM, Box 607, Whittier, Calif.

QSLS. Twenty exclusive designs in 3 colors. Rush $3 for 100 or $5 for 200 and get surprise of your life. 48-hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

CREATIVE QSL and SWL Cards. Are you proud of your card? If not let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob Wilkins, Jr., KN6ZMT, *Creative Printing*, P. O. Box 1064-C, Atascadero, Calif.

QSLS-SWLS. Samples free. W4BKT Press, 123 Main, McKenzie, Tenn.

QSLS Samples dime. Sims, 3227 Missouri Ave., St. Louis 18, Mo.

QSLS. Taprint, Union, Miss.

QSLS. Quality and economy complete samples dime. QSL Printing, Box 12351, Houston 17, Texas.

SUPERIOR QSLS, samples 10¢, Ham Specialties, Box 3023, Bellaire, Texas.

QSLS, 3-color glossy, 100—$4.50. Rutgers VariTyping Service, 7 Fairfield Rd., New Brunswick, N. J.

QSLS WAT. Box 1, Brecksville, Ohio.

W. FRITZ quality QSLs. New location. P.O. Box 1684, Scottsdale, Arizona. Samples 25¢ deductible. Be sure you get our card-of-the-month deal. Introductory Arizona Special!

QSL's-SWL's: That are different, colored, embossed card stock, and "Kromekote." Samples 10¢. Turner, K8AIA Box 953, Hamilton, Ohio.

QSLS-SWLS, reasonable prices. Samples 10¢. Robert Bull, W1RXT, Arlington, Vt.

QSLS, $1.00. Riesland, Del Mar, Calif.

QSLS, Lapel pins, samples dime. Kephart W2SPV, 4309 Willis, Merchantville, N. J.

QSLS, SWLs, XYL-OMs (sample assortment approximately 93¢) covering designing, planning, printing, arranging, mailing; eye-catching, comic, sedate, fantabulous, DX-attracting, proto-type, snazzy, unparagoned cards (Wow!). Rogers, KØAAB, 737 Lincoln Ave., St. Paul 5, Minn.

PICTURE QSL Cards of your shack, home, etc., Made from your photograph. 1000, $13.00. Raum's, 4154 Fifth St., Philadelphia 40, Penna.

GLOSSY QSLS, 100, 4 colors, $3.50. Others less, Samples 10¢. Dick, W8VXK, 7373 No. M-18, Gladwin, Mich.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

QSLS, Samples free. Phillips, W7HRG, 1708 Bridge St., The Dalles, Oregon.

QSL'S SWL'S Nicholas & Son Printery, P.O. Box 11184, Phoenix, Arizona.

QSLS-SWLS. 100 2-color glossy, $3.00; QSO file cards, $1.00 per 100. Samples, 10¢. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS: Send 25¢ (refundable) for samples. W6CMN, Schuch, 6707 Beck Ave., North Hollywood, Calif.

QSLS-SWLS. Free Samples. Spicer, 4615 Rosedale, Austin 5, Texas.

QSLS, Glossy 2 and 3 colors, attractive, different, 48-hour service. Samples 10¢. Free ball point pen with order. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

QSLS. 100 for $3.00. Glossy. Distinctive design. Samples free. R. A. Larson Press, 32 Midland Ave., Stamford, Conn.

QSLS. $1.75 per 100 postpaid U.S. only. Glossy, red and green. All orders mailed within 10 days. Free sample. Hobby Print Shop, Umatilla, Fla.

QSLS: Cartoons, colors, samples 25¢. Chris, W9PPA, 365 Terra Cotta Ave., Crystal Lake, Ill.

DON'T Buy QSLs until you see my free samples. Bolles, 7701 Tisdale, Austin 5, Texas.

ATTRACTIVE QSLS. Pearce, 192 Osborne, Danbury, Conn.

QSLS. Samples, dime. Printer, Corwith, Iowa.

RUBBER Stamps for hams, sample impressions, W9UNY, 542 North 93, Milwaukee, Wisconsin.

QSLS. Stamp brings samples. Eddie Scott, W3CSX, Fairplay, Md.

BEAUTIFUL QSLS. Dime. Filmcrafters, Box 304, Martins Ferry, Ohio.

QSLS-SWLs, distinctive, reasonable. Samples 10¢. Al-Mar Crafts, Box 6052, Riverton Heights, Wash.

QSLS-SWLS, 3-colors, 100, $2.00. Samples, dime. Bob Garra, 414 Mahoning St., Lehighton, Penna.

QSLS, 3-color, $3.00. RBL Printing, Wm. Rufe, Mt. Rt. 12, Phillipsburg, N. J.

QSLS. Attractive, colorful. Variety of type styles and backgrounds. Samples 10¢. K6QAO Press, 5013 Enfield Ave., Encino, Calif.

QSLS. Fine quality. Choose your own combination. 6 styles, 10 card stocks, 8 ink colors, photos. $2.50 up. Samples dime. Ray, K7HLR, 679 Borah, Twin Falls, Idaho.

WANT 1925 and earlier ham and broadcast gear for personal collection. W4AA, Wayne Nelson, Concord, N. C.

QSLS 10 useable samples, 10¢. Back issues QST, CQ, 75¢. Coop Box 5938, K. C. 11, Mo.

RECEIVERS: Repaired and aligned by competent engineers using factory standard instruments. Authorized factory service station for Collins, Hallicrafters, Hammarlund, National, Harvey-Wells. Our twenty-fourth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

DON'T Fail FCC tests! Check yourself with a time-tested "Sure-check Test". Novice, $1.50; General, $1.75; Extra, $2.00. We pay the postage. Amateur Radio Specialties, 1013 Seventh Ave., Worthington, Minn.

LOWEST Prices; Latest amateur equipment. Factory fresh sealed cartons. Self-addressed stamped envelope for lowest quotation on your needs. HDH Sales Co., 919 High Ridge Rd., Stamford, Conn.

GREAT surplus values!! BC-603 Receiver New $17.00—R-26/ARC5 Rec 3-6 mc New $12.95, used exc $7.95—R-27/ARC5 Rec 6-9 mc New $12.95, used exc $7.95—BC-659 Transceiver with PE-120 $19.95—T-47/ART-13 Transmitters 34/AP $49.00—Sound-Powered Dynamic Phones Pr. $4.75—Rec. Microwave R-111/APR-5 $39.00—Collins CF1 82-Q for Q-5'er compl. w/tubes & instructions $5.95—Collins Mod. Xformer 100 watt 811-PP to 813 final $3.95—RA-62-C Power Supply A-C for SCR-522 VHF 110/60 cyc. New $59.50—Kits only for above, $17.00—Ground-plane VHF antennas 30-200 MC New $9.95—Hi-Mu Electronics—131 Hamilton St., New Haven, Conn. Store hours 10—5. Sat. 9—12.

FOR Sale, all in gud condx, T.W. Masters TV antenna, $20; Hornet Tribander 10,15,20 meter beam, complete w/coaxial cable, $80.00; V.O.M. Precision model to 60 megohm scale, $10; Tube tester Precision model 180 for $25.00; Super Pro receiver range 1250-50 Mcs., complete w/power supply and 5 ft. rack with fuse box, $140; Measurements Corp. 80 signal generator up to 50 Mcs., $80; Motorola 2-way radio 30 to 55 Mcs. 12V converted for 60 watts output, $100 or will trade for what have you? Bill, K8MOQ/2, 440 Battery Ave., Apt. 3-C, Brooklyn 9, N. Y.

