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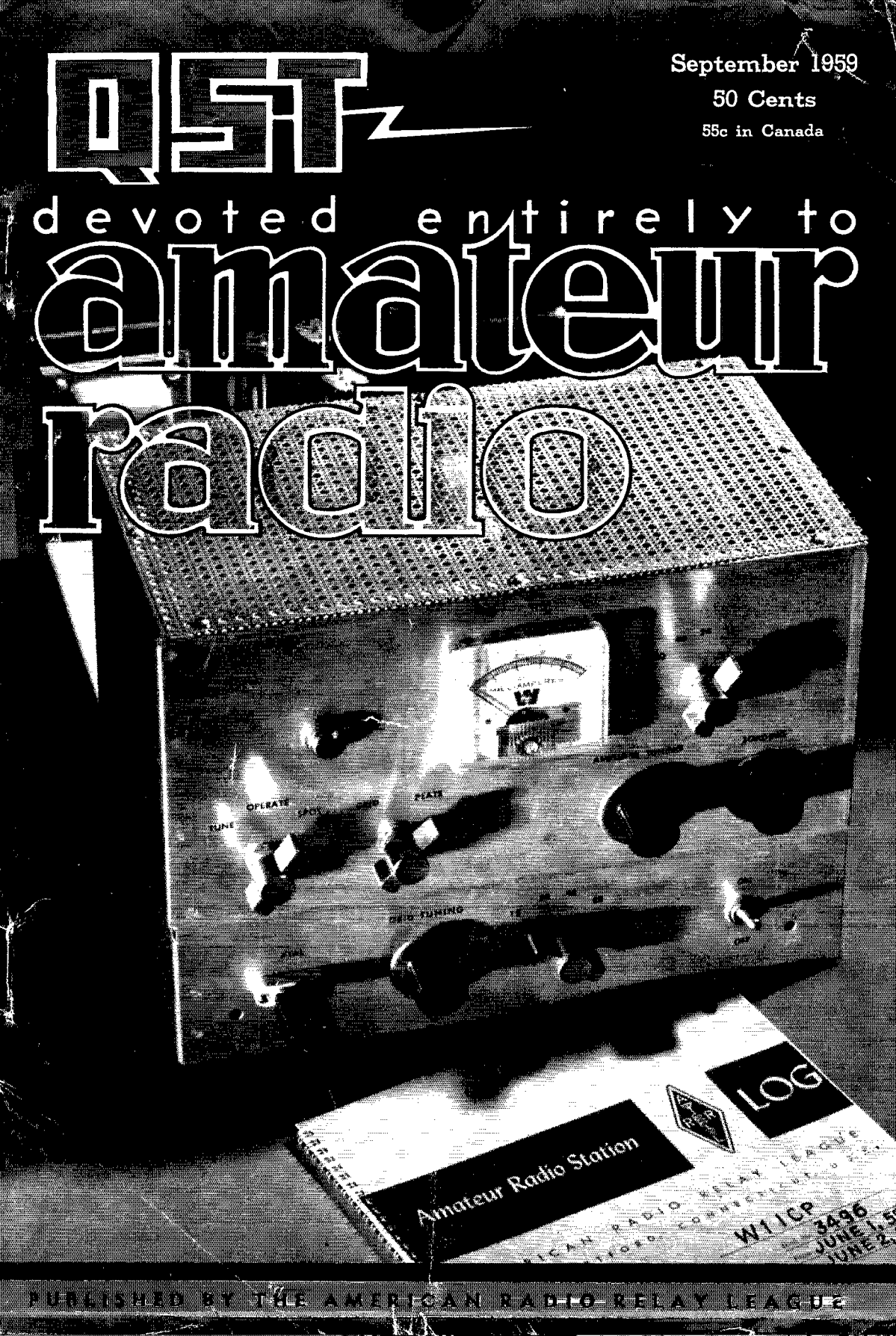

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There's more than one reason why the HT-33A was designed to be *rated conservatively at the maximum legal input. Talk-power* was part of it—enough to provide output to the antenna that guarantees you one of the really big signals on the band. But way beyond that was a need for *reserve-power* . . . to insure the effortless operation that means so much to efficiency and component life. Your distributor is ready to give you a convincing demonstration.

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- Perfect match to HT-32 in size, appearance, and drive requirements.
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- Front panel controls: Meter selector; Filament switch; High Voltage switch; Bias adjustment; Band switch; Plate tuning; Plate loading.

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Front panel switching and simplified controls offer the amateur a bonus of ease of operation and optimum operating efficiency. A gear reduced, 20-kc-per-dial-turn tuning knob allows easy, accurate tuning. And the tuning dial lights up for easy readability. All knobs turn effortlessly.

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ONE KC DIVISION ON ALL BANDS
MORE QSO'S PER KC

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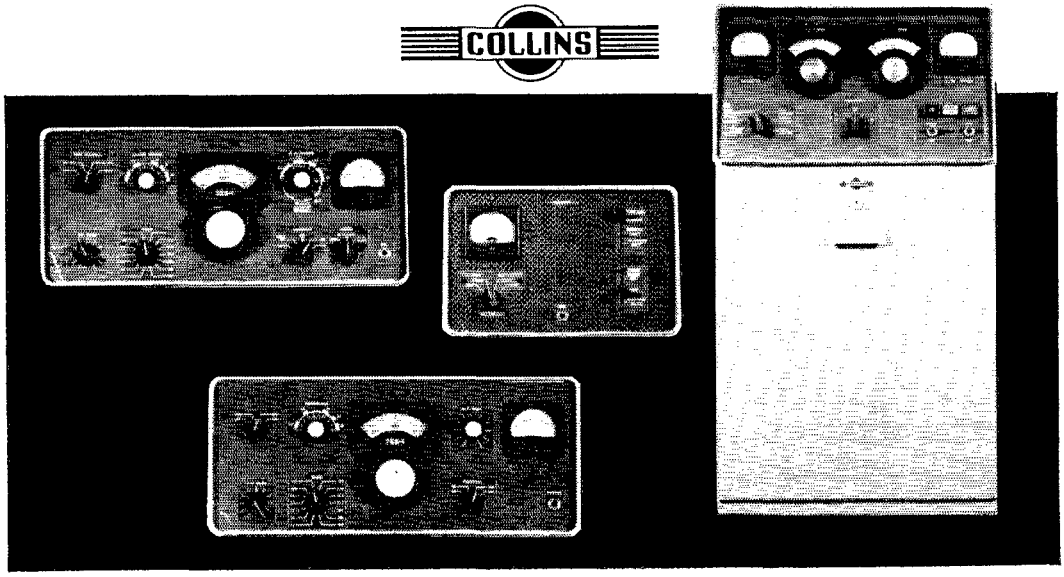

QST

SEPTEMBER 1959

VOLUME XLIII • NUMBER 9

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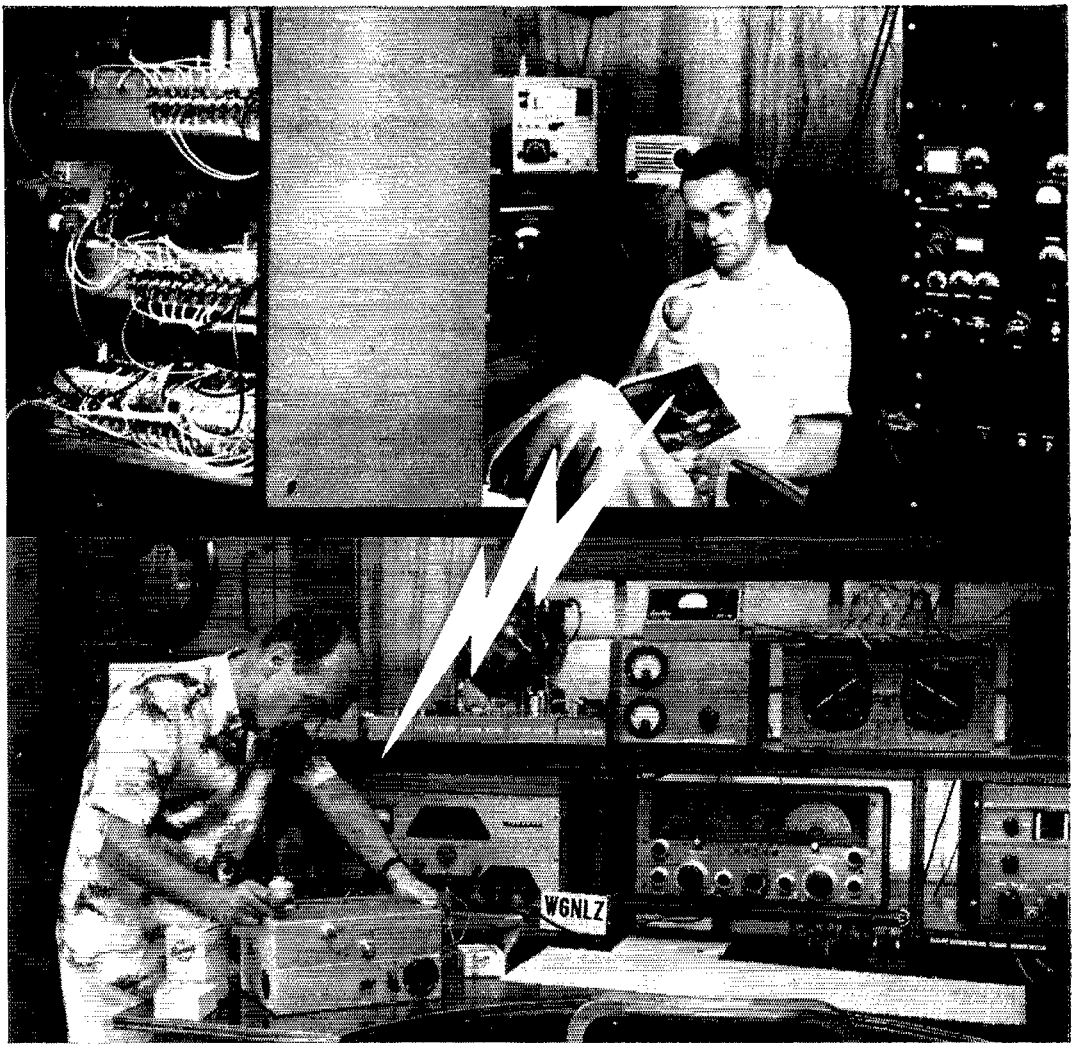

2540 MILES AT 220 MEGACYCLES — EIMAC TUBES HELP SET NEW DX RECORD

John Chambers, W6NLZ, and Ralph Thomas, KH6UK.have done it again. On June 22, 1959, they set a new ARRL 220 megacycle DX record of 2540 miles between California and Hawaii. Contact was established at 10:10 p.m. Pacific Standard Time and maintained until 11 p.m. The contact was repeated the same day and again on June 30. In 1957, Ralph and John set a two meter record over the same distance with Eimac-powered rigs.

Exceptional performance by Eimac tubes helped set this new record. KH6UK in Hawaii operated a pair of Eimac ceramic 4CX300A's in push-pull in his final amplifier, driven by a pair of Eimac 4X150A's. The final operated at 800 watts input—400 MA at 2,000 volts. KH6UK reports his Eimac tubes "just loafed along and input could have been increased to a full kilowatt with ease!"

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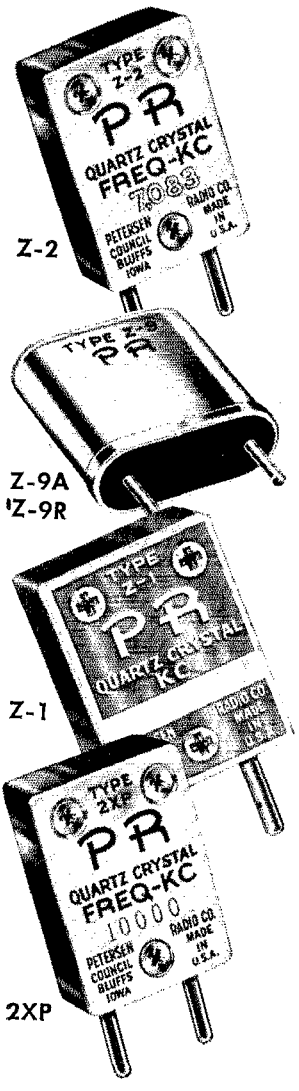

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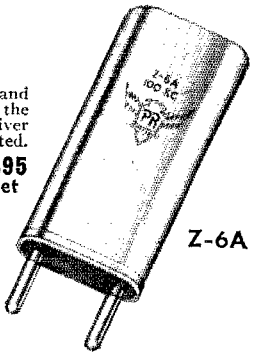

Z-6A

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Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members holding Canadian or FCC amateur license, General or Conditional Class or above. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. OES appointment is available to Novices and Technicians.

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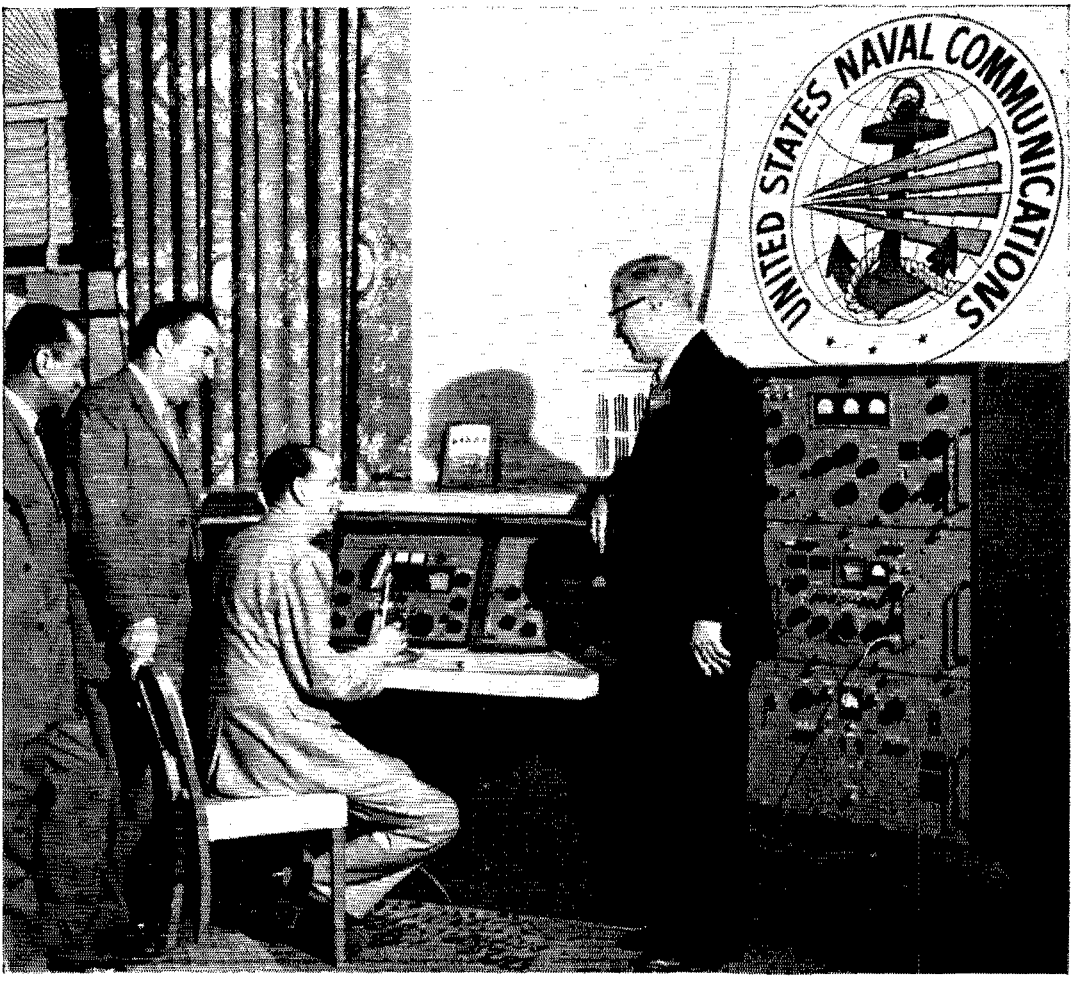

ONE OF THE HIGHLIGHTS OF THE AFCEA CONVENTION

(WASHINGTON, D. C., JUNE 3-5)

...was the operation of K4NAA/3 from the lobby of the Sheraton Park Hotel. Several hundred contacts were made using the TMC GPT-750 and a three element rotary. The first contact was with Commander Lee Denning, W4ESH, of the Bureau of Ships. Among the notable visitors were George Bailey, W2KH, of the ARRL and Ray Meyers, W6MLZ, of K6USA fame. At the mike is Chief Christopher Walker Jr., W4SSN (EX VP9CZ). Looking on from left to right are Frank Merrill, W4JFE, Hank Geist, W1AOH and Bill Deans, W2AZA.

The TECHNICAL MATERIEL CORPORATION

IN CANADA
TMC Canada Ltd., Ottawa, Ontario

Main Office: MAMARONECK
NEW YORK

THE AMERICAN RADIO RELAY LEAGUE, INC.,

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

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

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

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

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

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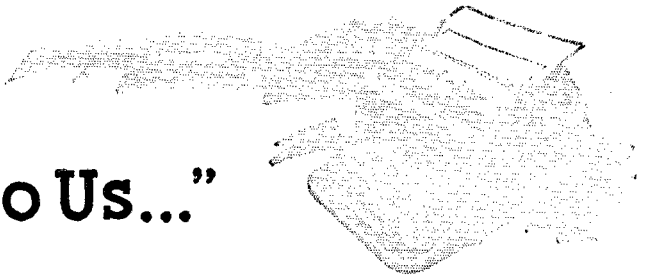


"It Seems to Us..."

RECIPROCAL LICENSING PRIVILEGES

One of the toughest questions the headquarters has to answer for its members from time to time is: "Why doesn't the United States enter into reciprocal licensing agreements with any other nation who is willing to make these arrangements?" The direct answer — "The Communications Act of 1934 prohibits it" — only leads to another question: "Then why don't we get it changed?"

It is at this point one runs out of easy answers. The League has been working on the problem behind the scenes, for years. We find that many thoughtful, conscientious government people — including not a few who are hams — honestly feel it is not in the public interest for the government to issue licenses to noncitizens.

To indicate how deep the government people's feelings on the subject run, however, we offer a concrete example. Early in 1958 Senator Hubert Humphrey introduced a resolution which would express the sense of the Senate that negotiations should be entered into, looking toward a reciprocal *operating* treaty with Mexico. Actually, the text did not refer to amateurs or even mention permission to operate; it confined itself to the matter of permission to carry mobile radio gear from one country to the other without the necessity for removing the equipment or having it sealed. However, the Senator's remarks in introducing his resolution indicated amateur radio objectives, apparently sparked by correspondence with some of his amateur constituents. Even this modest bill got nowhere, though it was much less comprehensive than an agreement to *license* foreign amateurs.

Of equal significance to us, the Senator's remarks also indicated that he had personally taken up the subject during the two years preceding with the State Department and FCC, without success, just as we have.

In our conversations with the various agencies, we have presented several points in favor of reciprocal operating privileges. Operation by American amateurs abroad and foreign hams here could, we feel, deepen international friendship. No additional security risk is entailed, in our opinion, because anyone who wants to can acquire radio equipment and take his chances on operating it *sub-rosa:* a Russian colonel did just that for quite a period of time. It would benefit Americans about ten to one over foreigners, since far more of our people are overseas as tourists, businessmen, mutual-aid advisors, and armed forces personnel than there are aliens visiting or working here. It would be a strong gesture of mutual trust and understanding — and one completely divorced from "dollar diplomacy." Other countries in a more exposed position from the security angle — such as Germany — readily grant licenses to visiting amateurs from any country with whom they have diplomatic relations.

In reply we hear remarks something like the following: other considerations aside, who says American amateurs foster good will when they operate abroad? At least in one country domestic amateurs have asked that American licensing be eliminated or greatly restricted. American traffic-handling and the use of 500-watt transmitters by GI hams in European and North African countries where national laws restrict power to much lower limits, have aroused the antagonism of local hams in the countries concerned and in many neighboring ones as well.

(Right after the Second World War ended, some of these countries were considered as occupied enemy territory, and operation by Americans was authorized under FCC-type regs by the military governments. In others, the local governments were demoralized or occupied by much more important problems — the day-to-day survival of their people, — and were quite willing that the Americans should have such minor privileges as amateur radio operation so long as these countries did not have to get involved in regulation of the Americans. However, as time went by, occupied countries regained their sovereignty, the liberated ones relative prosperity and stability, and these governments resumed amateur licensing under their traditional ground-rules. As most of you know, the power limit for most of Europe and much of the world is around 150 watts input, and traffic-handling by amateurs is almost universally prohibited.)

Though this argument probably has some foundation, obviously it isn't the sole reason for the government's reluctance to enter into licensing agreements with others. Whatever the reason, as we — and Senator Humphrey — have discovered, the answer at present is simply "no."

Summing up, there doesn't seem to be much we can do at the moment to hasten "reciprocal licensing." Rest assured, however, that the League will continue chipping away at the subject at every available opportunity. QST

FLASH!

Just at deadline, we received word that the Mexican and United States Governments have signed an agreement permitting amateur third-party message traffic between the two countries, effective August 30. Details next month in the Happenings section.

COMING A.R.R.L. CONVENTIONS

September 5–6 — N.E. Division, Hartford
September 5–7 — Maritime Provinces, Halifax, Nova Scotia.
October 3–4 — Roanoke Division, Richmond, Va.
October 17–18 — Ontario Province, London, Ontario.

MARITIME PROVINCE CONVENTION

Halifax — September 5–7

The Halifax Amateur Radio Club is sponsoring the Maritime Province ARRL Convention, to be held in Halifax over the Labor Day week end, September 5–7, at St. Mary's University. Hidden transmitter hunts, contests, banquet, buffet supper, technical talks, and other activities will constitute part of the program. Registration fee is $6.00.

R. W. Wilson, VE1WL, is president of the Halifax Club. Convention chairman is D. J. Bain, VE1LZ. G. F. Snair, VE1TA is Convention Committee Vice-Chairman.

Convention activities will be held in the University's gymnasium.

ROANOKE DIVISION CONVENTION

Richmond, Virginia — October 3–4

The Richmond Amateur Radio Club will be host to the ARRL Roanoke Division Convention in Richmond on October 3–4 at the Hotel Jefferson. The registration fee is $7.00 which includes the banquet and an evening of dancing.

Registration will begin Friday night, October 2. Saturday morning, October 3, will feature ARRL affairs and meetings with Director Anderson and the SCMs. Luncheon will be organized into special interest groups such as DX, s.s.b., MARS, etc. The afternoon is filled with top speakers on various subjects of wide interest. Informal dancing will follow the banquet.

Advance registrations should be postmarked on or before September 30. Hotel reservations should be made directly with the Hotel Jefferson. Registrations or request for additional information should be sent to ARRL Roanoke Convention Committee, P. O. Box 73, Richmond 1, Virginia.

Co-chairmen for the Roanoke Convention are Joseph S. Galeski, jr., W4IMP and Charles C. Justice, W4JUJ.

More Hamfest Calendar on page 89.

Hamfest Calendar

California — The San Joaquin Valley ARRL Section picnic will be held on Sunday, Sept. 27, at the government recreation grounds at Bass Lake in Madera County. Take Highway 41 to Yosemite Forks and about eight miles southeast, on the east side of the lake. There is no fee, but register in advance with Bill Wurts, K6EJT, 4795 E. Hammond Ave., Fresno, 2, prior to noon, Sept. 25. Further details will be given on the SJV ARRL Section Net Monday through Friday, at 1830 on 3915 kc. All amateurs are invited to attend.

Florida — The Daytona Beach Amateur Radio Association will sponsor its annual gabfest on Sept. 6, on the grounds of the Coquina Hotel, on A1A, and Granada, on the beach at Ormond Beach. This is an open-air affair, with porches and patios available. Bring your own lunch, or enjoy hot dogs and soft drinks that will be available. There are also chuck wagons and fine restaurants near by. Tickets are 50¢ each. Plenty of parking space. All day auction and swap shop. Further information is available from Jim Campbell, K4RNR, 24 Palmetto Drive, Ormond Beach.

Illinois — The annual picnic of the North Central Phone Net will be held Sunday, Sept. 13, at the St. John's Sanitorium grounds, Springfield. Follow the signs on Sangamon Avenue to the site.

Illinois — The Peoria Area Amateur Radio Club will hold its annual hamfest on Sunday, Sept. 20, at Baty's Barn on Route 29, three miles up-river from Peoria. It will be held rain or shine, as there is a large building which can be heated. There is plenty of parking room. Bring your own lunch, or eat lunch on the grounds. Contests and fun for all. Advance tickets are $1.00, or $1.50 at the gate. Contact George Enders, K9EHF, 2915 North Avalon, Peoria, before Sept. 14.

Kentucky — The Blue Grass Amateur Radio Club will hold its annual hamfest on Sept. 13 at Keenland Racing Park, Lexington. For further information write L. H. Echols, W4PRT, 2000 S. Lime, Lexington.

Massachusetts — All members of the DXCC are invited to the annual New England DXCC meeting to be held September 26, 1959 at the Motel 128, Massachusetts route 128 (take route 1 South, exit 57, Dedham, Mass.). The meeting begins at 1700 with a talk by Reverend Daniel J. (Father Dan) Linehan, S.J., W1HWK. 1830 to 1930, cocktail hour, banquet at 1930. Reservations, $5.00 covers admission and banquet, should be made through Charles Mellen, W1FH, 28 Woodley Ave., Boston.

New York — The 15th annual hamfest and ladies night of the Oneida area hams will be held on Saturday, Sept. 26, at the Masonic Temple Dining Room, 230 Main St., Oneida. Admission is $3.00 per person, by advance registration only, and is limited to the 150-person capacity of the dining hall. Check in begins at 1700, with the banquet at 1900. For reservations write Walter L. Babcock, W2RXW, 105 Sayles St., Oneida.

North Carolina — The Asheville Amateur Radio Club will sponsor a hamfest on September 27 at the Firemen's Camp Grounds near Asheville. Admission is $2.50 per person. There will be food, swapping, auction, and contests for the whole family. For further information, write to Hamfest — W4MOE, P. O. Box 128, Asheville.

Ohio — The Findlay Radio Club, W8FT, will hold its annual hamfest on Sunday, Sept. 13, at Findlay Riverside Park. Families welcome. Excellent playground and picnic facilities. Mobile talk-in on 3812 kc. Advance registration is $1.00 per family, or $1.50 at the park. Tickets and information from Fred F. Flowers, W8UGE, 1307 S. Main St., Findlay.

Texas — The Central Texas Amateur Radio Club will hold its annual hamfest on Sept. 6 at the Cameran Park Club House, from 0900 to 1500. Transmitter hunts will be held on 3.87, 29.52, and 50.8 Mc. These frequencies will also be monitored prior to the hamfest. Entertainment for the whole family. Registration fee is $1.50. For further information contact Bill Mostyn, K5CLG, 523 Camp Drive, Waco.

Five Bands in an Inexpensive Crystal-Controlled Transmitter

BY LEWIS G. McCOY,* W1ICP

The Novice likes to look ahead a little — to operating in any ham band, to more power, to v.f.o. — in short, to his "Generalship." This transmitter has that "look-ahead" design — five bands, 100-watts input, a keying system that plans for adding a v.f.o. — but complies with all Novice requirements in the meantime. Based on TV-receiver salvage, it's an economical set to build.

75 Watts Novice—100 Watts General

THE newcomer reading *QST* — or, for that matter, almost any publication treating construction of radio gear — will find the term "junk box" mentioned again and again. A junk box is a collection of salvaged components — stripped from old sets, purchased at club auctions (dust collectors, mostly!), or acquired by other means — all hoarded in the expectation that they "may come in handy sometime." The owner of a well-stocked junk box can save himself much cash in most construction projects.

The junk-box idea may be attractive to the newcomer, too, but how can a good assortment of "junk" have accumulated when you're just starting out? Here's one possible answer: In considering the design of a low-cost beginner's-type transmitter for 80 through 10 meters, the thought occurred that a discarded TV set ought to be a source of an economical power supply. But a TV set has many other components besides the power supply — altogether, a ready-made junk box in itself! For our purposes, the TV set wouldn't have to be in working order as long as it had a usable power transformer (some models use transformerless power supplies and wouldn't have been useful for what we had in mind), so we asked several TV servicemen and dealers whether they had any such TV turn-ins they wanted to sell (or even give away!). The results were encouraging — all the dealers contacted had one or more sets to dispose of, and the prices ranged from five dollars down to "you come and get it and you can have it". A cheap junk box — and available practically anywhere.

On investigation it was found that some of the sets even included tubes, although the picture tube — of no use anyway — was usually burned out. (In fact, getting rid of a picture tube is not exactly easy; if at all possible, ask the serviceman to dispose of it or, if he won't, ask his advice on how to discard it.) When purchasing an old set, make sure the power transformer isn't burnt out. All you need to do is smell it — if it's bad you'll know by the odor of burnt insulation. Also, try to get a set that includes a power-supply choke. In some sets the choke is the speaker field winding, a type which it would be difficult to mount in a transmitter. Ask the serviceman to let you see the circuit of the set you buy, and make a note of the power-transformer color code so you'll know which leads are which. If you can, get information on the voltage and current ratings of each winding. If you can't get such information, most transformer manufacturers publish power-transformer interchangeability charts for TV receivers, so one way to get the approximate ratings of your transformer would be to look up the ratings of the recommended replacement type.

We settled on an old RCA 630-type chassis for the rig described here. For utility, it wasn't the best choice in the world, but there are probably more of these sets around than any other type. Its principal drawbacks were that the choke was part of the speaker and that some of the electrolytic capacitors had their metal cases at positive polarity and some had negative-polarity cases — unmarked in both instances. However, the power transformer was a real beauty, giving about 700 volts a.c., center-tapped, and rated at over 300 ma., with a 5-volt and two 6.3-volt windings. Such a transformer, used in a bridge-rectifier supply, will power a transmitter to at least 100 watts input. Different makes of TV sets will, of course, have different transformers, but practically any TV power transformer will furnish adequate voltage and current for the rig described here.

A soldering iron, soldering aid, long-nosed

*Technical Assistant, *QST*.

pliers and side-cutters will help in salvaging parts from your potential junk box. Retain as much of the lead length on each component as you can. Get out your copy of the *Handbook* and look in the Construction Practices chapter for detailed information on determining component values. Sorting the various components into groups will give you good practice in reading color codes. Don't discard any usable parts—there's no telling what you may need for some future project. We used as many parts as we could from the TV set junk box in building the transmitter described here.

Circuit Details

The transmitter can be operated on any band from 3.5 Mc. through 28 Mc. at inputs up to 100 watts. As shown in Fig. 1, the r.f. section uses a 6AG7 grid-plate crystal oscillator driving a pair of 1625s. Either 80- or 40-meter crystals are used, depending on the band.

The plate circuit of the oscillator is tuned by the combination of C_3 and L_1L_2. The correct inductance for each band is selected by using S_1 to short out part of L_2. The oscillator can be operated either straight-through, doubling, or tripling, depending on the crystal used. An 80-meter crystal is used for 3.5-Mc. operation, and the same crystal will provide more than enough excitation for 40-meter work with the oscillator working as a doubler. However, the grid drive to the amplifier on 14 Mc. is not great enough when the oscillator is operated as a quadrupler from a 3.5-Mc. crystal. Adequate 14-Mc. excitation is obtained with the oscillator working as doubler from a 7-Mc. crystal, and also on 21 Mc. working as a tripler; the 7-Mc. crystal, of course, also can be used for 40-meter work with the oscillator working straight through. For 28-Mc. work, a 7-Mc. crystal is used with the oscillator doubling to 14 Mc., and the amplifier also works as doubler.

The parallel 1625s are operated as a straight-through amplifier on all bands except 28 Mc. The amplifier tank circuit is a pi network designed primarily to work into 50- or 70-ohm loads. C_5 is the plate tuning capacitor. The variable loading capacitor, C_6, is a two-gang broadcast type consisting of two sections of approximately 375 $\mu\mu$f. each. These two sections are connected in parallel to provide 750 $\mu\mu$f. at maximum. In addition, a 680-$\mu\mu$f. mica fixed capacitor is switched into the circuit on the 80-meter band. This, with C_6, provides the approximately 1450-$\mu\mu$f. capacitance required for 50-ohm loads at 80 meters.

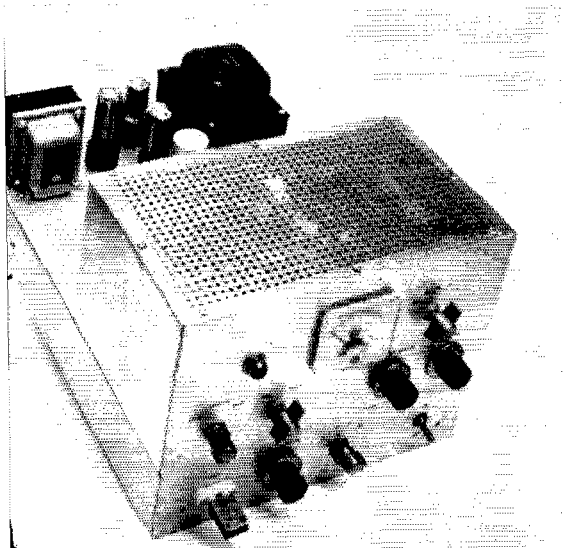
L_3 and L_4, in the plate leads of the 1625s, are for suppressing parasitic oscillations. The 1625 plates are parallel fed. Either of the two chokes specified in the parts list for RFC_5 will work satisfactorily; the 120-μh. choke was used in the unit shown because we happened to have such a choke on hand. RFC_6 serves as a safety precaution in the event that C_7, the plate blocking capacitor, should break down, in which case the d.c. plate voltage would be shorted to ground through RFC_6 rather than appearing on the antenna circuit.

Note that the cathodes of the 1625s are individually bypassed, as are also the screens. The bypass capacitors, 0.01 μf., should be installed right at each tube socket, using the shortest possible path to chassis.

Keying System

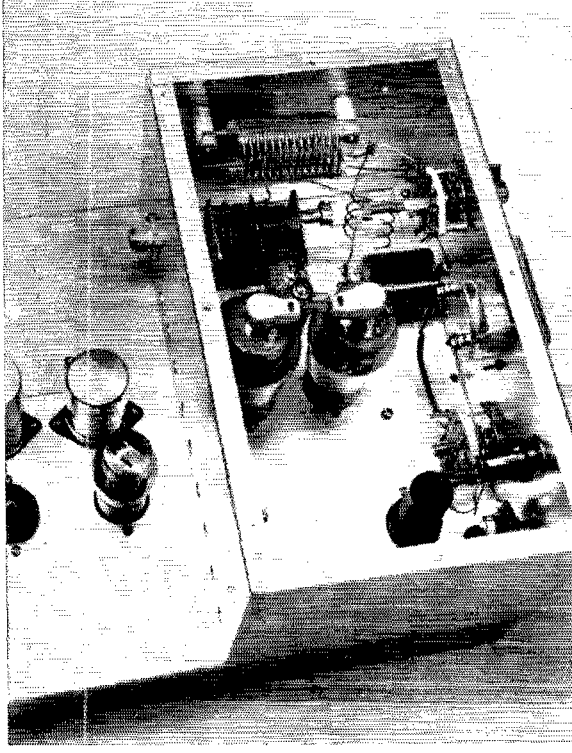
A somewhat unconventional feature for a rig of this class is the differential keying system included in the circuit. A keyed oscillator usually has either clicks or chirps. The chirp, which is a slight change in the oscillator frequency as it is keyed, can be eliminated by letting the oscillator run continuously during a transmission and doing the keying in a following stage.[1] However, break-in operation is not possible when this is done, and it is necessary to have a send-receive switch to turn off the oscillator at the end of each transmission. In "differential" keying, the oscil-

[1] It does not always suffice to let the oscillator run and key the immediately-following stage, as is done in this transmitter, because keying the amplifier often will have an effect on the oscillator frequency. Good practice usually requires at least one buffer stage between the oscillator and keyed stage. However, when the oscillator is crystal-controlled the buffer is not always necessary, because a crystal oscillator is much less susceptible to such influences than a v.f.o., particularly when the oscillator is also a frequency multiplier as in the present circuit.—*Ed.*



This view shows the completed transmitter from the front. Across the bottom on the front of the chassis are the crystal, amplifier grid (or oscillator plate) tuning capacitor, oscillator band switch, and power switch. On the box panel, from the left, are the Tune-Operate-Spot switch, meter switch, and amplifier plate tuning and loading controls, The amplifier band switch is at the upper right.

At the rear of the chassis are L_8, the 5U4 and 6DE4s, and the power transformer. The key jack, not visible in this view, is mounted on the rear chassis wall.



This view shows the arrangement of parts inside the box, The loading capacitor, C_6, in the upper left-hand corner, is mounted at the rear of the box near J_2, the output connector. A panel-bearing assembly (Allied 60 H 385) and a shaft coupler are connected to the rotor of C_6. (Some of the broadcast-type replacement capacitors have ⅜-inch diameter rotor shafts. A ⅜-to-¼-inch shaft coupler (Allied 60 H 362) can be used in such an installation.)

The 28-Mc. coil, upper center in this view, is connected between the stator of C_5 and one end of L_6. Two steatite standoffs are used to support L_6 from the side of the box. When installing the 1625 sockets be sure to allow sufficient clearance for installing and removing the tubes.

lator does not actually run all the time but is turned on just before the power is applied to the amplifier and turned off shortly after power is taken off the amplifier. Only the amplifier keying is heard on the air, and this keying can be shaped as desired, to eliminate key clicks, without affecting the oscillator frequency.

In the system used here, the keying circuit can be adjusted so that the oscillator "hangs on," even at slow speeds. In fact, it can be set to turn off as much as a second or two after the key is opened, thus eliminating the need for manual switching even though the oscillator runs continuously while the operator is sending at ordinary keying speed. A "Tune-Operate-Spot" switch, S_2, is included in the circuit; in the "Spot" position, the oscillator is turned on and, if desired, can be left on continuously and keying done entirely in the amplifier stage.

The differential keying system, although not actually essential to this transmitter, has the further advantage that it provides for future use of break-in when the builder becomes a General-Class license holder, at which time incorporating the differential keyer into v.f.o.-type (rather than crystal-controlled) operation is a relatively simple process. The system as shown also eliminates key clicks by shaping the keyed signal.

The differential keying circuit of Fig. 1 uses a 6-volt a.c. relay, single-pole, double-throw. In the key-up position a negative voltage is applied to the screens of the 1625s, through the contacts of K_1, thus cutting off the plate current. The same voltage is applied to the 0A3/VR75, causing it to conduct and thereby applying negative voltage as a bias to the 6AG7 grid through one diode of a 6H6 (the other half of the 6H6 is used as a rectifier for the negative supply). In this condition the 6AG7 plate current is cut off and the circuit does not oscillate. When the key is closed, a positive voltage is applied to the circuit, through the contacts on K_1. The positive voltage does not reach the grid of the oscillator because it cannot get through the 6H6, and since the negative biasing voltage has been removed the oscillator comes on. Meanwhile, the positive voltage has gradually been overcoming the negative charge left on C_4, so the amplifier screens come up to the normal positive operating voltage relatively slowly. The slow rise in voltage — actually, it takes place in just a small fraction of a second — eliminates the click on closing the key.

On opening the key the negative voltage is again applied to the 1625 screens through K_1, but must overcome the positive charge left on C_4 before cutting off the amplifier. This slow change in voltage eliminates the click on "break," and also delays the application of negative bias to the oscillator, so the oscillator holds on for a while after the key is opened.