TOROIDS: Unused 88 mhy like new. Dollar each. Five, $4.00. pp. DaPaul, 101 Starview, San Francisco, Calif.

HAVE 10 top brand 6146. Will sell 2.50 each. K4LRX.

HAMFESTERS Radio Club announces its 26th annual picnic on Sunday, August 14, 1960, at Santa Fe Park near Chicago. See July Hamfest Calendar or write K9EEC.

SAN FRANCISCO and Vicinity: Communications receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Commercial two-way equipment. Factory service Leece-Neville and Delco alternators. Associated Electronics, 58 South P St., Livermore, Calif. W6KF, Skipper.

WANTED: American Mod. R331 ribbon-velocity microphone. K1DVO, Glenbrook, Conn.

THE Annual Peoria Hamfest will be held at Exposition Gardens, Youth Building Sept. 18, 1960. Advance registration $1.00; at the gate, $1.50. Contact Larry Pearsall, W9FDY, 2224 Herold, Peoria, Ill.

WANTED: 6 to 12 304TL tubes. Callanan, W9AU, P.O. Box 155, Barrington, Ill.

GELOSO Italian amateur rcvr. In perf. condx. $250. KØTGW, Wichita Kansas.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system, $50; 12 volt 50 amp system $50; 12 volt 60 amp system, $60; 12 volt 100 amp syst. $100. Guaranteed no ex-police car units. Herb A. Zimmerman, Jr. K2PAT, 115 Willow St., Brooklyn 1, N. Y. Tel. ULster 2-3472 or JAckson 2-2857

WANTED: Your buy or sell list. State price, condition. Small buyer fee. W2LMS Exchange, D'Amico, 319 Maryland St., Buffalo 1, N. Y.

CRYSTALS Airmailed: SSB, MARS, Marine, Net, Novice, Commercial, etc. Custom finished FT-243 .01% any kilocycle 3500 to 8600 $1.49 (10 or more 99¢), all novice 99¢, 1700 to 30,000 $1.95. All frequencies 60¢ additional for HC-6/u hermetic holders. Builders crystal packages: November QST "Phasing Sidebander" $9.95: June 1958 QST "SSB Package", 5 mixer FT-243 $9.95, hermetics $12.95, 7 matched filter $6.90 set. All types, if you don't see it be specific, write. Airmailing 9¢ per crystal. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

200 Back issues of QST and CQ, 1930-1960, $20.00 (shipped collect). WØDVN, Box 5938, Kansas City 11, Mo.

HT32 $400 L1000A with IPA-MU-2, $300. Both in excellent condition. Going mobile. Priced for quick sale. Cash only. J. Power, 21 Holt Circle, Trenton, N. J.

WANTED: Heath CB or Heath "Sixer" transceiver. Have tape recorder, Leece-Neville 100 amp. 6 volt system and much more. What do you want for above? K4YVE.

BEGINNERS. Code memorized in one hour. New method. Used in Armed Services, ham radio, scouting. "Ketchum's Hour Code Course". $1.00 postpaid. Money back guaranteed. O. H. Ketchum, 10125 Flora Vista, Bellflower, Calif.

CHOKE, 10 hy., 500 mills, 100 ohms 2000 RMS. Hermetically sealed 25 pounds. Never used. Smith, 38 Sargent, Scarsdale, N. Y.

WANTED: For experimental TV (amateur): CRV-46ACD or CRV-46ACC radio receiver; CRV-60ABK monitor unit; CRV-53AAB filter junction box, CEK-21981 dynamotor; handbook of maintenance instructions for ATJ or ARJ equipments—Co. Navaer 08-5S-45. Please state price & condition. Bill Bain, W4LRG, 3201 Briarcliffe Rd., Winston-Salem, N. C.

WANTED: 300 ft. of RG17A/U or RG14A/U low loss 52 ohm coax. 1.2-1.5 Kw. modulation xfrmr. K3CJY, 1208 Linden St., Cheswick, Penna.

KITS Wired, licensed radio technicians with complete test facilities. Quotation on request, or buy fully wired, tested kits. Sales & Service Division, Robert S. Schoenfeld, Corporation, 2079 Wallace Ave., The Bronx 62, N. Y.

COLLEGE Bound: Must sell: HQ-140X with spkr, just aligned, in exc. condx. $185; DX-35 with J-38 and 4 Novice xtals. $55; Geloso VFO with dial, tubes, instructions, never used. $25.00. Steve Moul, K4ZVF, 1319 W. Smith Ave., Orlando, Fla.

FOR Sale: Tickets to the one and only—The Original Syracuse VHF Roundup, October 8, 1960. Write K2TXG, 317 Clover Ridge Drive, Syracuse 6, N. Y.

SX-100, like new, $205; Globe Scout 65, $35. Shipped collect. Danner, 840 South 29th St., Omaha, Nebraska.

SELL: DX-35, Heathkit VFO, Q-Multiplier, all factory adjusted; Hallicrafters SX-99, D104 mike. $160.00. K5DCR, 2201 Elizabeth NE, Albuquerque, N. M.

FOR Sale: Transmitter DX-100 in gud condx, with mike, $175. Steve Bedell, 260 Autumn Ave., Brooklyn 8, N. Y.

SELL: Globe King 500-A, $375.00; Hammarlund SP-400X, recently aligned and in perfect condition, $185. Richard Norton, K2PHF, 143 Merrick Rd., Lynnbrook, N. Y. Tel. LY 9-6978.

COLLEGE Bound: DX-35 with new 6146 and Heath VFO. Both for $60.00. James Ellis, K5SCH, DeQueen, Arkansas.

COLLINS KWM-1, all tubes perfect, condition like new, mobile rack, full length cables and 516F-1 AC supply. $695.00. Plus rack but without supply, $620.00. John Ashton, W2SIK, 224A Rye Colony, Rye, N. Y. Tel. WOodbine 7-5520.

FOR Sale or Trade: Commercially built 1 kw. c.w. xmtr Parallel 813s pi-net final; xtal-VFO, bandswitching. 2200 volt 500 Ma. power supply. Possibilities as linear? Byron E. Fortner, W9FYM, RFD #10, Box 486, Indianapolis 19, Ind.

SELL Complete station. 5100B, SX-101, Matchbox, SWR, keys, mikes, extras, $600. Pickup deal only. W2EIX, 64 2nd Ave., Secaucus, N. J. Tel. UN 7-5207.

CLEANING Shack. Send for list. Transmitting tubes, chokes, plate transformers. QSTs 1944 to 1960 Brown, 1201 Theresa Ave., Campbell, Calif.

WANTED: General Radio RF Bridge 916A or 916AL. W3DJS, 1121 Prescott, McKeesport, Penna.

R/C Transistor receiver, CG 27255 Kc., 9 volt, 5-tone, all transistor, new, $50.00. Joe Shank, Jr., W8KBT, Box 1486, Huntington, W. Va.

G-E used two-way radios, ham gear. Bought, sold, swapped. Louis McCann, W3YYL, Oley, Penna.

FOR Sale: QST magazines January 1940 thru July 1958; CQ Oct. 1948 thru Nov. 1958 except Oct. 1952 to highest bidder. Inquiries invited. C. M Guido, 692 Radron, Box 106, Baudette, Minn.

COMPLETE 1959 CQ and 1958 QST runs, most of 1957 QST, some 1956. 20¢ per issue plus postage. W2JBL.

S.S.B. Xfrmrs, exact type for W2EWL Special and other sideband units; hermetically sealed, brand new set of 3 for $3.00. Brand new G-E 100 watt (audio) multi-impedance modulation xfrmr (10 lbs.) $6.25. No. c.o.d. include postage. Send stamp for list of other gear. S. A. Tucker, W2HLT, 51-10 Little Neck Pkwy. Little Neck 62, N. Y.

WANTED: NRI Radio TV Service Course. No kits. Norris McKamey, RR 1, Bettendorf, Iowa.

SELL: Gonset Converter 3003 75/160 meters, 6 volt, $18. W. Rau, WØNUI, Henderson, Minn.

DX-100, $165; HQ-100 with clock, spkr, $175. 15KSR teletype, excellent. Best offer. Pair talkies freq. 3885. Best offer. Shure mike Mod. 520SL, $15.00. W9VAJ, Humphrey, 2455 N. 38th St., Milwaukee 10, Wis.

WANTED: 500 w. modulation transformer, 2500 v. 500 Ma. full wave power transformer. K2JDW, 62 Gaston, W. Orange, N. J.

55 Ft. mast-tower, steel sections, base, guy assemblies for 37 and 50 ft. Sledge, engineers hammer, block and tackle and scissors. All in wooden case. You ship. $45.00. K1KKH, 10 Martin St., Medford 55, Mass.

VALIANT, factory-wired, in exc. condx, $325. HQ-110, exc., $175. W3HRA, HO 8-5268.

FROM Estate of late W5YOE: Clobe 500C, HQ-170 (clock), two RME 4303 transceivers, Eico 'scope, parts and gear, too numerous to mention. Write for list and prices. Wallace Martin, W5WXI, Box 396, Carrizo Springs, Texas.

PR 810s final; PR 810s mod., two full-wave MV pwr supplies, fully filtered and metered; 6 ft. relay rack; speech amp., $700. K8JZX, 201-22nd St., Dunbar, W. Va.

HI-FI House cleaning: Will sell or swap pair of Reslo Celese 15-1500 cps mikes (net $59.95 each); Fairchild XP-50 monaural cartridge with matching transformer (net, $62.95) all in excellent condx. Want Ham-M rotator and control; P&H compressor-amplifier, or what-have-you? No half-reasonable cash offer or swap will be refused. K3JZH, 325 Washington Ave., Jermyn, Penna.

VFO: Knightkit, in perfect condx. Have gone sideband. $25.00 plus postage. John Noe, K2OFD, 226 Naples Terrace, New York City 63.

SELL: SX-101 MRK-3 with spkr, $325; F/W Globe Scout 680A and Heath VFO, $100; Palco Bantam 65A, $130; PMR-7 and PSR-612, $145; gonset Monitone $15; 600D mike, $18; 6/M converter, $15.75 meter Basset coil, fibreglass whip, and spring mount, $16; BC-603, $10 3EL 15M Mosley beam, $30; D-104 and "G" stand, $20 Heath Conelrad alarm, $10. K5JZV, 5847 South Pittsburg, Tulsa, Okla.

75A-3, $350; VFO, $15. Dick Johnson, 6 W. 26th St., Indianapolis, Ind.

SELL: DX-40 with VF-1 both exc. condx, $65; VF-1, used only 2 months. Balun coils, $6.50. W. J. Christoff, K8RCA, 3509 Harding Rd., Jackson, Mich.

FOR Sale: RME-4300, $140; Central Electronics 10-B, like new, $120. Both in excellent condition. David Brewer, K5HBC, 519 Okmulgee, Okmulgee, Oklahoma.

LEARN Code. Qualify for Amateur or Commercial License. Free Book. Candler System, Dept. Q-8, Box 9226, Denver 20, Colo.

TRADE: RME-VHF126 plus $50 for 75A2. Ranger transmitter plus $200 for 32V3. W4ENO.

SELL: Four month old SSB Station: HT-37, SX-111, Matchbox w/SWR Indicator, Mosley Tribander, AR-22 rotator, L.P. bug, handkey: $950 value for $725.00. Package deal only. K9GPV/1, John J. Brandt, 17 Willard St., Ayer, Mass.

WANTED: KWM-2. Selling out everything else. Write for list. W6EBY, 789 Garland, Palo Alto, Calif.

NATIONAL HRO5OT1, four coils, crystal calibrator, speaker, CE sideband slicer, $285; Heath Model 0-7 'scope with extra CRT, $35; Heath impedance meter model AM-1, $15; D104 mike with grip-to-talk stand, $20; Chicago transformer 2350-0-2350; 775VA—115V, 60 cycle, choke, two CE 8 fd., 2500V DC coils, $38. K7ESQ/6, 2435 Andover Place, Costa Mesa, Calif.

BARGAINS: Returning to college: DX-100 (push-to-talk and professionally wired) $145.00; SX-71 with speaker only, $105; Astatic T-3 mike with G stand, $20. Write K2PDG, 41D Oakwood Manor, Woodbury, N. J.

PRECISE 635 audio oscillator, $25; General Electric Model 250 self-charging portable radio, new battery, $20; 2-station intercom, $10; Madison-Fielding "Micamp", $5.00. V. R. Hein, 418 Gregory, Rockford, Ill.

WANTED: TCS xmtr unmodified. H. S. Robb, Bird Island, Minn.

WANTED: SSB exciter, transmitter, Triband beam, tower, rotator, reflected SWR meter, TR-switch, filter, Thunderbolt. Al Haberman, 129 Morgan St., Holyoke, Mass.

CLEANING Shack: Send for list. K9GCM, 222 So. Taylor, Decatur, Ill.

ALUMINUM For every ham need. While they last, 12 foot lengths, 3 inch .065 wall 6061T6 aluminum tubing, $6.50. Write to Dick's, 62 Cherry Ave., Tiffin, Ohio, for list of tubing, angle channel, castings, plain and perforated sheet, and complete beam kits.

KILOWATT-Minded? Two power supplies, 3600-V-350 Ma. Variac controlled and 1500-V 500 Ma. both with panels, relays, etc. B&W 850A inductor; Johnson 150D90 capacitor; 4-400 air system socket with blower; filament transformer 5V-20 amp, National R-175A choke. Most items are unused. All for $125.00 F.O.B. Excellent Johnson Ranger, $175. Martin R. Peterson, 1311 West 5th St., Winona, Minn.

WANTED: Apache or similar transmitter. Also DX-40. Must be reasonable and in gud shape. Will pick up in a radius of 300 miles. Ken, VE3CCB, 1593 Dale St., Ondon, Ont., Canada.

DX-100B with B&W LP filter, $160; Heath 0-12 scope with three probes, $50.00; TS-4A TV alignment generator, $30; new #249 Eico VTVM, $28. Send for list of rest of shack equipment, and test instruments. Am moving and all must go. Phone and name your own price. J. G. David, K4HQB, Box 205, Bishopville, S. C. Tel. HUnter 4-5822.