Control and Metering

The first position of S_2 grounds the amplifier screens and turns on the oscillator. This allows tune-up at reduced amplifier plate current. The second position of S_2 permits the oscillator and amplifier to be keyed together, as described above. In the third position the oscillator is turned on but the amplifier is off until the key is closed. This position can be used for spotting

Fig. 1 (opposite page)—Circuit diagram of the 100-watt transmitter. Unless otherwise specified, capacitances are in $\mu\mu f.$, resistances are in ohms, resistors are ½ watt. Capacitors with polarity marked are electrolytic.

C_1—3-30-$\mu\mu f.$ mica trimmer.
C_2—220-$\mu\mu f.$ mica.
C_3—50-$\mu\mu f.$ variable (Hammarlund HF-50).
C_4—0.25-$\mu f.$ paper, 400 volts.
C_5—250-$\mu\mu f.$ variable (Hammarlund MC-250-M).
C_6—Approx. 750-$\mu\mu f.$ variable, dual-section broadcast type, with stators connected in parallel (Allied 60 H 725).
C_7—500-$\mu\mu f.$, 20,000-volt, TV "doorknob."
C_8, C_9—40-$\mu f.$, 600-volt electrolytic.
F_1, F_2—5 amp., type 3AG.
I_1—Dial lamp, 6 volts, type 47.
J_1—Phone jack, open circuit.
J_2—Coax chassis receptacle, SO-239.
K_1—Keying relay, s.p.d.t., 6-volt a.c. coil (Potter Brumfield KA5A).
L_1, L_2, L_5, L_6—See coil table.
L_3—18 turns No. 22 enam., wound on a 1-watt resistor (any value over 1000 ohms) as a form, tapped at center.
L_4—12 turns No. 22 enam. on same type form as L_3.
L_7—8.5-hy. 50-ma. filter choke (Allied 62 G 136).
L_8—Filter choke, current-carrying capability over 200 ma. (see text).
M_1—0–1 d.c. milliammeter.
P_1—Fuse-type line plug.
R_1—0.1 megohm, ½ watt.
R_2—15 ohms, ½ watt.
R_3—270 ohms, ½ watt.
R_4—0.15 megohm, 1 watt (see text).
R_5—See text.
RFC_1–RFC_4, inc.—1 mh. (National R-50, Millen 34300-1000).
RFC_5—1 mh. (Millen 34107) or 120 $\mu h.$ (Raypar RL-102).
RFC_6—2.5 mh. r.f. choke.
S_1—1 pole, 11 positions (4 used), 1 section (Centralab 1001).
S_2—2 poles, 3 positions, 1 section (Centralab 1473).
S_3—1 pole, 6 positions (5 used), 1 section (Centralab 2501).
S_4—S.p.s.t. toggle.
S_5—2 poles, 3 positions (two used), 1 section (Centralab 1473).
T_1—250 volts, center-tapped, 25 ma., 6.3 volts, 1 amp.; h.v. center tap not used (Allied 62 G 008).
T_2—See text.
Y_1—Crystal, 3.5- or 7-Mc. band as required.

your frequency or, as mentioned earlier, lets the oscillator run continuously, if plain amplifier keying is preferred.

The metering circuit uses a 0–1 milliammeter as a low-range voltmeter that can be switched, by S_5, across appropriate shunts to read either grid or cathode current of the 1625 amplifier. The internal resistance of the meter used in this installation is approximately 50 ohms, and with the series and shunt values listed in Fig. 1 the full-scale readings are approximately 20 ma. for grid current and 300 ma. for cathode current. Some of the lower-priced meters have internal resistances of 1000 ohms and if such a meter is used, the 4700-ohm series resistor, R_5, should be changed to 3900 ohms. The total of the meter resistance and R_5 should be approximately 5000 ohms, whatever the actual meter resistance.

Coil Data

L_1—13 turns No. 20, ½-inch diam., 16 turns per inch (B & W Miniductor 3003).

L_2—46 turns No. 24, 1-inch diam; 14-Mc. tap 5 turns from junction of L_1L_2, 7-Mc. tap 17 turns from junction of L_1L_2 (B & W Miniductor 3016).

L_5—4 turns No. 16, 1-inch diam., 1 inch long.

L_6—28 turns No. 16, 1½ inch diam., 12 turns per inch; 21-Mc. tap 1½ turns from junction of L_5L_6, 14-Mc. tap 5½ turns from junction of L_5L_6, 7-Mc. tap 17½ turns from junction of L_5L_6 (Pi Air Dux 1212A with 4 turns removed).

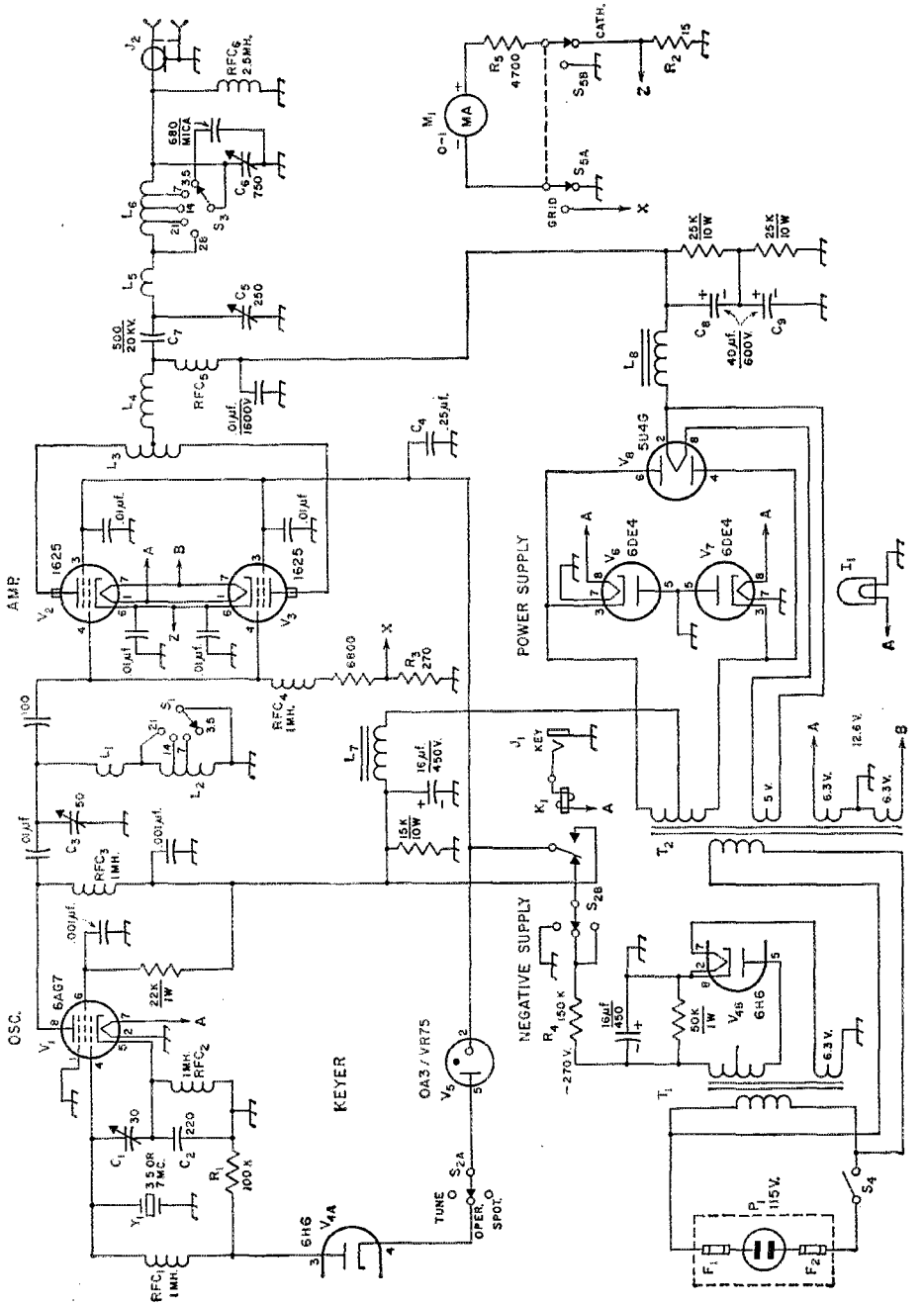
Power Supply

To obtain as much voltage as possible from the TV-type transformer a bridge rectifier circuit is used in the power supply. A pair of 6DE4 half-wave rectifiers and a full-wave 5U4G are used in the bridge. The 6DE4 is a relatively new tube and is a huskier version of the 6W4, a tube normally used as a damper in TV circuits. As used in this circuit, the tubes are more than adequate to handle the current and voltage requirements of the transmitter.

The two 6.3-volt a.c. windings on the power transformer are connected in series to provide the 12.6 volts required for the heaters of the 1625s. Incidentally, the 1625, a 12-volt version of the 807, was used because of its low cost in surplus, about thirty cents each. If you happen to own some 807s they can be substituted in the rig simply by using the proper sockets (5-prong instead of 7-prong large) and heater voltage.

The power supply has two output voltages, approximately 600 and 300 volts (the actual voltages will depend on the particular type of power transformer used, but will be in the same vicinity). Choke-input filters are used in both the high- and low-voltage legs. The inductance of L_8, the choke in the high-voltage leg, is not definitely specified in Fig. 1 because practically any TV power-supply choke will work in the circuit, providing the current rating is at least 200 ma. or more. Two 40-$\mu f.$ 600-volt electrolytic capacitors, C_8 and C_9, are connected in series to provide 20 $\mu f.$ at 1200 volts for the filter capacitance in the high-voltage side of the power supply. These two capacitors are shunted by two 25,000-ohm, 10-watt resistors, to help equalize the voltage drops across the two capacitors and to serve as a bleeder.

A 15,000-ohm, 10-watt resistor is used as a bleeder in the low-voltage leg of the supply. The

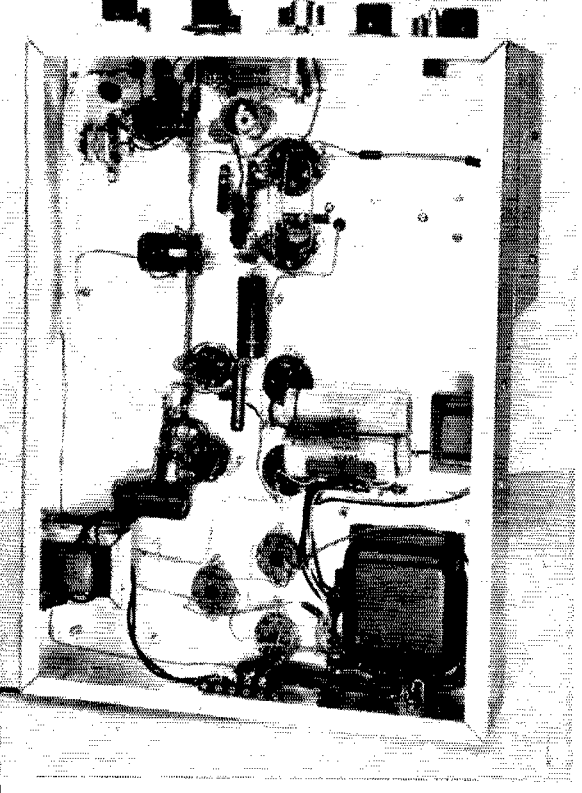


filter in this side of the supply consists of an 8.5-hy. choke (L_7) and a 16-μf. 450-volt electrolytic capacitor.

One of the diode sections of the 6H6, V_{4B}, is used as a half-wave rectifier in the negative-voltage supply for the keying system. The secondary of T_1 has two windings, one at 250 volts, center-tapped, and the other at 6.3 volts. The center tap on the high-voltage winding is not used. When installing the electrolytic filter capacitor be sure that its positive side is connected to chassis ground.

Construction

Before getting down to constructional details, there is a point that will bear mentioning. If you've acquired a TV-set junk box, on checking the values of components in Fig. 1 you may find



The oscillator components are in the upper left corner. The amplifier grid circuit components, C_3, L_1, L_2, and S_1, are at the top center. Directly below are the sockets for the 1625s. Lower left, on the chassis side is T_1, the negative-supply transformer. T_2, the power transformer, is visible in the lower right-hand corner. Just above it, on the chassis wall, is L_7.

only a few of the parts you've accumulated are the same as those used in the rig. However, this doesn't mean you can't use the parts you have. For example, resistors can be connected in series or parallel to provide values approximating those specified. Aside from the inductances in the r.f. portions of the rig and possibly C_1, C_2, and R_1 in the oscillator, none of the values are critical. For example, disk ceramic capacitors from 0.001 to 0.01 μf. usually can be depended on to work well as bypass and blocking capacitors in r.f. circuits, so the fact that 0.001 may be specified doesn't mean that 0.01 wouldn't be usable.

A 17 × 12 × 3-inch aluminum chassis is used as the base and the r.f. components are housed in a 12 × 7 × 6-inch aluminum box (Premier AC-1276). In laying out and mounting components inside the box be sure to allow clearance for the ½-inch lip around the bottom. It is a good idea to follow the general layout shown in the photographs.

L_6 is a length of Air Dux pi-network coil stock that comes mounted on a piece of plastic. Two steatite standoffs, ½ × 1 inch, are used to support the coil on the side of the box. The 28-Mc. coil, L_5, is connected between one end of L_6 and the stator of C_5. The output terminal, J_2, is mounted on the rear of the box just behind C_6. The front-view photograph shows the layout of the panel controls.

Underneath the chassis, L_2 is mounted on a 1-inch cone insulator by cementing the coil support bars to the insulator with Duco cement. L_1 is supported between the rotor of C_3 and the 21-Mc. switch terminal. The keying relay should be mounted on a rubber grommet to reduce the relay noise; the grommet size is ¼-inch diameter and a ¼-inch hole is required.

The power-supply components are mounted at the rear of the chassis. The layout shown in the photographs can be followed if desired but the arrangement of parts is not critical. However, when mounting the rectifier sockets be sure to allow for clearance of the tube envelopes when the tubes are inserted in the sockets.

In order to obtain the 12.6 volts required for the 1625 heaters, the two 6.3-volt windings on T_2 are connected in series. In the TV-type transformers there is usually one winding of 6.3 volts at 6 or more amperes and another winding of the same voltage at a little more than 1 ampere rating. Connect the two windings in series and check the voltage at the outside ends with an a.c. voltmeter. If you don't have such a voltmeter, use the 1625 heaters instead; if the heaters light up the connections are correct; if they stay dark, reverse *one* of the 6.3-volt windings. Between either lead A or B (Fig. 1), and chassis ground you will get 6.3 volts. The 6.3-volt winding with the heavier current rating will be your lead A. This is the one that will handle the heater current for the 6AG7, 6DE4s, the pilot light, and the keying relay. Current for the 6H6 heater can be taken from the 6.3-volt winding on T_1.

F_1 and F_2 mount in a fuse-type line plug.

Testing and Adjustment

Before applying power to the transmitter, carefully check your wiring for errors. If an ohmmeter is available you can check between the B-plus low-voltage line and chassis ground. Before using the ohmmeter make sure the capacitor is discharged by shorting the positive side of the electrolytic to chassis. Connect the negative lead of your test instrument to chassis and make your test with the positive lead. (A word of caution: when doing any testing on the transmitter be very careful as the voltage used in

the rig can be lethal if you get a shock.) The resistance should be approximately 15,000 ohms, the value of the bleeder in the low-voltage supply. On the high-voltage side the resistance will be about 50,000 ohms. These tests will show whether there are any shorts or opens in the B-plus circuits.

A 100-watt lamp can be connected to J_2 to be used as a dummy load. Put S_2 in the position that grounds the screens of the 1625s. Plug in a 3.5-Mc. crystal and set S_1 and S_3 for the 3.5-Mc. band. Turn on the power and allow about two minutes for the tubes to warm up. With the meter switched to read grid current you should get a reading when C_3 is tuned. Adjust C_3 so that the grid current is about 7 ma. Next, set C_6 near maximum capacitance (plates fully meshed), set S_5 to read plate current, and adjust C_5 for a dip in the reading. The current will be small because the screens of the amplifier are grounded and the dip may at first be difficult to see. Then turn S_2 to "Operate," and adjusting C_5 and C_6 should cause the lamp dummy to light up.

Go through the same procedure on the other bands to familiarize yourself with the controls. On each band, S_1 and S_3 should be set to the same frequency, with the exception of 28 Mc.; on this band, set S_1 to 14 Mc. and S_3 to 28 Mc. Remember, also, that 7-Mc. crystals should be used for 14, 21 and 28 Mc. When testing the setup on 21 Mc., adjust C_1, the oscillator feedback capacitor so that the grid current is no more than 7 ma. This adjustment should be made with C_3 at the position that gives maximum drive.

With the transformer taken from the junk-box 630 the following voltage readings, taken with a 20,000-ohms-per-volt meter, were obtained: high voltage, 570 volts with the amplifier plate current 170 ma.; low voltage, 260 (screens of 1625s and plate of 6AG7), 6AG7 screen, 150 volts; negative supply, −270 volts measured at the junction of the negative-supply filter and R_4.

The grid voltage and current for 1625s at normal operating conditions are −45 volts and 7 ma. The 6AG7 gives more than enough output, being capable of developing over 100 volts bias on the 1625 grids on 80, 40, and 20, and about 70 volts on 15 meters. However, the drive on 15 should be adjusted as outlined above, to minimize crystal heating. If the grid current is too high on the lower bands it can be reduced by adjusting C_3. All the voltages given, of course, are based on the transformer taken from the 630 chassis. Your transformer may have slightly higher or lower voltages, depending on the type. However, as stated earlier, practically all TV power transformers will be suitable.

With the component values specified for R_4 and C_4, the oscillator tends to stay on for two or three seconds after opening the key. The operator can adjust the circuit so that the oscillator stays on for longer or shorter times by changing the value of R_4. A higher value, such as 220K or 330K, holds the oscillator on for longer periods. However, this also tends to "soften" the keying, so the adjustment that best suits the operator should be used.

As stated earlier, the amplifier pi network is designed to work into 50- or 70-ohm loads. The best way to obtain such a load is to use an antenna coupler.[2] The output capacitance range of the amplifier tank is such that a 50-ohm load on 80 meters can be handled, but if the load is much less than 50 ohms it may not be possible to load the amplifier fully. However, if an antenna coupler is used, or if the s.w.r. on 50-ohm line is 1 to 1, this will not be a problem.

When going on the air, a couple of precautions should be observed. Always check your crystal frequency. Check the settings of S_1 and S_3, to make certain that you will be on the right band. For example, you could have a 3750-kc. crystal plugged in and, while planning to operate on 80, inadvertently set S_3 for 40. In this case the amplifier would be working as a doubler and your signal would be going out on 7500 kc.—and you'd be in for trouble! Make a point of checking the crystal and switches each time you change bands.

Until you get your General Class license you must not run more than 75 watts input. If you know what your plate voltage is, Ohm's Law will give the plate current you can run on the amplifier to get 75 watts input. For example, in the rig described here the plate voltage is 570. If the amplifier plate current is 130 ma. the input is 74 watts. If you can't measure the plate voltage, the simplest thing to do is to assume that it will be 600 volts, a round figure that is not likely to be exceeded with a power supply of the type described here when the amplifier is loaded to a plate current of 125 ma. Thus a plate current of 125 ma. should be on the safe side, for an estimated 75 watts input.

To load the amplifier to the Novice limit, first set the output capacitance, C_6, to maximum and "dip" the final by adjusting C_5. Note the current reading and, if you can measure the plate voltage, calculate your input. You'll probably find it to be considerably less than 75 watts. Decrease the capacitance of C_6 a little and redip the final, then repeat until the input is brought up to the 75-watt point. Alternatively, follow the same tuning process until the dipped plate current is 125 ma., as suggested above.

The construction and shielding of the transmitter are adequate for minimizing TVI troubles in what would normally be considered to be the service area of a TV station. If there is interference with weak TV signals on channels in harmonic relationship with the higher-frequency bands, 20, 15 and 10 meters, the addition of some shielding around the meter, filters in the a.c. and key leads, and a bottom pan on the chassis should clear up any harmonic leakage from the transmitter. The TVI chapter in the *Handbook* has the details. In such cases, too, a low-pass filter probably will be necessary. QST

[2] McCoy, "A Multiband Antenna System for the Newcomer," *QST*, March, 1959.

Antennas improperly installed on apartment-house roofs in thickly-populated areas can constitute a severe hazard not only to property but to personal safety as well. Cliff-dwellers would do well to heed the suggestions made here by a "voice of experience."

Safeguards in Roof-Top Installations

BY MYRTON J. BILLINGS,* W2BIV

Apartment-House Antenna Precautions

MANY of us amateurs who live in large apartment houses are confronted with certain situations and problems which our country brethren do not have. I live in a fifty-eight-family apartment, and the roof is a forest of TV antennas in all stages of neglect. Over one third are on the roof top, having come down at one time or another.

During the past eighteen years I have erected many antennas, and only one has stood the test of time. The masts have been up for over fifteen years, and they have withstood every storm and hurricane that came along. I have a graveyard of antennas which did not last more than three or four years, all erected with great care.

With the above situation prevailing, failure of any section of your antenna can be a major calamity, involving much property damage for which you may be held responsible. A 2 × 4 falling four to six stories is something of a monster, and can easily kill from that height. We must take steps to prevent any such calamity.

A major problem to contend with is the erosive soot from incinerator outlets, and the smoke and soot from the surrounding apartments. The fumes cause such serious rust and erosion that TV masts and antennas literally turn to dust unless steps are taken to protect the surface of the metal. Aluminum is supposed to be corrosion-resistant, but minor impurities in the metal are acted upon, causing a galvanic action which eats away at the metal until it looks like a moth-ridden garment. Television masts look like castaway cigars. I have devised a few simple precautionary measures, some old and some new, which can avert a catastrophe of major proportion.

A few months ago a very bad storm fractured a 2 × 4 which supported a two-meter array. This entire structure was hanging more than 36 feet over the parapet. Without protection this could have fallen into the street, with serious consequences. A simple measure secured this mast and prevented it from falling. It is now among the residents of my antenna graveyard.

A good antenna is hard to come by for us cliff dwellers in the city. It should therefore be erected with loving care, and watched carefully so that roof privileges will not be withdrawn.

Breakage of Insulators

My flat top is 140 feet long, of No. 8 Copper-Weld wire. You have only to hold the far end to realize the amount of pull it can exert if suddenly dropped. In case of failure, I use the method outlined in Fig. 1. Several lengths of 50-lb. test monofilament are braided together and strung through the center insulator and the first spreader which is placed about six inches below the center insulator. If you are a fisherman, you may have this type of line; if not, scrounge it from a friend who has it. The end insulators are also bridged in the same way. If the insulators break, the monofilament braid will take over and break the fall. This stuff is strong and impervious to the

* 1141 Eastern Parkway, Brooklyn 13, New York, N. Y.

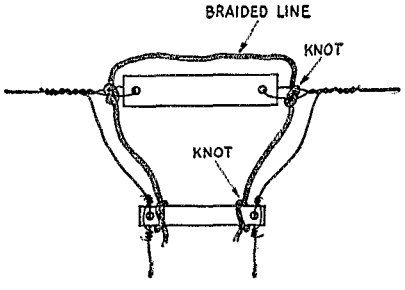


Fig. 1—The braided line will hold the antenna temporarily should the insulator break. Material having suitable insulating characteristics should be used for the line, as suggested in the text.

weather, so have confidence in it. Secure the ends with a figure-eight or a bowline knot and make sure the knot is secure.

Halyard Failure

This danger can be minimized by using at least ½-inch or ¾-inch Manila or nylon rope. This should be checked at regular intervals, and replaced before it breaks. Tape the first three feet after the end insulators. This will prevent cutting when tightening your halyards. The halyard should be secured by spiraling it around the mast. This will serve as a shock absorber, and take up the slack. Be sure to use a length at least twice the height of the mast.

To keep the antenna from falling if a halyard does break, run a second halyard at each end. This may be of smaller size, such as 3/16-inch braided nylon. This second set of halyards should be left slack, so as not to take any of the normal antenna weight, but the ends should be anchored securely.

After the antenna has been raised, tie the halyard ends as far up on the mast as possible, using a chair or stepladder. Then run the excess halyard ends to any secure anchorage that may be found on the roof. This will keep the mast from falling off the roof should the mast come down.

Pulleys? No! I have never seen the pulley that would stand up. Forget about them. Use a Y bracket made out of steel strap, as shown in Fig. 2. Your plumbing-supply house will make

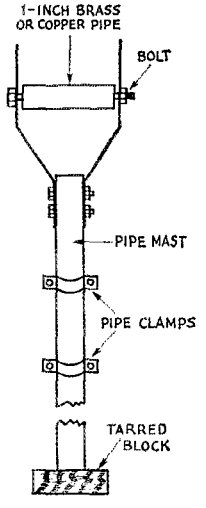


Fig. 2—A Y-bracket holding a brass-pipe roller is more reliable than most pulleys and makes it possible to rethread a halyard without lowering the mast. Pipe clamps can be used to fasten the mast against masonry and the tarred block protects the roof.

this cheaply. Secure the bracket to the mast with two through bolts and washers. I never did it, but it sure should help to put a length of brass pipe over the top bolt. This will keep the halyard from roughing up. I am going to do it if my masts ever come down. (Heaven forbid!) So my halyards get scuffed.

If you have to replace a halyard, it can be done very easily by using two lengths of bamboo from a rug, splicing them together by inserting one in the other, and fastening with wire and tape. This will give a height of over 24 feet. For additional height add a length of plaster lath strip, and notch the top. This arrangement is very light and can be handled by one man. Just raise the pole with the new halyard in the notch, and drop the line over the Y extension, and you are back in business.

Mast Failure

Mast failure is caused either by poor materials, improper materials or poor installation. I have erected countless masts made of 2 × 3-inch and 2 × 4-inch sections. All have come down for various reasons, but the masts supporting my present Zepp have been up for fifteen years and are still going strong. Wooden masts have to be guyed in the first place, and guy wires break, rust, sag, and the landlord doesn't like them anyway. Retention bolts and straps loosen because wood expands and dries out, the bolts either pull out, or the mast splits (just look in my graveyard). The fumes from the incinerator kill the guys, rot the wood, and just knock the devil out of it, so don't use wood unless you don't mind replacement every three or four years. Aluminum? Just look at the TV antennas on my roof. You can count more lying down than standing up. And — show me the aluminum mast that will withstand incinerator fumes. I have had them literally turn to dust.

What mast to use? I use 2½-inch galvanized iron-pipe masts, 12 feet each section, joined by a connector, and threaded for a cap on top and on the bottom. Your plumbing-supply house will do this for you too. Mine were old steam pipes. Treat your masts with loving care. Sand them to remove any rust spots, give them three coats of chrome paint, then a few coats of outdoor white lead. It doesn't take long.

Be kind to your roof. Place a small piece of tarred wood at the bottom of the mast. This will prevent damage to the roof, and the block can be knocked out for any roof repairs, and the roofer will love you and not tell the landlord. The mast can be secured to brick parapets or pent hatches with lag bolts and copper pipe strap. See Fig. 2. Paint these well, keep them painted, and please replace them every five years or so if they loosen, and they do. The lag bolts can be tarred, if you are so inclined.

Last, but perhaps most important, take out extended-coverage insurance. This is not expensive and will cover any unexpected damages to person or property. QST

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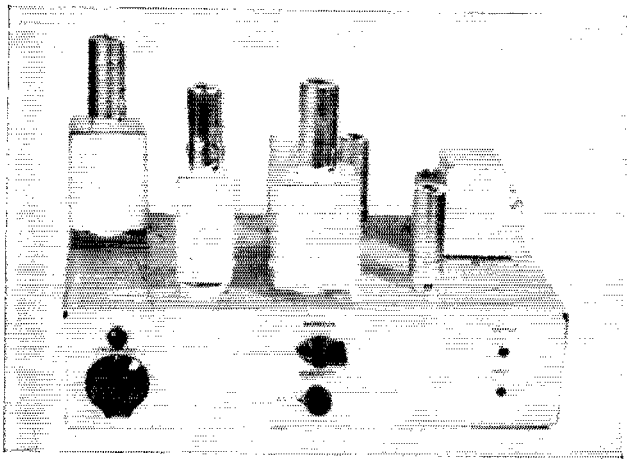
Break-In at Its Best

Automatic Change-Over and Receiver Muting

BY RALPH ROSENBAUM,* W5ECP



The complete t.r. monitoring unit is built on a 7 × 12 × 3-inch aluminum chassis. The plug-in turret-socket units are a convenience in construction and adjustment. The one at the left contains the 6BZ7 and associated components. The 6C4 audio oscillator unit is next to the right, while the one at the center houses the 12AX7 muter/amplifier. The shielded tube to the right is the 6AQ5 output tube. (All photos by Robert E. Kyrlach.)

In the break-in system described here, W5ECP combines the features of earlier individual units in a single package. No alterations in transmitter or receiver are required.

NO BETTER endurance and practicability tests can be given to a piece of electronic equipment than during Field Day. On Field Day different operators will often find electrical faults in equipment, faults which go unnoticed by the owners. Sometimes, unfortunately, these defects are not discovered until the equipment breaks down under field conditions.

For example, I remember the disaster which occurred during the last two operating hours of the 1958 Field Day contest. The Field Day operators at W5EKK were working over forty stations per hour until, to their horror, they saw a small cloud of smoke rise from my de luxe break-in system and fill the operating tent with the pungent odor of a burnt carbon resistor. The receivers immediately went dead, and it was obvious that the t.r. switch in my break-in system had failed.

Nevertheless, there existed a very good reason why the failure had taken place. The break-in system had to be keyed both on c.w. and phone if the muting and t.r. switching units were to function properly. This caused the failure since, during rapid band changes to phone operation, the operators would forget to key the break-in system. The disastrous result was that the t.r. tube and its components had burned out. In addition to this main electrical weakness, I received several complaints that the break-in relay used to key the transmitter was unable to follow the high speeds of the bug.

After Field Day I was so disappointed with my break-in system that I decided to make a different approach to the keying problem. In contrast to the custom of keying a transmitter by a break-in system, I decided that the r.f. power output from the transmitter must be the triggering agent for the break-in system. Keying the transmitter directly would eliminate the keying-relay problem, and using r.f. energy as the triggering agent would enable the new system to function automatically on c.w., phone, and s.s.b.

T.R. Switch

The break-in system is composed of two sections — the t.r. switch (Fig. 1A) and the audio-muting and keying-monitor circuits (Fig. 1B). The latter circuits include an audio-muting switch, a side-tone generator for c.w. monitoring, and an audio amplifier to drive a speaker.

Although I had a choice of several t.r. switching circuits, I selected W3LYP's arrangement[1] for several reasons. First, he had tested the switch with a kw. of s.s.b. power. This would tend to indicate that a higher s.w.r. could be tolerated at lower power levels. A t.r. switch for Field Day use should meet this requirement since the

* 1800 Lafayette Drive N.E., Albuquerque, N. M.

[1] Arvonio, "An Electronic Transmitter-Receiver Antenna Switch," *QST*, October, 1957.

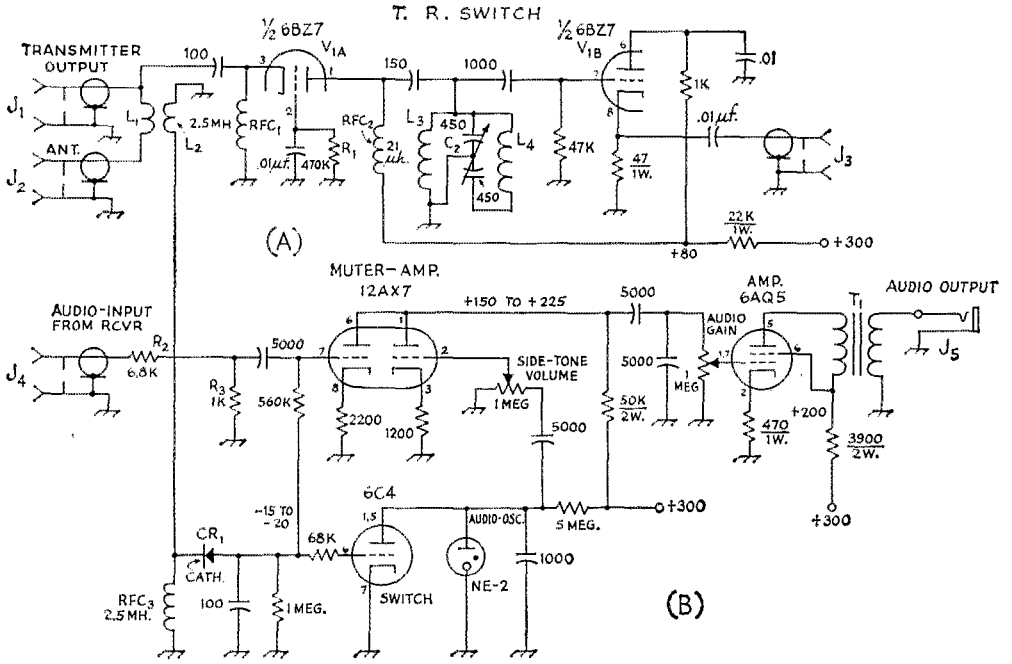


Fig. 1—Circuit of W5ECP's break-in system. Capacitances less than 0.01 μf. are in μμf. Resistances are in ohms and resistors are ½ watt unless marked otherwise.

C_1—Dual 450-μμf. variable (broadcast replacement type).

CR_1—1N34 crystal diode.

J_1, J_2, J_3—Coax receptacle or phono jack.

J_4, J_5—Open-circuit jack or phono connector.

L_1, L_2—See text.

L_3—23 turns ½-inch diam., 16 turns per inch (B&W 3003 Miniductor or Airdux 416).

L_4—19 turns 1-inch diam., 32 turns per inch (B&W 3016 Miniductor or Airdux 832).

R_1—Blocking-bias resistor.

R_2, R_3—Signal voltage divider (see text).

RFC_1, RFC_3—2.5-mh. 125-ma. r.f. choke.

RFC_2—21-μh.r.f. choke (Ohmite Z-28).

T_1—Audio output transformer, 5000 ohms to 3.2 ohms 5 watts or more (500-ohm tap if headphone operation is desired).

s.w.r. on the feed lines is often very high. The gain offered by his circuit meant that my present preamplifier could be discarded. Last, W3LYP's circuit works automatically when r.f. is applied to its input.

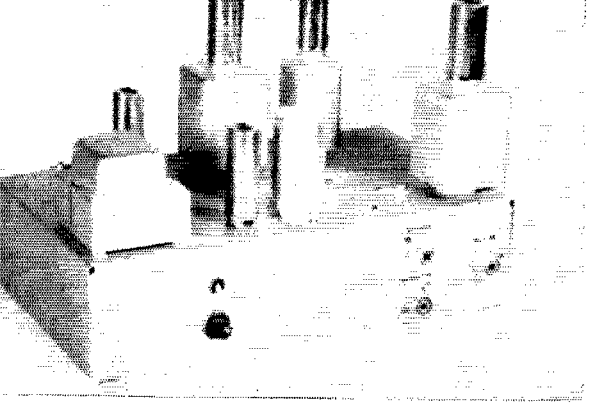
In W3LYP's circuit (Fig. 1A), one triode section of a 6BZ7 is used as a grounded-grid amplifier coupled to the transmitting antenna. The second triode section is used as a cathode follower feeding the receiver. The two stages are coupled using a multiband tuner, $C_2L_3L_4$, which covers 10 through 80 meters without switching. The tuning is set once for each band. Normal bias for V_{1A} is provided by the d.c. drop across the resistance of RFC_1. When the transmitter is keyed, a high bias is developed across the grid leak R_1, cutting the stage off almost completely. A few months ago W8EUJ came out with a t.r. switch[2] which would make an ideal substitute for the builder who would like to eliminate W3LYP's grid tank circuit.

Muter and Monitor

The audio portion (Fig. 1B) in this system is a modification of W6ICB's "Monoclipper."[3] Although this circuit has many fine qualities, I found that the clipper circuit he employed was an inconvenience. Since many of the present receivers have well-developed a.v.c. and noise-limiting circuits, I converted the clipper circuit into an audio-amplifier circuit. W6ICB's audio circuit is triggered by negative bias which is obtained by rectifying r.f. energy coupled from the hot "inner" conductor of the coax line. This bias cuts off both the triode muting section of the 12AX7 and the 6C4 which is conducting so heavily that the voltage on its plate is not great enough to trigger the neon oscillator. When the neon oscillator is fired the side tone is amplified by the other triode section of the 12AX7 before it reaches the audio amplifier. I found that the keying of the side tone is sharp and pleasant. Depending on the signal voltage level at the input of the 12AX7, the audio output from the receiver can be either muted completely through the receiver's audio gain-control range, or muted over only a portion of its range. In my setup, if the signal is taken from the receiver's speaker voice-coil terminals, the input to the 12AX7 is so low at all settings of the receiver's audio gain control that the output from the muter is completely cut off. However, if the signal is taken from the high-impedance headphone jack of the receiver,

[2] Quick, "T.R. Switches," Hints & Kinks, *QST*, September, 1958.

[3] Lafferty, "The Monoclipper," Hints & Kinks, *QST*, February, 1955.



Rear view of the t.r. unit. The 6X4 rectifier and the plug-in filter capacitor are to the right of the power transformer. Coax connectors for receiver, transmitter and antenna are at the right-hand end of the chassis.

output from the muter will be cut off completely over only about half of the receiver's audio gain-control range. When the gain is increased, the signal input to the 12AX7 overrides the bias, and output from the muter is not completely cut off. This permits direct monitoring of the transmitter signal when the receiver audio gain control is advanced. The point at which muting starts and stops is governed by the values used in the voltage divider consisting of R_2 and R_3. If the output from the receiver's headphone jack is not sufficient to overcome the 12AX7 bias, R_2 should be decreased and R_3 increased, keeping the total resistance the same. In some cases, it may be possible to eliminate these two resistors entirely, connecting the input coupling capacitor directly to the input terminal.

Construction

I used plug-in turret sockets. Although their cost is high, the sockets are certainly worth the money when experimental work is being done. Repair time is kept to a minimum since all components are easily accessible. The sockets not only look neat on a chassis but also make wiring and lacing under the chassis very easy. I would suggest that the builder use either these plug-in turret sockets or standard turret sockets in the construction of this system.

Although any construction practices may be followed, I suggest that the builder observe the following:

1) The t.r. switching circuit should be isolated from the other unit, and its components should be placed as close to the antenna coax connectors as possible. Also, the lead from the coupling coil, L_2, to the input of the 1N34 diode should be short.

2) Another ground wire should be run from the grid tank circuit of the t.r. switch to a common ground connection in the 6BZ7 circuit.

3) The leads connecting the tank-circuit components should be kept short, and the tank-circuit coils should be placed in the open.

4) Low voltage should be maintained on the plates of the 6BZ7 to prevent high-frequency oscillations. Gains varied from unity to three db. on the different bands.

I found that a 12 × 7 × 3-inch chassis gave ample room to mount all parts. Since the potentiometer provides the necessary attenuation of the side tone during phone and s.s.b. operations, I did not include a switch in the 6C4 circuit.