NC-109 receiver, in excellent condition, $119 for quick cash sale. Manning, Box 563, Riverside, Mich.

B&W LPA-1 and LPS-1, brand net in factory cartons with spare 813, $495; new Dow-Key TR switch, $8.50; new Johnson Low-pass filter, $10.00; 100 ft. of new RG8A/U, $5.00. F. S. Eggert, W8FIL, 11833 Wisconsin, Detroit 4, Mich.

KANSAS City Area: Beams, 20M, 3L Telrex, semi-compact with balun, $50; 10-11 Hy-lite 3L folded dipole, Twin-boom $30 310-B-1/3 exciter. Completely band-switch, TVI suppressed, better than original. $160.00. Sry, will not ship! WØMAF, Endicott 2-6933.

POLICE Monitor: BC-603 FM receiver converted to tune 32.0 to 40.3 Mc. Complete with power cord for 12VDC mobile and cord and power supply for instant change to 110V AC. Excellent condx. First $45.00 check takes it. F.o.b. Racine, Wisconsin. Earl Poulson, K9CPT, 1203 East Colonial Drive.

FOR Sale: Collins KWS-1 and D-104, $1100; 75A2, product detector and xtal calibrator, $275; UTC VM5, $45.00; KW B&W Butterfly and neut. condenser, jack bar, $15.00. Hank, W2OZD, 3 Elizabeth Lane, West Paterson, N. J. Tel LAmbert 3-0991.

OLD QSTS: 1934 to 1956. Best offer to Robert Stoner, W3EPV, 817 Hamilton Blvd., Hagerstown, Md.

WANTED: 2 Meter receiver and transmitter that is wired and has been tested, should be crystal-controlled and 75 watts input. Tom Lesher, 25 North Market St., Elizabethville, Penna.

51J-4 Collins receiver. Serial No. 812. Vernier dial, 1 kc–3 kc and 6 kc mech. filters. In perf. condx. Firm price, $895.00. Certified check or cash only. Edw. A petro, 1338 S. Placentia Ave., Anaheim, Calif.

SALE: Collins 75A2, spkr, xtal calibrator, exc. condx. $275; Central Model B Slicer, new, $50.00; Heath SB-10 kit, never unpacked, $80; Globe King Model 400C modulator section and power supply section, $60 each; QSTs from January 1952 and CQs from January 1954 to date, $3.00 per yyar. Shipping express collect. R. L. Kaniorski, W2CYX, 506 So. Plainfield Ave., South Plainfield, N. J.

FOR Sale: QST issues September 1953 through June 1960 complete run; CQ issues November 1956 through June 1960, complete. Several older copies CQ back to March 1953, 30¢ per copy, $3.00 year. Hoye, 2925 Weisman Road, Silver Springs, Maryland.

NEW 4CX1000 in factory-sealed bag with Eimac socket and chimney. First $140.00 takes it and I'll pay the postage anywhere in U. S. K8BLL, Box 77, Route 2, Stevensville, Michigan.

SELL HT-32, used 5 hours. Three extra 10M crystals, $475; HT-17 with meter and all coils, $20.00. Carter Cynamotor package 400V, 225 mil., 6V DC, $10. Cash f.o.b. Chicago, Ill. W9GBD, Bob Gould, 1107 W. Albion Ave., Chicago 26, Ill.

75A4, $500, Ser. No. 5208, with 3 Kc. filter and book. Like new condx. Will Herzog, KØLTH, 1445 40th St. NE, Cedar Rapids, Iowa.

FOR SALE: Gonset 66B mobile rcgr, Gonset 77-A mobile xmtr, with Mod. 3069 power supply and Shure model 405K mobile mike, $475.00. Johnson Mod. 250-37 SWR coupler and 250-38 indicator, $25.00; Johnson 250-20 low-pass filter, $10.00; Simpson Model 269 volt-ohm amp. meter, $50.00; Eico 495K 'scope calibrator, $10; $35.00 Fibroplex (Gold) with case, $20.00 All above items either new, or in exc. condx. K5THF, Box 3236, Arsenal, Arkansas.

75A4 serial 1880 with spkr, $545.00; 32V3 serial 962, $425; both units absolutely like brand new. W4TVN, 304 North Colonial Homes Circle, N.W., Atlanta 9, Ga. Tel. TRinity 3-1757.

SALE: Telrex 20 meter #503 beam, sealed factory packing, $100. New prop pitch rotator, mast adapter, transformer, $50.00. No trades! Peter C. Card, W1WDD, 32 Elm Lane, W. Barrington, R. I.

FOR Sale: Hallicrafters SX-71, C.E. Model A Sideband Slicer, R-46B spkr; Viking Navigator, 300 watt linear amplifier, Eldico antenna tuner. All in excellent condition. K9JNL, Box 193, Durand, Wis.

SELL: NC-125 rcvr in excellent condx $100. K2AQY, Attica, N. Y.

SELL: RME 4350-A, ser. #2583, with matching spkr. In exc. condx, under two yrs. old. $190. John Lawser, K8IPR, 315 South Waverly, Dearborn, Mich.

SOUTH California only. GSB-101, like new condx. Save money! Best offer over $350.00. W6UPP, 11365 La Verda, Santa Ana, Calif. Tel. LI 4-1367.

SALE: Harvey-Wells TBS-50D, all band, Bandmaster xmttr, with VFO AC and mobile pwr. supplies. All are in excellent and like-new condx. Complete $85.00. Will ship. Jack Plane, K1JVJ. 42 Pennsylvania Ave., Niantic, Conn.

SELL: Mobile rig 12 volts complete. $150.00; HQ-100, $150.00; 3 element 10-meter beam with rotator, $35.00; power supply 15 volt 8 amp. $10. Tube checker, $15.00; Q-multiplier, $8.00. Ensign radio, antique, make an offer. Al Potter, 2 Buttonwood Drive, Sayreville, N. J.

WANTED: Collins 75A2 or 75A3. Must be top quality. Send description and price. R. J. Sander, 6411 West 67th St., Overland Park, Kansas.

SELL: QSTs complete December 1939 to January 1960. Like new condition. Best offer. W9EDH.

SELL: Hallicrafters HT-32, never used, in original carton, with Dow-Key, $525. Also Hallicrafters SX-101, like new, with earphones, $295. Bob Warren, Box 248, Halesite, N. Y. or Tel. HA 1-4029. Going to college.

SELL: Johnson Valiant, factory-wired; 8 months old only. $350. Hallicrafters SX-62 with speaker, $250.00; Gonset G50—$225.00. All are in exc. condx w/manuals. K8MZS, Tel. GL 3-0638.

MODEL 15 teletype and converter; HQ-150, Tecraft 108 Mc. converter; relay racks, amplifiers, more. Write for complete list. Brian Fernandez, 376 E. Palisade Ave., Englewood, N. J.

VIKING 6N2, Turner, 34X mike and stand; VHF-152A converter, Model 9-1090 Meissner Signal Shifter, 4D32 tube. Deal on a Anniv. Speed Graphic 2¼ x 3¼? Prices, descriptions write: W9OSQ, 2130—18th Ave., Monroe, Wis.