Fig. 2 shows the circuit diagram of the power

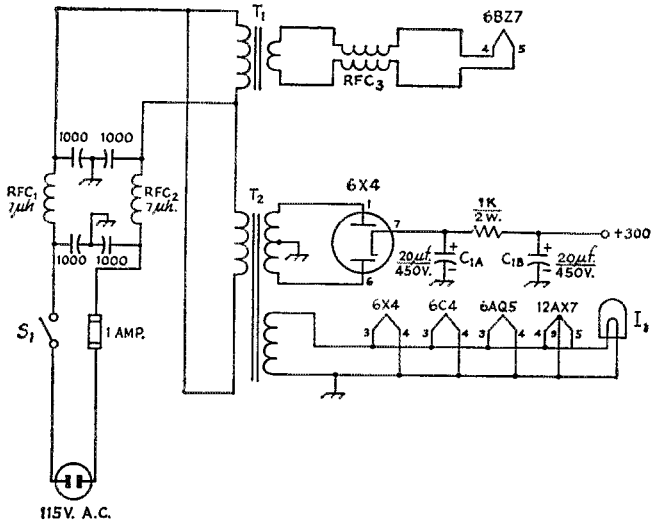
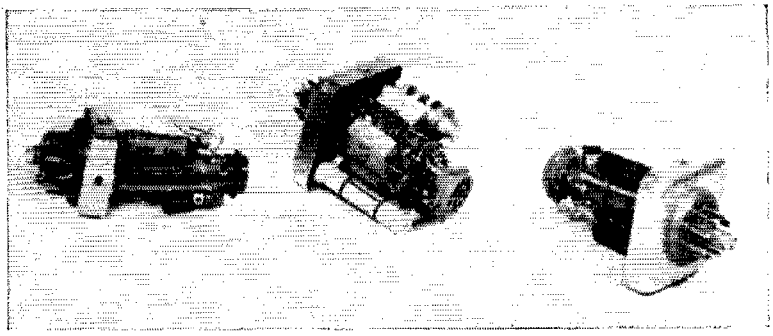


Fig. 2—Circuit of the power-supply section of the break-in system of Fig. 1. Unless otherwise indicated, capacitances are in μμf. Capacitors marked with polarity are electrolytic. Resistance is in ohms.

C_1—Dual 20/20-μf. 450-volt electrolytic.
I_1—6.3-volt panel lamp.
RFC_1, RFC_2—7-μh. r.f. choke (Ohmite Z-50).
RFC_3—See text.
S_1—S.p.s.t. switch attached to 6AQ5 audio gain control.
T_1—6.3-volt 1-amp. filament transformer.
T_2—Power transformer: 700 volts r.m.s., c.t., 70 ma.; 6.3 volts, 2 amp. or more.



Interior views of the three plug-in assemblies. Left to right, they are for the audio oscillator, t.r. switch and muter/amplifier.

supply section. The heater of the 6BZ7 should be isolated from ground so it is fed through a bifilar choke, RFC_3, from a separate 6.3-volt transformer. RFC_3 is made by winding two strands of No. 26 enameled wire simultaneously on a ½-inch diameter form to a length of 1½ inches.

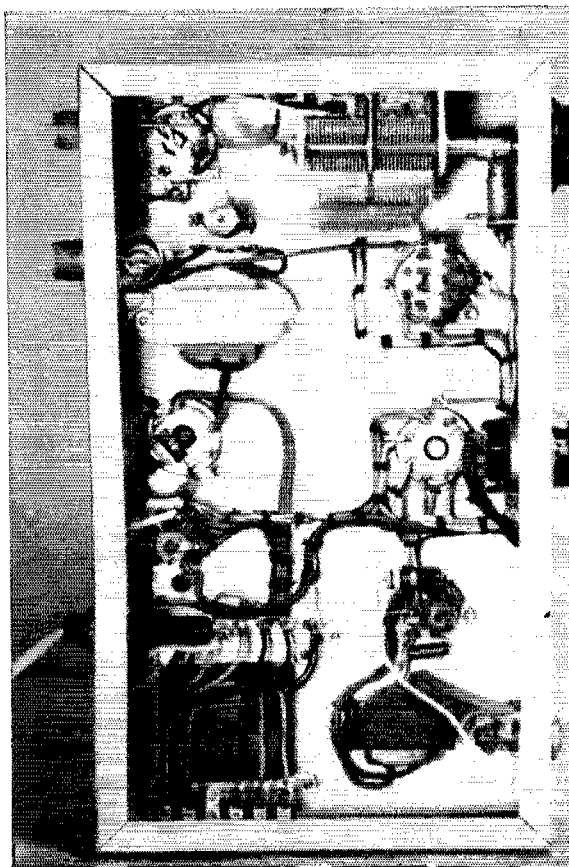
Testing and Tuning

The output power from the transmitter and the s.w.r. on the antenna feedline will determine the negative triggering bias for the audio circuit. Since r.f. coupling yielding more than 60 volts will damage the 1N34 diode, the amount of coupling from the inner coax wire should be carefully adjusted to obtain between −15 and −20 volts.

The first step in adjusting for proper negative voltage is to couple the break-in system at some point in the antenna feed system where the s.w.r. is less than 5 to 1. If an antenna coupler is employed, the unit should be placed between the coupler and the transmitter. When the power output from the transmitter is between 50 and 100 watts, the bus wire joining the two female antenna coax connectors should have a three-turn coil, L_1, at its center. The diameter of the coil should be less than ¼ inch. The bias coupling coil, L_2, fits over L_1. The diameter of L_2, which consists of twelve turns, should be large enough to allow a clearance of ⅛ inch between the two coils. Both coils are wound with No. 16 wire. The coils are then soldered in place along with the 100-$\mu\mu$f. capacitor. If the negative bias is too high, the builder should lift the end of L_2 from ground. There should be a drop of about 5 volts. With power outputs between 100 and 500 watts, L_1 should be eliminated and a straight wire should join the two female connectors. The proper number of turns on L_2 should be determined experimentally. With power outputs greater than 500 watts a straight wire supported on the standoff insulators and running parallel to the first wire will probably pick up sufficient r.f. energy. Remember that if the s.w.r. on the line to which the unit is coupled has not been previously checked, the turret socket housing the 1N34 should be pulled from its octal socket to prevent damage to the diode. Where the unit may be used in Field Day installations, or frequently changed from one antenna system to another, it might be a good idea to shunt RFC_3 with a variable resistor (pot) which should first be turned so as to short out the choke, and then gradually advanced until the signal input to the 1N34 is just enough to trigger the muter and side-tone generator. A more expensive diode with a higher inverse voltage rating would be another solution.

I sincerely hope that the builder will have as many enjoyable hours of operating with this system as I have had! QST

In this under-chassis view, the power transformer and speaker output transformer are at the bottom, and the separate filament transformer for the 6BZ7 and the multiband tuner are at the top. The monitor pick-up, L_1L_2, is at the coax connector above and to the left of the filament transformer.



A Cool Kilowatt Plate Transformer

BY ROBERT B. COATS,* W9ESD

Transformer winding became practically a lost art when power transformers started to be plentiful and inexpensive. Today, though, you might save money on a high-power job by making it yourself. Perhaps even more appealing is the prospect of reducing size and weight by using the newer types of core that don't seem to have invaded the amateur plate-supply field commercially.

THE plate transformer to be described, although small — only 6⅜ by 6⅜ by 7¼ inches — delivers a kilowatt input at 3000 volts d.c. to the writer's 450TH. Furthermore, it is not difficult to construct and assemble, thanks to the use of a two-piece "C"-type core. The secret is in the use of a grain-oriented silicon-steel core, made in a variety of sizes and sold under various trade names. The core used in the transformer shown is a "Silectron" type AA-520, having a cross-sectional area of 5 square inches and using 12-mil material.[1] The secondary can handle an output current of 500 ma. without any trouble, since the wire size has been selected on the conservative basis of about 1000 circular mils per ampere.

The basic equation for transformer design is

$$N_p = \frac{34.9 \times 10^5 \times E_p}{A \times F \times f \times B}$$

where N_p = Number of primary turns
E_p = Primary voltage
A = Core area in square inches
F = Stacking factor (0.95 for 12-mil material)
f = Frequency in cycles per second
B = Flux density in gausses (15,000 for Silectron)

Substituting the values given,

$$N_p = \frac{34.9 \times 10^5 \times 115}{5 \times 0.95 \times 60 \times 15{,}000} = 94 \text{ turns}$$

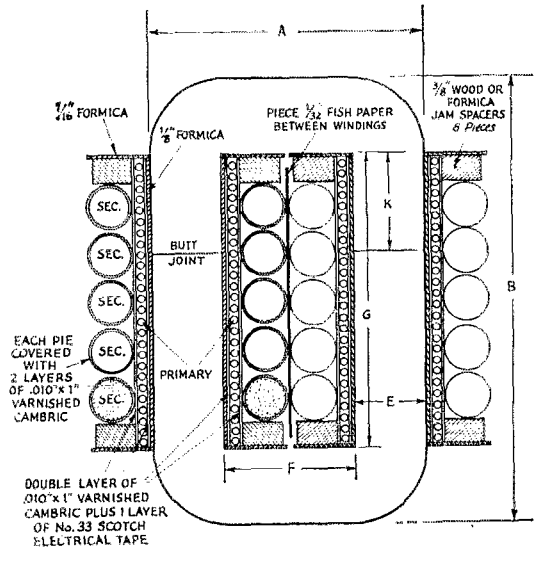
For a supply voltage of 230 the number of turns should be doubled — i.e., 188 turns for this core. No. 10 wire is used for the 115-volt primary in the transformer shown, but if a 230-volt primary is used the wire size may be reduced to No. 13. Formvar insulation on both primary and secondary is recommended.

In the actual construction, half the primary is wound on each leg, as is half the secondary. The cross section of the final assembly is shown in Fig. 1. The coils are assembled on two bobbins made as shown in Fig. 2, one for each leg of the core. One-half of the primary, 47 turns, is wound directly on each bobbin after taping as indicated in Fig. 1. The primary is then similarly covered with tape. The double layer of varnished cambric is made by lapping each turn over half the preceding one.

A 94-turn primary for 115 volts figures out to be about 1.22 volts per turn; thus the number of secondary turns required for 6000 volts r.m.s. would be 6000/1.22, or 4920 turns — in round figures, 5000 turns. A little figuring showed that No. 25 (320 circular mils) would fit in the space. But the thought of winding all those turns was rather staggering. The problem was

* 514 West Washington St., Marengo, Ill.

[1] Made by Arnold Engineering Co., Marengo, Ill., and obtainable on order direct to the company.



CORE DIMENSIONS

D = 4 + 1/16"−0 STRIP WIDTH
E = 1¼" ± 1/32"
F = 2" − 1/64" MIN.
G = 5" − 1/64" MIN.
A = 4½" + 3/32" MAX.
B = 7½" + 3/8" MAX.
K = 1 15/16"

Fig. 1—Cross section of the transformer assembly. Dimensions given are for the Arnold Engineering Company type AA-520 grain-oriented silicon steel core. If a core with other dimensions is used, the bobbin shown in Fig. 2 should be modified accordingly. Spacer thickness should be such as to hold the windings tightly in place to prevent vibration.

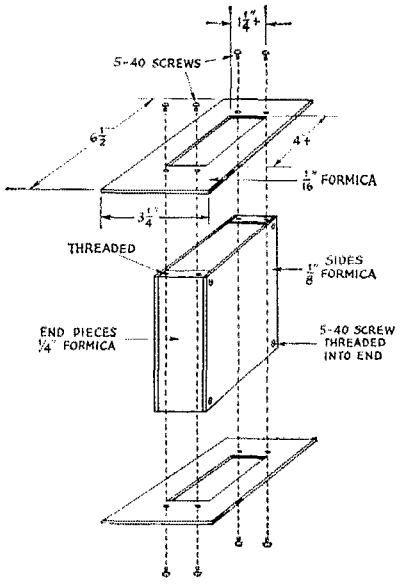


Fig. 2. — Bobbin construction. The parts are held together by small machine screws threaded into the Formica. The bobbin should be a snug fit for the core, but care must be used to keep its over-all length slightly less than that of the core opening so the two halves of the core can be butted tightly together.

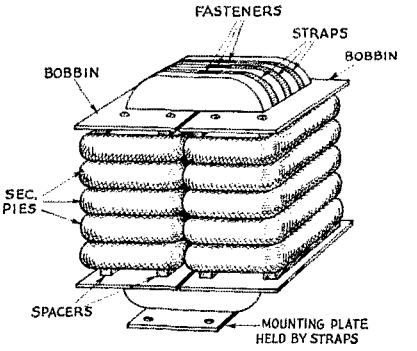
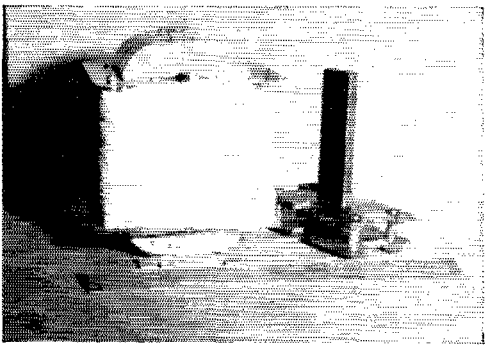


Fig. 3—Assembly before final wrapping. The core pieces are held tightly together by steel straps of the type used for fastening crates. If these and the machine for tightening them are not available, chimney-mounting straps for TV antennas are a possible substitute. Terminals for primary and high-voltage leads can be machine screws mounted in the bobbin ends.

solved by adopting the method of winding the secondary in ten pies of 500 turns each, and a special tool shown in the photograph was made up for the purpose. The coils are scramble-wound, and go on easily if the handle of the tool is held in the left hand while the right pulls the wire off its spool and winds it on the tool in circular fashion. After winding a few pies it was found that a complete 500-turn coil could be wound in 12 minutes. Each pie is wrapped with 1-inch varnished cambric tape, overlapped ½ inch to give double insulation.

In assembling the bobbins and core, make sure that the core faces are free from dirt, hair, or small particles of any kind. The writer applied a very thin film of silicone grease to the core faces after cleaning, in order to keep them from rusting. The coils should of course be connected series aiding (so the voltages add), and the center tap as well as the two ends of the secondary winding should be brought out to terminals.

Although no exact cost run-down has been made on the transformer, the cost should be in the vicinity of $30 to $35. The core is the major item,



The completed transformer, and tool for winding secondary pies. The wire is wound on the four metal pillars at the corners of the tool. One side of the tool is removable so the pie can be slipped off after completion. Sides of the tool are cut away as shown so that the pie can be partially taped to keep it together when removing. Tool dimensions should be chosen to make the pie fit reasonably snugly over the bobbin.

its price being slightly over $15. Another $10 should take care of the wire. This particular transformer, weighing about 35 pounds, has taken over the plate-supply job formerly handled by a much bulkier 2-kva surplus transformer that was too heavy for one man to handle — and runs stone cold while doing it. QST

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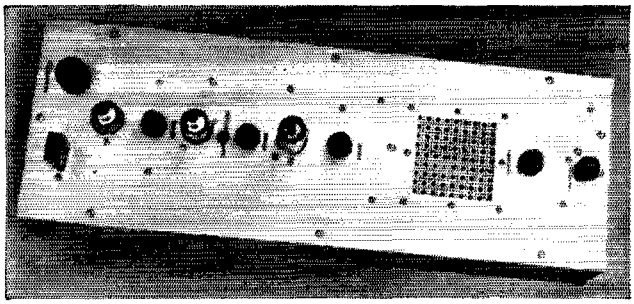


Top view of the 220-Mc. transmitter. Final amplifier tube is inside the chassis, below the screened ventilation hole. Power connections, keying jack and output terminal are on the back of the chassis.

A 40-Watt Transmitter for 220 Mc.

Stability and Efficiency in an Easy-To-Build Layout

BY EDWARD P. TILTON,* W1HDQ

As we go higher in frequency it becomes more and more difficult to build an exciter that develops adequate drive. At 144 Mc. we begin to run out of tubes that will work efficiently, and at 220 Mc. the choice is limited, indeed. In the course of working out the transmitter shown herewith, most available tubes were tried in various combinations. The objective was a fairly simple transmitter that would also serve as a driver for a kilowatt amplifier. We hoped to have each stage running easily, so that there would be no overheating anywhere along the line, yet we didn't want to employ an excessive number of tubes and stages to achieve this end.

Though its principal intended use was as a driver for higher-powered amplifiers, the exciter is designed so that its final stage may be modulated for voice operation at 30 to 40 watts input. In this service it will deliver power enough for much interesting work on 220 Mc. The amplifier may be keyed for c.w. operation as well, a feature that has often come in handy in the several months that the rig has been in use at W1HDQ.

Tubes and Circuits

A simple overtone oscillator circuit uses one half of a 12AT7 dual triode. The crystal may be between 8.15 and 8.33 Mc. or 24.45 and 25 Mc. In either case, the frequency of oscillation is in the latter range, as the crystal works on its third overtone. The second half of the 12AT7 is a tripler to 73 to 75 Mc. This stage has a balanced plate circuit, so that its output may be capacitively coupled to the grids of a second 12AT7, working as a push-pull tripler to 220 Mc. Note that the low side of the first tripler plate circuit has a balancing capacitor, C_3, so that a capacitance equal to the output capacitance of the 12AT7 can be added to that side of the circuit. Without this the two halves of the push-pull tripler may receive unequal drive, and one half of the tube will run hotter than the other.

The plate circuit of the push-pull tripler is inductively coupled to the grid circuit of an Amperex 6360 dual tetrode amplifier that runs straight through on 220 Mc. Several different tubes were tried here, but the 6360 gave more output with the limited drive available than other types. The grid return of the 6360 stage has a tip jack for insertion of a meter to measure grid current. This is helpful in making adjustments of coupling and tuning in previous stages.

Similar inductive coupling transfers the drive to the grid circuit of the final amplifier stage, an Amperex 6252 dual tetrode. This tube is a somewhat more efficient outgrowth of the 832A, which may also be used, though with lower efficiency and output. Base connections are the same for both tubes. The big brother of the 6252, the 5894, may also be used in the output stage, but some modification of the grid circuit will be necessary because of the greater input capacitance of the larger tube. Within its capabilities, the 6252 is probably the most efficient tube presently available for use at 220 Mc. and higher frequencies, other than much higher-priced coaxial-electrode types.

The grid return of the 6252 is brought out to the terminal strip on the back of the unit, to allow for connection of a grid meter. Both this point and the tip jack in the 6360 grid return have 1000-ohm resistors completing the grid returns to ground, so that operation of the stages is unaffected if the meters are removed.

Instability in tetrode amplifiers for v.h.f. service may develop as a result of the ineffective bypassing of the screen. In the case of the 6360 stage stable operation was obtained with no bypassing at all, while on the 6252 a small mica trimmer was connected directly from the screen terminal to ground. It is operated near the minimum setting.

Construction

The transmitter is built on an aluminum plate 6 by 17 inches in size. This screws to a standard chassis of the same dimensions, which serves as both shield and case. Cutouts about three inches

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

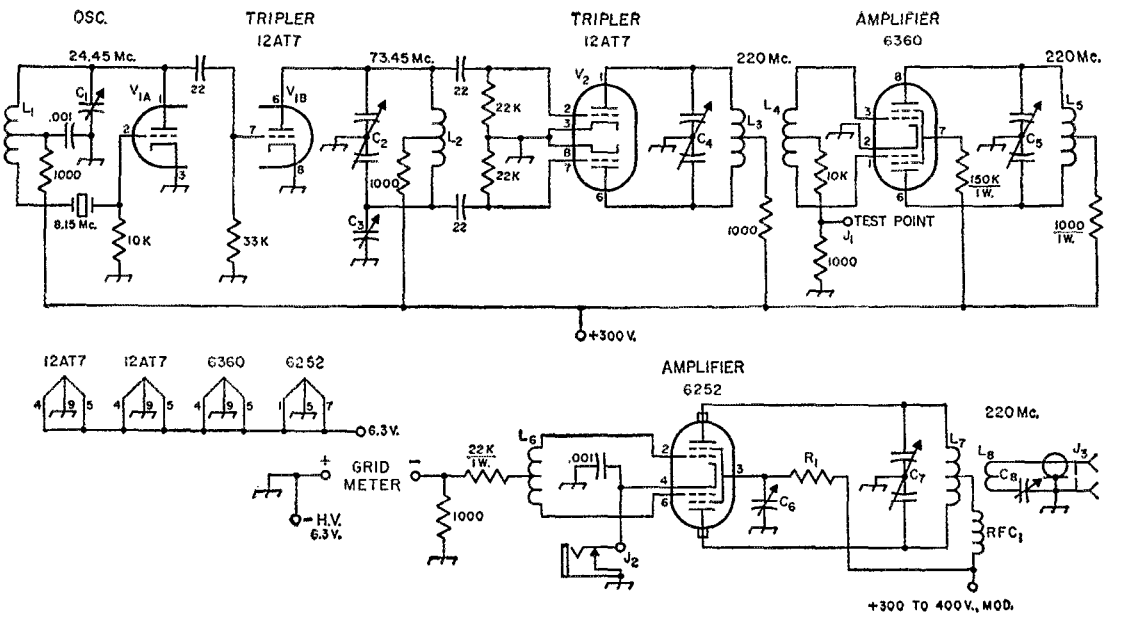


Fig. 1—*Schematic diagram and parts information for the 220-Mc. transmitter. Capacitor values below 0.001 μf. are in μμf. Resistors ½ watt unless specified.*

C_1—50-μμf. miniature variable (Hammarlund MAPC-50-B).
C_2, C_4, C_5—8-μμf. miniature butterfly variable (Johnson 160-208).
C_3, C_6—3-30-μμf. mica trimmer.
C_7—Butterfly variable, 1 stator and 1 rotor (Johnson 167-21, *with plates removed*).
C_8—15-μμf. miniature variable (Hammarlund MAPC-15-B).
J_1—Tip jack, insulated.
J_2—Closed-circuit phone jack.
J_3—Coaxial chassis fitting, SO-239.
L_1—15 t. No. 20 tinned, ½-inch diam., 1 inch long (B & W Miniductor No. 3003). Tap at 4 turns from crystal end; see text.
L_2—12 t. No. 18 tinned, ½-inch diam., 1 inch long, center-tapped.
L_3, L_4, L_5, L_6—U-shaped loops No. 18 enam., center-tapped. Dimensions given in Fig. 2.
L_7—2 t. No. 14 enam., 1-inch., 1-inch diam., leads ⅝ inch long. Center-tapped, space turns ½ inch apart.
L_8—1 t. No. 18 enam., inserted between turns of L_7. Cover with insulating sleeving.
R_1—23,500 ohms, 2 watts. (Two 47,000-ohm 1-watt resistors in parallel.)
RFC_1—25 t. No. 28 enam. on 1-watt high-value resistor.

square are made in the chassis and base plate, above and below the tube, to allow for ventilation. These openings are fitted with perforated aluminum or screening to preserve shielding. The case should be equipped with rubber feet, to avoid marring the surface it rests on, and to allow air circulation around the tube.

The tube sockets and all the controls except the tuning capacitor of the oscillator are mounted along the center line of the cover plate. The 220-Mc. stages are inductively coupled, using hairpin loop tank circuits the dimensions of which are given in Fig. 2. The tuning range of these circuits is affected by the width of the loops as well as their length, so some variation can be had by squeezing the sides together or spreading them apart.

It is important that the method of mounting the 6252 socket be followed closely. An aluminum bracket about 2⅞ inches high and 4 inches wide supports the socket. Note that the socket and tube are on the *same* side of the plate. Holes are drilled in the plate in line with the control grid terminals to pass the grid leads. These holes are ¾-inch diameter, and are equipped with rubber grommets to prevent accidental shorting of the grid leads to ground. The shape of the grid inductance should be such that its leads pass through the centers of the holes. The socket is supported on 5/16-inch metal pillars. It may be necessary to bend the socket lugs slightly to keep them from shorting to the mounting plate. The screen trimmer capacitor is just visible in the photograph, on the left side of the mounting plate, projecting out from behind the socket. The heater lead comes over the top of the plate,

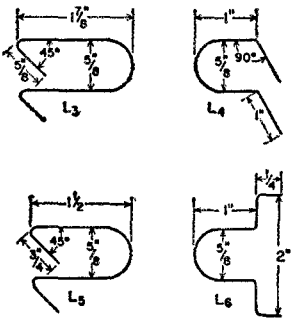
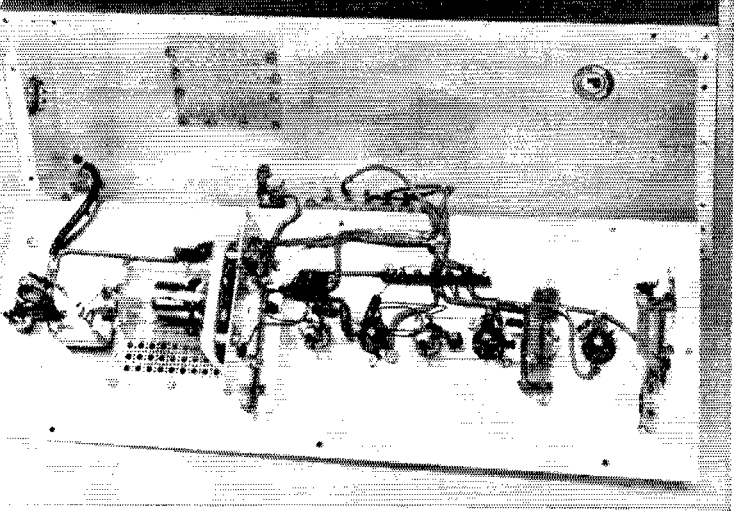


Fig. 2—*Details of the hairpin loops used in the 220-Mc. transmitter.*



Interior view of the 220-Mc. transmitter. Oscillator stage is at the far right. All r.f. components are mounted on an aluminum plate, which is screwed to the top of a standard 6 × 17-inch chassis.

and the cathode lead bends around the bottom of it.

Power leads are made with shielded wire, and are brought out to a terminal strip on the back of the chassis. These leads and the coax to the output connector should be long enough so that the plate on which the transmitter is built can be lifted off the chassis and inverted as shown in the photograph.

Looking at the bottom view, the crystal socket and the oscillator coil and capacitor are at the far right. Next is the first 12AT7 socket. Next to the left is the first tripler plate coil, mounted over its trimmer, with the mica balancing padder, C_3, above it in the picture. The 12AT7 tripler, the test point, J_1, the tuning capacitor C_4, the tripler plate and amplifier grid loops, L_3 and L_4, the 6360 socket, the 6360 plate and amplifier grid loops, the amplifier mounting plate, the 6252, and its tuned circuits follow in that order. The series capacitor, C_8, and the coaxial lead to the output connector, J_3, are at the far left.

Adjustment

Initial tests should be made with a power supply that delivers no more than 250 volts, and as little as 150 to 200 volts can be used. If the voltage is more than 250, insert a 5000-ohm 10-watt resistor in series with the power lead temporarily. Plate voltage should be applied to the various stages separately, starting with the oscillator, making sure that each stage is working correctly before proceeding to the next.

A milliammeter of 50- or 100-ma. range should be connected temporarily in series with the 1000-ohm resistor in the oscillator plate lead. When power is applied the current should be not more than about 10 ma. Rotate C_1 and note if an upward kick occurs, probably near the middle of the range of C_1. At this point the stage is oscillating. Lack of oscillation indicates too low feedback, or a defective crystal. Listen for the note on a communications receiver tuned near 24 Mc., if one is available. There should be no more than a slight change in frequency when a metallic tool is held near the tuned circuit, or when the circuit is tuned through its range. The note should be of pure crystal quality. If there is a rough sound, or if the frequency changes with mechanical vibration, the oscillator is not controlled by the crystal. This indicates too much feedback, and the tap on the coil, L_1, should be moved nearer the crystal end.

The proper amount of feedback is the lowest tap position that allows the oscillator to start readily under load. This will vary with different layouts, and sometimes with crystals. If 24-Mc. crystals are used the tap can be lower on the coil than with 8-Mc. crystals. When 8-Mc. crystals are operated on the third overtone, as in this case, the frequency of oscillation may not be exactly three times that marked on the crystal holder. Crystals whose frequencies multiply out close to a band edge should be checked with care to be sure that you are in the band.

Now apply plate voltage to the second half of the 12AT7, again using a temporary plate meter connected in series with the 1000-ohm decoupling resistor that feeds plate power to L_2. Current will be about 10 ma., as with the oscillator. Tune C_2 for maximum output. This can be determined by brilliance indication in a 2-volt 60-ma. pilot lamp connected to a 1-turn loop of insulated wire coupled to L_2. Check the frequency of this stage with a calibrated wavemeter or a grid-dip meter used in the power-indicating position. Adjustment for maximum output need only be approximate at this point.

Now connect a low-range milliammeter (not more than 10 ma.) between the test point, J_1, and ground. Apply power to the push-pull tripler, again using a temporary milliammeter connected in the lead to the plate coil, L_3. Tune the plate circuit for maximum indication on the grid meter. Plate current will be about 20 ma. Adjust the position of L_3 with respect to L_4 for maximum grid current. Now go back over all previous adjustments and set them carefully for maximum grid current. Adjust the balancing padder, C_3, retuning C_2 each time this is done, until the combination of C_2 and C_3 that gives the highest grid

current is found. Check the frequency to be sure that the stage is tripling to 220 Mc.

Now apply power to the 6360 plate circuit, again using the temporary meter to check the current. Connect the low-range milliammeter between the grid-metering terminal on the connector strip and ground. Set the screen trimmer, C_6, near minimum, and tune the 6360 plate circuit for maximum grid current. With 300 volts on the preceding stages, it should be possible to get at least 4 ma. Adjust the spacing between L_5 and L_6 carefully for maximum grid current, retuning C_5 each time this is done. Plate current should not exceed 55 ma.

A preliminary check for neutralization of the final amplifier may now be made. Tune the final plate circuit through resonance while watching the grid-current meter. If there is no change, or only a slight rise as the circuit goes through resonance, the stage is near enough to neutralization to apply plate power. The 6252 has built-in cross-over capacitance, intended to provide neutralization in the v.h.f. range, so it is likely to be stable at this frequency. If there is a downward kick in the grid current at resonance, adjust the screen trimmer until it disappears. If best neutralization shows at minimum setting of the screen trimmer it may be desirable to eliminate the trimmer.

Plate power may now be applied to the final amplifier, but first a load should be connected to the coaxial output. The most convenient load at this frequency is a coax-fed antenna. This can be a folded dipole fed through a balun, or a gamma-matched dipole as shown in Fig. 3. Some form of power-indicating s.w.r. bridge is desirable, for the matching adjustment, and it will also indicate proper tuning and loading in the transmitter. If no such device is at hand, connect a 50-watt or larger light bulb to a coaxial connector. Adjustments of tuning and loading for maximum output as indicated in the lamp load will not coincide with those for best operation with an antenna, however. The lamp merely serves as a temporary indication that the amplifier is working.

Tune the final plate circuit for maximum output, with a meter of 100 ma. or higher range connected to read the combined plate and screen current. This meter may be connected in the power lead, or it can be plugged into the cathode jack. In the latter position it will read the combined plate, screen and grid currents. Tune for maximum output and note the plate current. If it is much over 100 ma., loosen the coupling between L_7 and L_8. The input should not be over 50 watts at this frequency.

A final check for neutralization should now be made. Pull out the crystal or otherwise disable the early stages of the transmitter. The grid current and output should drop to zero. If they do not, adjust the screen trimmer until they do. Make this test only very briefly, as the tubes will draw excessive current when drive is removed. When perfect neutralization is achieved, maximum output will be found at a setting of C_7 at which plate current is at a minimum and grid current at maximum.

Output should be in the vicinity of 20 watts with 40 watts input. The lamp indication may make it appear that higher output is being obtained but lamp brilliance is not a reliable measure. Only a power-indicating device of known accuracy can be trusted at this frequency.

Operation

All stages should be run as lightly as possible, for stable operation and long tube life. No more than 300 volts should be run on the exciter stages, and if sufficient grid drive can be obtained, lower voltage is desirable. The 6360 stage runs with rather low drive, and its efficiency is consequently poor, but it delivers enough power to drive the 6252, even when run at as low as 250 volts, if all stages are operating as they should.

Observe the plates of the tubes when the transmitter is operated in a darkened room. There should be no reddening of the plates. If one side of any of the last three stages shows red and the other does not it is evidence of unbalance. This can usually be corrected by adjustment of the balancing trimmer, C_3, in the first tripler plate circuit. Lack of symmetry in lead lengths or unbalanced capacitance to ground in any of the r.f. circuits may also lead to lopsided operation.

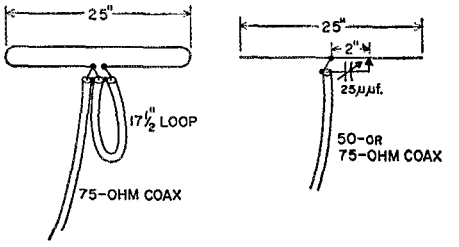
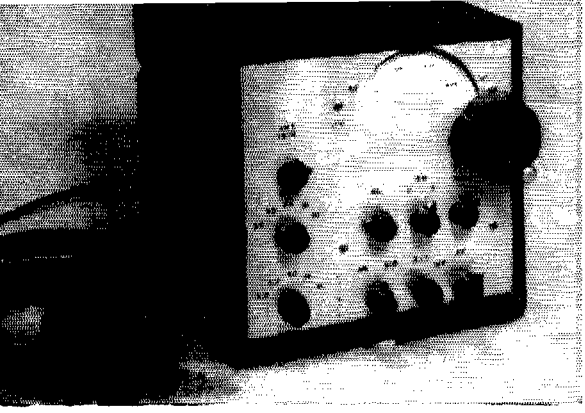


Fig. 3—Coax-fed dipoles for use at 220 Mc. Folded dipole at left can be made from any stiff wire or tubing. Spacing of the wires is not critical, but should be under 1 inch. Only 75-ohm coax will give a good match with the folded dipole, but the gamma match, right, may be used with coaxial line of any impedance.

Though the 6252 is rated for up to 600 volts on the plates, it is recommended that no more than 400 be used in this application, particularly if the stage is to be modulated for voice work. Pushing the tube to its limit may raise the output by 25 to 50 per cent, but even if the output is doubled it will make only half an S-unit difference at a distant station. From this it can be seen that there is little point in straining for the last watt, if long tube life is important.

For voice work the plate-screen current of the 6252 is run through the secondary of the output transformer on the modulator. The latter should have an output of 20 watts or so. Suitable designs may be found in any edition of the ARRL *Handbook*. The transmitter may be keyed for c.w. by inserting a key in the cathode jack. QST



Disguised by a new panel, and installed in a modified tuning-unit cover from a BC-375, the BC-453 which is the heart of this receiver is used as a tunable i.f. after a crystal-controlled four-band converter. The tuning range has been raised in frequency in order to reduce image response, and the rear end has been thoroughly revamped to modernize the performance.

BY CARL H. ERICSON,* W2PPL

Tunable-I.F. Receiver Using the BC-453

Up-dated Surplus Receiver in an Inexpensive Assembly Meeting Modern Standards of Performance

These notes on the "HBR-453," as the author calls the receiver, are intended principally to suggest ideas, encourage experimentation, and inspire others to delve a bit into receiver construction. The set-up described here differs in many ways from previously-published schemes, and although you can take the circuit as a "final final" product for copying, the ARC-5 receivers still offer plenty of scope for the ingenious builder.

THE BC-453 Command Set has enjoyed a long and varied career in amateur radio circles its popularity is justly deserved. These units have been used as s.s.b. generators, panadaptors, the very famous Q5-er, and as parts of many receivers. The principal reasons why the 453 has found so much use are its small size, high gain and low cost, but perhaps the most valuable assets are the stable front end and sharp intermediate-frequency system.

The presence of a 453 on the shelf here for many years has offered a constant challege to see what could be done with it in the way of making an all-band amateur receiver. There have been numerous articles on using a 453 as a tunable i.f. following a fixed-frequency front end for 80 and 40,[1] but usually 7 Mc. was the recommended upper frequency because of image limitations with the 200- to 500-kc. i.f. that was used.

Before starting this project some rough specifications were formulated, one being that the receiver should work on all bands except 10. Ten meters was not desired because of operating-time limitations. Additionally, the receiver should be small in size and self-contained — even including a small speaker for portable use; it should be stable enough for s.s.b. reception and also good on c.w. or a.m.; it should be sensitive and selective — in general, it should be a pretty decent performer.

These notes on the "HBR-453," if one may crib a name from Ted Crosby,[2] are an account of my experience in this endeavor.

Fig. 1 is a block diagram of the end result. The crystal-controlled front end accounts for the fact that the stability of the HBR-453, on any band, is that inherent in the Command Set itself. Although no noise figures were taken, in this average location antenna noise greatly exceeds receiver noise on 15 meters. One band switch changes coils in the front end. A separate switch is used for the crystals. Only the mixer circuit was broadbanded, since the antenna trimmer tunes the r.f. stage.

A 6BE6 was originally used as a converter but this was changed to a 6BE6-6AB4 combination at a later stage of development, to reduce mixer noise and to obtain more reliable oscillation with the higher-frequency crystals.

Revamping the 453 Tuning Range

The front end of the BC-453, which is the tunable i.f., was the area in which most difficulty was encountered. Realizing, from the experience of others with images, that the front end had to be moved to a higher frequency, this was first attempted by pulling the slugs from the 453 coils. This increased the frequency not more than 200 kc. on the high end and even less on the low end. Next, a set of Ferri-loopsticks was obtained and trimmed down for operation in the 1800- to 2100-kc. range, a very nice place for the tunable i.f. so far as front-end images were concerned. This attempt failed because images in the tunable section, removed twice 85 kc. from the

* 183 Burbank Drive, Snyder 26, N. Y.

[1] For example, Stewart, "A Crystal-Controlled Plug-in Converter for the Q5-er," *QST*, October, 1949.

[2] Crosby, "Ham-Band 14-Tube Double-Conversion Receiver," *QST*, July 1957.

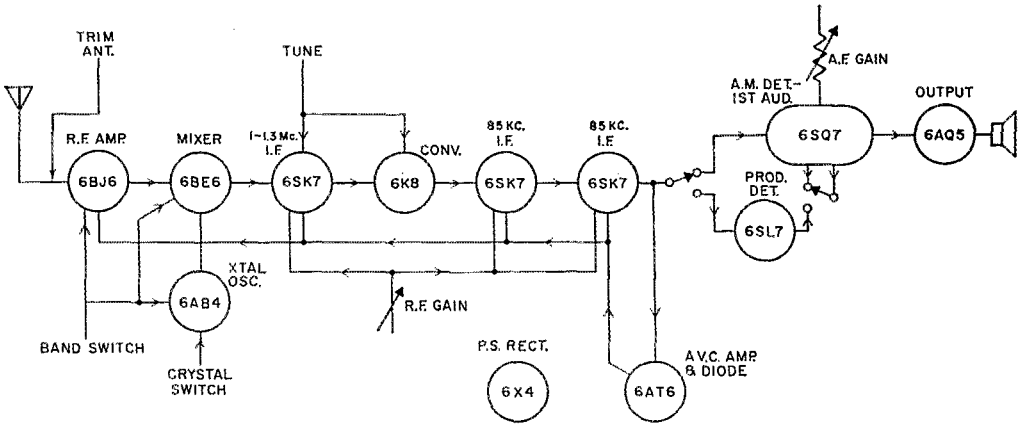


Fig. 1—Block diagram of the receiver. The 1-1.3-Mc. tunable i.f. is a revamped BC-453 receiver.

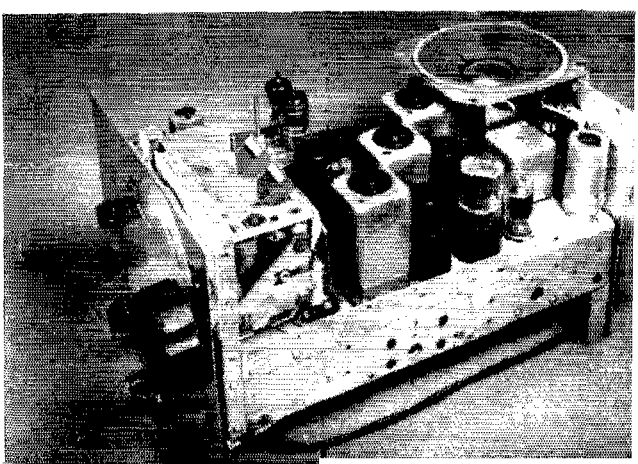
desired signal, could not be brought down to a satisfactory level. Finally the Rubicon was crossed and the coils that came with the 453 were gradually unwound and tried repeatedly until a balance between front-end images and internal images was reached in the vicinity of 1000 kc. The tuning range was made 1000 to 1300 kc. with the variable oscillator in the 453 being 85 kc. lower in frequency (it was formerly higher in frequency than the received signal). This move to the low side of the signal was made in the interests of thermal stability, but it is possible that it contributed to some of the difficulty that was encountered later in tracking. The oscillator was not tried on the high side.

The final choice of frequencies resulted in image ratios in excess of 40 db., which is the limit of our ability to measure accurately; the ratio actually may be somewhat better than this. These measurements were taken with a transmitting antenna, tuned to the band in use, on the receiver: and that is certainly recommended operation for any station. In terms of actual listening tests 40 db. means that very few images will be heard, and those that do get through will be weak compared with the desired signal. (These are pre-inflation decibels, not to be confused with the type that come nowadays over 9 on the S meter.) All tests were made on 15 meters.

Rear-End Changes

The 85-kc. i.f. strip of the 453 was used unchanged except for the a.v.c. and manual gain control circuits. However, beyond the second 6SK7 i.f. stage the 453 was completely rebuilt. Low audio gain made necessary the addition of a 6SQ7 first-audio stage, and a 6AQ5 was substituted for the original output tube to save room. The diode in the 6SQ7 was retained for a.m. detection and a 6SL7 was added as a dual-triode product detector. This circuit, used in some of the better commercial receivers, gives very good performance on s.s.b. and c.w. The voltage available for a.v.c. with a diode alone at the second i.f. stage was insufficient to give the type of a.v.c. action desired, so the 6AT6 was added as an a.v.c. amplifier-rectifier. The amplifier is *RC* coupled, and as such gives plenty of gain at 85 kc.

It was necessary to move the b.f.o. to the rear of the chassis to prevent stray coupling into the i.f. amplifier. Once it was moved to the rear the only precaution necessary was the use of a shielded lead to the product detector, and a tube shield. One half of a 12AT7 was used for the b.f.o.; the other half is currently unused but some day may see service as a 100-kc. oscillator or the like. Since the 85-kc. i.f.s. will not pass both side-



The i.f. section of the 453 remains largely intact, with the new tubes in the rear-end section being installed on the afterdeck formerly occupied by the dynamotor mounts. The power supply is on a vertical subchassis at the rear, with the transformer mounted outboard to reduce internal heating.

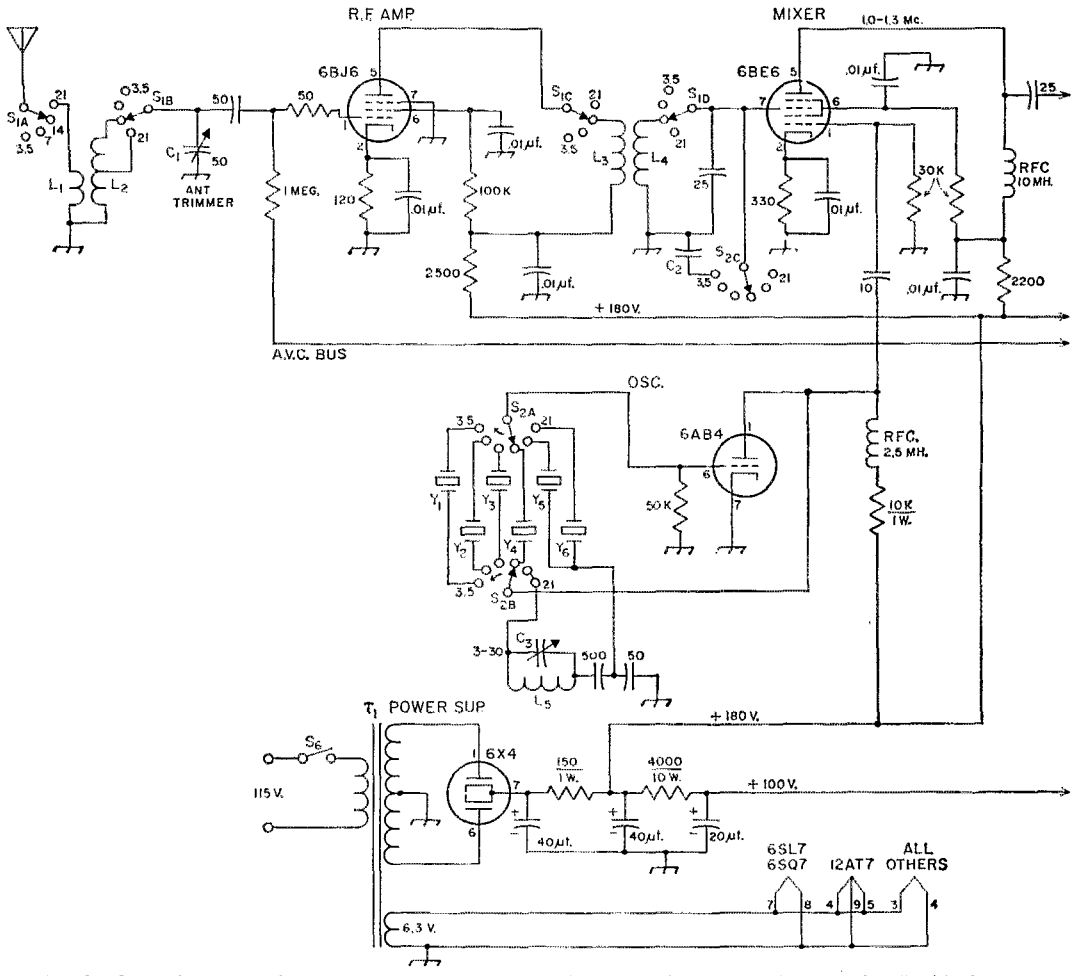


Fig. 2—Circuit diagram of the receiver. The section shown on this page is built on sub-chassis as described in the text. Section on opposite page is on the BC-453 chassis. Unless indicated otherwise, capacitances are in μμf., resistances are in ohms, resistors are ½ watt. Fixed capacitors of 0.01 μf. are disk ceramic; capacitors with polarity indicated are electrolytic; others may be mica or ceramic.

C_1—50 μμf. midget variable.
C_2—5 μμf. ceramic (see text).
C_3, C_4, C_5—Mica trimmers.
L_1–L_4, inc.—See table.
L_5—7 turns No. 26 enam. close-wound on ⅜-inch form.
L_6—20-henry choke; any low-current type satisfactory.
LS_1—Midget speaker, 3.2-ohm voice coil.
R_1—0.5-megohm control, audio taper.
R_2—3000-ohm wire-wound control, screwdriver adjustment.
S_1—Phenolic rotary; 4 poles, 4 positions used, 2 sections.
S_2—Ceramic rotary; 3 poles, 6 positions used, 3 sections.
S_3—Rotary; 3 poles, 2 positions, 1 section.
S_4, S_5—Rotary, 1 pole, 2 positions.
S_6—S.p.s.t., on R_1.
T_1—Power transformer, 230 volts each side c.t., 100 ma.; 6.3 volts, 5 amp. (Stancor PM-8420 suitable).
T_2—Output transformer, 7000 ohms to 3.2-ohm voice coil.
Y_1–Y_6, inc.—See table.

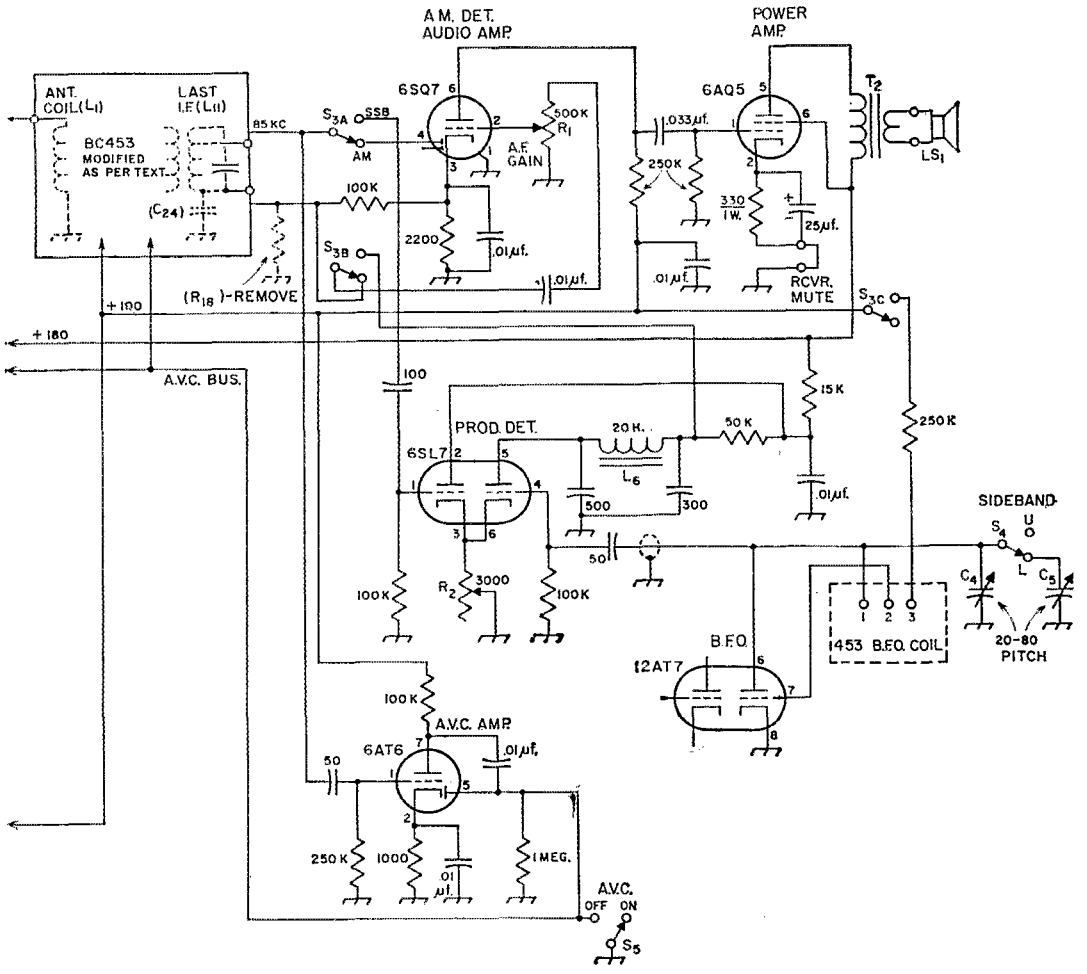
bands it was necessary to switch sidebands by shifting the b.f.o. from 700 cycles above to 700 cycles below the 85-kc. i.f. passband. The error this throws in the dial calibration is negligible.

Power Supply

A small transformer capable of delivering about 100 ma. at 230 volts powers the receiver. The *RC* filter, which also doubles as a voltage divider, renders the receiver completely hum free. Experiment showed that the 453 would perform well at plate voltages down to about 40 volts, but the gain rose rapidly up to 100 volts or so and then more slowly beyond that point. To keep down heating, and thus reduce drift, the 453 runs at 100 volts and the 6BJ6, 6BE6 and 6AQ5 are run at 180 volts for noise and distortion considerations. Voltage regulation wasn't required.

Construction Pointers

It would be nice to be able to say that this receiver was put together over a week end and it worked perfectly the first time, but that isn't so.



It was put together over several months, and most of the time it didn't work well, if at all, until the end of the struggle drew near. This is not a step-by-step conversion piece, so anyone intending to construct a similar receiver should have some previous experience along these lines. Access to a signal generator, v.t.v.m., and a grid-dip meter is also desirable, and a circuit diagram for the BC-453 is most essential. Aside from the foregoing we can only recommend a small measure of perseverance.

Numerous articles on the BC-453 cover what one may expect to encounter upon digging into its vitals. These are recommended reading if one is not familiar with the unit. It was an easy piece of surplus to work on, as surplus goes. To get the 453 ready for conversion it was stripped of its top shields, antenna terminal, dial, and the mounts and socket for the dynamotor. The antenna trimmer capacitor, the rear socket and the front plug-in box were also removed. With the exception of the tube sockets, all of the receiver beyond the last i.f. transformer was removed, including the entire b.f.o. and all of the filament and high-voltage filters. These filters are L_{14}, L_{15}, C_{22}, C_{16}, and C_{15} in the original circuit. R_{22} and R_{23} were left in to supply screen voltage. The neon bulbs were removed. A number of the capacitor cans along the side of the chassis were removed and replaced with small modern capacitors of the same electrical ratings. This was done only to gain some working space, and is a matter for the discretion of the builder.

The filaments were rewired in parallel for six-volt tubes. The holes left by each of the four dynamotor mounts were enlarged to take sockets for the new tubes that were added to the rear end of the receiver, and the b.f.o. transformer was mounted in the socket hole in the middle of these four.

Although such an arrangement need not be copied, the new tube layout is as follows: the 6SQ7 goes into the 12SR7 socket, the 6SL7 into the 12A6 socket and, when viewed from the top front, the tube at the left rear is the 6AQ5, the one at the right rear is the 12AT7, and the one at the right front is the 6AT6.

A 2-inch subchassis was added to the bottom of the 453 in order to get more front panel space for controls. Although this receiver could have been made even smaller than it was, a future builder might do well to think in terms of a larger

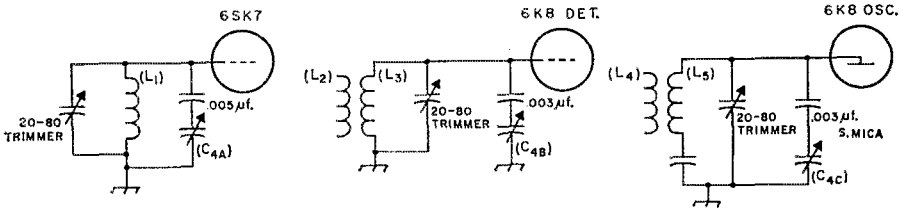


Fig. 3—Changes in BC-453 front end to cover 1-1.3-Mc. tuning range. Designations in parenthesis are the same as in BC-453 original circuit diagram. See text for data on changes in tuned-circuit coils.

unit if greater ease in construction is to be desired. The front end was built on a separate subassembly; so also was the power supply, which hangs mainly on the rear panel. The power transformer was mounted on the outside of the rear panel to keep its heat out of the set.

An aluminum front panel was spaced ¼ inch off the front of the 453. A steel wire pointer, painted dull black, was fastened under the old dial nut, thus retaining the smooth dial drive that came with the Command Set. The front of the 453 was painted with two coats of satin-finish white enamel and calibrated with India ink. Control nomenclature was lettered directly on the aluminum panel with a Leroy lettering set and India ink after the panel was etched with caustic (Spic-and-Span). The final product was given two coats of clear lacquer.

453 Circuit Changes

Work on the tunable portion of the 453 consists only of making it tune and track over the new tuning range. To facilitate work the common yoke between the coil cans was removed. This yoke grounds the shield cans, so once it is removed the cans have to be individually grounded. On the r.f. and mixer coils there was a ground pin available, but on the oscillator there was none so this can was grounded with a lug. The coils were altered by removing the following numbers of turns, in every instance from the hot end:

L_1 — 110 turns
L_2 — 50 turns
L_3 — 125 turns
L_4 — 50 turns
L_5 — 90 turns

The slugs were used in the r.f. and mixer coils and were helpful in tracking. The slug was not used in the oscillator coil. Tracking accurate enough to produce a gain uniform to about two db. was as good as could be obtained. It is adequate. Fig. 3 shows the trimmer and padder capacitors added to the circuits.

Fig. 4 shows the manual gain control circuit, which was in accordance with the original circuit diagram except that R_{12} was reconnected to include the second i.f. stage in the control. Before this was done the gain of the receiver couldn't be reduced sufficiently to monitor the home station transmitter.

Fig. 5 shows the changes made to incorporate a.v.c. in the 453 and to apply it to the 6BJ6. While on this subject of a.v.c. for c.w. and s.s.b., the discerning may note that this receiver has only 0.05 μf. on its a.v.c. bus, making it a fast-attack, fast-decay system. The writer has, in the past, modified a number of a.v.c. systems and built up more from scratch for use on s.s.b. No matter how one compromises their design, in my opinion they all still fall short in one respect or another. This a.v.c. is no worse than some of the "ultimate" systems I have tried.

The basic 453 seemed to be very noisy when the gain control was well advanced. This same characteristic has been observed in a few Q5-ers. The cause appears to be regeneration in the i.f. stages, which can easily be eliminated by installing decoupling networks consisting of 200-ohm resistors and 0.05-μf. capacitors at the screens of the 6SK7s. Once this was done the 85-kc. i.f. strip couldn't be peaked up to the ringing selectiviy it had displayed previously, so an inveterate c.w. man might not think this step desirable. The i.f. stages could be aligned to give something in the order of 1500 cycles at 6 db. down, which was a little too sharp for good phone reception, so they were slightly staggered to give a bandpass of about 2500 cycles. Switching of the transformers was tried in an effort to obtain variable bandpass, but it was found necesary to switch at least two transformers — four circuits — to get adequate control, so the idea was abandoned.

Product Detector

The 6SL7 product detector was chosen because good results had previously been obtained with this circuit. This dual-triode demodulator gives about the same gain (loss) as the diode detector in the a.m. position, which is considerably better

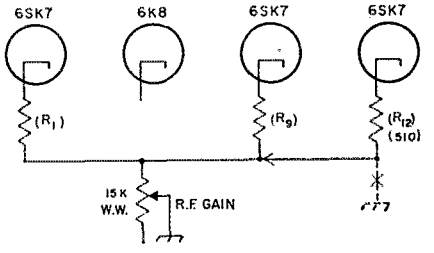


Fig. 4—These changes in the BC-453 add a manual gain control and apply it to the last i.f. stage in addition to the r.f. and first-i.f. stages. Designations in parentheses refer to original BC-453 circuit diagram.

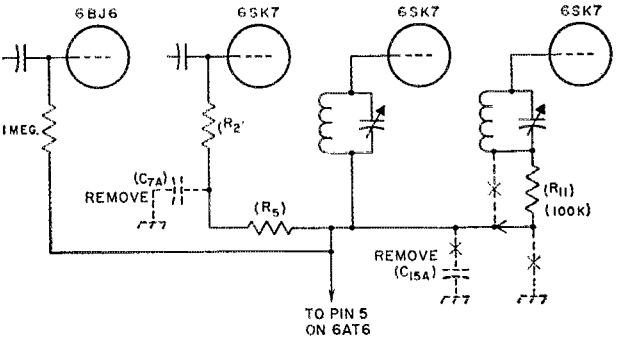


Fig. 5—Circuit changes in the BC-453 to introduce a.v.c. voltage from the added a.v.c. amplifier (6AT6). This drawing also shows the a.v.c. voltage applied to the 6BJ6 r.f. amplifier in the external converter.

than some of the other circuits will do. The only adjustment required in the product detector was setting the cathode balancing resistor. This was set by switching to s.s.b. and pulling the b.f.o. tube out of its socket. The resistor was then adjusted while listening to an a.m. station. Over most of the range of this resistor the a.m. will be very readable but at one critical setting it will become so distorted as to be unreadable. That is the point. This point was found to hold unless the tube was changed for one of different characteristics, or unless the voltage on the tube changed by quite a large percentage.

On a.m. it was found that the 2500-cycle bandpass was inclined to make the signals sound quite bassy. On a stable signal this condition can be alleviated by switching to s.s.b. and using the b.f.o. as a substitute for the a.m. carrier. It did not seem prudent to widen the i.f. just to make unstable signals sound better.

Quite a bit of 85-kc. signal will go through the product detector and appear at the grid of the first audio stage unless it is filtered out. Filtering at 85 kc. takes quite a large inductance to be effective as an r.f. choke, so it was decided instead to put in an audio filter using an iron-core inductance. By doing this it was possible to start cutting off at about 3000 cycles and thereby eliminate some of the hash that adds nothing to communication.

The isolation of the b.f.o. was tested by switching to the a.m. position and powering the b.f.o. with a jumper. In addition to the shielded lead to the 6SN7 it was found necessary to shield the 12AT7 in order to remove all trace of beat signal.

At about this stage of the game one discovers he has a pretty hot broadcast receiver on his hands. In this metropolitan area, with powerful broadcast stations nearby, there was not a trace of these broadcast stations coming through after the receiver was installed in its shielded cabinet.

Coil and Crystal Data

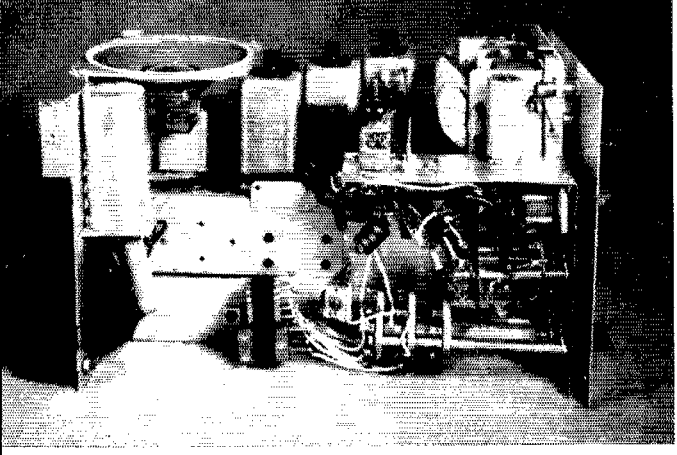
3.5 Mc.:	L_1 — 30 turns No. 26 on ⅜-inch diam. form. L_2 — 80 turns same as L_1, wound close to L_1. L_3 — 90 turns No. 32 on ¼-inch diam. slug-tuned form. L_4 — 120 turns same as L_3, wound close to L_3. Y_1 — 4.8 Mc., for 3.5–3.8-Mc. range. Y_2 — 5.0 Mc., for 3.7–4.0-Mc. range.
7 Mc.:	L_1 — 18 turns No. 26 on ⅜-inch diam. form. L_2 — 45 turns same as L_1, wound close to L_1. L_3 — 90 turns No. 32 on ¼-inch diam. slug-tuned form. L_4 — 65 turns same as L_3, wound close to L_3. Y_3 — 8.3 Mc.
14 Mc.:	L_1 — 5 turns No. 26 wound over L_2. L_2 — 18 turns No. 24, 32 turns/inch, ½-inch diam. (B & W Miniductor 3004). L_3 — 25 turns No. 32 on ¼-inch diam. slug-tuned form. L_4 — 35 turns same as L_3, wound close to L_3. Y_4 — 15.3 Mc.
21 Mc.:	L_1 — Use L_1 for 14 Mc. L_2 — Use tap at 13th turn from bottom on L_2 for 14 Mc. L_3 — 15 turns No. 26 on ¼-inch diam. slug-tuned form. L_4 — 20 turns same as L_3, wound close to L_3. Y_5 — 22.3 Mc., overtone type, for 21.0–21.3-Mc. range. Y_6 — 22.5 Mc., overtone type, for 21.2–21.5-Mc. range.

Coils on ¼- and ⅜-inch diameter forms are multi-layer (scramble-wound), approximately ⅛ inch in width; separation between coils wound on same form is about 1/16 inch. Wire insulation is enamel. Adjust to resonate, with capacitances given in Fig. 2, to band for which wound.

Front End

After the problems with the conversion of the 453 were licked the front end went together quite uneventfully. Aside from running a metal shield between the input and output sections of the 6BJ6 circuit no special precautions were taken; nevertheless, the stage proved stable from the start.

The addition of the 6AB4 was a big improvement and its omission would be discouraged. It may be noted that the oscillator switches from fundamental to overtone operation on 21 Mc. C_3 is a 3-30 mica trimmer and L_5 is 7 turns of No. 24 on a ⅜-inch diameter form. If it is desired to use an overtone crystal on 14 Mc. another



The crystal-controlled converter is on a subchassis installed at the left front of the assembly. The three-deck switch at the bottom is for the converter oscillator crystals; the band switch for the r.f. and mixer tuned circuits is near the center and the tubes are at the top. Power-supply components are on the rear panel or subchassis.

coil-capacitor combination will be required and the coil should have about 10 turns.

The mixer grid circuits are peaked up for the center of each band except in the case of the 80-meter coil. The 80-meter circuit is peaked at the center of the 3.7-4 Mc. range with S_2 on the proper contact for this range. Switching S_2 to the 3.5–3.7 Mc. range cuts in C_2, which should be selected to peak the mixer at about 3600 kc. without changing the position of the slug in L_4.

Performance — And Some Speculations

Now that the receiver is about completed one might logically ask if it meets the specifications. It is small, being 8 by 8 by 12 inches, and is very rugged. It contains power supply and speaker — although it is true that it sounds better on a larger speaker. Stability proved to be far in excess of expectations — possibly due to some fortunate circumstance — and certainly is a tribute to the design of the BC-453. On 21 Mc. from a cold filament start, the drift has been measured at less than 300 cycles in the first 30 seconds, and less than 60 cycles from there on out.

The mechanical stability of the unit was implied earlier. I have repeatedly worked on the receiver while listening to an s.s.b. QSO and decided, say, to change a component in the audio circuit. The line cord would be pulled, the receiver up-ended and the part changed, then the cord plugged in again and the set returned to normal position — to find the s.s.b. QSO still in tune. The receiver is sensitive, has plenty of gain, and has a low noise level. The image rejection is a little poorer than was hoped for.

Having trod this ground once would I come this way again? Probably not. If it is my "misfortune" to get another BC-453 I think I would leave the 453 on 200- to 500-kc., convert to 3500–3800 kc. and 3700–4000 kc. for 80, and convert to 3700–4000 kc. for the higher bands, using triple conversion. Some preliminary tests made along this line indicate the need for an r.f. amplifier at the intermediate 3700–4000 frequency when working on the higher bands. Spurious responses should not be a problem except for one fifth harmonic that shows up at 21,250 kc., the injection frequency being 3.7–4 Mc. lower than the signal in every case.

One other idea that seems interesting is the use of a higher-frequency Command Set, perhaps the one that tunes the 80-meter band. These units have the curse of a higher-frequency intermediate-frequency amplifier that is quite broad, but they might respond to a cascaded half-lattice filter. In either case the tail end of the receiver described here would be pretty much duplicated. General-coverage, rather than amateur-band only, tuning in the crystal-converter section would be a worthwhile asset, in that it would allow any 300-kc. segment of the entire spectrum to be covered by plugging in a suitable crystal.

A close inspection of the front panel will reveal a control marked noise limiter (NL). Since the type to be used has not been decided on as yet, that is just a provision for the future. Ah! Then the HBR-453 is not completely finished? No, and it never will be — not as long as new ideas continue to flash up on the horizon — wonderful ideas, that can be tried, incorporated, or abandoned!

Strays

W8QBJ, plagued with an odd type of chirp while cathode keying the v.f.o. and buffer of a new rig, traced it to the bug. The contacts were not at fault, but installation of some flexible "pigtail" around the "hinge" of the bug completely eliminated the oscillator instability under keying conditions.

Roy M. Brown is a lucky chap. He has received the call KN9RMB.

—···—

Would this have been a homogeneous mixture? Yes, it would have been O.K. for the Field Day generator. K8GAS worked K9OIL.

A Crystal-Controlled Converter for 1296 Mc.

Modern Receiving Techniques for Our Lowest Microwave Band

BY DONALD K. GOSHAY,* W6MMU

Recent issues of QST have carried reports of new DX records for the 1215-Mc. band. The author of this article was one of the moving spirits in this work, and the converter he describes here has been employed extensively, not only in these record-making expeditions, but regularly in his home station in Los Angeles. It brings to the edge of the microwave region the high-stability narrow-band techniques that have proven effective on all lower amateur frequencies.

Few articles on equipment for the 1215-Mc. band have appeared in amateur publications. Of these, only two described crystal-controlled transmitting or receiving gear.[1] In any new field of amateur communication it is well not to let a particular circuit or mechanical arrangement become too standardized in the mind of the experimenter. New schemes for transmitters, receivers or antennas for 1215 Mc. may or may not be superior to the few that have already appeared in print, but each should be given due consideration, before relegating the band to cut-and-dried circuitry, as has happened on our lower frequencies.

In designing the crystal-controlled converter described here we tried to use circuits that could be duplicated without special equipment not generally available. While a small amount of machine work is involved, it is simple in nature. The enterprising enthusiast will find ways to do it, or he can have the work done at moderate expense. The first model of the converter had no machined parts whatever, yet it apparently worked just as well as the later and more refined model.

Also for simplicity, no r.f. amplifier stage is used ahead of the crystal mixer. While a good amplifier may have advantages over a straight crystal-mixer type of superheterodyne at this frequency, much interesting work can be done with the simpler arrangement. The builder can then take his time while he looks for that elusive 416B — which will probably be flat when he gets it! By following certain design principles, to be discussed later, the performance of a crystal mixer can be made very nearly as good as that of the best r.f. amplifier stages.

The converter uses a 1N21E crystal diode in a radial cavity. Injection at 1280 Mc. is furnished by an oscillator-multiplier chain consisting of a 6U8, two 6J6s and a 446A lighthouse tube. The converter layout leaves plenty of space for changes, and the various units can be modified readily. R.f. connections between stages are made with coaxial connectors and RG-58/U or RG-59/U cable.

The Cavity Mixer

Most mixer cavities described are the coaxial type, but this converter employs the radial variety. In a coaxial cavity the length is the primary frequency-determining dimension. (The diameter has a small effect.) A radial cavity resonates at a frequency almost totally dependent on its diameter. Center loading the radial cavity capacitively lowers its resonant frequency, just as does end loading a coaxial line.

The physical details of the mixer are shown in Figs. 1 and 2. The dimensions given are not critical. The first model was made by sawing a ¾-inch length off a 4½-inch diameter aluminum pipe for the main body. The ¾-inch length was chosen to accommodate the physical length of the 1N21-series crystals.

The antenna input, the local oscillator injection and the mixing crystal are all on one face of the mixer, spaced 120 degrees apart. The crystal was mounted somewhat closer to the middle of the cavity than the antenna input connector. This was because the antenna connection on an earlier model was a wire ¾ inch long, from the center conductor of the connector to the opposite end

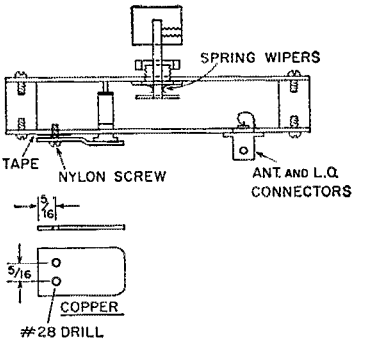


Fig. 1—Cut-away view of the radial cavity mixer assembly in the 1296-Mc. converter.

*8352 Westlawn Ave., Los Angeles 45, Calif.

[1] Robertson, "A Tripler for the 1215-Mc. Band," *QST*, July, 1955, p. 20.
Cross and Taft, "A Practical Front End for a 1215-Mc. Receiver," *CQ*, January, 1958, p. 48.

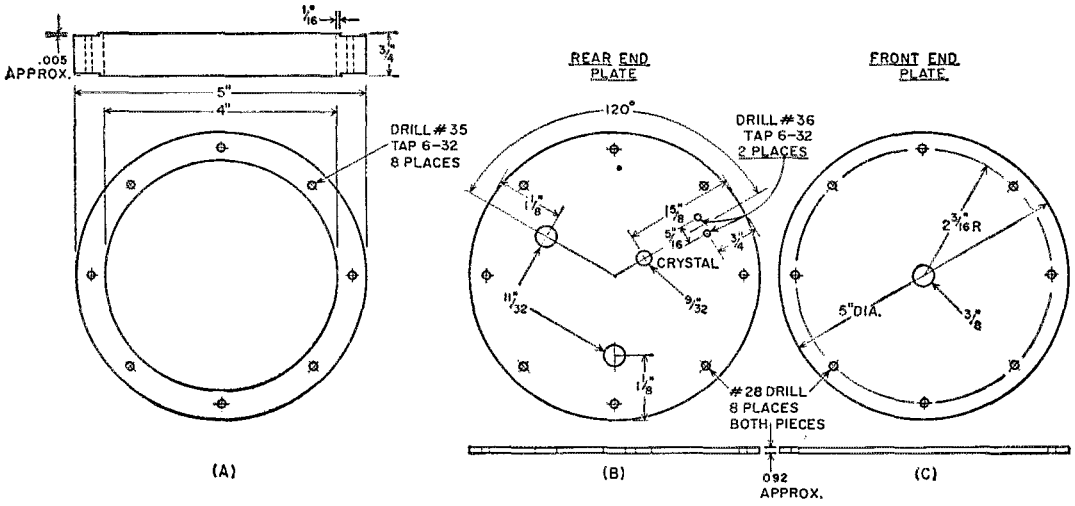


Fig. 2—Dimensions of the principal parts of the radial cavity. Material may be aluminum or brass.

plate of the cavity. Assuming the r.f. input impedance of the crystal to be about 100 to 150 ohms, the crystal would have to be closer to the center than the input tap, for the latter to provide a good match for 50-ohm input. Laboratory tests showed that this arrangement worked out quite well, but the loop coupling gives just as good match. The cavity is loaded quite heavily, as image rejection is no problem. So long as the image rejection is 10 db. or more the over-all noise figure will not be adversely affected. The lower Q reduces insertion loss and lessens the mechanical rigidity requirements of the mixer.

Tuning the mixer is done with a ¼-inch brass shaft passing through the end plate opposite to that containing the mixer crystal and coaxial connectors. A penny-sized copper disk is soldered to the shaft for a capacitor plate, and the shaft runs through a locking-type panel bushing adjusted to provide the necessary friction. In practice the mixer rarely requires tuning, but the red-blooded experimenter would rightfully feel cheated if something were not available for adjusting occasionally.

Spring copper wipers, shown in the drawing, were a refinement that was found to be unnecessary, but it may be just as well to add them anyway. Erratic mixer tuning was at first thought to be due to poor contact between the shaft and its bushing. Later it was found that the end plates were "oil-canning." This was cured by mounting the mixer against a heavy panel, as seen in the rear-view photograph, and changing the end plate to a heavier stock. A further refinement to reduce mixer loss and improve tuning stability was to improve contact between the main body and the end plates by undercutting the end faces of the main body,[2] as shown in Fig. 2A.

The mixing crystal protrudes through one end plate and contacts the opposite one. The large end is insulated by a tight-fitting piece of spaghetti sleeving. The i.f. output is brought off by a copper tab that presses down on the end of the crystal. The tab also serves as a mixer bypass capacitor. It is fastened to the end plate with two nylon screws, and is insulated from the plate by a strip of plastic electrical tape. (Metal screws, suitably insulated, may be used if the nylon screws are not available.) Because of 40 $\mu\mu$f. of capacitance to ground so provided, and the relatively low impedance of the circuit, about 400 ohms, there is negligible pickup at the intermediate frequency.

I.F. Preamplifier

As no communications receiver has enough gain to accommodate the low signal level from the mixer, a preamplifier is necessary. Other arrangements might give more gain and lower noise figure than the one shown in Fig. 3, but none would be more simple or readily adjusted. Like the injection string, the i.f. preamplifier is built as a subassembly. Experimentation with other circuits is thus made easy, but in the meantime the builder of the converter is able to receive signals.

The i.f. amplifier is a 12AT7. The first stage is grounded-grid, and has an input impedance, neglecting input capacitance, of nominally 400 ohms. This happens to be the optimum i.f. impedance for the 1N21-series mixing crystal. The d.c. return for the crystal is through one half of a bifilar r.f. choke winding, the cathode return being the other half. This choke is resonated at the intermediate frequency by the combined effect of the mixer bypass, the coaxial cable and the tube input capacitances. Resonance is checked with a grid-dip meter, removing or adding turns as required. It is not at all critical, as the operating Q is low and the bandwidth consequently is large. Be sure to remove the crystal from the mixer before using the grid-dip meter; otherwise the dip may be questionable.

[2] Cavities are available in the form shown in Fig. 2 from Mooradian Machine Works, 1752 E. 23rd St., Los Angeles. Price, $1.50 each.

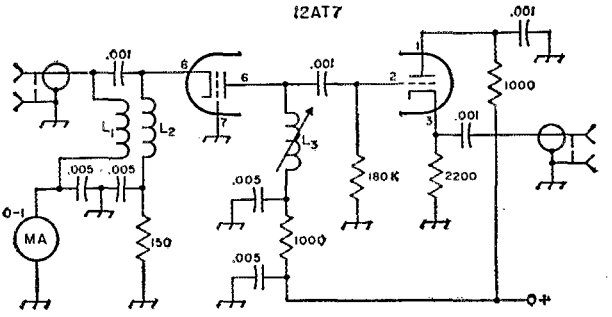


Fig. 3—Schematic diagram of the i.f. preamplifier stage.
L_1, L_2—Bifilar-wound choke resonating at 16 Mc. 23 double turns No. 26 enamel, ¼ diam., close-wound.
L_3—25 turns No. 22 enamel, ½-inch slug-tuned form.

For maximum gain in the first stage it should be loaded with as low-capacitance and high-impedance a second stage as possible. There should be no tuning capacitance, so a slug-tuned coil is used. The second stage is a cathode follower. This has virtually infinite input resistance, and no Miller-effect capacitance, making the slug-tuned coil the sole frequency-determining element of the preamp. The pass band of the amplifier is very narrow; no more than a few hundred kilocycles. This is not a disadvantage as the coil is quickly adjusted by turning the slug and listening to the noise peak when the receiver is tuned to the desired frequency.

The casual observer may suggest at this point that the cathode follower is useless, as it has no gain and could be replaced by link coupling from the interstage coil. Nothing could be further from correct. A low-impedance link coupled to the interstage coil would load it, and the gain from the grounded-grid stage would drop rapidly. While having a *voltage* gain of only about 0.9, the cathode follower definitely provides gain compared to the conventional grounded-cathode amplifier. Furthermore, its output impedance is very nearly that of the input of most low- and medium-priced communications receivers.

Oscillator-Multiplier Chain

One problem in crystal-controlled converters as we progress to higher bands is instability. Having gone to crystal control to achieve stability, we should get as much as crystals will provide. Expensive crystals and ovens could be used, but we would rather do otherwise. Overtone oscillators were also ruled out. Possibly their use would save one stage, but at some sacrifice in stability and only a slight reduction in circuit complexity. Crystal-diode multipliers have merit, but their peculiarities may not be familiar to the v.h.f. man already experienced in vacuum-tube multipliers.

As seen in Fig. 4, the injection chain starts with a 10.0-Mc. crystal oscillator using the pentode section of a 6U8. Check the frequency before construction progresses too far; if the oscillator is only 8 kc. off, the final injection frequency will be off by more than a megacycle. The 4th harmonic, 40 Mc., is taken from the plate circuit and fed to the triode section of the 6U8, where it is doubled to 80 Mc. Two halves of a 6J6 double twice to 320 Mc. The 320-Mc. circuit is balanced, for optimum coupling to the balanced input of the 6J6 push-push doubler to 640 Mc. The 640-Mc. plate circuit of this stage is a small loop, parallel-resonant with the 6J6 output capacitance, and tuned by a small variable series capacitor.

The final doubler is a 2C40 or 446A lighthouse tube, available at most surplus houses for 25 to 50 cents. It uses a modified ASB-5 mixer cavity, also a surplus item. Little use has been found for this unit in the past, though its companion unit, the r.f. amplifier in the ASB-5, is much in demand. Its input circuit will not quite reach 640 Mc. in its original form, so it was shortened about ¾ inch by installing a false bottom in the cathode cavity This was made by punching a 1⅜-inch hole in the middle of the plate cover of the mixer, and slotting the rim in numerous places with a jeweler's saw or coping saw. The cavity is heated *on one end only* over a gas stove, and the original bottom and cathode conductor temporarily removed. The modified mixer plate cover is slipped over the cathode connector and soldered in place. The works is then reassembled.