TRADE: HQ-110 for HQ-140 or equivalent. Paul Gawenus, RD 1, Port Jervis, N. Y.

NC-109. In exec. condition. Asking $118. Cash needed for completing HBR-16. Bob Boivin, K1DUX, RFD 4, Vergennes, Vt.

BUDELMAN freq. meter, type CX-8A1 (17A), exc. condx, $75.00: Motorola test set P-8501-A, exc., $50.00; Floor model self-service tube-tester, new, $100. Will trade for FM 2-way units. Leonard Flowers, K4AQK, 202 Bonner Ave., Louisville, Ky.

RECONDITIONED! Terms! Full Guarantee! Collins 75A-1 $245.00; Elmac PMR-6 (6V) $69.00; Hallicrafters S-40A $64.50; Hallicrafters SX-71 $135.00; Hammarlund HQ-100 $125.00; Harvey Wells R-9 $85.00; National HRO-60T w/coils $345.00; National NC-98 $95.00; National NC-183D $234.50; National NC-300 $209.00; TMC GPR-90 $355.00; B&W 51-SB $159.00; B&W 51-SB-B $149.00; CE 600L $299.00; Collins KWS-1 $999.00; Collins 32V-3 $399.00; Eldico SSB-100F $495.00; Scout 55-B $65.00; Globe DSB-100 $74.50; Globe Champ 300-A $435.00; Gonset 6M Comm. III $199.00; Hallicrafters HT-32 $435.00; Hallicrafters HT-33, $390.00; Heath SB-10 $75.00; Johnson Pacemaker $295.00; Viking KW $895.00. Leo, WØGFQ, Box 919, Council Bluffs, Iowa—World Radio Laboratories.

VALIANT, factory-wired, Dow antenna relay, 100 ft. RGU58, $335; SX-100, matching speaker, headset, $215; Vibroplex Deluxe, new, $16.00; SWR Micro-Match, Jones, $20; will sell in one lot for $575.00. Vernon Chitty, WA2HOW, 627 West 113th St., New York, N. Y. Phone MO 6-0911.

FOR Sale: TV cameras, teletype, Panadaptors, transmitting tubes, SSB gear. Write for list. Spera Electronics, 37-10 33rd St., L. I. C., N. Y. Tel. Stillwell 6-2199.

FOR Sale: Chicago area! BC610E, 500 watt xmtr and accessories, consider all offers above approx. $200.00. HQ129X rcvr, $100; 4-el. 10 Meter beam, $10. Also misc. gear. E. Haug, 676 Greenwood, Glencoe, Ill.

HQ150 with spkr, $250. Take standby rcvr in trade. W3FYW.

SELL: SX-99 receiver, like new condx, $100; wanted: small SSB exciter, SB receiver, 2000 to 2500 volts supply components. Vergne, K2KGU, 420 Riverside Dr., New York 25, N. Y.

SELL: Complete station, all in exc. condx: 75A4 with spkr, Phasemaster 2B, D-104 mike, Johnson Matchbox, RME clipper, DB23A, B&W 650 Matchmaster, B&W 380B T/R Switch, Bud FCC 90 xtal calibrator, B&W 550 switch, Mosely TA33 beam, plus coax cable, tubes, etc. Best offer over $750 takes all. Al Spiewak, K2CKZ, 1150 Broadway, New York 1, N. Y.

CANADIANS! Elmac transmitter A/54/H, $65.00; dynamotor PE-103, $15.00; Harvey-Wells transmitter, TBS-50-D with matched VFO and power supply, $110. All in gud condx. Clayton Dean, VE3AUC, Niagara-On-The-Lake, Ont., Canada.

WANTED: 3-4 μfd 4000 volt capacitors; 2-SK-400 air system sockets; 6 hy. 600-700 Ma. low resistance filter choke. K8CQK, 613 Pearl St., Bluefield, W. Va.

FOR Sale: Hallicrafters HT-37 with coax relay, like new condx, $325.00. William C. Sutton, Jr., K1OOT, 151 Low Rd., Bedford, Mass.

FOR Sale: 2500-2000-1750 volts @ 500 Ma. DC xfrmr, $20; UTC S-37 choke, $6.00; UTC S-38 choke, $6.00; 2-4 μfd, 2500 volt capacitors, $3.00 each; 500 watt Multimatch modulation transformer, $22.50; 2-4-125A tubes, used very little, $10 ea., new Dow-Key antenna relay, $6.00; ribbon wound rotary inductor coil with Groth turn count dial, $20.00. Other items, send for full list. W8DYA, Box 1275, Bluefield, W. Va.

COLLINS KWS-1. This transmitter has been used very little and is in a like-new condx. $1,200.00. W2QST, 630 Highland Rd., Ithaca, N. Y.

SELL: DX-40, S-53A, $125. Dale Bullough, 1600 Indian Hills Dr., Big Spring, Texas.

COLLINS MBF transceiver, $25.00; BC375, $15.00; Leica III, $100. W7POS.

FAST Service, send stamp for QSL samples. K2 Press, Box 372, Mineola, N. Y.

HT-32, $395, like-new condition. Instruction book, original carton. Why fool with phasing when you can steal a fine filtering at this price? K2FF, 33 Oakview Ave., Maplewood, N. J.

SELL: Complete station, now in use, Johnson Ranger, HQ-170 rcvr. Cubical quad. Many extras. K2PDD, Nye, Tel. FI 7-8673.

SELL: Kleinschmidt tape perforator, $45; Super Pro 1250 Kc to 40 Mc., $85; Pr. KW xfrmrs, 220 pri, 3 Kc. sec., $40; Masco 30 w. PA, $12.50; BC453B 190-550 Kc., $8; B&W CX62C butterfly with N2, $16; electric, Pr. 4" dia, 110v. selsyns, $10; 1.5 KVA pole xfrmr with auto xfrmr to 3 K VDC, $18; Hy-Gain 14 AV vertical with base mntg kit, $20. Joe Gillson, W3GAU, 109 Mullin Rd., Wilmington 3, Del.

WANTED: Amateurs with 2nd radiotelephone license, for Bendix 2-way radio/sales/service centers. Lower Peninsular, Michigan. Frank E. Ostrow, W8VCN. Sha-Mar Electronics, 238 S. Glengarry, Birmingham, Mich.

HALLICRAFTERS S-40B receiver plus 5 extra tubes for sale, $55. Fine condx. Richard Bergen, La Grange, Ky. K4VDE

SIDEBANDER Globe DSB-100; in xlnt condx, $90. Prefer local deal. Scott Norman, 9900 S. Merrill, Chi. 17, Ill.

FOR SALE: Collins 310B-3, $149.50; 32V2, $300.00; Globe Scout, $85.00; LA-1 Linear, $69.50; Alpha 6 Xmtr., $64.50; Alpha AC pwr., $24.50; Viking Ranger, $195.00; Valiant, $325.00; Pacemaker, $325.00; "500", $675.00; Challenger, $113.50; Matchstick (like new), $65.00; Matchbox, $44.50; Gonset 6 meter linear, $122.50; G-66B, 3 way pwr., $175.00; G-77, $175.00; SX-101 Mark III, $275.00; SX-100, $210.; S-102, $36.50; SX-25, $65.00; HQ-110, $196.50; HQ-110C $203.50; Viking Mobile $65.00; R-46B spkr., $10.00; C.E. 20A w/458 VFO, $225.00; P&H LA-400, $145.00; HT-32, $495.00; 75A-4 (excellent), $550.00; Elmac AF-67, $127.50; DX-100, $189.50. Write Art Brown, W9IHZ, Brown Electronics Inc., 1032 Broadway, Ft. Wayne, Ind.