The original input hole will then be covered by the false bottom. However, what was originally the ASB local oscillator injection hole is now in the exact position for the 640-Mc. drive. Under operating conditions the s.w.r. looking into this doubler was found to be 1.19. A BNC fitting is attached to take the 640-Mc. drive.

The 1280-Mc. plate circuit is quite simple, and details are more readily conveyed by drawings than by description. The inner conductor is made from $\frac{5}{16}$-inch copper fuel line, slotted at the end to receive the plate cap of the 446A. (See Fig. 5.) The insulating bushing, preferably of Teflon, is installed at the other end. The plunger and spring-loaded bearing were taken from a precision piston trimmer found in many pieces of surplus gear. (The ARR-26 has 30 of them.)

The ring attaching the outer conductor to the ASB cavity was cut from flat copper sheet with tin snips. It is held on the end of the ASB cavity and holes are drilled through both it and the cavity. The holes in the cavity are then tapped for 6-32 screws. The outer conductor (brass plumbing pipe) was soldered to the copper ring, and allowed to protrude through it. This makes the outer conductor press firmly against the grid ring of the ASB cavity, giving a good r.f. joint.

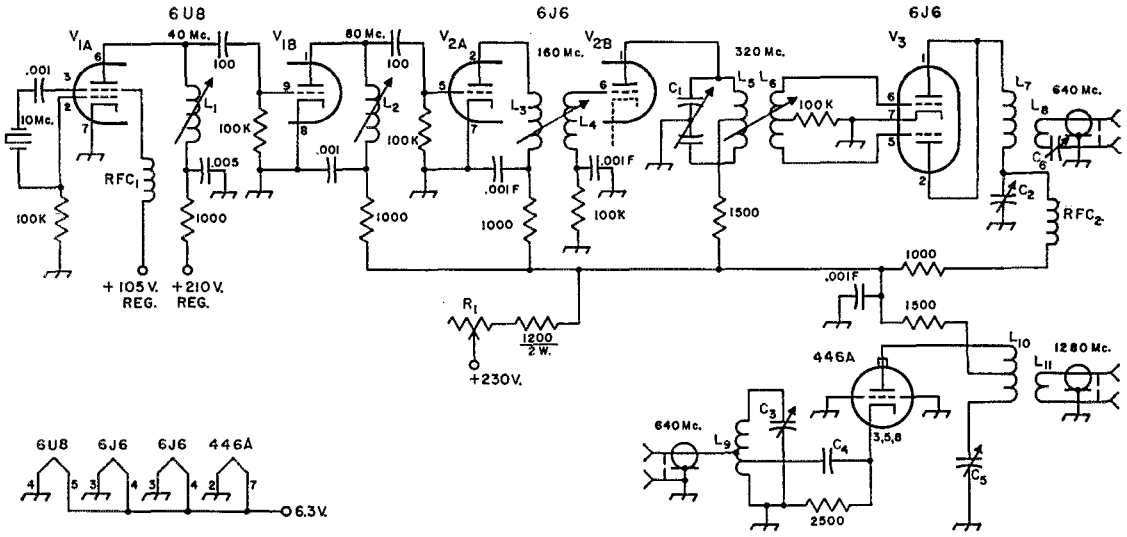


Fig. 4—Schematic diagram and parts information for the oscillator-multiplier chain. Capacitor values below .001 are in $\mu\mu$f. Those marked with F are feedthrough type. Resistors ½ watt unless specified.

C_1—1.8 to 5.1 $\mu\mu$f.-per-section split-stator variable. (Johnson 160-205).
C_2, C_6—1.8-$\mu\mu$f. plastic trimmer (Erie 532).
C_3, C_4—Part of ASB cavity.
C_5—Piston from trimmer capacitor; slides inside end of L_{10}. See Fig. 5.
L_1—18 t. No. 22 on 9/32-inch diam. iron-slug form.
L_2—8 t. No. 22 on 9/32-inch diam. iron-slug form, spaced to ⅝ inch.
L_3—9 t. No. 22, ¼-inch diam., ¾ inch long.
L_4—8 t. like L_3. L_3 and L_4 are side by side ½ inch apart, c. to c.
L_5—3 t. No. 14, 5/16-inch diam., 7/16 inch long, center tapped. Leads ⅜ inch long.
L_6—2 t. No. 22, ½-inch diam., 7/16 inch long.
L_7—2 t. No. 14, ¼-inch diam., 7/16 inch long. One ⅜-inch lead.
L_8—2-inch length of No. 16 bent into U shape, ¾ inch wide at open end, ¼ inch at bent end.
L_9—Part of ASB cavity.
L_{10}—Final doubler plate circuit; see Fig. 5.
RFC_1—1-mh r.f. choke.
RFC_2—5 t. No. 24 enam. on 1-watt resistor.

The output link enters through a ⅜-inch hole, about ½ inch above the plate cap, as seen in Fig. 5. The B-plus feed resistor enters through a 5/16-inch hole. Its cold side is connected to a feedthrough bypass, mounted on a small angle bracket, as close to the hole as possible.

Power Supply

The d.c. output voltage of the power supply is about 230. Two 0B2 regulator tubes in series provide regulated 210 volts for the oscillator plate and 105 for the oscillator screen. Other stages of the injection chain are run from the unregulated output of the supply, through a 2000-ohm wirewound potentiometer. This is useful for varying the injection electrically. It will be found that crystal currents from 50 to 500 microamperes have very little effect on the mixer operation.

The i.f. preamplifier is also operated from the unregulated supply. It will be seen from Fig. 4 that the oscillator voltage is left on continuously during transmit or standby periods. This keep-alive voltage eliminates the last few cycles of drift when going from transmit to receive. Stability, both long and short term, was found to be worth the effort when we began to make straight

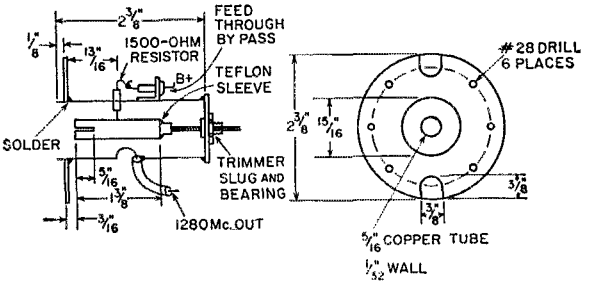
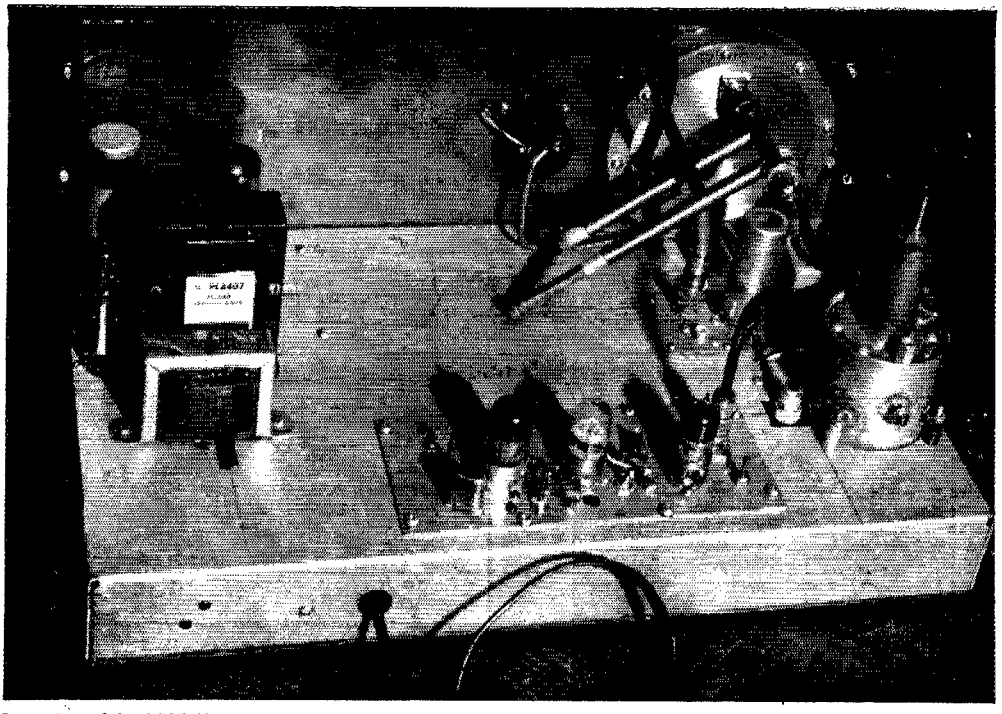


Fig. 5—Details of the 1280-Mc. doubler plate circuit. Circular plate fits top of an ASB cavity. See text and photograph. The inner conductor of the line fits over the plate cap of the 2C40 or 446A tube. Output coupling loop can be made from the inner conductor of the coaxial line. Tuning capacitor is made from a piston-type trimmer and its bearing assembly.



Rear view of the 1296-Mc. crystal-controlled converter. At the back of the chassis is the injection string assembly, except for the 1280-Mc. doubler, which is at the far right. The small assembly adjacent to the doubler is the 16-Mc. i.f. preamplifier. The radial mixer cavity is fastened to the front panel. Power-supply components are at the left.

c.w. contacts on 1296 Mc. Stability and c.w. notes were like 80 meters — a vast improvement over several previous converters used on this band. Being able to set up the receiver on a frequency precisely, and then just wait for the signal to come through, has been an important factor in several DX attempts on 1296 Mc.

Improvements

After the first signal is copied on the converter, ideas will come along for possible improvements. With the subassembly construction employed ideas can be tried one at a time, with the assurance that unchanged other units will continue to operate properly. A pi-network input to the i.f. preamplifier may aid materially in matching the crystal to the grounded-grid amplifier input. This can be done by adjusting different combinations while listening to a fairly weak signal. The ninth harmonic of a 144-Mc. transmitter can be used as a signal source, though a silicon diode or vacuum-tube noise generator may give better results.

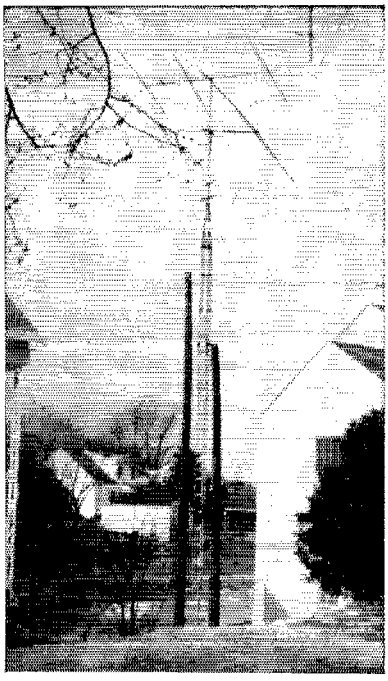
Cascode and pentode preamplifier circuits can be explored. Two problems to be expected will be instability and matching the input impedance of the amplifier. Keep in mind that mere absence of oscillation in an amplifier does not guarantee that it is free of regeneration, and consequent poor noise figure.

Adequate injection was obtained with the setup described, but some experimenters may experience trouble due to variation in lighthouse tube condition. Many 446A and 2C40 tubes obtained on the surplus market are inferior in one way or another. Nearly all have been removed from equipment, even when they are advertised as "new."

While the $\frac{3}{8}$-inch signal injection loop seems to work well there is no assurance at this point that some other size loop or different coupling method would not be better. Untuned mixers deserve consideration. Some experimenters report poor results with these, possibly because of mismatched antenna or feedline impedances. Poor mixer performance may also result from much of the signal being shunted into the local oscillator chain, where it is dissipated. High-Q tank circuit design for the injection chain output stage may be helpful here, a point that is often overlooked in 420-Mc. crystal-mixer converters, as well. The untuned mixer has the advantage that the signal may be injected at 640 or 427 Mc. with only slightly degraded performance.

In spite of the fact that most u.h.f. triodes are not supposed to work well at 1300 Mc., several experimenters have used 446As, pencil triodes and the 416B with gratifying results. The *apparent* improved performance may be due to a poorly-constructed or improperly-adjusted mixer, benefiting greatly from the gain of the r.f. amplifier. The 416B, particularly, was designed for commercial applications at 4000 Mc., so it should be good at 1300 Mc. when properly handled. Poor noise figures quoted for this tube are from

(*Continued on page 174*)



The tip-over arrangement used by W4PRM uses two discarded utility poles to form a fixed vertical member for supporting a pivot for swinging the tower proper. The tower is triangular, 40 feet high with a 10-foot pipe extension to make the total height 50 feet. The shorter of the two poles is 27½ feet above ground, with 5½ feet sunk. Height of the second pole is not critical in relation to the height of the first, except that it should be somewhat greater.

Been wishing you had a tip-over tower instead of the ordinary kind? Possibly you can use some of the ideas in W4PRM's method of converting, with similar economy. You don't have to take down the tower to do it the way described here.

Converting a Guyed Tower to Tilt-Over

THE accompanying drawings and photograph show the method used by L. D. Chipman, W4PRM, to convert a guyed metal tower into one of the tilt-over variety. With two beams on top of the tower, raising and lowering the original guyed job for antenna adjustments was distinctly not a one-man proposition. He writes, "I had to have a truck with a boom come in to lower and raise the tower whenever I had to work on the beams. This became quite expensive.

"I purchased two used poles from a local utility at a very low price and had them set either side of the tower. Then I fabricated a cradle around the tower about halfway up and ran a 1-inch pipe, with a 1-inch solid steel rod inside it, through the tower, fastening the pipe to the two poles. The tower tips over very nicely now and I can work on the beams on the ground; also, I can tilt it alone.

"The total cost of the conversion, including the cost of setting the poles, was less than having the tower lowered just once."

The essential details of W4PRM's arrangement are given in Fig. 1. The tower in his case is triangular, but the modifications for a tower of square cross section should be obvious. In either case only two bearing plates are needed for the cradle. These are of ¼-inch steel, and should be long enough to extend about an inch beyond the tower legs to accommodate the U-bolts that fasten them to the legs. The plates should be at least 3 inches wide, so there will be enough material left around the bearing holes to have ample strength for supporting the tower. The bearing or pivot is a length of 1-inch i.d. iron pipe, reinforced by running a 1-inch round iron bar through it, and is fastened between the two poles. The holes in the cradle plates are made large enough for easy clearance around the pipe so the tower can swing freely.

It is difficult to set poles so their tops are exactly level and an exact distance apart. W4PRM dodged the resulting problems in bearing alignment by using a method that does not require such accuracy in pole setting. One pole is a little longer than the other, as indicated in Fig. 1. After the poles were up, a pipe flange was run on one end of the threaded 1-inch i.d. pipe. This was then leveled at the top of the short pole, run through the tower in its proper operating position, and the flange was then screwed to the long pole as shown in the drawing. Then the pipe was unscrewed, leaving the flange as a marker, and a 1-inch diameter hole (for the reinforcing bar) was drilled into the pole, through the center of the pipe flange opening, to a depth of about 2½ inches. After final installation, the pipe simply rests on the top of the short pole, and is held in place by a small steel plate, 2½ by 4 by 3/16 inches, using four 6 × ⅜-inch lag screws.

To locate the bearing holes in the cradle plates, the plates were assembled loosely to the tower at about the top of the short pole, after drilling appropriate holes for the U-bolts. (W4PRM recommends at least ⅜-inch U-bolts, since smaller ones tend to stretch.) Then a straightedge was run across the center of the top of the short pole to the bearing hole drilled in the long pole, and the intersections of the straightedge with the edges of the cradle plates were marked on the plates. The plates were then removed and 1¼-inch holes drilled at their centers along the bearing lines so determined. If the tower is triangular, these holes will have to be drilled at an angle, or filed out to provide good bearing surface on the pipe pivot.

Note that the pipe is threaded from both ends toward the center to provide for check nuts to keep the tower from shifting position on the pipe. In the final assembly, the 1-inch solid bar was first driven through the pipe, with its end projecting to fit into the hole drilled in the long pole. Then the cradle plates were put on and a check nut run on from each end. Next, one end of the pipe was threaded into the flange on the long pole, the bearing plates were assembled on the tower and the U-bolts tightened, and the end of the pipe on top of the short pole was secured by means of the small plate. Last, the check nuts were run up, making sure everything in the bearing operated freely, and staked in place by using a center punch on the pipe threads at the nuts.

The procedure above assumes that the work will be done with the tower guyed in place, which W4PRM found to be a simpler way of doing it than attempting to assemble the cradle and bearing to the tower with the tower lying on the ground. In using this method it must be possible, of course, to unfasten the tower bottom so the tower can swing after the job is completed. After final assembly, leave the guys in place but a little loose, then unfasten the tower bottom and determine whether the tower is top-heavy or bottom-heavy. If the latter, the guys are not needed as such, but can be used for pulling the tower over. If top-heavy, weights should be added to the bottom to balance the system, including the weight of the beam or beams. It is advisable to install the cradle near the center of gravity of the unweighted tower; in most cases this will not be too far from the midpoint, depending on whether the tower is tapered or not and on the added weight of the antenna.

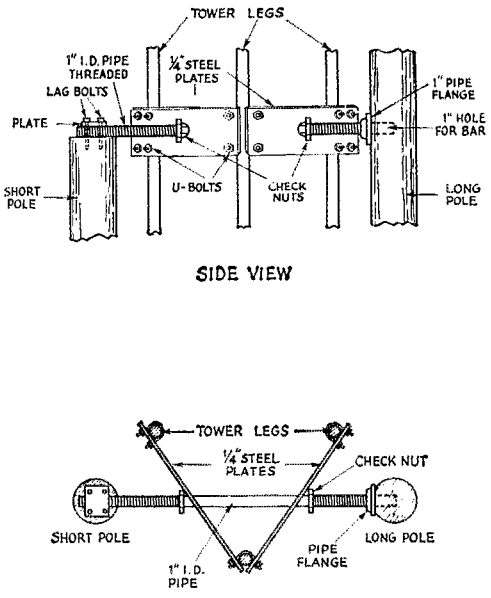


Fig. 1—Essentials of the cradle and pivot constructed by W4PRM. This method (the details can be varied to suit) does not require accurate alignment of the pole tops. The two ¼-inch steel plates and 1-inch i.d. pipe form a bearing on which the tower can swing for tipping over.

The principal cost of this system will be in the poles. This will vary in different sections of the country, but it should be possible to pick up, at relatively low cost, suitable poles removed from regular service by the local utility companies. Local contractors with the necessary equipment for installing them can be found. QST

Strays

The Rettke family of Harlowton, Mont., claim the title of the biggest ham family with the most YLs—OM John, W7CTM, poses with his girls: Nicky, KN7HWQ; Lucille, KN7HWN; Linda, KN7HWP; and Judy, KN7HWO. They're not 100 per cent ham, however—brother Dave has no call. But then, he's only two years old.

The Gonset GSB-100 Transmitter

THE Gonset GSB-100 is a table-top transmitter capable of operating on c.w., p.m. (phase modulation), a.m. and upper or lower s.s.b. Power input to the final amplifier, a 6DQ5, is rated to be 100 watts p.e.p. on s.s.b., 100 watts on c.w., 75 watts on p.m., and 50 watts on a.m. The unit is v.f.o.-controlled and frequency coverage is eighty through ten meters. The 10-meter phone band is covered in two 600-kc. steps — 28.5 to 29.1 Mc. and 29.1 to 29.7 Mc. — as normally furnished. Optional crystals are available to cover 28.0 to 28.6 Mc. On 40, 20, and 15 meters the frequency coverage extends outside the amateur bands to cover some of the MARS frequencies. The frequency ranges on these bands are 6.9 to 7.5 Mc., 14.0 to 14.6 Mc., and 21.0 to 21.6 Mc. Automatic voice-operated transmit-receive switching is provided.

The GSB-100 uses the phasing method for s.s.b. generation, yet a look at the panel shows no sign of the balanced-modulator controls usually found on a phasing rig. A special notch filter following the balanced modulator does away with the necessity for keeping a constant check on carrier suppression and for continually rebalancing the modulator controls. We'll take a closer look at the filter circuit later on.

A block diagram of the GSB-100 is shown in Fig. 1. The basic signal for all frequencies and types of emission is 9 Mc., generated in the 6AZ8 crystal oscillator, V_{1B}.

For s.s.b., a.m. and p.m. operation, audio from the microphone is amplified in the 12AX7 speech amplifier and 6AZ8 a.f. driver, V_{1A}. It is then passed through a 300- to 2500-cycle band-pass filter. On s.s.b. the signal is fed into an audio phase-shift network where it is split into two components 90 degrees out of phase. Each channel is then amplified, using separate sections of V_2, and fed to a balanced modulator, where it is combined with the 9-Mc. energy from the crystal oscillator which has also been split into two components 90 degrees apart in phase. Either sideband can be selected by reversing the output polarity of one audio channel, while the balanced modulators cancel out the carrier. On a.m., one of the balanced modulators is disabled and enough carrier is inserted in the other to give a properly-modulated a.m. signal. For p.m., one balanced modulator is used for generating a d.s.b. signal with suppressed carrier, which is then combined with the second r.f. channel, shifted 90 degrees with respect to the first, producing a phase-modulated signal. For c.w. operation, the audio circuits are disconnected and the modulator is unbalanced to produce a carrier which can be keyed later.

The balanced modulator in the GSB-100 uses 1N34A crystal diodes and when adjusted properly will attenuate the carrier as much as 40 to 45 db. However, to overcome the well-known drift so characteristic of diode modulators, which allows carrier to leak through unless the balance is periodically readjusted, Gonset inserts a notch filter after the balanced modulator, adding as much as 30 db. more attenuation of the carrier on

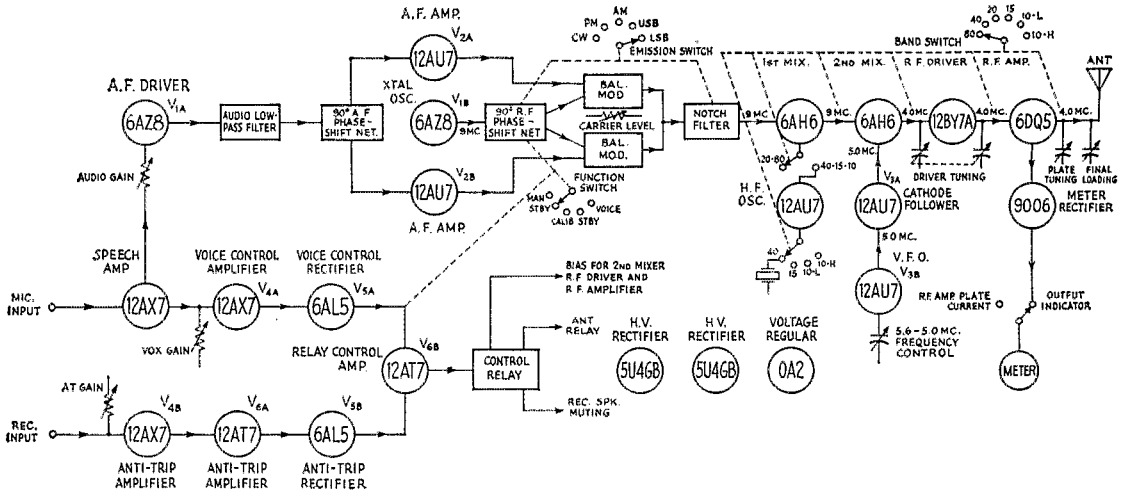
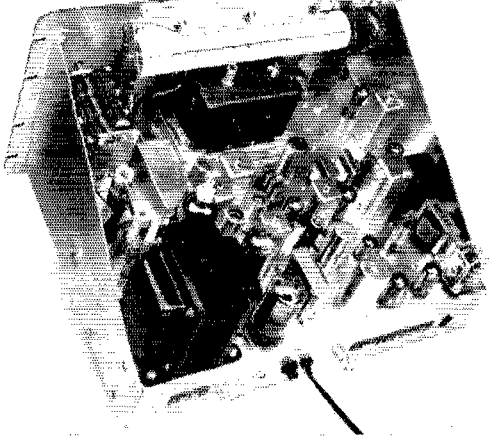


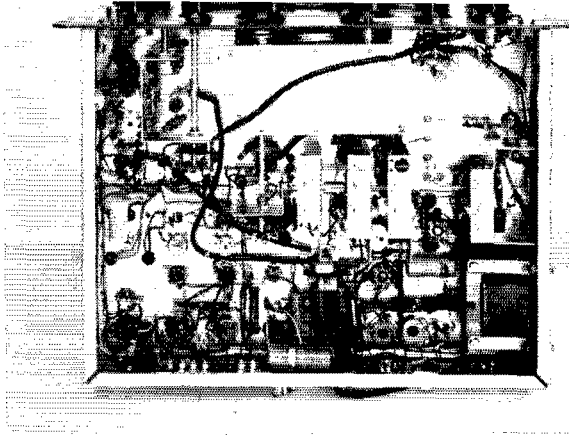
Fig. 1—Block diagram of the Gonset GSB-100 transmitter. Switches and frequencies are shown for 75-meter upper-sideband operation.



This view of the GSB-100 shows the top-mounted components and the rear-apron connections. The calibrated dial drum, which is illuminated by three pilot lamps, is mounted above the shielded v.f.o. assembly shown at the top of the photograph. The v.f.o. shield box—which strongly resembles the v.f.o. shield in the ARC-5 transmitter—is painted black so it will absorb heat readily and come up to temperature rapidly. This box is placed at a spot considerably removed from heat-generating components.

In this photograph the audio and control circuits are at the right on the chassis, the plastic enclosed VOX relay is at the right bottom, while the r.f. circuits are to the left and the power supply is at the left bottom. The three-gang variable capacitor at the top left is the final loading capacitor. Directly below this capacitor are the r.f. amplifier plate circuit coils and the 6DQ5 r.f. amplifier tube which is partially hidden by the power transformer.

Rear apron connections, from left to right, are: —100 volts bias connection for use with an external linear amplifier, r.f. output connector, VOX potentiometer, fuse, line cord, grounding stud, remote transmit-standy switch connection, receiver and speaker connections and, finally, a 117-volt receptacle for the antenna relay.



This bottom view of the GSB-100 also gives a glimpse of some of the panel controls. The crank dial knob drives the v.f.o. In this photograph, the power-supply components are grouped along the bottom right corner with the audio and control circuits to the left. The balanced modulator is mounted in the small shielded partition near the top left. The two balanced-modulator potentiometers and the emission switch control shaft are included in this partition.

Although probably difficult to find in the photograph, the band switch is connected to a shaft which runs from the panel down to about the middle of the chassis, connects to a switch wafer, turns right by means of a right-angle drive, passes through five more switch wafers, and finally terminates near the chassis wall at the right. The circular objects mounted on plates above some of the switch sections are the ceramic trimmers in the r.f. tuned circuits. The black cables crisscrossing the chassis are coax leads which connect mechanically isolated r.f. circuitry.

Only one tube is located under the chassis. Mounted horizontally on a bracket next to the chassis wall at the right, this tube is the 9006 r.f. rectifier diode which provides d.c. current to the front-panel meter to give relative output indications.

s.s.b. Fig. 2 is the circuit of the filter — really a trap working on the "suck-out" principle. The balanced modulator is inductively coupled to the grid of the 6AH6 first mixer through the link L_2 and tuned circuit L_1C_1. A 9-Mc. crystal is also coupled to L_1C_1 by means of link L_3. The crystal puts a sharp 9-Mc. notch in the response curve of the tuned circuit and attenuates any 9-Mc. carrier that remains after passing through the balanced modulator, but has little or no effect on the sideband. Suppression of the unwanted sideband is about 40 db., and spurious products are said to be down about 50 db., in the modulators. A carrier-level control on the front panel permits varying the carrier injection for a.m. and p.m.

After leaving the notch filter (on s.s.b.) or the balanced modulator (on a.m., p.m. and c.w.) the signal is injected at 9 Mc. into the grid of the first 6AH6, which on 20 and 80 meters operates as a straight-through amplifier to drive the grid of the second 6AH6 as a mixer. On 40, 15 and 10 meters, the first 6AH6 operates as a mixer, and on these three bands its output frequency is the difference between the h.f. oscillator frequency and 9 Mc. This output frequency is not yet in an amateur band; for example, on 15 meters the crystal-oscillator frequency is 35.6 Mc., which minus 9 Mc. gives 26.6 Mc. The output is capacitively coupled into the grid circuit of the second mixer along with energy from a 12AU7 v.f.o.-cathode follower, V_3. Frequency range of the v.f.o. is 5.6 to 50 Mc. written in this order since the 5.6 Mc. ends up as the low-frequency end on the majority of the bands). When the v.f.o. signal is mixed with the incoming signal from the first mixer the beat, now in a ham band, is selected in the plate circuit of the second mixer. The beat selected is the difference frequency except on 20 meters, where the sum frequency is used.

The cathode follower is used after the v.f.o.

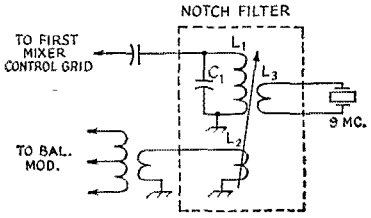


Fig. 2—A notch filter is placed in series between the balanced modulator and first mixer control grid. It performs as a trap and gives additional carrier attenuation on s.s.b.

to minimize any pulling effect and thus improve frequency stability. The v.f.o. drift is said to be 250 cycles, maximum, over a two-hour period from a cold start.

After amplification in the 12BY7A r.f. driver, the signal goes into the 6DQ5 final amplifier and then into the antenna. Power output on s.s.b. is rated to be 65 watts p.e.p. into a 50-ohm load. The pi-network output circuit is designed to work into loads ranging from 30 to 200 ohms.

A sample of the r.f. output signal is rectified by a 9006 diode, the d.c. output of which can be switched to a panel meter to indicate relative output.

Referring again to the block diagram, Fig. 1, audio from the 12AX7 speech amplifier is applied to the 12AX7 voice-control amplifier, V_{4A}, and after amplification is rectified in V_{5A}. The resulting d.c. voltage is applied to the relay control amplifier, V_{6B}, triggering the tube and thus activating the control relay. The relay mutes the receiver's speaker, removes blocking bias from the last three r.f. stages in the transmitter, and energizes an antenna relay plug mounted on the transmitter's rear apron — in short, the transmitter is placed on the air while the receiver is silenced.

During the receiving part of the operating cycle, audio is fed from the receiver to the 12AX7 anti-trip amplifier, V_{4B}, further amplified in V_{6A}, and then fed to the anti-trip rectifier, V_{5B}. The resulting d.c. voltage is applied to the relay control amplifier V_{6B}. However, the polarity of the voltage from the anti-trip rectifier is opposite to the polarity of the voltage from the voice-control rectifier, so when the microphone picks up a sound from the speaker the control voltages from the rectifiers tend to cancel, thus preventing the speaker from activating the control relay. Front-panel controls allow setting the gains of the two channels to compensate for various voice and loudspeaker levels.

The GSB-100 power supply provides 600 volts for the amplifier plate, 275 volts for the low-level stages, and regulated 150 volts for the final-amplifier screen, h.f. oscillator plate, v.f.o. plate, screen of the first mixer and the screen of the 9-Mc. crystal oscillator. In addition, there is a negative 100-volt supply for blocking bias; this voltage also is made available on the chassis rear apron for use with an external linear amplifier. Power requirements for the transmitter are not given in the instruction manual, but the primary power source is 117 volts 50–60 cycles.

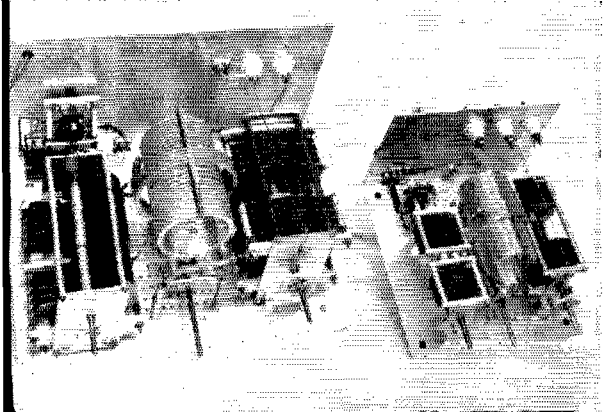
Front-panel controls and connections not mentioned previously include a switch which connects a panel meter to read plate current (0 to 250 ma.) or relative output (0 to 10 scale), a function switch (MAN, STBY, CALIB, STBY and VOX), and a calibration level control which can be adjusted to inject carrier for zero beating. The a.c. power switch is combined with the calibration control. Three phone jacks — for key, headphones, and external audio — are mounted on the front panel. When headphones are plugged in, the speaker is automatically disconnected, but the headphone circuit is connected to the control circuits so that the headphones are muted during transmitting.

A 30-page instruction manual is included with the GSB-100 transmitter. It contains specifications, installation instructions, operating instructions, circuit data, alignment and trouble-shooting data. The unit is manufactured by the Gonset Division of the Young Spring and Wire Corp., Burbank, California. — *E. L. C.*

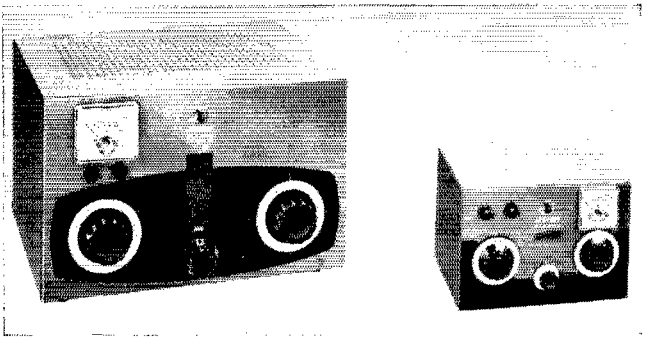
Additions to the 250 Series Matchboxes

THE original models of the Viking Matchboxes (250 series) provided all the tuning and switching controls that are necessary in an "antenna coupler," but had no built-in indicators for telling the operator when he had the right adjustments; for best results, an external s.w.r. bridge was a recommended accessory. The earlier 250-watt and kilowatt Matchboxes have now been supplemented by units, otherwise similar to their predecessors, which are equipped with reflectometers so proper matching adjustments can be attained with a minimum of trouble. The kilowatt version carries the type number 250–30–3 and the smaller (now rated at 275 watts) is type 250–23–3.

Except for the addition of a meter and two small control knobs for the reflectometer circuit, the external appearance of the panels is the same as in the older models. In fact, there is also very



Interiors of the kilowatt (left) and 275-watt Matchboxes. The differential capacitors are at the right in each case. The L-shaped chassis forms the back and bottom of the cabinet, thus the shafts shown pointing downward here project through the front panel when assembled. The panel and remaining box sides are a single unit.



New models of the E. F. Johnson Co. Viking Matchboxes differ from the older ones in having reflectometer indicators and controls on the front panels.

little change evident in the internals of the Matchboxes since the reflectometer is an external unit which can be installed at any convenient spot in the coax line whose s.w.r. is to be checked. D.c. connections between the reflectometer and the coupler are made through a two-conductor shielded cable. The meter has a 0–100 microampere movement. One of the panel controls is for adjusting the reflectometer sensitivity and the other is for switching from reflected to forward readings.

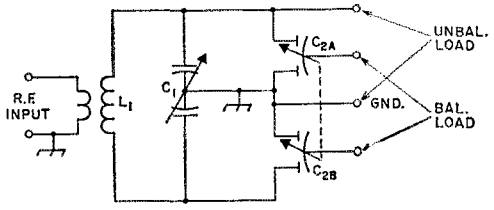


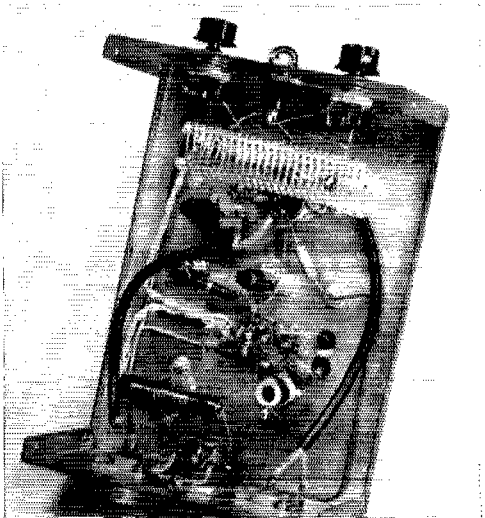
Fig. 1—Basic circuit of the Matchbox, with accessory details in the actual equipment omitted. The circuit provides variable coupling, and thus impedance matching between a coax line connected to the input link and a load connected to the terminals at the right, by adjustment of the differential capacitor C_2. Circuit resonance is maintained by C_1, after proper choice of inductance at L_1.

If you haven't previously met the Matchbox, it is a completely bandswitched matching circuit covering the amateur bands from 3.5 through 30 Mc. It will match 52-ohm coax to balanced-line loads ranging from 25 to 1500 ohms, and to unbalanced loads of 25 to 3000 ohms, in the 275-watt model; and 50 to 1200 ohms balanced, 50 to 2000 ohms unbalanced, in the kilowatt model. The basic circuit is a parallel-tuned network including a dual differential capacitor, C_2, which operates as a variable capacitive voltage divider to accomplish matching, much in the same way that taps on the tank coil do in the conventional coupler circuit. The capacitive adjustment is of course smoother and more convenient, although physical limitations of capacitors place more of a restriction on the matching range than is the case with coil taps. Because of its differential construction C_2 has relatively little effect on the tuning of the system, this being the function of C_1, a balanced capacitor of orthodox construction. (Incidentally, you won't find capacitors like C_2 in the catalogs; the ones used in the Matchboxes are made especially for these units.)

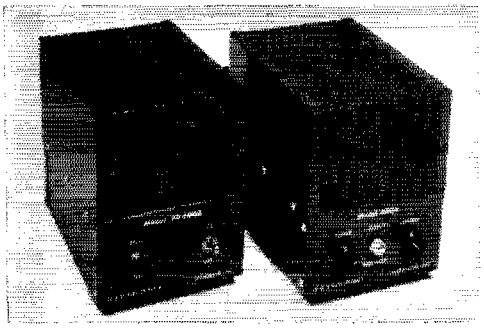
The new models retain all the features of the earlier units, such as built-in antenna changeover relay, and terminals for an r.f. probe connection. Dimensions also remain the same — 9⅞ long by 7 inches high by 10½ inches deep in the 275-watt model, 17¼ by 10⅞ by 12½ in the kilowatt version.

The P & H Electronics 600A Converter

GETTING on 50-Mc. s.s.b. looks easy, if you already have a sideband setup for the lower bands. The P & H 600A converter is a 2-tube unit that, when driven by an s.s.b. signal on 14 Mc., will give enough 50-Mc. s.s.b output to be usable on its own, or it will drive an AB_1 linear amplifier for high-power operation. Drive at 14 Mc. need be no more than is supplied by commercial s.s.b. exciters using receiving tubes.



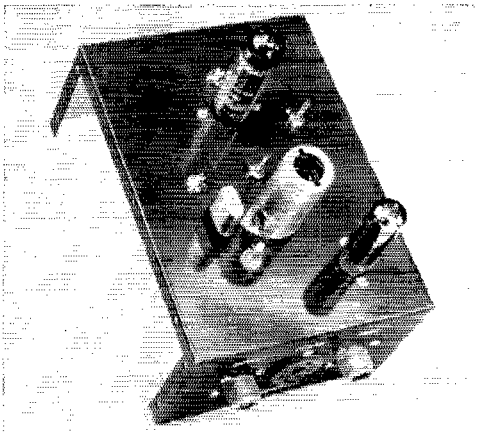
Bottom view shows the simplicity of the s.s.b. conversion unit. Large coil has three sections: the mixer plate circuit at the left, the output coupling winding at the center, and a single-turn loop for the output indicator lamp, right.



The P & H 600A 50-Mc. s.s.b. converter, with matching power supply.

The mixer stage in the 600A is a 6360 dual tetrode, with its sections in parallel. A 6U8 crystal oscillator-buffer drives the 6360 grids at 36 Mc. The s.s.b. signal at 14 Mc. is fed into the 6360 cathodes. The mixer plate circuit has fairly high C, presumably to give optimum rejection of the unwanted beat product at 22 Mc. and the 36-Mc. and 14-Mc. components in the output. Relative power output indication is provided by a small indicator lamp, coupled to the output circuit. Stability in the crystal oscillator during line-voltage fluctuations is assured through the use of an 0A2 regulator tube, holding the oscillator plate and buffer screen voltage to 150. The oscillator stage is also cathode biased, to hold input down.

A separate power supply is provided for the



The P & H Converter, with cover removed. Tubes are a 6U8 crystal oscillator-buffer, 6360 mixer and an 0A2 voltage regulator.

600A. It is similar in outward appearance to the converter unit, as may be seen from the first photograph. In the model we inspected the interconnecting cable (detachable at both units) violated the safety code at the converter end, in that a female power socket and male cable termination were used. We understand that future production will use a male chassis plug and female cable socket so there can be no exposed "hot" leads under any circumstances.

The 600A is made by P & H Electronics, 421 Columbia St., Lafayette, Indiana. — *E. P. T*

Strays

THE CUBIC VOCAMETER

The technician places test probes to the circuit — it appears he is making a routine trouble check on the equipment. Suddenly, from a rectangular gray box on a nearby table comes a clear human voice, "*Plus three five five point five volts!*" He moves the probe to another position: "*Plus seven five point three volts*" says the voice. Could it be that this magic box can measure the voltage and is reading it aloud? The answer is "yes" but it isn't magic — such a machine is available today.

The device is a new readout talking meter made by the Cubic Corp. of San Diego, California. The meter isn't restricted to reading voltage; it is available in models that measure pressure, temperature, resistance — in fact, it can read just about every electronic and electrical phenomenon and elements of time and space. The device has a voice capacity of 14 independent channels and each channel is capable of storing about 0.5 seconds of wordage. Switching between channels can be accomplished at a rate of about once every 0.75 seconds. A new voice reading is given automatically each time there is a change in the quantity being measured. If you want a repeat, push a panel button and the speaker will give it to you. When headphones are inserted in a panel jack, the speaker is disconnected and the headphones take over its function.

It doesn't take much imagination to think of many applications for the Vocameter. The obvious one is its use by the blind or handicapped. Also, it provides new safety for measuring high voltages since the operator's eyes do not have to leave the work area to get a reading.

Although it is unlikely that the average ham can afford the device (it sells for around $1375), it does give us a hint as to what to expect in the future in the way of instruments that someday will be as common in the ham shack as the vacuum tube voltmeter is today. — *E. L. C.*

—•••—

Howard Ragan, K7ATU, of Florence, Oregon, has whipped those post office blues. Says he: "When I got my ticket, I went to the post office and filled out a "Change of Address" card — to my call K7ATU, Florence, Oregon. Now when QSLs arrive, they go to me regardless of whether the QTH is in full or just addressed to K7ATU, Florence, Ore."

1959 VE/W Contest

September 26–27

Come the fourth week end in September, the VE's and W's will again be off and running and at each other's throats for QSOs in the 1959 VE/W Contest. What, you have never been in this chaos of QRM? Read on, friend!

The Montreal Amateur Radio Club again proudly announces its annual VE/W Contest and welcomes newcomers and oldtimers alike to participate. The 1959 version will be held from 1800 Sept. 26 through 2359 Sept. 27, EST times. The object, of course, is for Canadians to contact the U. S. and Possessions and vice versa. If you're a W, simply blare out a "CQ VE." If a VE, call "CQ W." Once in QSO across customs, exchange contact serial number, RS/RST report, and ARRL Section. *Example:* Having raised K6SXA on a CQ W, VE3UOT transmits "K6SXA de VE3UOT NR6 469 ONT K," whereupon K6SXA retorts with "VE3UOT de K6SXA R HR NR5 589 SAC K." If VE3UOT acknowledges, both operators are in business.

Log forms are supplied neither by ARRL nor MARC. Contest Chairman, VE2BB, therefore, requests that each entrant (1) familiarize himself with the ARRL-Section list on page 6 of this *QST*, (2) study the rules which follow, (3) submit a neat, legible log, and (4) carefully calculate his claimed score, applying the appropriate multipliers indicated in the sample.

The top scorer in each section will be awarded a certificate, with a trophy going to the over-all contest winner. To be eligible observe the rules and mail your log postmarked by October 13 to Gordon H. Webster, VE2BB, 69 Pine Beach Blvd., Dorval, Quebec.

Get that rig warmed up and that pencil sharpened for the VE/W Contest September 26–27!

Rules

1) Any single-operator station in the 73 ARRL Sections may participate. An amateur may enter as mobile, portable, or fixed, but in only *one* category. Multiple-operator stations are not eligible to compete.

2) All contacts must be made during the period from 1800 EST Sept. 26 to 2359 EST Sept. 27, with a total operating time of no more than 20 hours for each entry. Times on and off the air must be clearly shown in the log.

3) Canadians will work only amateurs in the U. S. and Possessions, and vice versa. VE/VO-to-VE/VO and U. S.-to-U. S. contacts do not count. A station may be worked once on phone and once on c.w. on each frequency-band.

4) The exchange consists of a QSO number, RS or RST report, and ARRL Section. Example of W2VAQ's message to VE2BB: "VE2BB de W2VAQ NR1 579 NYC."

5) *Scoring:* Count two points for a complete exchange of information; incomplete contacts do not count (no fractional breakdown of the two points per QSO). For final score, VE/VO stations will multiply their total contact points by the number of ARRL Sections worked in the U. S. and Possessions, and then by the appropriate power multiplier listed below. For final score, W/K amateurs will multiply their total contact points by the number of Canadian areas (maximum of 9: VE1-VE8 plus VO), then by 7.22 (ratio of U. S.-to-Canadian Sections), then by the appropriate power multiplier, and then by a 2.5 provisional multiplier (based on the ratio of U. S.-to-Canadian log entries received in previous contests). All stations using power inputs of 30 watts or less receive a power multiplier of 2, those using from 31 through 100 watts receive a power multiplier of 1.5, and those using over 100 watts receive a power multiplier of 1.

6) Each entry must be accompanied by the following signed declaration: "I hereby state that my station was operated strictly in accordance with the rules of the contest and governmental regulations, and I agree that the decision of the contest committee of the Montreal Amateur Radio Club, Inc., shall be final in all cases of dispute."

7) To be deemed valid, all entries must follow the form shown in the sample log and must be postmarked no later than midnight, October 13, 1959. They should be sent to Gordon H. Webster, VE2BB, Contest Chairman, 69 Pine Beach Blvd., Dorval, Quebec, Canada.

LOG, 1959 VE/W CONTEST

Call..... W2VAQ ..... *C.W., Phone, or Both*..... C.W. ..... *ARRL Section*..... N.Y.C.L.I. .....

Date/Time On or Off Air (EST)	*Time of QSO*	*NR Sent*	*My Stn.*	*RST Sent*	*My Sect.*	*Freq. Band*	*Emission*	*Power Input*	*NR Rcvd.*	*His Stn.*	*RST Rcvd.*	*His Sect.*	*New Sects. Wkd.*	*QSO Pts.*
Sept. 27														
On 1800	1800	1	W2VAQ	579	NYC	3555	A1	75	1	VE2BB	599	QUE	1	2
"	1801	2	"	569	"	"	"	"	2	VE3MP	579	ONT	2	2
"	1802	3	"	579	"	"	"	"	1	VE2ARC	579	QUE	–	2
"	1813	4	"	559	"	7010	"	"	3	VE1AR	579	MAR	3	2
Off 1815														

Total operating time: 15 min. Bands used: 3.5 & 7 Mc. 3 sects., 8 pts.

Claimed score: 4 QSOs × 2 (points per contact) × 3 (different sections worked) × 7.22 (section-balancing multiplier for all W/K stations) × 1.5 (power multiplier for 75 watts input) × 2.5 (provisional multiplier for all W/K stations based on ratio of U. S.-to-Canadian logs previously entered) = 650 (rounded).

I hereby state that my station was operated strictly in accordance with the rules of the contest and governmental regulations, and I agree that the decision of the contest committee of the Montreal Amateur Radio Club, Inc. shall be final in all cases of dispute.

Signature..... Call.....

Hints and Kinks For the Experimenter

BAND-SPOTTER WAVEMETER

A FREQUENT infraction of the rules governing amateur operation is harmonic radiation outside the amateur bands. The device described here is a series of fixed-tuned absorption wavemeters tuned to the various harmonically related amateur bands. With the transmitter operating, the units are advanced toward the transmitter tank circuit (See Fig. 1) until one of the indicating

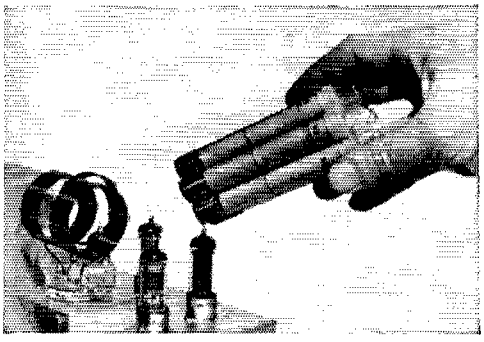


Fig. 1—Band-spotter wavemeter.

lamps begins to light. If more than one lamp lights up, it indicates that harmonic energy is present and should be suppressed.

Each unit of the wavemeter is built into a plastic tube, such as a pill container, that measures about 9/16 inch o.d. and 2 inches long. A coil is wound on one form and a capacitor is connected as shown in Fig. 3. A second plastic case with its

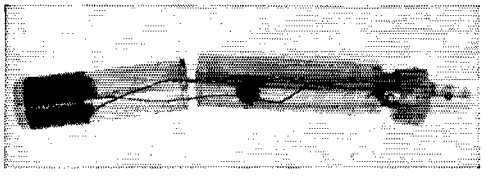


Fig. 2—View showing make-up of one of the tuned circuits.

bottom cut off to form a tube is held in position while the two leads from the tuned circuit are soldered to the pilot lamp (See Fig. 2). Make the leads as short as possible. Cut the plastic cap that comes with the container so that the pilot lamp will make a tight fit when it is inserted in the cap. After the unit has been checked for resonant frequency, the containers are cemented together and the cap containing the lamp is installed. Each of the individual units are then spot-cemented together to form a single multiple unit.

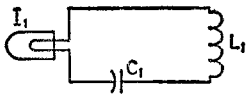


Fig. 3—Band-spotter wavemeter. The indicator lamp I_1 is a No. 47 pilot lamp. C_1 is ceramic or mica.

Band	C_1 ($\mu\mu$f.)	L_1	Length
80	100	45 turns No. 28 enam.	5/8 in.
40	47	29½ turns No. 26 enam.	½ in.
20	25	20½ turns No. 24 enam.	½ in.
15	20	18 turns No. 20 enam	11/16 in.
10	10	15 turns No. 22 enam.	½ in.
7.5	10	10 turns No. 22 enam.	½ in.
6	10	9 turns No. 22 enam.	9/16 in.
5	10	6½ turns No. 22 enam.	½ in.
3	5	5½ turns No. 20 enam.	½ in.

Remember, these units are harmonic band spotters only, and are not to be used as frequency meters. Be careful when using the wavemeter around high-voltage circuits in the transmitter.

— *Lee F. Worthington, K4HDX*

FIBERGLAS FOR HAM USE

HERE's a suggestion — that a Fiberglas kit used to repair Fiberglas boats and automobile bodies be applied to amateur radio use. Here are a couple of ideas: This material can be used to join antenna mast sections. Be sure to wrap the joint first with waxed paper, then apply the Fiberglas and you'll get a perfectly fitted coupling. QSL cards can be coated with the substance; carefully arrange the cards on a table and then apply Fiberglas over the entire surface to make an attractive and durable operating tabletop. — *Charles F. Broschart, K2VHZ*

DUMMY LOADS

MENTION of 100-ohm, 18-watt Globar resistors was made in the letter entitled "Dummy Loads," which appeared in the Technical Correspondence column, *QST*, April 1959, page 47. Unfortunately, these units are not usually found at radio-parts supply houses. They are, however, supplied by RCA (stock No. 17217) for use as parasitic suppressors in commercial high-power transmitters and are available through regular RCA distributors. The 100-ohm, 18-watt size is convenient for ham use since two of them can be connected in parallel for a 50-ohm, 36-watt dummy load. The resistors measure about 4 inches long and 1 inch in diameter.

—*Philip F. Robinson, W1CK*

QUAD ANTENNA

THE diagram in Fig. 4 shows the dimensions and circuit of my quad antenna. The values given are for 14.2 Mc. and 28.8 Mc. If other frequencies are desired, elements can be adjusted by lengthening or shortening each side, top and bottom section 3 inches per 100 kc. on 20 meters and 1 inch per 150 kc. on 10 meters.

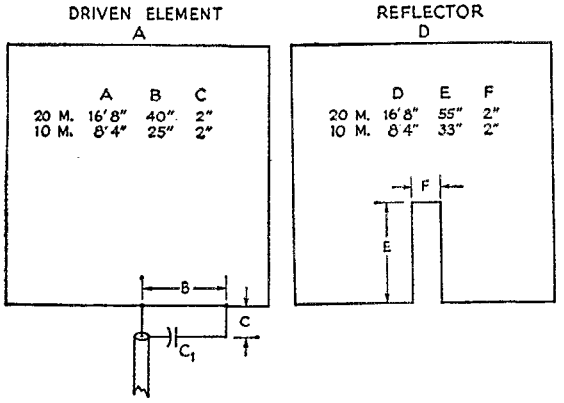


Fig. 4—K6VIZ's Quad Antenna. The reflector is spaced 8 feet from the driven element. C_1 is the gamma matching capacitor. See the text for finding the exact value of C_1. The approximate value is 55 $\mu\mu$f. for 20 meters and 25 $\mu\mu$f. for 10 meters

When adjusting the quad, feed power to the driven element while observing a field-strength meter placed in back of the antenna. Tune the reflector, with power on the driven element, for minimum field-strength reading. Reflector dimension "E" in Fig. 4 is approximate and the actual stub should be made about 12 inches longer than shown to allow for adjustments.

Insert a small variable capacitor (not more than 100 $\mu\mu$f.) in the gamma matching circuit. With an s.w.r. bridge in the feed line, tune the capacitor for minimum s.w.r. When the lowest value is obtained, remove the variable capacitor and substitute a fixed capacitor of the same value. I used a 1000-volt mica capacitor in my installation and it has given good service with power inputs up to 1000 watts.

— *G. G. Schlueter, K6VIZ*

MORE AUDIO GAIN FROM THE S-85

THE S-85 receiver uses the audio output power tube only when the speaker is in use. Headphone output is obtained from the audio preamplifier. To improve headphone gain, simply disconnect the headphone lead from pin 5 of the 6K6. Insert a 0.01-μf. capacitor in series with the lead and connect it to pin 3 of the 6K6. Now the headphone circuit is connected to the power output tube plate circuit and has plenty of gain. Since the tone control circuit is in the amplifier stage, the tone circuit is now effective when using headphones.

This idea can be used on any receiver which omits the final audio amplifier stage for headphone use.

— *Dan Metzger, K8JWR*

PORTABLE SPRING VERTICAL

SINCE I do quite a bit of traveling, I am always looking for information on portable antennas. Recently, while strolling through the toy department of a drugstore, I noticed a "Slinky" spring. This is a springy coil that children use as a toy. I took one home, measured its length and I found that it contained about 65 feet of wire. I tacked one end of the coil to the shack ceiling and connected the other end to the center conductor of a piece of coax, grounding the coax shield. The spring vertical loaded up on 20 meters and I made many successful contacts. By adjusting the height and using a coupler, the spring could probably be made to load satisfactorily on several bands. When you're finished with the antenna, merely fold it into a neat 4-inch package!

— *Pat Flanagan, K5TRB*

R.F.-POWERED C.W. MONITOR

WHILE experimenting with the code practice oscillator described in *QST*, July 1959, page 30, I discovered that the unit could be powered by rectified r.f. from my transmitter. The circuit in Fig. 5 shows how the addition of a 1N34

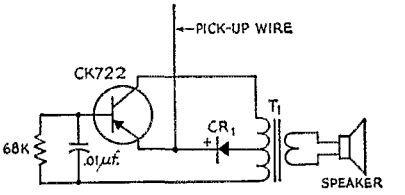


Fig. 5—R.f. powered c.w. monitor.
CR_1—1N34 crystal diode.
T_1—Output transformer, 12,000-ohm primary to 3.2-ohm voice coil (Thordarson 22S48).

diode, CR_1, in place of the dry cell power supply converts the code practice oscillator into a c.w. monitor. The pick-up wire can be a small probe placed near the feed line or near the transmitter final tank. (Danger — high voltage!)

— *Ernie Cataldo, K1ECD*

PLASTIC TUBE SPAGHETTI

THE Hint & Kink concerning ball point spaghetti in July *QST* prompts me to mention the plastic tubing used in hospitals. This tubing is used in large quantities and is usually discarded after being used once. Sometimes fixtures attached to the tubing can be made into feed-through insulators! I am sure that most any hospital would be glad to give the tubing to anyone who asks for it.

— *Robert L. Atkinson, M.D.*

The 1959 Novice Roundup Results

BY RONNIE GANN,* W1FGF

All this talk about space lately certainly had its effect on the 1959 NR! Scores skyrocketed, participation zoomed and the writer found himself orbiting amidst some 300 logs!

Twenty participants walloped out 10,000 points and better. The topper was a record-breaking 36,610 points made by WV2BEX, Western New York section.

Happy we were to see the soaring interest in code proficiency endorsements. Well over 100 contestants submitted CP copy. These 100 or more will certainly grin from Earth-to-Mars when they find extra points added to their scores.

Tyro Topics

"The NR was my first two-way contest and I sure enjoyed it. Previous to the NR, I entered the SWL *Boys' Life* contest in '56 and '58. The NR boosted my WAS total from 31 to 46, leaving only Vt., S. D., and the 49th state needed. I hope to work these before I get my General." — *KN9PQT*. . . . "Thanks for a great contest. Sure did enjoy it." — *KN1IIK*. . . . "Those who didn't participate in the NR missed a lot of fun." — *KN1HTV*. . . . "Saved 20 hours for the last week end and had my tank coil melt after the first hour. I couldn't figure out what that smell was, and then, Fzzzzzzzt." — *KN8MGK*. . . . "Thanks a lot for putting on such an FB contest, and especially to all the Generals who gave so many multipliers to me and others. I almost wish I could be a Novice again next year for the contest." [Yeah, *almost!* — *Ed.*] — *WV6APX*. . . . "I think you should have a multiplier for the number of hours *not* worked in the contest." — *KN2PEQ*. . . . "The NR sure sharpens a fellow's operating practice." — *KN8LBV*. . . . "The NR was the most fun I've had since I received my ticket." — *KN9OPO*. . . . "Take a look in the Novice band sometime and hear how many Novices *don't* tune after calling CQ!" — *WV2BEX*. . . . "Boy, I started weeks before to be ready for the contest, and I forgot it began at 1800 local time. I tuned the receiver not knowing I was one hour late and heard CQ NR smashing through! Things like this can shatter one's nerves!" — *WV2AKK*. . . . "I never knew how much fun hamming could be until the NR contest! If I could renew my Novice License and enter the contest every time as a Novice, I don't think I'd even try for my General." [You and WV6AFX should get together! — *Ed.*] — *KN8MJZ*. . . . "Boy, it was real fun to have my license expire right in the middle of the contest!" — *KN9LIA*. . . . "Thanks for the best time in my Novice Life, and thanks too, to W1AW for being my very first contact in the contest. It's an honor I will certainly remember for a long time to come." — *KN1HMQ*.

The General View

"Should have the NR twice a year to give Novices a real chance!" — *K2LVP*. . . . "Let's have more of these Sweepstakes-type contests!" — *K0QGJ*. . . . "It was gratifying to note that many of the Novices worked were such good operators. KN2SBW, KN5RHZ and KN9LWV to name a few. I certainly hope to work some of those fellows again!" — *K8BXT*. . . . "This year marked my fifth entry into this affair which, in my opinion, gets better every time." — *W3ZXP*. . . . "A great contest! There are some mighty smooth operators in our Novice bands!" — *K4QPJ*. . . . "Congratulations to the Novices on some snappy operating." — *K9ELT*. . . . "Never heard so many FB ops!" — *K8HVT*. . . . "Worked many fine operators. By some of the numbers received, records will be broken. Quite a change from 1954 when 9200 points was tops!" — *K2EIU*. . . . "I enjoyed the contest very much and will be looking forward to the NR in years to come." — *K0KGQ*. . . . "Some pretty hot c.w. men on that Novice band!" — *W9CCO*. . . . "In addition to the FB operating by the Novices, I noticed a lot of Generals giving the NR a whirl." — *K4IEX*. . . . "Worked a few future SS winners." — *K2KUJ*. . . . "Enjoyed the NR very much. I was a bit peeved to hear a KN swish in with a v.f.o. He should know better, but maybe a reminder in *QST* would

*Contest Assistant.

Crack ops like KN9PQT certainly make NR's worthwhile. Jerry took first place for the Wisconsin section, working 39 hours and tapping out 19,093 well-earned points! No better teacher than Dad, W9RQM, who's a crack contest man himself. The homebrew 75-watter (6V6, 807 and 813), NC-101X, center-fed zepp on 80, vertical on 40 and 8JK rotary on 15, really did the trick. Make way for the mailman, Jerry!

sink in more. Whatsa?" — *K3ALL*. . . . "Tuned down on the Novice band to get a little code practice and heard CQ NR. Worked a few and couldn't stop!" — *K4MMW*.

Here's how things shaped up in the "Call-Area-High" department:

KN1IIK	12,103	KN6RGA	23,126
WV2BEX	36,610	KN7EQM	15,618
KN3DWM	10,440	KN8KNT	14,896
KN4YFB	11,908	KN9PQT	19,093
KN5QKK	19,140	KNØPFF	8820
	WH6CXZ 441		

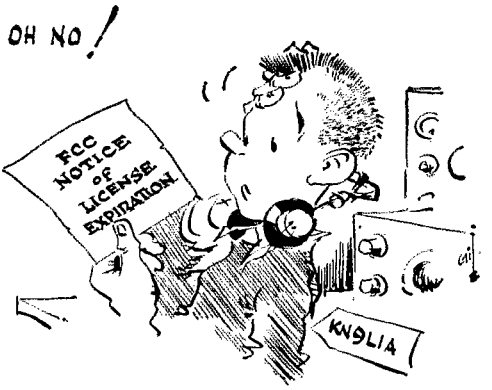
The twenty participants who pounded brass resulting in 10,000 points or better, really deserve honorable mention!:

WV2BEX	36,610	KN1HTV	11,528
KN6RGA	23,126	KN5SVC	11,322
KN5QKK	19,140	KN5SEK	10,810
KN9PQT	19,093	KN9PQG	10,633
KN7EQM	15,618	KN5SPD	10,535
KN8KNT	14,896	KN3DWM	10,440
KN8LGX	14,640	KN5TBZ	10,396
WV2BLK	12,750	KN7GQH	10,285
KN5RHZ	12,690	KN8LJU	10,250
KN1IIK	12,103	KN6PYS	10,150
KN4YFB	11,908	KN4YWZ	10,032

Again, the "Generals" added to the furor with some really FB brasspounding. Here's how they shaped up. Calls are listed in alphabetical order: W1AMY 238, W1AW[1] 4900, W1NJL 429, W1PLJ 69, W2AZO 2378, W2DUN 2550, W2GIX 4270, W2MTA 5480, W2NIY 1220, W2SZ[2] 7400, W3FHR 6930, W3MSR 470, W3ZXP 5577, W4IFJ 520, W4ZWT 750, W6OJW 320, W6TOI 440, W6UFJ 444, W7CNL 6345, W7VIU 882, W7ZVY 99, W8BZY 2001, W9CCO 54, W9MAK 1364, WØVFE 522, K1BCS 2320, K1IXT 518, K2BNS 102, K2CTK 154, K2DZG 96, K2EKM 1420, K2IKG 90, K2KOT 2296, K2KUA 135, K2KUJ 1364, K2LVP 272, K2LZW 448, K2SSX 320, K4TJV/2 1736, K3AHT 2622, K3ALL 1056, K3ANU 4750, K3DKC 2289, K4IEX 1625, K4MMW 1848, K4PHY 5418, K4QPJ 5586, K4PYM 280, K4TEA 1265, K5IHD 4440, K5LGH 2775, K5QHS 1768, K6BEP 375, K6EA[3] 140, K6ICS 912, K6EBL 1218, K6EIL 385, K6MSG 507, K6PXG 2610, K7BDK 370, K7BHL 255, K7CLA 3605, K8BXT 4914, K8CZJ 540, K8HVT 5330, K8HZO 10,812, K8JLF 954, K9ELT 1480, K9ISP 1380, K9LYE 1876, K9OCX 45, K9PDJ 760, KØGUY 1560, KØIDV 2496, KØJPL 992, KØKGQ 3471, KØLZJ 2262, KØOJC 2528, KØPML 1350, KØQGJ 2176, VE2AJD 336, VE3DNR/3 736, VO2NA 414.

[1] W1WPR, opr.; [2] K2EIU, opr.

[3] WØMFW, opr.



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:* WV2BEX 36,610-503-70-27, or, final score 36,610, number of stations 503, number of sections 70, total operating time 27 hours.

ATLANTIC DIVISION

Eastern Pennsylvania

KN3EHP....2240- 80-28-25
KN3EGE....1525- 51-25- 9
KN3HEE....851- 37-23- –

Md.-Del.-D. C.

KN3GBT....5544-117-42-19
KN3GMT....4340-114-35-18
KN3EST....4284-111-34-36
KN3GFK....4141- 86-41-14
KN3HBZ....3800- 70-40-28
KN3EBF....3456- 86-36-19
KN3DML....3360- 95-32-21
KN3GEK....1860- 93-20-20

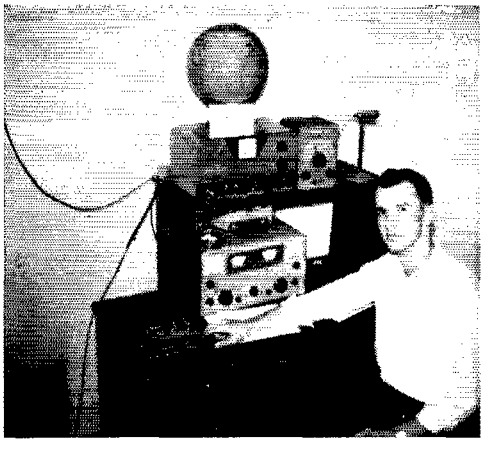
Southern New Jersey

WV2CCL....4181-103-37-20

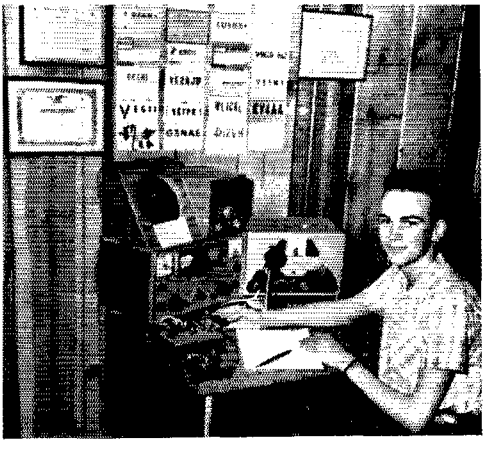
Western New York

WV2BEX....36,610-503-70-27
WV2CIA....7106-194-34-33
WV2CJO....5040-111-40-15
WV2CJK....2552- 88-29-25
WV2DGG....2295- 75-27-12

(*Continued on page 168*)



Top Banana among the "Generals" is K8HZO, who helped the Novice clan with 192 contacts in 51 sections. Final score: 10,812 points! Jim sports a WAS, RCC and CP certificate of 20 w.p.m. The gear used was a Globe Scout 680A, Knight v.f.o., Hammarlund HQ-100, 40-meter folded dipole and a Hy-Gain 3-element 10-meter rotary beam. The study of electronics in college is next on the agenda. Good luck, Jim.



"Take Me To Your Leader." WV2BEX, W. N. Y. section, certainly was the one! Pounding his way to the national high score, Dave netted 36,610 points, 503 QSOs and 70 sections. The rig is a DX-40, HQ-100 to a 40-meter dipole and a 15-meter dipole. A real DXer, Dave wo·ked 30 and confirmed 13 countries as a Novice. A General since May, he'll need plenty of wall-space for the QSLs to come!

VS5JA coming out of the jungle by prahu—which moved under Dyak paddle-power.

The Story of VS5JA Brunei

BY HARRY McQUILLAN, EX-ZL4JA,* VS5JA

Hams are single-minded fellows. The author, a New Zealand geologist, spent six months exploring the steaming Borneo jungles, paddling through crocodile-infested rivers in native long boats. But he devoted his time between trips to offering a rich plum — contact with VS5-land — to fellow hams. Here's how he did it.

IT WAS early in September of '58 that I received word of a transfer from Holland to Brunei in Borneo. A mere two weeks' notice allowed little time to look into the possibilities of ham radio operation apart from checking on the country prefix — VS5.

So with suitcase bulging with new tropical clothing and notably no radio equipment I landed at Singapore some two weeks later. A three day stop-over in Singapore had been arranged prior to the flight on to Borneo. The most was made of that time by travelling to Ipoh in Malaya in order to visit some old friends of University days. There, amongst others, I met the local hams: VS2's FR, EV, DY, and EG, now all with 9M2 calls. These fellows were enthusiastic about my going to Brunei as there had been no real activity there for some years, and an especial lack of c.w. activity. Several suggestions regarding equipment were offered, but when I landed at Anduki airfield in Brunei a few days later I had not even a carbon resistor towards building a rig.

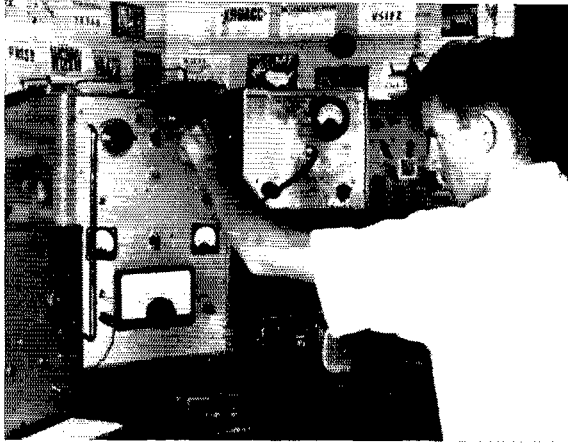
Within a day or two Tony Tipple of VS5AT and Bruce Young of VS5BY had been met. They were the only hams in Brunei at that time. It was most disconcerting to find that they were quite resigned to the fact that it would take at least nine months for my call to come through as the application had many departments to go through, and it even required the signature of the Sultan of Brunei himself. However, the picture brightened somewhat when Tony offered me the use of his call as he was soon to return to the U. K. Still there was the problem of equipment. Again Tony came to the fore when he recalled that Jim Tierney of VS4JT in Sarawak, some sixty miles to the south, had some gear to dispose of. We were on the v.h.f. telephone link to Sarawak soon after and I became new owner of an LG300 (813) rig. Part of the gear was to be shipped up and part to come by helicopter.

As a field geologist I found myself off into the interior jungle only a week after arrival at the Seria oilfield. Problems enough cropped up with running an exploration party. I had a party of twenty-five Dyaks, none of whom spoke any English, and with myself the only *Tuan* it was necessary to learn some of their language fairly rapidly. We used to travel the rivers by prahu (long boat) and establish base camps from which we cut our way through the jungle on reconnaissance exploration trips. These trips were usually of three or four weeks' duration, after which I would have a week or so back at Seria. It was during such breaks that all ham activities had to receive active attention, though of course plenty of speculative thought went on during those long jungle walks.

On returning from the first trip, feeling worn out after the effort of working the boys with a strictly limited knowledge of their Iban language, and after days of cutting through thick jungle and crossing rivers and swamps with their crocodiles and never ending leeches, not to mention the multitudes of insects of all descriptions, I found the LG300 waiting. Soon it was set up and with the addition of a receiver borrowed from Tony '5AT I was on the air. I operated as VS5AT from October '58 until early January '59. But oh, that receiver was full of images, drift, and every other conceivable trouble. If any of the stations calling were frustrated at my failure to reply, imagine my annoyance at being unable to copy and hold anything but an S8 or S9 signal, and then only with constant manipulation of the tuning control.

January saw the arrival of my own call of VS5JA, the "JA" because of a sentimental at-

* 15 Melrose Street, Dunedin, N.W. 1, New Zealand.



Back at headquarters, in the comparative civilization of the Seria oilfield, VS5JA settles down for some DXing.

tachment to the letters of my old call of ZL4JA. It was a pleasant surprise to have the call so soon as I had already prepared for at least a nine-month wait. January saw another surprising event in the discovery of an AR88 receiver in the district. Fortunately the owner, who used it only to listen to occasional BBC transmissions, was not reluctant to let me have the loan of it. Then at last it was possible to make some attempt to handle the pile-ups which were so frequent on 14 Mc. c.w. The ground plane antenna used, though only a few feet above ground, gave some encouraging results. So it went on — whenever I could get in from jungle trips the transmitter received plenty of attention both on a.m. phone and c.w. Meanwhile Bruce of '5BY attended to sideband contacts, and he is still active there.

Ideas were beginning to form concerning the chances of having some equipment organised to take to my jungle base camps. A 2 kw. generator which supplied lighting to the camps would have served admirably to power a ham set up. Actually I was looking ahead because my work was to take me to VS4 and possibly ZC5 later in the year. I was most anxious to give contacts from these call areas as so many of the W/K stations had enquired about activity from there.

All went well until mid-April when unexpected word came to say that my services were required in Iran. A two-week period remained during which time the jungle work had to be completed, and moreover I realised many QSOs had to be made before the final QRT. Those sleepless nights with sometimes two QSOs per minute were worthwhile though very tiring. The station was operated right up until the day before departure which meant a frantic last minute packing on that 27th day of April when the last QRT was signed.

As this is being written I am enjoying a short leave at home in New Zealand prior to departure for Iran. Iran and an EQ call sign. What problems lie behind that simple statement? That remains to be seen: but if it is at all possible to put an EQ call on I shall do it and hope to provide a new one for those requiring it.

Most of the VS5JA QSLs have been attended to but if omissions have occurred QSLs should be sent via ZL4JA. QST

Strays

W4ABY had a problem: how to route a new a.c. power cable from the meter center to the transmitter through 25 feet of channel only a few inches wide, without removing the ceiling material.

His solution? "I enlisted a small neighbor possessing one small cat. A length of light-weight yarn was tied to kitty's collar. The cat ran down the narrow passage to its mistress in less time than it takes to say 'Scat!'" From then on, the matter was strictly routine and the heavy cable was connected in less than 15 minutes.

Total cost — one sardine and one lollypop. W4ABY, a thrifty soul, retreived the yarn.

—···—

A group of Northern Ireland Radio Amateurs plan to take a fixed/portable station to Rathlin Island to commemorate the 50th anniversary of Marconi's winning the Nobel Prize. Some of Marconi's most important early work was carried out between Rathlin Island and the mainland (Ballycastle).

Using the call GB3RI, the Irish will operate on 160–10 and 2 meters, phone and c.w. Powerful tide races make the six-mile crossing a difficult one, but weather permitting, the group will cross to Rathlin the morning of Friday, Sept. 11 and return the afternoon of Monday, Sept. 14. They expect to operate from 1700 GMT on the 11th until 1200 GMT on the 14th.

The three operators are going under the auspices of their local amateur radio magazine, *Gee-Eye*. Rathlin Island counts as County Antrim for WABC and WBC. The call GB3RI will be valid for WPX.

QSL cards should be addressed to R. R. Parson, GI3HXV, 45 Erinvale Ave., Finaghy, Belfast, Northern Ireland. The group promises to answer all QSLs.

The photograph of Navy amateur operators attached show some old-timers who after totaling their experience as licensed amateurs came up with a total of 363 years of brass pounding. The neophyte of the group is credited with 26 years of experience and the greybeard with 38 years.

These old-timers took the controls at NSS and showed the youngsters how it's done. NSS, U. S. Naval Communication Station, Washington, D. C., established a record of amateur-to-military contacts on Armed Forces Day that may stand for many years.

Left to right—W2JAV, Phil Catona; W4GF, Bill Grenfell; W3PYW, Frank White; W4OI, Jim McCoy; W4ABY, Dave Veazey; W4HZ, Grif Grange, Commanding Officer, U. S. Naval Communication Station, Washington, D. C. (NSS); W5HKP, Joe Zammit, CNO Navy Project Officer for Armed Forces Day; W3GCW, Larry Covert; W3JHR, Paul Lee; W4OBF, "AJ" Johnson; KH6CE, Frank Fullaway; W4ROK, John True.

Results of Armed Forces Day 1959

CERTIFICATES of Merit have been mailed to 455 contestants in recognition of making perfect copy of the Secretary of Defense's International Morse Code (c.w.) message to radio amateurs on Armed Forces Day 1959. The message was transmitted at 25 w.p.m. by military stations on 16 May 1959. Certificate winners of the c.w. message are as follows:

N1AAU, N1ASP, W1AXG, W1BKG, W1BMW, K1CUE, 11CWZ, W1DSW/A1DSW, W1DV, W1DWO, W1ELL, W1GZQ, W1FV, K1GVW, W1HGE, K1HVJ/K1NR, W1HXI, W1JBB, KN1JHH, KN1JFF, K1JMS, W1JOS, K1KBK, K1KSO W1MCG, W1MEG, W1MIX, W1QJM, W1QPR, W1SAD, W1SRM, W1TA, W1TEC, ZL1WB, W1WGN, W1YFP, W1ZPA, W1ZYO, W1ZR.

W2AFZ, W2ATM, WA2BHA, K2BKG, W2BXW/A2BXW, W2CLQ, W2COG, N2CTD, K2CXO, W2ECZ/MM, K2EQP, W2FSN, K2GFO, A2GQN, W2GVU, W2HAQ, W2HQL, W2HX, W2JBZ, W2JOA, W2LRW, W2LYH, K2MBD, W2NMJ, W2NNK, W2OCO, W2PPB, W2PVK, K2PWM, K2SEN, W2SHC, W2TOX/A2TOX, W2TUK, K2QBW, K2UYG, W2VEH, K2VKC, W2VPH/4, K2YHZ, K2YTD, W2ZMK, W2ZK, W2DSS.

N3AAJ, W3ABZ, W3ADE, K3AGF, W3BFF, A3BHK, W3BKE, W3CB, W3DJW, N3EAD, W3ECP, W3ELI, A3EOV/W3EOV, W3FZO, KN3GOH, W3GQC, W3HCE, K3HNY, KN3HWI/3, VE3IA, W3JBP, W3KMD, A3LQV, W3MBL/A3MBL, W3MCG, W3MFW, N3NCE, N3NDV, N3NNL, W3PYW, W3QCB, W3UEQ/1, A3USA, W3VDV/8, W3VGF, W3VKQ, W3VXI/8, W3WGH, W3YRB, W3ZLP.

W4ABY, W3AEV, W4AGV, W4ATE, K4BAI, W4BBZ, W4BJR, W4CQI, K4CRL, K4DNZ/AA4DNZ, W4DTI, W4EFV, K4EHN, W4FDS, W4FXR, K4GAT, W4GMZ, K4HLS, W4HME, W4HQZ, W4HZZ, K4IRK/6, W4ISS, K4IVZ, A4IYT, W4KJ, K4JLK, W4KLT/A4KLT, W4KR, W4KVO, W4LYV, K4MEU, K4MMB, W4NWK, W4OGK, W4OLD, K4OSH, W4OXX, W4POI, K4PSE, W4RHZ, K4SGT/4, W4SOT, W4SDR, W4SRK, K4TDR, W4VHX, W4VYZ, K4WAG, K4YPD, W4ZKU, W4ZPR.