GLOBE King 500-C for sale, $575, in A-1 condx. K4TGB, Martin Ginsburg, 425 Pepper Mill Lane, Norfolk, Va.

BARGAIN: HQ-150; like new with book; $200 or best offer. Heath VOX, used 5 hours, with book, $20. Prefer local sale but will be willing to ship. Gary L. Foskett, W1ECH. 56½ Rockwell St., Winsted, Conn. Phone FRontier 9-5181.

LOOK! B&W 5100-B, brand new, used twelve hours, perfect, $350; SX-101, matching speaker, perfect operating condition, $290; Jones Micro-Match and indicator, never used, $30. Ed Savage, WA2JXU, 147 Ridgecrest Rd., Ithaca, N. Y.

GONSET G-66B 3-way pwr. and G-77 with dynamic mike. Both in gud condx, $345. E. H. Kirk, W90ET, 6315 S. Harrison, Ft. Wayne, Ind.

FOR Sale: DX-40 and VF-1, $60; Viking Adventurer, $35; Regency all transistor converter and receiver, $80; VHF-152A, $25; pair BC-611 handie-talkies. W5DCA, 2249 S. Troost St., Tulsa, Okla.

ELMAC PMR7 receiver with AC and S meter supply, PSR117 like new, $130. Will trade toward KWM-1. Griffiths, W2OQR, 39-82 65th Place, Woodside, 77, L. I., N. Y.

ELDICO EE3A electronic keyer $50; HQ-120, $45; Adventurer with Viking modulator, $35; 4X1000, best offer; Elmac AF67, $80; Elmac PMR6A with power supply, $75; 10-15-20 mobile Heliwhip, $10. Check or money order. F.o.b. Syracuse. K2PKL, 114 E. Newell St, Syracuse, N. Y.

GSB-100 Serial #A1061 less than 20 hrs. of use, $385 cash. Mosley TA-33 1 yr. old, $70. cash. Write, phone or wire Robert Dressell, W3BPZ, 1851 S.W. 29th St., Allentown, Penna.

HALLICRAFTERS SX-96. Excellent condx, $160.00. Mort Caldwell, K4IZW, 251 East Maxwell, Lexington, Ky.

FOR Sale: B.W. antenna coaxial connector $3.00; new meters, 0-500V DC, $6.00; 0-150 VAC, $6.00; 0-200 DCMA, $5.00; DPDT antenna relay, $3.00; 700 Ma. relay, $3.00; 12V DC SPST relay, $2.00; shorting relay $1.00; 2 sec. 5 pos. rotary switch, $1.00; 3 AC synchronous motors, $4.00; anchor TV preamplifier, $5.00; 200V DC at 300 Ma. power supply with S meters. Best offer over $50.00 Bendix ATD xmtr. $30.00; Triplett 3433 FM-AM sig. generator, best offer over $40.00. J. Davidson, 1036 Starr Ave., Burlington, Iowa.

SELL: Globe Chief 90A, $4500. K7INO, 2517 Galloway, Olympia, Wash.

EXTENSIVE Collection gear, components, RTTY, books and magazines (single and sets). Send stamped self-addressed envelope for list. W4NYF, 405 NW 30 Terr., Ft. Lauderdale, Fla.

WANTED: Harvey-Wells T-90. W2FLI, 16 Hillis Terrace, Poughkeepsie, N. Y.

EXCELLENT: DX-100, $170. Will deliver up to within 100 miles; will ship following: AM2 SWR bridge, $12.50; Bud adjustable lo-pass $12.50; 110V ac Dow co-ax relay, $10; Astatic 54-MB mike, $7.00; GD1, $15.00, QF-1, $7.50, HQ-140XA $180, Harold McMaster, W9LIV, 808 West Main, Taylorville, Ill.

SELL: Collins 75S1, unopened carton. Make offer or trade for 75A4; 312A-1 deluxe speaker; NBFM adapter, $10. W0BNF, Box 105, Kearney, Nebr.

BC-348, $45.00; BC-312, $45.00; SCR-522, $20.00; BC-779 $100; 7BP7, $4.00; 5BP1, $4.00; HY-75, $4.00; par. 872-As $500. Bill Blaine, 4132 Haverhill Dr., Atlanta, Ga.

SELL: Am. Senior in E.E. at college and have no time for hamming. Equip. all in excint condx: HQ140XA, DX-40, UF-1, Lightning Bug, etc. K2IPV, Robert Gordon, 1207 154th St., Whitestone 57, L. I., N. Y.

SALE: Ranger, late model, in excint condx. Grid block keying, $175.00. K3MDV, 131 MacDonald Dr., Wayne, N. J.

RECEIVER 2, 6, and 10 meters: VHF152 converter plus home built 7 Mc. rcvr IF. Includes noise-limiter, BFO, S-meter, squelch and audio. Guaranteed. W5KVE, 1307 So. 21st St., Temple, Texas.

COMPLETE Mobile station. AF-67, PMR-7, C-1050 supply, "Web-whip" antenna, relay, cabling, etc. Asking $250.00. Hal, W8PNM, 1330 Southern Hills, Hamilton, Ohio.

NATIONAL: NC-173D with Johnson calibrator, just realigned, perfect in looks and operation, $315; Elmac PMR7 and PSR6-12 p/s and special Drake Q multiplier to match, $150, like new! S-40 rcvr needs work, $45.00; Eico signal generator, $15; pair BC645 transceivers with conversion data, $55.00. T. J. Sulas, WA2KZU, 5808-80 St., Elmhurst 73, L. I., N. Y.

ANTENNA Rotator, Telrex heavy-duty 500RIS for heaviest arrays. Used less than one year. New QTH can't use. Cost $450 with deluxe indicator. Sacrifice $250 or best offer. Charbeneau W80LJ, Franklin, Mich.

WORLD'S best reconditioned equipment. Shipped on approval. Trades. Terms financed by us. Central 20A $159.00; Collins 75A1 $229.00, 75A2 $299.00, 32V3 $349.00, 75S1 $399.00, 32S1 $449.00, KWM1 $549.00; Drake 1A $199.00; Elmac PMR7 $119.00, AF-67 $129.00; Globe Chief $39.00, Globe Scout $59.00; Hallicrafters S76 $99.00, SX99 $109.00, SX100 $199.00, SX101 $279.00, HT32 $429.00, HT32A $499.00, HT33A $575.00; Hammarlund HQ100 $129.00, HQ129X $149.00, HQ110 $189.00, HQ150 $219.00, HQ170 $289.00, HQ160 $289.00; Heath DX35 $49.00, DX40 $65.00; SB-10 $89.00, DX100 $179.00, RX-1 $199.00, Apache $239.00; Johnson Adventurer $39.00, Viking II $179.00, Valiant $279.00; National NC173 $99.00, NC183 $149.00, NC300 $229.00, HR060 $349.00. Many other items. List free. Henry Radio, Butler, Mo.