W5BCF, KZ5BS/W6GKK, W5DIW, K5DMR, W5EGD, K5EGU, W5EGX/N8NAA, W5GCJ, W5GOG, KZ5GH, W5GRT, W5GKV, W5HKP, K5HVP, W5JET, W5JLS, W5JPC/A5JPC, KZ5LP, N5LTH, N5LTJ, N5LTK, K5MMO, W5NDV, K5NRA, N5LTI/K4NRY, W5PCL, W5PNG, K5RHF, K5SKG, W5SPZ, W5SQB, W5SYE, W5YOK, W5ZU.

N6AAB, N6AAJ, W6AAL, N6AAR, N6ABQ, N6ABT, A6AEE/W6AEE, KH6AO, W6AWP, W6AXV, KH6BGW, W6BHG, KH6BLT, W6BVY, W6CBF, K6CHR, W6KF, W6CGJ, W6CKU, WA6CLT, KH6CQS/AB6CQS, W6DTY, K6DV, K6DYX, N6EBA, W6ELT, K6ESQ, K6EXY, N6FAC, N6FAI, W6FHI, W6FLE, W6FLW, W6FNG, KH6FX/AB6FX, W6FYN, W6FZC, K6GB, W6GEB, K6GK, W6GKZ, W6GQY/A6GQY, AF6GSX, K6GZ, K6HB, W6HXQ, W6IAH, KH6IJ, W6ID, W6IBO, W6IZH, K6KVF, K6MCA, W6MWR, W6NNV, W6OJW, W6OWP, K6PMG/3, W6PYN, W6QIE, W6QIL, W6QQ, W6RLP/5, W6SCQ, W6THQ, K6TPL, W6TYQ, A6UJY/W6UJY, KH6UK/AB6UK, K6WDV, W6WX, W6WTL, W6WZB, W6YCF/A6YCF, W6YHM, K6YKG, K6ZIK, W6ZPX.

W7ADQ/9, W7BHH, W7BJR, K7BPR, W7BVH, W7CO, W7CZY, W7EBS, W7EYF, W7FCO, W7FIX, W7FOS, W7FYW, W7GCL, AF7IFN, W7KQV, W7KQX, W7LCS, W7LFA, W7LJW, W7LPM, W7MAE, W7SNA, AF7YKG, W7ZMD.

W8ARO, W8BKM, K8BTY, W8CAT, W8DPX, W8DAE, W8DHL, W8DSX, W8FFK, K8HOS, W8HNY, W8HS, W8HZA, W8IJV, K8IKE, W8JGI, W8JKX, K8JLO, K8KLC, K8LNQ, K8MBN, K8NRA, W8PHM, W8PEI, W8QHW, W8QMI, W8ELR, W8SQU, W8SRU, W8TZO, W8YCP, W8YPT, W8ZHB, W8ZJY, W8ZL, W8PBO, W8WOA, W8DEZ/AF8DEZ.

N9ABM, N9ACY, N9ADA, K9ALP, K9BKB/3, K9BSH, W9CCO, W9CHD, W9ERB/A9ERB, W9EW6, W9GVZ, W9HAE, W9HTO, W9JAM, K9KMT, W9LGH, N9ADI/K9NBI, W9MAK, A9NXN, W9NZZ, W9ONI, W9PNE, W9TZN, W9UML/A9UML, W9VHD, W9WNB/K9CFP, W9YGP, W9ZEN, W9RAR, W9YZO, W9ZGW/A9ZGW.

WØAOK, WØARO, KØBIX, WØBP, WØDJE/9, WØDRB, WØDYF, WØECE, WØEWH, KØIDV, WØJHY/5, WØLGG, KØLJH, KØPIK, WØPIV, WØRCV/AFØRCV, KØSJB, WØWIN, AFØWYK/WØWYK, AØNSF, WØOKH.

C. P. Alexander, C. L. Banks, D. J. Bastian, J. L. Becknell, W. J. Beetham, R. T. Blinkenstaff, W. J. Bottoms, C. E. Brock, H. J. Bronkala, R. K. Brummet, W. G. Case, O. F. Curtis, R. Davidson, V. B. Dayton, L. J. Devitto, S. M. Dobbins, B. Easterwood, E. H. Eastwood, W. E. Ekdahl, C. E. Frisby, B. H. Graham, J. R. Hebert, R. G. Hilf, P. L. Holbrook, W. L. Hutton, R. L. Hyatt, G. M Johnson, C. E. Kelley, C. M. Klein, W. C. Klein, P. W. Koenig, E. J. Kruger, H. O. Lawhon, J. E. Lawrence, W. M. Lewis, J. E. Martin, F. Miller, C. C. Murrill, R. H. Nelson, M. L. Norman, K. Parrotte, S. E. Paul, V. Pollero, J. E. Quinn, D. Reynolds, C. D. Richards, G. D. Ricketts, C. R. Rider, W. G. Simpson, J. Smith, J. A. Taylor, F. M, Throop, J. A. Ungari, W. Wilson, R. R. Wixon, C. Zaug.

Military to Amateur Contacts

Operating on military frequencies AIR, NSS, and WAR, amateurs worked in the 80–40–20 and 15 meter bands, using c.w., s.s.b., a.m., and RTTY. The three military stations made a total of 2694 contacts.

Radioteletypewriter Receiving Competition

The radioteletypewriter receiving competition featured a message from the Secretary of Defense transmitted at 60 w.p.m. A total of 194 contestants received a certificate of merit for perfect copy. RTTY winners of certificates of merit are as follows:

W1OUG, W2BVE, K2EID/AA2EID, W2GQN/A2GQN, W2HDQ/A2HDQ, K2HHH, K2HJC, W2IGX, W2JAV, W2KDW, W2LRW, W2PAU, W2PEE, W2RUI, W2TAM, W2TKO, W2TOX/A2TOX, W2UAE.

K3APS, VE3BAD, W3CRO, W3DJZ, W3HCE, K3HHY, W3JNE, W3MHD, W3NQA, K3NRB, W3PRQ, W3TUZ, W3YRB, W3ZYK.

W4AIY, W4EHU, A4EJ, K4GFL, W4HNF, W4HXT, K4IVA, W4KJN/AF4KJN, K4KKZ, K4NAS, K4NDE, K4NRY, W4NWK, W4PHL/A4PHL, K4PSE, W4WMM/A4WMM.

W5BOT, K5BSS, W5DHZ, AC5DS/KZ5DS, N5EFA, W5FPD/A5FPD, W5GJH, W5GMM/AF5GMM, N5LTI, N5LTN, K5MBB, W5RDT, K5RHF, K5RXC, W5SQB/AF5SQB, W5SYE, K5THK, W5TVG, K5WAB.

W6AEE/A6AEE, W6ASJ/A6ASJ, W6AXV, K6BHF, W6BIK, K6BPI, W6BYS, W6CAP, W6CBX, K6CHR, W6CQI/6, KH6CQS, K6CXS, W6CZ, K6GZ, WA6DME, W6DOU, AG6FCW, W6FHI, W6FLW/A6FLW, W6FZC, K6GB/AA6GB, W6GDO/AF6GDO, W6GGC, K6GOK, AF6GSX, K6HHD, W6HTS, W6IIV, W6JCK, W6IZJ, K6JIV, K6JPR, W6JOX/AF6JOX, W6/AF6JWF, K6JWQ/AFA6JWQ, W6LFD, W6LDG, W6NRM, W6PGP, W6QIE, K6QMK, W6QYS, VE6UB, W6UJX, K6USN, K6WDV, K6ZBG, W6SCQ, W6CBF, K6HB, K6ZBL.

K7ABB, K7AFI, KL7AIZ, K7BXS, W7CBE, A7CO/W7CO, W7FOS, W7JMH, W7KQK, W7KV, W7LPM, W7MC, W7MEV, W7PVF, W7TUI, W7VI, W7VMN, W7VPH, W7WBB, W7TMF.

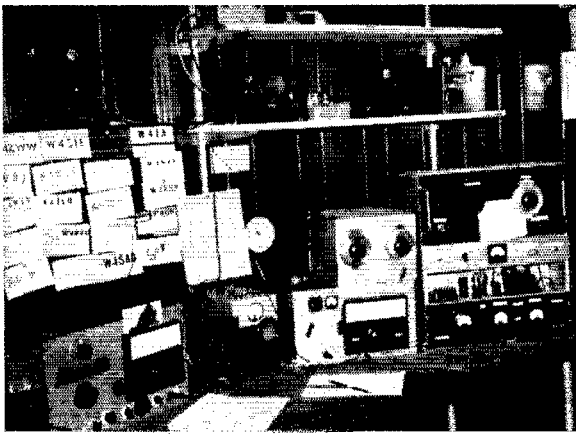
W8BWL, W8FEU, W8IJV, K8KBO, K8KLC, W8KPT, W8LGL/AF8LGL, K8MRU, W8PEI, W8WUD.
K9BRL, K9BSL, W9CWH, W9DNP, K9EHP, W9EWC, K9EYY, W9GGH, W9GRW, AF9GVN, W9LKK, W9LOT, K9NBI/N9ADI, W9ONM/AF9ONM, W9OPI, KN9QEE, A9QIX, W9QKE, W9WKM.

WØBP, WØFQW, WØHAH, AFØJHS, WØLQV/AFØLQV, WØOKH, WØQCZ.
Amateur Operators of the Comm. Platoon 1st Battle, Grp 20th Inf. W. R. Anderson, C. E. Brock, R. K. Brummet, Horacio Correa, N. D. Crow, C. E. Frisby, T. R. Gilbert, R. L. Golinski, D. J. Goodman, B. H. Graham, R. F. Hall, W. B. Hanson, F. R. Heward, W. A. McKinnon, C. L. Manis, F. Miller, J. E. Quinn, B. G. Sutton, Jacob Ritzen, Otis Rood, R. R. Wixon.

The military departments are pleased with the continued increase in participation in these tests and appreciate the interest shown by the amateurs participating. Congratulations to all winners of the Secretary of Defense certificates and it is hoped that next years participants will exceed the present record. QST

Strays

It's time to issue another call for pictures of stations that are completely home-brew. If your station has transmitter and receiver of your own construction, send us a photo, and we'll show some of them in QST. This neat layout belongs to W4LW, who has now closed it down and headed for the Navy's London base and a tour of duty there. At the left is a double-conversion superhet with Q multiplier, t.r. switch, and s.s.b. detector. Next in line is a loudspeaker, then a voltage control and power panel. Second from the right is a 70-watt v.f.o. transmitter covering 80 through 15 meters, complete with power supply in one case. Then an antenna coupler and then a Field-Day special—30 watts on 80 meters. On the shelf are a 6-meter transceiver and a 50-kc. standard.



Geneva—1959

Part II†

BY A. L. BUDLONG,* W1BUD

• In this second half of his article, General Manager Budlong tells about the development of "proposals" for a conference and briefly gives the story behind conference preparation and procedure, indicating how we amateurs make our case at such affairs. Budlong is well-qualified to speak on the subject, having attended telecommunications conferences at Geneva (1951), Washington (1949), Atlantic City (1947), Moscow (1946), Rio de Janeiro (1945), and Santiago, Chile (1940) for ARRL and, during the war, as Lt. Cmdr., USCGR, having been a Government delegate to the Anglo-American telecommunications conference at Bermuda, 1945, and the London conference on International Marine Radio Aids to Navigation, 1946. During the war, as Chief of the Frequency Allocations Section of the Coast Guard, in Washington, he served for three-and-a-half years on the Interdepartment Radio Advisory Committee (IRAC), during the last two of which he was chairman of its technical subcommittee, and served on the Frequency Allocations committees of both the Joint and Combined Communications Boards, of the Chiefs of Staff, in Washington, until the end of the war.

IN the previous section we outlined, as rapidly as was consistent with the facts, the history of amateur frequency allocations, both internationally and here in the United States.

Now we come to the question of the forthcoming Geneva conference itself. Like its predecessors, listed in the first section of this article, it has the power to make complete changes in the radio regulations, including such a drastic — although admittedly improbable — one as the complete elimination of a particular service from the allocations table, and so it becomes a matter of great interest to every service. Most amateurs, however, aside from knowing there is such a thing as an international conference and that it meets from time to time have very little idea how the sessions are conducted, how we amateurs, for instance, get represented and get our wishes placed before the conference delegates, and to what extent we participate and vote in the sessions. In this second half of our article, we propose to sketch in the conference picture and the U. S. preparations for Geneva to date.

As a starter: why is the conference being held in Geneva, why is it being held this year, and who is entitled to participate?

It is being held because a majority of the nations member to the International Telecommunications Union voted to have it. It is being held in Geneva because that is the permanent seat of the International Telecommunications Union. For all practical purposes, any nation may participate.

This conference will revise both the basic treaty and the appended regulations, last revised at Atlantic City in 1947. We'll explain the distinction between the two documents a little later. Incidentally, the cost of holding a conference is prorated among the participating governments. Basic participation, it should be noted, is by *governments*. In fact, it is probable that *only* government people would be permitted to attend such conferences and participate in their workings were it not for the fact that the United States has a unique communications situation whereunder most of its communications setup is privately-owned and operated.[1] Because of this, there is a provision in the treaty which permits a government to accredit representatives of its private companies, who may then participate in the conference in an advisory capacity to their own government group. Representatives of ARRL have gone to all previous conferences under this proviso. For the Geneva conference, with Board approval, Messrs. Dosland, Segal, Budlong, Huntoon, and Grammer are accredited to our U. S. Delegation. For this conference, the Board has also authorized the attendance of Canadian Director Reid, as a member of the Canadian delegation. The writer will be present for the entire conference and it is probable Huntoon will, also. Mr. Reid and General Counsel Segal will be present at the start of the conference and will remain for varying lengths of time. President Dosland and Technical Director Grammer will be on tap to go over when and if required. At this point it should perhaps be mentioned that the attendance of representatives of private operating agencies — ARRL in this case — is at their own expense. It is for this reason that the Board at its meeting this past May appropriated $25,000 to defray the expenses of League representatives who will

† Part I appeared in August *QST*.

* Secretary and General Manager, ARRL.

[1] Virtually all other radio and telephone facilities in the world are government-owned and operated.

be attending (except that General Counsel Segal is attending without expense to the League).

In addition to representatives of private companies, representatives of certain international organizations in the field of radio may also attend as "observers" with the permission of the participating governments. As the Headquarters Society of the International Amateur Radio Union, the League last year filed notice of the intention of Union representatives to be present in this capacity; Mr. John Clarricoats, G6CL, and Major Per-Anders Kinnman, SM5ZD, have been designated by the Region I Bureau to attend and will do so, probably for the duration of the conference, with their expenses paid by a special fund which the European societies have accumulated for this purpose over the past several years.[2]

Incidentally, the official government delegations of many countries will include gentlemen who are also radio amateurs, usually on the order of fifty or more.

At this point, it should be noted that regardless of what other agencies may participate, only *governments* vote. Representatives of the League and the IARU may sit in on conference sessions and, in the case of the League, advise their government people, but they cannot vote. We'll have more to say about both such participation and voting later on.

Conference Preparations

Earlier, we mentioned that this conference will draft both a new treaty and a new set of regulations. Together, the two documents combine to form a volume of more than five-hundred pages of normal-size type. Of these, the *treaty* takes up only a little more than a hundred pages: the *regulations* and appended annexes occupy the remainder. The whole thing might be likened to a constitution and by-laws, the treaty (or "convention" as it is called in conference parlance) being the constitution and the annexed regulations being the by-laws. The convention portion is of no particular concern to us, since it deals with such broad aspects as organization and functions of the International Telecommunications Union, finances of the Union, provisions for conferences and their ground rules, and similar generalities. Because it does treat only of the basic machinery such a convention ordinarily stands without much revision; however, it is up for revision this time and the United States will have some changes to suggest, of no interest whatsoever to us. To revise the convention takes a full plenipotentiary conference and part of the time at Geneva will be taken up with this (same people, simply using different hats!).

From our standpoint, all the really important material appears in the regulations; it is in these that services are defined and frequency allocations set forth, for instance. Regulations are revised at so-called administrative conferences, as against plenipotentiary conferences, which simply means they aren't so high-hat. There is a lot more action at them, though, and they take a lot longer — more than six months in the case of Atlantic City. The Geneva conference is currently scheduled for a maximum of four months, beginning August 17, and if past experience is any indicator we will use up every bit of that time. We'll be there in full force (Budlong, Huntoon, Segal and Reid) when they open the doors.

Now it is quite true, as we have said, that the conference has the authority to junk all the previous regulations and write up an entirely new set, but from a practical standpoint it is rarely necessary to go to such extremes even where — as is the case now — the existing regulations are twelve years old. Many of the Atlantic City regulations are all right, even today; there is no sense junking them merely to rewrite them in the same language in a new document. So what will happen at Geneva is that everybody will scan the Atlantic City regulations, use them as the basis for a discussion of such changes as the participating governments feel are necessary, and finally agree on a final new set which will be in effect a modification of Atlantic City. The idea is to let alone the regulations that are okay "as is" and devote the time of the conference only to those needing revision.

It is probably unnecessary at this point to state that nations don't wait until they get to the conference to go over the old regulations and determine what they think needs revision. Studies along these lines begin months and even years before the conference, with groups of experts both within and without the government meeting frequently, studying the current and projected needs of communications, examining the old regulations in terms of such requirements and devising word by word and paragraph by paragraph the exact language for the necessary revisions, in their opinion. In the case of the United States, such studies for the Geneva conference began in the late Fall of 1956 — that's right, 1956 — and were completed only a few months ago.

Representatives of the League were present and participated actively from the start.

Proposed changes are referred to as the "proposals" of the country concerned. Ordinarily, each country sends its proposals to the secretariat of the ITU in advance of the conference opening, where they are printed in a single "Book of Proposals," copies of which are circulated to all countries concerned so that everyone will have advance knowledge of what everyone else expects to revise and just how they propose to revise it. The purpose is to provide every participant with

[2] Primarily for the purpose of coordinating Geneva conference plans for the amateur service, the writer attended both the Region I amateur conferences at Stresa, Italy, in 1956, when he was accompanied by Assistant General Manager Huntoon, and the Bad Godesburg, Germany, conference of 1958. He and Huntoon also attended the annual national convention of the Mexican amateur society, LMIRE, at Mexico City in 1958, for a similar purpose.

full knowledge of what to expect when the conference gets under way. For the Geneva conference, the Book of Proposals became available in early July, although not including all the proposals that will be filed, and which will have been issued in a supplementary document before the conference opens. To the extent that proposals affecting the amateur service were included, however, they were summarized in *QST* in the editorial in the August issue, page 9.

The U. S. Amateur Proposals

From the foregoing, it should be apparent that as of some months before each conference, the position of the United States has been pretty well established as the result of preparatory work which had been going on for several years. Well, what was the end result of the preparatory work? How do we fare in the U. S. proposals?

These have already been reported in *QST*[3] but will be summarized here again: Our country is proposing that so far as the United States is concerned it wants to see every single one of our existing amateur bands continued. That is what our country will do its very best to persuade other countries to agree to, even though — as reported in the first section of this article — most other countries of the world do not, even now, grant their amateurs the privileges we enjoy.

The Geneva Conference

Now to the conference!

Our U. S. proposals are in, the position of this country for amateurs announced, and — as of this writing — we're just about ready to head for Geneva and the conference itself.

The last step in connection with U. S. participation at Geneva will be the appointment of the U. S. Government Delegation. As we write, in mid-July, the make-up of the delegation has not been officially announced but it probably will run in the neighborhood of some dozens of people. There will be a chairman (who is known and is FCC Commissioner T. A. M. Craven, a man of vast experience in allocations work and conference matters), and delegates from the FCC, Department of Defense, and other interested departments; with them will go technical advisors — experts all — stenographers and clerks. With the exception of the clerical help these people will for the most part be men who know amateur radio and whom we have worked and conferred with on our common problems over the years, both in this country and at previous conferences. Also from the United States will be a large group of the accredited private-agency representatives referred to earlier, among whom will be the League representatives. At Geneva our U. S. group will join similar delegations and representatives from what is estimated will be more than ninety countries, comprising a total of many hundreds of people.

First, will be the holding of the opening plenary meeting — a plenary meeting being a full-scale meeting on a formal basis of the whole conference group. There are comparatively few such meetings during the course of a conference, since they are far too unwieldy to get down to detailed negotiations, but they are held to effect some of the opening preliminaries and also at the end of the conference to put the official stamp of approval on what will by then be a virtually agreed-upon set of documents. This first plenary session will elect a chairman for the conference (something that will have been negotiated behind the scenes prior to the meeting!), and then will form the main committees of the conference (usually five) and the election of their chairmen and vice-chairmen, these representing also, in most cases, pre-negotiations. But these main committees are also too big to do any real work, so they will quickly meet and form subcommittees in various categories, these in turn electing their own chairmen. During this shaking-down process, which customarily takes some days, the known work of the conference will be parceled out to the various committees, with nations wishing to participate in each committee or subcommittee so signifying and naming their representatives for the jobs; similarly, we and the other non-government people will be keeping a sharp eye on the things we're interested in, seeing where they go, and registering our own desire to sit in on the groups we'll be concerned with. Things will really start moving in the subcommittees as the actual problems are disclosed, and additional subcommittees will be appointed to study them as they develop. After that, for perhaps half or more of the length of the conference, it will be a process of study, hit a snag, appoint a sub-subcommittee, study, hit another snag, appoint a sub-sub-subcommittee, until finally most of the real work of the conference is in the hands of such small working groups, the schedule of whose daily meetings will fill the bulletin board and take plenty of work to keep track of. Here's where the real work gets done. As studies are completed and agreed upon, the smallest groups will turn in their completed jobs to their parent groups and be discharged; then the parent groups will report to *their* parent groups and so the process of recombination will take the place of subdivision until finally the main committees will make their combined reports to the whole conference. The result will represent a new set of regulations. When the final plenary sessions approve the documents, the delegates sign the official copies and the conference is over. That doesn't mean that the new regulations become immediately effective. They aren't binding on any country until they are ratified, in any event, but on top of that the conference itself will specify an effective date, which is usually about a year subsequent to the final signing.

Now, as we've indicated, Geneva — like its predecessors — will be a conference of nations, with the active participants and voting members being strictly government people in each case and with non-government representatives, like

[3] *QST*, June 1958, p. 9; June 1959, p. 71.

those of ARRL being permitted to attend only in an advisory capacity, without vote. How do we figure in all this business and get an opportunity to get in our licks on matters affecting us?

First and foremost, without any qualifications whatsoever, is the matter of getting ourselves the best possible treatment in the U. S. proposals, of which we have already spoken. Our U. S. proposals represent what this government goes to the conference pledged to fight for to the very limit of its ability: more than that, they represent what all our government delegates, advisors and non-government representatives alike, are obligated to support in their entirety. The U. S. group at Geneva will be solidly behind every feature of the U. S. plan, and make no mistake about it; anyone caught sabotaging a part of the U. S. plan in an effort to benefit himself at the expense of other U. S. interests would quickly find himself on the outside, lucky even to look in, and with chances remote of ever again being a member of the U. S. group. Thus, when it comes to one of these conferences, our greatest asset is the U. S. set of proposals; that is why the League spends so much time and effort to associate itself closely with every phase of the preparatory work.

Second, is our association with the U. S. delegation at the conference, arising from our status as an accredited group. When it gets to Geneva, the U. S. delegation will set up shop with extensive facilities for mimeographing, typing, and stenographic work, files, translation, etc., all incident to its daily workings for the conference. In the normal course of events, it is the practice of the U. S. group to meet early in the morning of each day under the leadership of the chairman to hear reports of progress from the various "fronts," discuss developments affecting the U. S. position or requirements, map out tactics, etc. In most of these, the industry representatives are included, sitting with our government people in intimate daily contact to plan the U. S. moves. We'll be there. Once the initial proposals have been formulated, this participation in our own delegation's daily planning represents our best line of defense, our most valuable opportunity to protect our interests. Incident to this will be our actual attendance at committees, subcommittees, sub-subcommittees, etc., where we'll be able to advise our government spokesmen and may even be called on by them to express the U. S. point of view in matters affecting amateurs.

Then there is the "after-hours" mixing with our own people and the representatives of other governments, conversations and discussions with them at lunches and dinners, at coffee breaks, and so on. It is all logical and familiar, and works out nicely.

Now, as to voting, about which you will recall we promised we'd have something to say before we finished. It isn't possible to talk very concretely about the voting question because it is such a perpetual bone of contention that it really never has been settled in all its details. Voting questions sometimes cause wrangles lasting weeks: not voting on the conference items themselves, but arguments as to how it shall be done — purely academic stuff. At any rate, it's about time we put an end to all this by saying that as a matter of actual practice, hardly any matter in the fields affecting us, particularly allocations, is ever submitted to vote. The way things work out, nobody would think of putting a matter to vote until the sentiment had been thoroughly determined and hashed out and everybody lined up; when that has been done no voting is necessary. Consequently, it is rarely resorted to; decisions are usually made in terms of the obvious consensus and that ends the matter. It should be said at this point that this does not mean that the Geneva-conference negotiations will necessarily follow the same course. As everyone knows, there have been widespread changes in the political atmosphere of the world in recent years; perhaps we'll have the unusual prospect of voting on some things this time where it almost never happened before. In that case, our delegation will simply have to round up as much support as it can for its ideas or join with others in a bloc with others of similar mind. Incidentally, regardless of the size of its delegation, each country has only one vote.[4]

Prospects

We have purposely avoided saying very much about what we expect at Geneva. We know what our own Government's position is; we know it is going to do its very utmost to put over its own allocation table and persuade other governments to adopt its point of view on that table, including its provisions for U. S. amateurs. While for this conference there is a general tendency on the part of many countries, including ours, to avoid monkeying with the allocations table below 25 Mc. we know, as recorded in the August issue, that there are countries who want to make cuts in this band or that of ours which, in the aggregate, will make our future look pretty grim. The question of our future, then, boils down to how successful our Government's delegation's efforts will be. This is not a matter where senators and congressmen or the public at large can have any effect, pro or con. The negotiation of the treaty and regulations is exclusively a responsibility of the Department of State, a responsibility it entrusts to the U. S. delegation during the conference itself. Our future, then, depends upon the work of the U. S. delegation at the conference, with the best advice and backing we can give it.

As to where we expect pressure, and of what nature, we frankly are ducking the question at this time. It is difficult to see where our best interests would be served by spreading our thoughts on this subject in detail on these pages, when about the only effect might be to

[4] Where groups of territories or colonies maintain membership in ITU they also have a vote (as a group); under this proviso the United States has two votes.

give people ideas that wouldn't otherwise occur to them. There is no gainsaying that the situation created by another of the periodic re-openings of the allocations table, combined with the known traditional views of most other nations with respect to amateurs and the increasing pressure on the spectrum, is a cause for concern — but to every other established service as well as amateurs. Such a situation is not new. We can only say that the pattern is a familiar one, the rules of the game well known, and the important preliminaries already taken care of.

Before we conclude this article, we want to emphasize one point: conferences such as Geneva represent the efforts of expert and seriously-minded people to come up with equitable solutions to what is getting to be an extremely complex problem. The spectrum isn't stretching but the demands on it are increasing almost daily. Legitimate use of radio frequencies has to be provided somehow and you can't tell a service — like international aviation, for instance — that it can't get in because it wasn't provided for in 1927. Unfortunately, there are no "vacant lots" available and never have been. If some legitimate new use has to be provided for or some existing service — such as the so-called safety services — has to be expanded, something has to give somewhere. The job of everyone attending Geneva will be to weigh these matters, as they come up, and try to come to some solution.

It isn't easy.

That, we think, just about winds up the story at this point. It has been impossible, obviously, to touch on the hundreds of details and "angles" with respect to legislative history and interpretation, conferences, principles involved in putting together allocation tables, etc. However, we hope that the average amateur has a more complete picture of the situation and an improved understanding of what is behind our existing frequencies, our U. S. proposals, and the workings of the conference.

By the time you read this we'll be in Geneva, where you can be assured we'll be doing our very best. Wish us luck!

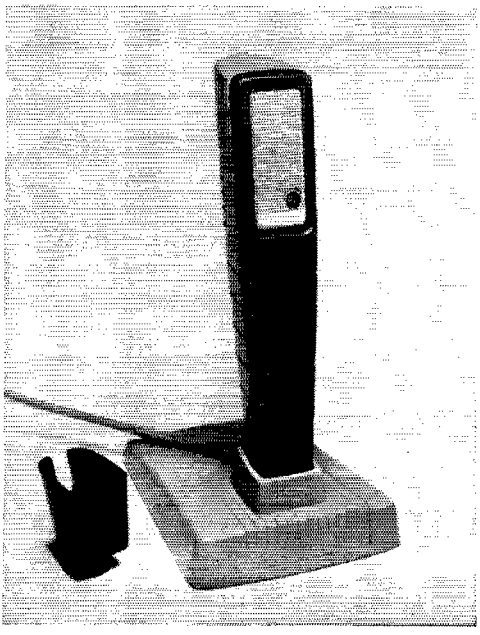
QST

• *New Apparatus* —

E-V Model 729 Cardioid Microphone

CERAMIC microphones have a well-deserved reputation for ruggedness and the ability to withstand considerable mechanical shock and large temperature and humidity changes. These features are combined with a cardioid directional pattern in the new Electro-Voice Model 729 to give a microphone that should find its way into many ham stations. The cardioid pattern reduces the response of the microphone to sound coming in at the sides and rear, a useful feature when the ambient noise is high or when acoustic feedback is a problem. Frequency range of the microphone is 60 to 8000 cycles, more than adequate for any voice work. The manufacturer (Electro-Voice, Buchanan, Mich.) warns that speaking closer than 6 inches into a directional microphone like this gives an unnatural bass response, so we expect a few smart YLs will take advantage of this fact to give a breathless bedroom quality to their CQs.

Since the ceramic microphone is high impedance and has an output level comparable to that of a crystal microphone, it can be used anywhere a crystal mike can be used. We checked out the sample with a hi-fi tape recorder and found it living up to the manufacturer's claims in every way. Furnished with a 10-foot cable, the Model 729 comes with two bases, a metal one for the table (pictured) and a plastic 5/8-27 stand coupler for a mike boom or stand. If desired, the



mike can be hand-held without a stand. The similar 729S microphone includes a shorting switch to kill the mike when not in use.

A highlight of the day in Cranston, R. I., was the visit made to the mobile base station unit by Governor Christopher Del Sesto, who congratulated the group on its effectiveness. Shown in the photo, left to right, are a governor's aide, Gov. Del Sesto, K1EGH (operating) and W1ZPG, net manager.

Holding Our Own in Civil Defense

BY GEORGE HART,* W1NJM

Operation Alert, 1959

It took a long time for all the Operation Alert reports to get here, but it now looks as though all are here that are coming. Lining them up, we find that 26 states (including Hawaii) are represented, plus the Canadian provinces of British Columbia and Saskatchewan. This is just about the same response as last year, so we're holding our own. The difference was that this year the operation was held a month earlier and we had less notice.

Not until March 11 did we receive word from OCDM that OPAL was scheduled for April 17–18. We immediately started to get up a bulletin to ECs[1] asking them to participate, and were just about ready to mail it out when, on March 27, OCDM announced the conelrad drill to be held concurrently with OPAL and asked us to help publicize it and get reports. This held up the bulletin two or three days more, and it was after the first of the month when we finally got it into the mails. Result: many ECs did not receive it until *after* the alert.

Then, you might ask, how come so many AREC and RACES groups took part? Well, we did announce the dates over W1AW by means of a special bulletin, and of course the entire c.d. organization was alerted through its own channels. Probably one of the bigger factors in getting the amateurs out was that this year the dates were scheduled on a week end in order to encourage participation by volunteer personnel — and that's us all over. Not that we're satisfied with the turnout; but at least we didn't lose ground.

About that conelrad drill. Each bulletin to ECs announcing the alert contained half a dozen cards to be filled out by volunteer amateur observers and sent direct to OCDM in Battle Creek, Mich., reporting a few pertinent details concerning reception. Because of the lateness of the mailing, we estimated to OCDM that they might expect between 400 and 500 returns. Imagine their surprise (and ours) when they received close to a thousand cards from the amateurs alone, materially assisting in their analysis of conelrad coverage and effectiveness. High OCDM officials expressed gratification at this evidence of amateur support, and praise for the amateurs who came through. Thanks for exceeding our expectations, fellows.

When we say that we heard from 26 states, we mean that amateurs in that number of states are known to have participated in OPAL. Of course amateurs in *all* states participated; this goes without saying. But it is difficult to get some of them to talk about it. Here is a summary of known activity in each state, as reported to us.

Alabama

A radiogram reported participation by four stations in Florence under EC W4WAZ. No other information received.

British Columbia

A letter from VE7APH indicates that participation by amateurs in the Canadian c.d. test on April 24–25 was good. Considerable traffic was handled on 75 meter phone from Northern B.C. to the capital city of Victoria. Vancouver amateurs were set up at Abbotsford and assisted in channeling the traffic to Victoria. The turnout and general conduct of the test, says Vancouver EC VE7APH, was a pleasant surprise.

California

The California Civil Defense Net (CCDN) was activated on April 17, with four control center stations and four alternates active on 3507 kc. State headquarters at Sacramento was represented by the alternate, W6CMA. Complete coverage capabilities were excellent, says State RO W6CIS.

There was quite a turnout in East Contra Costa County. Stations at Alamo, Antioch, Concord, Danville, Lafayette, Martinez, Pacheco, Pleasant Hill and Walnut Creek were active on six and two meters, with a relay to Oakland. Eight amateurs operated communications headquarters in Pacheco. A total of 29 amateurs took part, all told.

Although Redwood City and San Mateo County c.d. officials did not call an official drill, Redwood City Radio Officer K6IEE called one anyway for April 18. C.D. base station W6WWJ was activated by W6HOG and W6TJJ

* National Emergency Coordinator, ARRL.

[1] This isn't as easy as it sounds.

EC W9JMY operates during the alert in St. Clair County, Ill.

at noon on Saturday and the drill was carried out with several city officials cooperating. Eight amateur stations took part. Messages were originated for c.d. officials at state, regional and national level, and relayed by W6YZE through the National Traffic System. There is no RACES-AREC problem in Redwood City. The RO is an assistant EC and membership is identical.

Messages were received from stations in Pasadena, Altadena and Siskiyou, but activity was not specifically defined.

Connecticut

Bethlehem EC W1FHP reported that six stations, five of them mobile, took part in OPAL.

Florida

April 17 and 18 were days of feverish activity at the South Pinellas c.d. Station, W4SEA. The station was manned by three amateurs from noon Friday until the drill was secured at 1800. Saturday morning K4LYS manned six meters and W4FPC operated 10 meters. Red Cross workers kept the "inner man" nourished until the station secured at noon. The AREC trial in conjunction with the Alert was called just prior to 2000 from club station W4GAC/4. Fifteen stations reported in and 11 messages were received. Messages were dispatched to ARRL, American National Red Cross, and OCDM national headquarters. All stations were secured at 2037.

Although RACES is not organized in Monroe County (no interest by c.d., sez asst. EC W4BCZ), the AREC, which has been well organized for a number of years, nevertheless held a test run at 1400 EST on Saturday, April 18. Club station W4LLO was placed in operation and called the Monroe County Emergency Net. Stations reported in with simulated emergency messages, which then were acted upon by dispatching of mobiles. A break in the water line from the mainland was simulated, and reported by W4GAH. W4BCZ drove his mobile out the overseas highway to locate the break, while mobiles W4MLR and K4RYL determined the state of the water supply on the island. W4GAH then filed a message to Miami asking for assistance, which was transmitted by K4HEN to K4TFS. The latter also transmitted a message to Key West addressed to the county c.d. director, but the local director wasn't interested.

Four stations were activated in Okaloosa County, and the MARS station at Eglin Air Force Base was also active. All activity was on 29,560 kc. About 25 messages were handled, including several to and from regional c.d. hq. in Pensacola.

Hawaii

Twelve amateurs, members of the Maui AREC, participated in Operation Alert from the Paia Fire Station. The operation was organized and spearheaded by KH6AUM, c.d. coordinator for the club.

Idaho

The Idaho Radio Amateurs of Boise operated the headquarters control station, K7AXM, for the entire state. This mobile unit was situated on a 6,000-foot hill overlooking Boise, maintaining contact with all six district net controls throughout the exercise. District controls maintained contact with county coordinators who, in turn, were linked with police and highway departments on two meters. A total of 121 messages were handled during the 9½ hours of operation. Twelve amateurs took part at state level to make this the most successful statewide alert so far.

Illinois

Ten amateurs, members of the SWANI Amateur Radio Club, put Woodstock on the map. W9KMN was the EC who handled the alert, which was adjudged successful by the c.d. director.

The St. Clair County c.d. station, K9KHN, was manned by 15 AREC-RACES members throughout the alert, easily handling all traffic. Channels used included the Target City Net, 3997 kc.; point-to-point on 147.3 and 29,640; and local support and mobiles on 29,520 and 50,580 kc. Points covered included Lebanon, Collinsville, Granite City and Belleville. Communication was maintained between the Belleville City Hall and the county c.d. center on 50.58 Mc. — *W9JMY, EC St. Clair County, Ill.*

Indiana

It seems we had W9RTH participating in Seymour, Ind., but that's all we've heard from that state.

Kansas

The two-day drill in Kansas Area 1 was controlled from WØFON at Lawrence. Communication was maintained with four of the adjoining districts, and schedules were maintained on 2, 10 and 75 meters. Nine local amateurs participated.

Maine

SEC W1QJA reports that although OPAL was secured at 1700 on Friday through a misunderstanding of a message from Colorado Springs, the Penobscot County boys nevertheless had a drill on Saturday having to do with an unidentified object dropped by a plane in the Penobscot River near the Bangor Dam and power plant at 1300. At 1310, K1AHD was calling any station on the standby frequency and was answered by K1DZP, who then notified Bangor and County Headquarters. At 1320, divers were alerted to fish the object out of the water. At 1345, the divers were on the scene and at 1400 two teams of divers were put over the side to fish out the object, which was done by 1500. All this was being reported by communications conducted by a crew of ten amateurs who had already "secured" and had no advance notice of this drill.

Massachusetts

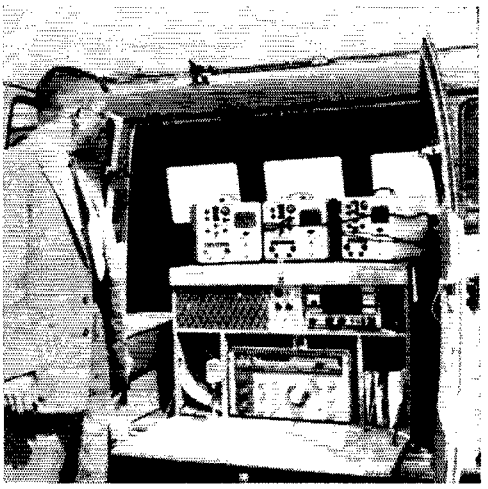
In Massachusetts Sector 2C, radio circuits to area and the various towns were handled by ROs W1IDY, W1EGZ, W1ZSJ and by K1GRP, using the call W1BCN-1. Sixteen towns were represented in the sector in which 33 amateurs and an undisclosed number of trainees participated.

As usual, Winthrop RO/EC W1BB had his boys on the go. Participation was at both sector and town level. The sector project entailed communication with Sector 1F headquarters on 6 and 2 meters from 1700 to 2200 on Apr. 17 and from 1000 to 1500 on Apr. 18. About ten messages were handled each way. Sector 1F headquarters was under control of W1QQL, and towns taking part included Marblehead, Rockport, Salem, Danvers, Saugus, Swampscott, Lynn, Revere and Winthrop. The town of Winthrop also conducted a local drill on 2 meters, which was well attended. Fourteen stations took part and 22 people, 15 of them amateurs, assisted.