SELL: SX-100, $220; Webcor tape recorder 210-10, $85.00. Stuber, Amherst, Ohio.

FOR Sale: 1 Gonset III Communicator 6 and 110V., $200.00. Jerry Reed, K5ZGV, 5311 E. Archer, Tulsa, Okla.

SELL Or trade three good cameras, SSB exciter or stable receiver wanted. K20YN, 449 Hill St., Boonton, N. J.

CANADIANS: Collins 32V2, $375; RCA CR88A rcvr, $250; Hy-Gain 3-el. 3 bds., beam $100; Geloso VFO, $15.00; will drive pair 807s, 6146s; new 7094, $30.00. Low-pass Johnson, $13.00. Dow-Key relay, $7.00, etc. Write for list. All letters answered. VE2AES, 1400 Souvenir St., St. Martin, P.Q., Canada.

KWM-1 and mike, $550; AC supply, $75.00; DC supply, $150; cable and mount, $50; Bassett antenna $25.00. The works for $800. Norman Rowe, 6 Greenbrier Lane, Pt. Washington, N. Y. Telephone MA 7-0717.

SELL: KWS-1 with 4X250Bs, perfect, $1050; Telrex 15 M full-size, sealed package, $65.00; Roberts 4-track stereo tape recorder, $400; amplifier spkr, $20; Fisher PR-66 stereo pream., $15; Fisher 101R stereo tuner with cab., $200; Bell 3030 stereo amp, $100; Concertone stereo professional tape recorder, $750. All like new condx. R. R. Lamb, 1219 Yardley Rd., Morrisville, Penna.

COMMUNICATOR II. 12 volts d.c./115 volts a.c., 2-meter model with a.c. and d.c. cables. In gud condx $160. Cash only. E. Laird Campbell, W1CUT, Box 1, West Hartford 7, Conn.

KWM-1 transceiver $590; ci6E-1, 12 VDC pwr supply, $205.00; 516F-1 AC pwr. supply, $80.00; 351D-1 mobile mount with cable, $50.00 and 302C-1 directional wattmeter with coupler, $45.00. All for $905. DC pwr supply, mobile mount and cable, new. Other items like new condx. Must sell immediately. John E. Stanis, 55 Joseph Rd., Framingham, Mass. Tel. TR 5-0209.

SELLING Out; KWM-2, AC power supply, mike, $935.00; Mosley TA 33 beam, CDR Ham-M rotator, 200 ft. RG8U 200 ft. rotator cable $140. Sam. J. Rhoades, Jr., W5RVX, 4616 So. Columbia Tulsa, Okla., Phone RIverside 2-7772

SELL: DX-40 $55; DX-20, $25.00; VF-1, $18.00; AR-3, $20. For information write to Paul Jagnow, 845 Stewart, Dubuque, Iowa.

LEECE-NEVILLE 5μ amp. rectifier, $5.00; 24V 10 amp., $6.00, 110V selsyns, $3.00 Telephone relays, 50¢. B. J. Kucera, 10615 So. Highland Ave., Cleveland 25, Ohio.

SELL: Heath Seneca 6- and 2-meter transmitter. Used on two exclusively on air, but checked out on dummy load on six when built. Top shape. Good reports on signal. First check for $150. Corwin Butler, K5INX, 125 Enlow, Blackwell, Oklahoma.

SELL: New DX-100 built but never used. Need the cash. Will sell cheap. K2URG, Tel. FI 3-4498, 80-43rd 240th St., Bellerose 26, L. I., N. Y.

RTTY—Model 14 tape distributors, brand new, in sealed cartons, $110. W2ZXM.

COLLINS Receivers reconditioned: 51J-2, $495; 51J-3, $675; 75A-1, $269; 75A-2, $295; PMO oscillator, $245; HQ-145X, $149; HQ 110, $149; R-390A Gonset 111 2M., $209; HRO-7R, $99; Valiant, $319; Ranger, $199; BC-103 1 Panadaptor, $89; Model #14, #15, #19, 26, 28 teletype printers Telewriter Converters. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. (Tel. Richmond 2-0048).

CRYSTALS Airmailed: SSB MARS, Marine, Net, Novice, Commercial, etc., Custom finished FT-243 .01% any kilocycle 3500 to 8600 $1.49 (10 or more 99¢), all novice 99¢, 1700 to 30,000 $1.95. All frequencies 60¢ additional for HC-6/u hermetic holders. Builders crystal packages: November QST "Phasing Sidebander" $9.95; June 1958 QST "SSB Package", 5 mixer FT-243 $9.95, hermetics $12.95, 7 matched filter $6.90 set. All types, if you don't see it be specific, write. Airmailing 9¢ per crystal. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

NEW 813s, $5.00; QST and CQ magazines, best offer; BC221T, $45. DeClaive, W6GIB, 6646 MacArthur, Oakland, Calif.

WANTED: Unusued or excellent BC610, BC342, BC348, BC191, PE95F, PE95K PE75. State condx, price. Larry Pon, 2849 East Colorado St., Pasadena, Calif.

SELL: Complete station, HQ129X, Harvey-Wells TBS-50, two Command VFOs, 3-4 and 7-9 Mc. Husky power supply, Balun coils and B&W LP filter on special mounting. RF ammeter, external antenna condenser, mike, relay, spare tubes, instruction manuals, etc. All in good condition. You pay shipping costs. Complete 10-80 meters. $200. W7MH, 2514 Baker, Everett, Wash.

FOR Sale: Phasemaster 11B, brand-new, no time to operate. Cost $459.00. Sacrificed at $259.00; Elmac A-54-BD77 dynamotor-Tribander converter all for $90.00; Leece-Neville alternator, rectifier and regulator, 6 volt complete, $25.00. W2RCN, 53-35 203rd St., Bayside 64, N. Y. or phone BA 9-7010.

HAVE Brand new Carrier refrigerated 1 HP room air-conditioner, dehumidifier, heat pump. Never used, full 5 year. Factory warranty. Lists at $342.50. Want: complete mobile station for 12 volts of approx. equal value; Morrow, Elmac, Heath, R. J. Hampton, 1533 Glen Ayre Drive, Lakewood, Colorado.

WANTED: Ham-M rotor and 75A-3 with 3 Kc. filter. Write to W. E. Jones, Box 4, Bowmansville, N. Y.

WANTED: Panadapter, and RCA AR-88 receiver Paul Lee, 5209 Bangor Drive, Kensington, Md.

COLLINS KWS-1 transmitter. Never sold. Ex-Collins employee. 4X-250A final, including antenna changeover relay. All modifications in by Service Dept. In beautiful condition. $1175 or best offer. Serial No. 959. Paul Comstock, Schafer Custom Engineering, 235 South Third St., Burbank, Calif. Tel. THornwall 5-3561.

DX-40, new, $60.00; Heath SB-10, in mint condx, $75. W0GML, A. Verne Roberts, 5520 Porter, Wichita, Kansas.

SUPER PRO Rcvr, cabinet, power supply, $100; Collins exciter VFO, $50; 75 watts c.w. fone xmtr, $50.00. Ron Condry, Anamosa, Iowa.

BC-221-AH frequency meter, complete. Power supply, $79.00. Triplet test-meter, model 1200, $19.00. F.o.b. W6NCT, 612, Alston, Santa Barbara, Calif.

GLOBE Chief 90 watt xmtr, Globe 750 VFO, both in gud condx, $35.00 each, or both for $65.00 shipped. First money-order takes them. Lew, K9AIU, Rossville, Ill.

SURPLUS Height indicators, good for small 'scope, modulation checker, band scanner, etc. 3BPI, 2x2, 3-6AG5, hi-voltage pots, condens, etc. New, in Tropipak. Huffington, 1802 Inglewood, Wilmington 3, Del. $9.50.

FOR Sale: Heathkit AT-1 transmitter, vy gud conx, inc. key, crystals, coax jack, $20. Chuck Welsch, 924 E. North St., Appleton, Wis.

WANTED: Old QST's for library, complete run from first issue to and including year 1930 or what have you? Cash. W5RU, Roy L. Alciatore, 5700 Canal Blvd., New Orleans 24, La.

KW-1 Collins, in perfect condx, from the estate of the late W0EIB, make offer. Mrs. Virginia Klassen, W0OCP, 301 W. 120th St., Kansas City, Mo.

FOR Sale: New HT32A, $600; CE600-L, $325.00; Elmac A54H, $65; transformers, 208-230 and 440 input; 3800 CT at 2.7 amps. Use in bridge circuit for 3500 V DC at $1.35 amps, $165; filament transformer for 872s in bridge. Use with above transformer, $21.00; transformer 115 input, 3100 CT at 400 Ma., $22. VFO-Matic for 20 and 75 meters, $75. 4-400A tube, $25. Power supply, 1500 VDC @ 400 ma (42ufd cap.) $75. James Craig, 172 W. Third, Peru, Ind. Tel. GR 3-9306.

APN-4 Loran receiver, in exc. condx, $25; APX-6 32 tubes, $15; BC1151 dual 5" scope, $15; BC1066 UHF rcvr with canvas carrying case, $15. All F.o.b. Dick Maxey, KN7KHZ, 1133 E. Fern Drive, Phoenix, Ariz.

WANTED: SX-42, in gud condx. Richard Hansen, 451 E. 65th St., Seattle 15, Wash.

FOREIGN, Domestic radio magazine subscriptions. QTH stickers: 1000, $1.00. 3-line rubber stamp, $1.00. Hart, W8VVD, 467 Park, Birmingham, Mich.

SELLING Out complete station. Collins 32S-1 w/ps AC Model 516F2, $575.00; NC-300 with xtal calibrator and 6 mtr. conv., $265; B&W L-1000A linear, $360; all above perf. condx, original cartons and instrux books. Sylvania VTVM with manual, like new, $18; T-21 (Navy version of BC-458), still in overseas wrap, new, $8.00; BC459, excellent, $8.00; new pwr. xfmr, 2940CT, at 500 mils, 115V prim., $15.00. All foregoing items can be shipped F.o.b. Spring City, Penna. Following (no shipping): 40 ft. self-supporting Spaulding Galv. tower, CDR rotator, $65; 32 ft. crank-up tower, $25; pwr. xfmr 1500V CT at 700 mils, $115 prim. wonderful for bridge ckt. Used, $12.00. No trades or swaps. sry. W3CUO, Walt Clevenstine, Arch St., Spring City, Penna.

HY-GAIN 3-el. Mini-Tribander, $53. Also WRL screen modulator, 75 ft. RG-8/U. Dick Loftin, Piedmont, Ala.

SALE: Hammarlund 145 with clock, Bliley calibrator, home brew speaker. New condition, used less than fifty hours. $245 plus shipping. John Fels, W3ICF, 801 Silver Spring Ave., Silver Spring, Md.

ANCHOR Your tower with these heavy-duty screw anchors. Set of 6, $17.00; 3-$9.00. F.o.b. Titusville, Fla. John Link, Box 47A, Rt. 1.

SWAP Johnson Valiant, in perf. condx; need mobile gear, or SSB exciter or what have you? All letters answered. K2QWG, R. C. Miller, Hillcrest Rd., Plainfield, N. J.

BATTERY Operated tape recorder, purchased new in Germany and made by Grundig. Will operate on 110/220 AC also! Used a few hours, orig. cost, $120. First $65 takes it. Complete with mike; 3-way supply. Stan Cokas, W1ULR, 16 Edgehill Rd., Swampscott, Mass.

HEATHKITS: Audio analyzer, Signal generator, signal tracer. Expertly constructed; never used. Best offer. Protzman, 148-31 87 Road, Jamaica 35, N. Y.

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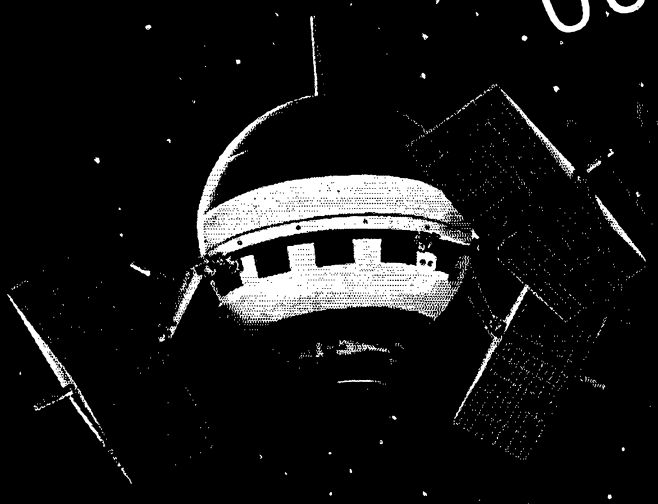

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Already so deep in space that it staggers a dx man's imagination, Pioneer V—the paddlewheel sun satellite—is keeping skeds with earth millions of miles away. Two RCA Cermolox Power Tubes (precision aligned grids with ceramic-metal construction) "deliver the goods" in the 150-watt rig aboard Pioneer V. Back on earth, RCA high-power Cermolox Power Tubes develop the 10-kw triggering pulses that are expected to keep contact with the satellite until it is 50 million miles from home.

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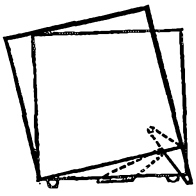

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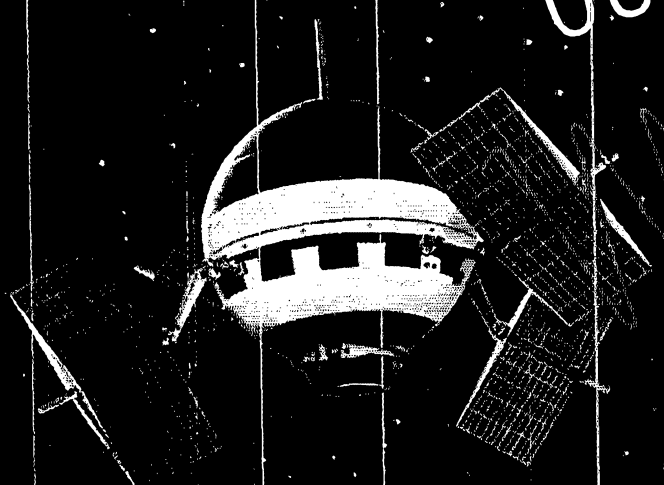

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