Michigan

The alert in Ottawa County was termed "Operation Checkerboard." The control station at Holland alerted the net at 1100, at which time base stations and mobiles in Grand Haven, Coopersville, Hudsonville and Zeeland reported in. The net was secured at 1130 but called again at 1300. Mobiles were dispatched to strategic points and operators received sealed envelopes with fallout data at 1430, 1530, 1630 and 1700. Each mobile radioed these data

W5UWA, RO for Albuquerque and Bernallilo County, N. M., viewing the equipment used for 2 and 10 meters in the Albuquerque alert.



to its respective base station, whence it was radioed to the control center and checked for accuracy. All reports were found to be accurate. Communications with the sheriff's department and the weather bureau were maintained throughout, and one motorist with car trouble was assisted. Twenty-seven messages were handled with only two requests for repeats.

Minnesota

Cook County EC KØDID contacted c.d. headquarters and stood by for traffic. Several messages to state headquarters were handled from 1100 to 1330 on the 17th. Emergency power and mobile equipment were available if needed. WØBMO in Grand Marais took over the net frequency at 1400.

Missouri

St. Louis County was blasted by a simulated 10-megaton bomb at 1245 on April 17. Radio operation was conducted from the new underground control center, and all messages were handled by radio with telephone backup. A six-meter f.m. link was set up between St. Louis and Jefferson City and was found feasible. RACES also set up communications with four sector control points and five staging areas outside the target area. Frequencies on 2, 6, 10, 40 and 80 meters were used under the call WØIGU. Forty-five amateurs participated and RACES, as usual, had the largest number of participants of all c.d. groups.

Montana

All AREC members were invited to participate in OPAL, and SEC W7KUH requested all EC's to cooperate. Net control was handled by Great Falls amateurs W7s BOZ ODK GCS and others, on emergency power, taking checkins and relaying traffic into the c.d. offices in Helena. The state c.d. director kept the net busy with test messages to and from his office. Great Falls was then declared "knocked out" and alternate net control W7SFK took over until the end of the alert, which lasted from 0830 to 1359 MST. A total of approximately 60 stations and 28 towns checked into the net for a very worthwhile and highly successful statewide drill.

New Mexico

Albuquerque RACES had a well-organized and efficient drill. The group was alerted at 0930 on April 17, and operators proceeded to their pre-assigned stations promptly. Twelve operators manned four evacuation centers and set up a 2-meter net between them. Eleven operators reported to c.d. headquarters for assignment as ten-meter mobiles. Four operators set up liaison stations on 2, 10 and 80 meters at the Civic Auditorium. Later, two additional operators reported for 80-meter operating duty at the auditorium and two operators reported to c.d. headquarters for 2-meter duty. Communication with Santa Fe, state headquarters, constituted a big problem. It had been planned to accomplish this on 80 meters through a station in Los Alamos, and such a circuit was successfully set up and traffic sent, but traffic from Santa Fe was received through a 75-meter net not operating under RACES. Nevertheless, all in all, this drill, organized and supervised by Albuquerque RO W5UWA, was a highly successful one from all standpoints.

The Totah Amateur Radio Club of Farmington, under SEC W5CIN, programmed a c.d. test over the local broadcast station during the conelrad alert. Six amateurs took part in this exercise.

New York

The Rome Radio Club's mobile communications center, W2OFQ/2, established six-meter communication with county c.d. headquarters shortly after the completion of the conelrad test. Operation was carried on at Rome c.d. headquarters by ROs W5RWH/2, K2ZKY and K2IXN.

In Monroe County (Rochester), 76 RACES operators under RO W2KIO were at their posts in the county control center, in mobile and warden nets, and in Command A and B nets in outlying towns. All nets operated on Friday, and some continued into Saturday. Support Area 9 was also active, with contacts to the Monroe County center. It was a mighty busy place and the QRM between positions was rough until cavity traps were installed. Nets were operated on 2, 6, 10, 75 and 80 meters covering an area which included, in addition to Monroe, the counties of

The Winthrop, Mass., RACES/AREC group always puts on a good show for Operation Alert. Here is the group that did the job this year. Standing, left to right, are W1BB (RO/EC), W1CMW, W1BDU, W1MQB, KN1GYJ, K1ECD, C.D. Director Wyman, K1AIQ, W1IOO, W1JJI, KN1JIL, W1WLP, W1EAG, W1HFJ. Seated are W1DLY (deputy r.o., 3rd from left) and W1DQB (extreme right).

In Eau Claire, Wis., K9IBB and KN9QHD operate the equipment in the c.d. control center. This unit operated in the state c.d. net.

Wayne, Yates, Livingston, Steuben and Ontario. Six radio circuits were in simultaneous operation at the Monroe Center and the gang handled 176 messages — and nobody perspired. Many more could have been handled.

North Carolina

SCM W4RRH reports that the state had a good drill. W4SGD-1 acted as NCS on 3997, and W4PNM did the job on 3509.5. Most surprising was the amount of coverage that was effected on two meters, on which mountain-to mountain relays made possible coverage over great distances. Fifty messages were handled altogether.

Buncombe County RO W4AFM reported by message that 13 stations participated in the OPAL drill in that area. No details.

Oregon

This year's alert in Portland was conducted from the new underground c.d. center, complete with new antennae and equipment. Six operators were on hand to man this installation.

Rhode Island

Twenty amateurs of the Cranston Radio Assn. activated the base station at city c.d. headquarters on Friday morning on both two and ten meters, using assigned RACES frequencies. The station remained active until the close of the drill Saturday evening. Separate two-meter circuits were maintained with area control on state level and with mobile units with the city and neighboring Johnston. On Saturday afternoon the ten meter mobile net put on a public demonstration in conjunction with the fire department; five mobiles participated.

Saskatchewan

On April 24 and 25 Saskatchewan amateurs participated in Co-Op III, the Canadian equivalent to our Operation Alert. Eighteen amateurs were on hand. VE5NN was set up at c.d. headquarters. SEC VE5IG says that the activity was a big success because of the lessons learned and the demonstration to c.d. officials of amateur capabilities. Special credit is due to the Weyburn amateurs who turned out in force.

South Dakota

The Sioux Falls Amateur Radio Club is proud of its communications van (see cut), which was used during the alert. The van was situated on a hill south of the city and operated on 40 meters during the alert, while the base station was on 75. Five messages were handled, one of which was in lieu of the police teletype circuit which had an actual breakdown.

Tennessee

A note from W4UIO, Tennessee SCM, says merely: "We went through another c.d. drill. The QRM was terrible and there was the same unimaginative assignment from c.d. This year I acted as communications chief, since the chief was acting director."

Texas

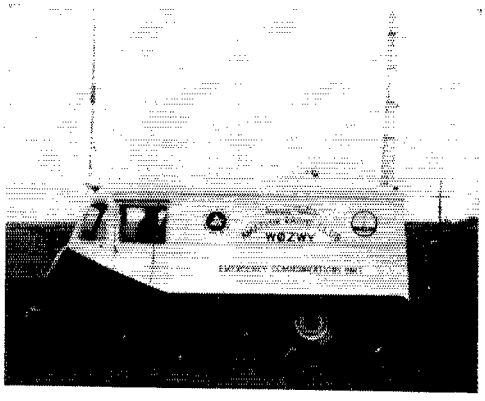
Amateurs from Alvin and adjacent areas of Houston took part in a communications drill in Alvin on Friday from 1830 until 2130 CST. Control station K5IVY was set up in the State Guard radio room in City Hall and communication maintained with mobile units. All operation was on six meters. The drill included construction of a roadblock by mobiles and police and distribution of c.d. pamphlets on fallout. Seven amateurs took part.

Virginia

The AREC of Prince William County simulated a series of emergencies none of which had to do with enemy action: a plane crash, a gasoline truck fire and a helicopter in distress. About forty amateurs participated. K4MJZ was in charge of the test. Each amateur taking part was given a sealed envelope with instructions before the test, to be opened at a given signal. A station was set up at the Arlington Red Cross Building, while others operated from home, manned hand-carried units or cruised in mobiles. The first was an airplane crash in which the operator reporting did not know where he was; the problem was to locate him and send aid. Then a helicopter was reported in trouble near the Washington monument and was safely guided into the airport. This was followed by the gasoline truck fire, broken gas mains and power failures. Just about every phase of emergency communication was tested during the drill.

West Virginia

A comprehensive report by SEC W8HZA indicates activity in six cities and at state level. On a statewide basis, total operating time was 12 hours and 29 minutes, spread over both days of the alert. W8HZA/8 was set up as state control station and handled 25 messages. Only one city, Huntington, made use of the RACES/AREC group to handle traffic to state headquarters; the others had amateurs active but no local-state traffic was involved. In Huntington, 21 amateurs participated on 80, 40 and 6 meters, handling 20 messages. In Wheeling a six-meter net was active and EC W8KXD was active on 80. In Fairmont seven amateurs were on deck; bands used were 2, 6, 75 and 80 meters, and the Marion County C.D. communications truck was in use. In Parkersburg, and Sutton, stations were standing by. In Charleston most of the activity was at state control center, but other amateurs are on hand and ready if needed. Because of overcrowded conditions in the RACES segments, the West Virginia Net frequencies were used on 80 and 75. Later, communication with Huntington was moved to 40 meters.



The Sioux Falls Amateur Radio Club communications van on location during the alert in South Dakota. It is equipped with a BC-610, an HQ 140X, an SCR 522, state and city police equipment and an all-band whip, with a generator on a trailer.

Wisconsin

Eau Claire County used its newly-equipped control center to participate in the state net. All Eau Claire County amateurs took their turn operating the equipment.

Comments

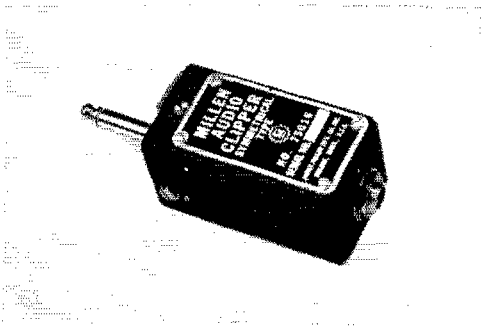
"In the past, c.d. operations here have been a farce, so you can well imagine the pleasant surprise in this year's c.d. test." — *VE7AI'H.* "Again it was proved that c.d. and NTS can combine to make an interesting test." — *W6DEF.* "If a bomb drops on our little island anywhere, we won t be around to operate RACES!" — *W4BCZ.* "Exercise OPAL 59 was a complete success in every way." — *W1BCN.* "Our group participated and cooperated 100%." — *W1BB.* "Missouri C.D. Director Dean Lupkey said the communications phase of the alert was very successful. While we haven't begun to tap the resources offered by thousands of amateurs, RACES has made great progress in the past year and offers excellent prospects for the future." — *Mo., C.D. Newsletter.* "Conelrad alert was received very satisfactorily by Montana amateurs." — *W7SFK.* "'Never have so many done so much' is about the way to describe RACES operation in providing the communications for the c.d. alert." — *The Rakta Rag, Rochester, N. Y.* "Lack of planning and lack of information from the state level resulted in an almost complete lack of activity." — *KØDYR.* "A diversified program is being worked out for future drills and tests." — *K5PNV.* "A reasonable short-term goal would be to strengthen our local AREC groups through regular drills and simulated emergencies. Let's work toward a goal." — *W8HZA.* QST

• *New Apparatus* —

Plug-In Audio Clipper

THE little plug-box in which the Millen tone modulator is assembled (*QST*, June 1959, page 46) evidently is the sort of gadget that practically compels other uses, just because it looks handy. Now we have the same box with another device — a semiconductor diode clipper for use as an audio limiter or for turning the output of a sine-wave a.f. generator into square waves for testing purposes.

The box, 2½ inches long by 1¼ inches square, is fitted with a standard phone-plug shaft at one end and a phone jack at the other, and thus is easily inserted between the phones and receiver when the unit is used as an audio limiter. The circuit is the conventional shunt diode clipper with reverse-connected diodes to take care of positive and negative peaks for symmetrical clipping. The diodes are individually back-biased by mercury cells to establish the clipping level, giving an output voltage of about 2 volts peak to peak. This is enough of a headphone level to satisfy most listeners. The clipper is

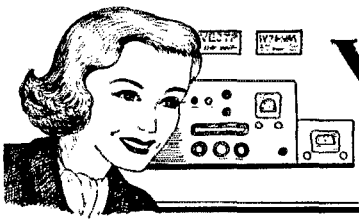


equipped with a battery switch similar in construction to the one used in the tone modulator — the switch closes when the plug shaft is pushed all the way into a phone jack — but has two poles so the battery circuit is opened completely when the unit is pulled out.

James Millen Manufacturing Co., Inc., Malden, Mass., is the maker. QST

Strays

It's nothing new when a ham receives a "Worked All Something" award, as a rule, and we seldom use pictures of such occasions. When ZL1TB (at right) got his Worked All Connecticut certificate recently, however, it was almost a "Stop press" affair: the presenter (left) is the Right Honourable Walter Nash, Prime Minister of New Zealand! The ceremony was arranged by the Auckland Junior Chamber of Commerce whose Connecticut cousins, the Willimantic Jaycees, sponsor the award.



YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

Week End in Texas

The eyes of the ham world were upon Texas June 19 through 21 when the Gulf city of Galveston played host to the Eleventh National Convention of the ARRL. For three memorable days hams visiting the Lone Star State were treated to that special brand of hospitality which is "made in Texas by the Texans".

The obvious success of the YL program could be traced directly to that enthusiastic, hard-working group of YLs known as the GAYLARKs — members of the Gulf Area Young Ladies Amateur Radio Klub. Hostess club for YL convention activities, GAYLARK did an outstanding job in arranging for an interesting program, pleasant to the last detail. GAYLARK was founded in November 1957 under the guidance of Harriett Woehst, K5BJU, who served as first president. Primarily a club for YLs in the Houston area, GAYLARK programmed YL convention activities in Galveston, some 50 miles away, for only a very few licensed YLs reside in Galveston and help was cheerfully volunteered from Houston.

Some seventy YLs attended the main YL event, the breakfast and YLRL session, despite the early start of 7:00 A.M. on Saturday. Every U. S. call area except the third and eighth was represented. (A total of about 90 YLs registered for the general convention.) After breakfast speeches were given by K5IMD, fifth district chairman of the YLRL; W5EGD, GAYLARK President; W6DXI, Vice President of the YLRL; W4BLR, YLRL President (by correspondence); W5RZJ, YL editor of *CQ* (by correspondence); and W1QON. K4LMB arrived too late for the YLRL session but recognition was given to Ethel for her role in founding the YLRL twenty years ago in 1939. Moderator for the discussion period was K5BJU. Ceramic plaques of the chirpy little GAYLARK bird made by KN5RFO and dainty net tissue holders made by the GAYLARKs were given as souvenirs of the happy occasion.

Lillian Beebe, W5EGD, GAYLARK president.

OMs and YLs alike took a long look at the very effective YL booth in the exhibit hall. With the aid of her OM, Betty Sutton, W5ERH, had assembled an excellent display of the various YL certificates that are available, as well as a collection of fine pictures of DX YLs, QSLs, and assorted YLRL material.

In between such activities as the Ladies' Luncheon at the exotic waterfront Balinese Room, evening beach party, coffee in the GAYLARK Hospitality

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

YLRL NETS AND ROUND TABLES

Phone

Freq. Kc.	*Day*	*Time*	*Name and NCS*
3980	Monday	1500 PST	Monday YL, W7HHH
7230	"	0900 EST	Floridora, W4BWR
7235	"	1000 MST	Clothes Line, WØTYB
28,800	"	2000 EST	WRONE, K1DGZ
3900	Tuesday	0830 EST	Blue Ridge, K4CZP
3900	"	0900 EST	Welcome, W8ATB
29,130	"	1300 EST	Hairpin, K6JPY
51,000	"	2000 EST	R. I. YL, W1GSD
3900	Wednesday	0830 EST	Yankee Lassies, W1UKR
3915	"	0900 PST	Ironing Board, K6HHD
21,390	"	1000 EST	Cross Country, KZ5VR
7220	(last Wed.)	1100 EST	rotate NCS
7215	Thursday	0900 EST	K4CZP
7235	"	1000 CST	Texas YL Round-Up, W5WXY
14,240	Thursday	1400 EST	Tangle, W4SGD
7250	Friday	0900 PST	Friday Roundtable, W6QCX
29,000	"	2200 CST	LARK, W9BCA

C.W.

3750	Monday	1300 CST	LARK, W9MYC
7150	Wednesday	0930 CST	KØEDH
7104	Thursday	0900 EST	K4CZP

The above schedule, revised for Fall 1959 and compiled by the YLRL Vice President, was based on information received from the various nets. If your net is not listed, the chances are that it was not registered with the Vice President, or the registration was not renewed. Omissions, corrections, or additions to the schedule should be sent directly to Gladys Eastman, W6DXI, 735 Glen Ave., Glendale 6, California.

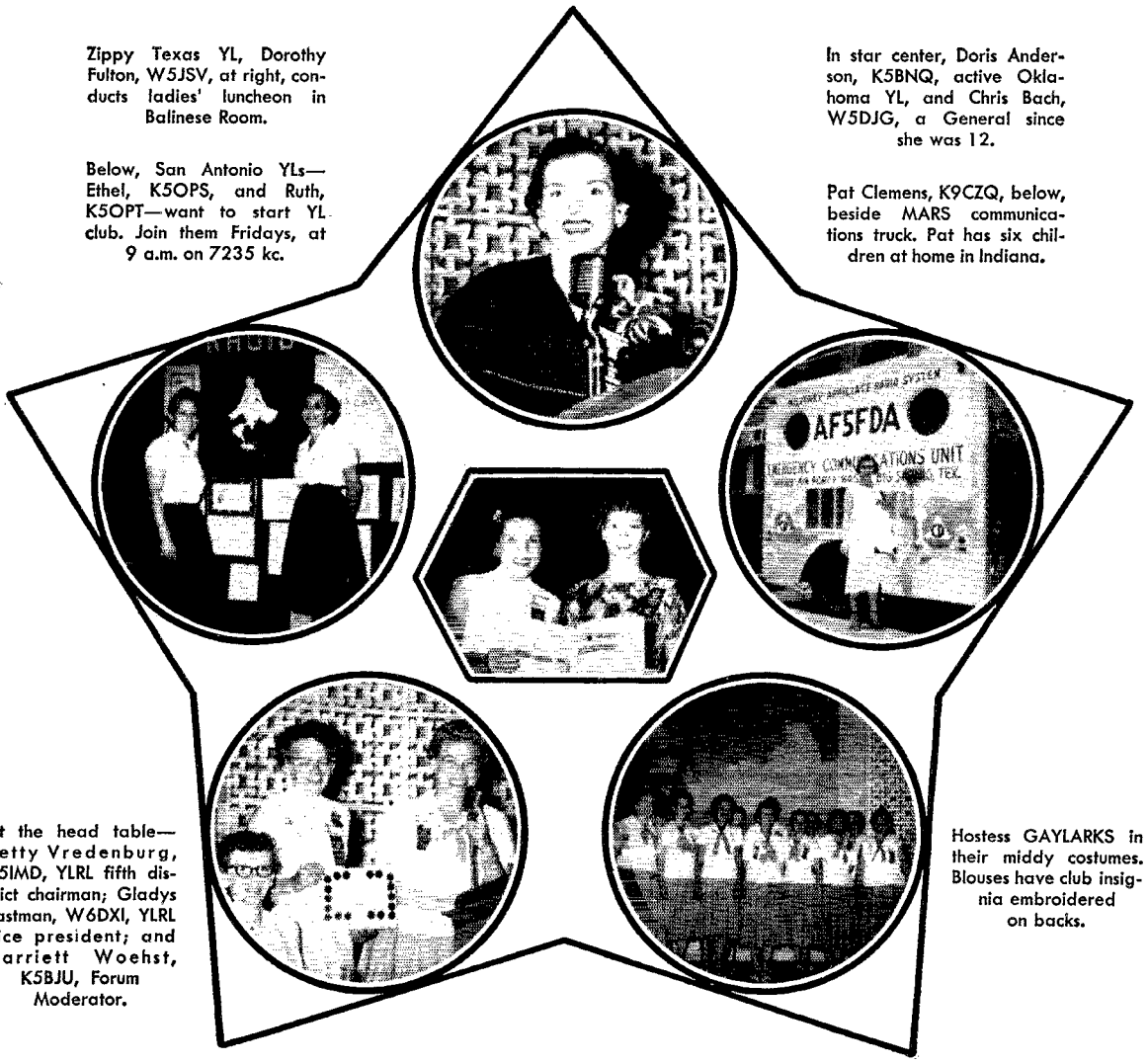
LONE STAR HIGHLIGHTS

Zippy Texas YL, Dorothy Fulton, W5JSV, at right, conducts ladies' luncheon in Balinese Room.

Below, San Antonio YLs—Ethel, K5OPS, and Ruth, K5OPT—want to start YL club. Join them Fridays, at 9 a.m. on 7235 kc.

In star center, Doris Anderson, K5BNQ, active Oklahoma YL, and Chris Bach, W5DJG, a General since she was 12.

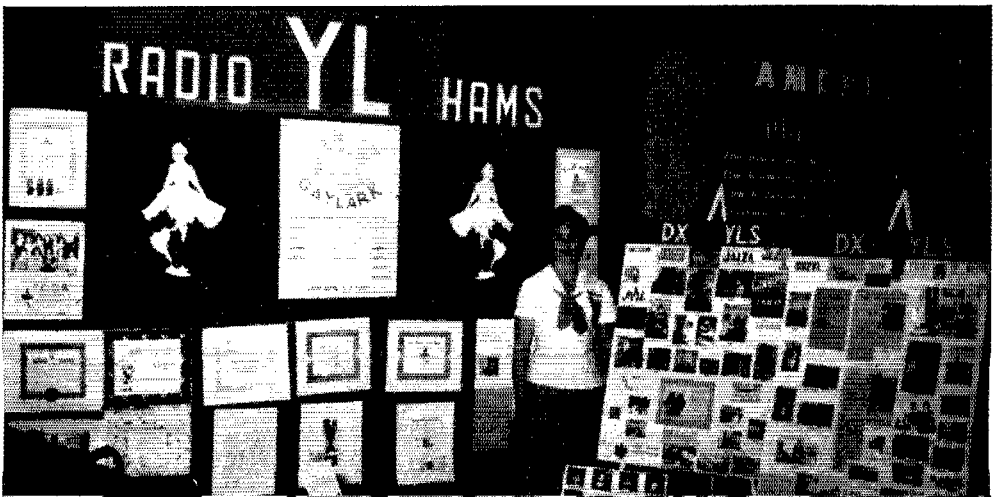
Pat Clemens, K9CZQ, below, beside MARS communications truck. Pat has six children at home in Indiana.



At the head table—Betty Vredenburg, K5IMD, YLRL fifth district chairman; Gladys Eastman, W6DXI, YLRL vice president; and Harriett Woehst, K5BJU, Forum Moderator.

Hostess GAYLARKS in their middy costumes. Blouses have club insignia embroidered on backs.

The YL exhibit booth with YL pictures galore on display and pretty GAYLARKs such as W5ERH on duty to answer questions.



Room, and assorted tours, YLs had a choice of attending the usual technical and general convention sessions, from MARS and s.s.b. to the Royal Order of the Wouff Houng. . . .

From start to finish it was a gala week end — the result of months of hard work by many people too numerous to credit. Farewells were brightened by the prospect of a reunion again at the Third International Convention of the YLRL to be held in Boston, Mass., next June.

1959 AWTAR

The full story of the annual All Woman Transcontinental Air Race would take pages to relate. Usually a report of the famed "Powder Puff" derby appears in one or more of the various flying magazines and anyone interested in flying should find such accounts intriguing.

Radio net chairman Carolyn Currens, W3GTC, greets Betty Gillies, W6QPI, AWTAR Board of Directors chairman as Betty arrives from California.

This year our report of the assistance rendered by the amateur radio communications net to the women pilots is briefer than usual, but the key word to the whole operation apparently was "success".

Chairman of the radio net, Cardyn Currens, W3GTC, concluded, "I feel that this was the most successful year for the amateur radio net. All information seemed to go through very successfully." Fifteen meters was the band mainly used, and conditions generally were good.

Following is a list of amateurs who participated in the 13th AWTAR. An asterisk denotes a YL call.

Lawrence, Mass. W1PFA, Chairman; K1s ALA, ATO, ATQ, BIQ, CLT, CNQ; W1s BJ, BLO, EQW, GPV, JBE, KNU, KWW, LEO, RAP, WNJ. Binghamton, N. Y. W2MTA, Chairman; K2s CWD, OYX; W2s EWO*, NEF, OW, QIZ, SVU, UNY, VDX, YLM, YOJ, YYF. Youngstown, Ohio W8GQD, Chairman. Kokomo, Ind. K9MWC* and W9HUF, Co-chairmen; W9s JUJ*, RTH.* West Chicago, Ill. K9CQF* Chairman; Chicago YLRL members. Rochester, Minn. WØIQW, Chairman; KØs CPW, EUK, EVS, EVW, GLP, PSI, RGP; WØs PQS, TJA, VYI. Fargo, N.D. WØCAQ, Chairman; KØKAG, WØRNS. Bismarck, N.D. WØHVA, Chairman. Miles City, Mont. W7YUP, Chairman. Helena, Mont. W7WMT, Chairman. Harlowton, Mont. W7s INM, NPV, OOY*, RZY. Spokane, Wash. W7OBH*, Chairman. K7s AFE, BVM, CTS, EXV, IAK; W7s ABF*, ABO*, BEO, DBJ, DSR, DXH, EQU, GXI*, HCJ, IGB*, JYO, OHI, OPR, PDH*, PXA, QFR, ULL, UOJ, USL, WIL, ZNN; KN7s EAU, HCV, IEZ, IFA; K6DLL/7; W6SMU/7.

New YLRL Contest

The Young Ladies Radio League has designated September 27 through October 3 for its new "Howdy Week" contest. For YLs only, the contest opens at 1200 EST Sunday, Sept. 27, and closes at 1200 EST, Saturday, Oct. 3. All bands and all modes of emission may be used. Only one contact for a call may be claimed — no multipliers. In scoring, a contact with a YLRL member counts two points; one point for a non-member. Logs are not required. Submit a list of contacts stating date, time, call of station worked, name, QTH, and whether or not the YL worked is a YLRL member. The top YLRL member scorer will have a choice of a club pin or stationery. The top non-YLRL scorer will receive one year paid membership in the YLRL. Scores must be received by October 24 by YLRL Vice President Gladys Eastman, W6DXI, 735 Glen Ave., Glendale 6, California. Step right up to your mike or key and see how many gals you can "Howdy" during "Howdy Week"!

Coming YL Get-Togethers

ARRL New England Division Convention

Last call for New England's long awaited ham event. Dates: Sept. 5 and 6 Labor Day week end. Place: Hotel Statler Hilton is downtown Hartford, Conn. Details: given in previous issues.

YL DXCC Notes

Thanks to OM PY1CK for calling attention to the fact that PY5QZ, Margareta, is the only Brazilian YL to date who is officially DXCC. (OMs PY7VBG and PY4OD were listed in error.) Flavio adds that YLs PY4AMX, PY2KT, and PY5YL are well on their way to DXCC.

W1WPO sends word of three more YLs who have recently made the DXCC grade: KH6BTX, W7IKK, and ZE7JY. QST

Strays

Here is the September schedule for the Western MARS technical net.

AF-MARS Western

(Sundays 1400–1600 local time, 7832.5, 3295 and 143,460 kc.)

Sept. 6 — Net Re-organization and Information.
Sept. 13 — High Speed Data Acquisition for Electronic Computers.
Sept. 20 — Radio Interference — What It Is.
Sept. 27 — Equipment Utilization and Conversion Information.

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Hams who regard the *Radio Amateurs' Handbook* as their own special property will share K6YNB's amusement at this story on himself.

"One day I had occasion to take the *Handbook* to school with me. As I glanced through it, a fellow who is very proud of his knowledge of electronics noticed what I was reading. Not very well concealing his amazement, he blurted: 'What are *you* doing with the amateurs' *Handbook*? You don't take electric shop!'"

— • • • —

Candidate for "hamily" of the month is this family on Cape Cod: Father is K1BZE; Mother, KN1HRR, Son, KN1JAU; daughter, KN1KPZ; and sister-in-law, KN1KTA!

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Huh?

Inarticulate gripes and groans are a dime a dozen in almost any field, from religion to radio, but a well-expressed "Bah!" can be a work of art. W2TOX contributes an excellent jeremiad for your displeasure this month, paragraphs well calculated to test the selectivity of "How's" and the sensitivity of the DX faithful. Brace yourself. Ready? Now:

Editor, *QST*:

I am writing to express my aversion to the popular concept that the only reason for hams being in existence is the relentless pursuit of the unheard-of prefix, the tiny corner of the world; in another word, "DXing". This appearance is given by the apparently spectacular figures of distance used in relating DX experience. I believe that this is like the unfortunate appeal to the masses of the low-class murder and scandal type of newspaper as opposed to the more refined and immeasurably more significaat headlines of such papers as the New York *Times*.

While there are some reasons for working DX, the present state of the art (and I fear that this is a loose application of the term) is disgraceful, to my way of thinking. When a station tries to work a DX station he is but part of a seething mass of QRM, noise and garble trying to force its way across the ocean. If he does succeed in making contact with the fellow across the pond, all he dares do is give a thoroughly boosted signal report (the higher the report, the better the chance of getting a QSL) and perhaps pass along his "handle" and location. If he breaks with this one-minute ritual he is QRMd and insulted for "hogging" the DX, for holding up the rest of the group.

Certainly one can learn nothing from this brand of QSO. What can you find out in a minute or two? Perhaps a name and a location. What can you learn of personal interests, professions, families, equipment, technical information, or anything else that leads to worth-while friendship? These brief contacts cannot in any way be taken to represent good use of the privilege of our amateur licenses.

What is the purpose in working DX, anyway? Is it to send a signal over a major portion of the earth's circumference? We all know that this can be done. Look at the transatlantic telephone, the satellites, short-wave broadcasting. Is it to get a card from some exotic island? It's easier to try collecting stamps or to join a pen-pal club.

It seems to me that the mass communications magazines of the electronics world place far too much emphasis on how, when trying out some commercial equipment, "We plugged it in and right away we worked New Podunk, South Africa!" and no emphasis at all on something like, "This gear has an interesting feature in that it uses a new control-relay setup," or, "Clever use of circuitry eliminates distortion in the speech amplifier. . . ."

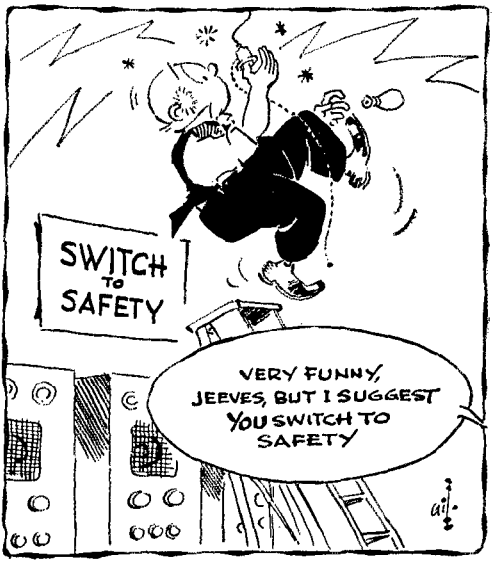
Doesn't the inquiring instinct for experimentation count any more in ham radio? What has happened to the public services, traffic-handling and emergency communications? I think that the ham who builds his own equipment, helps the community, experiments, explores v.h.f., or just gets to know others by ragchewing is doing something far more meaningful than one who would use DX cards rather than buy wallpaper. After all, where would these persons be who buy kw. rigs, twenty-tube receivers, the huge beams and towers, etc., if there were no experimenters and builders to make the equipment for them?

I realize that these views are rather off beat so far as *QST* is concerned, and I have no hope of seeing them in print. However, I get very peeved at this DX mania and I feel I must get my four cents (postage) in. Very sincerely,

— *C. Robert Clements, W2TOX/-A2TOX, trustee of W2CLE*

W2TOX regrets but does not deny the existence of that fundamental human communications instinct, a bent for DX. The thrill of exchanging thought at a distance, any thought at any distance, must have tingled bipeds even before Cro-Magnons and Neanderthals first hollered from hill to hill. Shucks, some of the most severe cases of DX obsession are to be found in v.h.f. ranks, and traffic handlers noticeably relish relaying QTC between remote points. Even casual TV-gawkers go ga-ga when a skip-in picture abruptly disperses *Gunsmoke*. A fresh and striking example of contagious DX fever is revealed by inspection of doings on the new 11-meter Citizens Band. Endsville, man — 'way out!

We cannot subscribe to the view that our DX facet is less conducive to true experimentation, more effete, than other major segments of ham interest. Indeed, the very nature of DX pursuit cries out for maximized technical performance in any given installation. It's true that operating skill can be subordinate to e.r.p. and receiver quality in routine DX-chasing, but show us a larger group of amateurs with more inspired perseverance and *esprit!*



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

SM5WN/LA/p's coldly beautiful Svalbard hangout, also the home of arctic LH3A, easily takes title as "How's" QTH of the Month. Ivar's snug raiment and bushy camouflage are necessitated by 'way-below-zero temperatures not entirely dispelled from the shack. Approaching scheduled QRT time last month, SM5WN/LA/p needed only Idaho to complete WAS and had logged thousands of DX contacts despite erratic wireless conditions, a nagging fuel shortage and stringent duty schedules. *(Photos via SM5AHK)*

On the other hand, few good things cannot be carried too far. OM W2TOX stoutly contends that amateur radio is running DX into the ground or vice-versa. Is he right? What do *you* think?

What:

Carrying a farfetched analogy too far, it's interesting to note that prehistoric man's DX world even had its bootleggers. That Piltdown feller, HØAX — his QSL just didn't stand the test of time. And as for that DX spirit we mentioned, consider the diligence and generosity of the DX crew who regularly take time out to assemble this column for you through postal contributions to Jeeves & Co. *That's* teamwork! Goes so. . . .

10 phone surprises the critics by producing a fine batch of summertime DX despite infrequent and sketchy east-west openings. K1ADH, K2UYG, K4RJN, K5JPZ, K6CJF, KØLEQ, EL4A and ISWL specify the 28-Mc. A3 availability of **CEs** 1AGI 3CP, **CN8**DJ, **CRs** 4AP 4AV **6**BY 6CA 6CZ 7AC 7AG 7DN's 7-watter, 7EO 9AI 9AK, **CTs** 1PK 2AC 2AI 3AF 3AN, **DU6**IV, **EAs** 8CF ØAB, **ELs** 1G 2F 4A, **FB8s** CG ZZ, **FE8**AY, **FF8**AP, **FM7s** WQ WU, **FQ8s** AD AE AF AG AT, **HA8**WS, **HCs** 1AGI 4IE, **HH2s** CL LD Z, **HI8s** CM GA TC, **HL9s** KR (s.s.b.). KT, **HP1**JF, **HR2s** MAC MC, **HS1**B, **HZ1**AB, IT1TAI, **JA1**BQR, **KAs** 7MD ØCG, **KR6s** CGA EO HI, **KV4**BT, **KW6**CM, **KX6**AF BP1(s.s.b.), **MP4**BBW, OA6Q, **OD5s** BN CF CG LA, **OQs** 5EB 5FV 5GU 5IG ØPD, **PJs** 2AD 2AF 2AV 3AG, **SVs** 1AA

HA5DH, with a signal familiar to 14-, 21- and 28-Mc. DX hunters around the world, displays DXCC, WAS and OTC trophies on the walls of his Budapest hamshack. *(Photo via W9VVJ)*

ØWB ØWQ ØWT, **UAs** 1AB **9**CM, **UB5s** FG SB, **UQ2**AN, **UR2**BU, VEs 3EGD/**SU** 6QG/**SU**, **VPs** 1SD 2AB 2AR 2DA 2KR 2LO 3MC 4LD 4TF 5RD 5MQ 6EB 6GT 6JK 6WE 7NM 8DK 8DW 9DC 9EP, **VQs** 2AC 2DC 2RB 2VG 3HB 3HH 4HT 5EK 5FS 8AD 8AV, **VSs** 1JO 6AE 9AL 9AO, **VU2s** CQ RG, **XQ8**AG, **XW8s** AK AL, **XZ2**SY, **YA1**IW, **YNs** 1CS 1SV 4AC 4CF, **YO3**CM, **YS1**MM, **YU3**JN, **YV5s** ADP AHB, **ZC4s** BK CH GS JB, **ZDs** 1FG 2CKH 2FNX 2GUP 3E 6DT 6FC, **ZEs** 2JA 4JF, ZLs galore, **ZP5s** CF JX MQ, **ZSs** 3HI 8I, **4S7**EJ, **4X4s** FR JR, **5A5s** TF TO, **9G1s** AA BA BB CW, **9K2s** AP AZ and **9M2**GA. Apparently the ten-meter crowd is determined to leave no 28-Mc. DX stone unturned before the m.u.f. drops out of sight.

10 c.w., mainly a week-end sport of late, presented K2UYG, W5GAI, EL4A, I1ER, ISWL and JDXRC diggers with **CN8**JE, **CRs** 4AX 6CA 7LU, **CX2**BT, **EL4**A, **JA1**BKV, **KG6**AAY, **OD5**CI, **PJ2s** AV CK ME of Sint Maarten, **SP1**JF, **UAs** 1DZ 6KOB, **VK6**SM, **VPs** 7NM 9D, **VQs** 2GH 4ST, **VR2**DA, **ZE1**JU and several ZSs. East-west prop paths on 28 Mc. should solidify somewhat beginning this month. 'Twill be interesting to compare this autumn's results with those of a year ago.

40 c.w., a star performer right through our hot months, offered **CN8s** BP JE, **COs** 2AJ (7010 kc.) 1-2 GMT, 2WI (8) 5, 5RV, **CR4**AX, **DU7**SV (10) 10, **HK1**DG (52) 1, **JAs** 1ALU 10, 1CD 1CHE 1CID 3ACT/mm 6TK 8HO 8II 8LN 8MS 9AA, **KG1**AQ (7) 5, **KL7s** CVL WAJ (30) 8, **KM6**BK, **KZ5**RR (30) 5, LX2DC, **OK1**KNT, OZ4LP/mm (11) 9 off VP2, **PJ2**ME, **SP8**KAV, **UAs** 9KAB **Ø**KSA, **UC2**KAC, **UH8**KAA, **UO5**KAA, **UR2**AK, **VKs** 6HK 9XK, **VP5**FP, **VQ4**HT, WW6CR/**KH6**, **YU4**EVW, **YV5**IIL (8) 4, ZLs in number, and **5A2**CV for the logs of K4s CEF PIC, W5GAI, K5s ABV JVF KBS, W7s DJU YAQ, K7s AYP GPG, EL4A and ISWL . . . . This same group scared up **FA3**LX, **VPs** 3IG and 9BN on 7-Mc. phone, no easy medium to deal with.

40 Novice DX doings grow more widespread. KNs 4FMA 7GZM, WH6CXW and WV6CRQ put the finger on **COs** 2AJ 2MD 6NV 8AY, **JA9**ZX, **KP4s** AKB AOO, **UA0**KSA and **WH6**DBY. A 32-ft. pipe vertical really lays out a sig for WH6CXW. Right about now the static level and absorptions that pestered 40 throughout the summer will begin to subside. All set for your share of 7-Mc. DX?

20 c.w. sort of snickers at the ups and downs of other DX bands while producing its usual steady output of carpoppers. W1s AZW (154/148 on 30 watts), DGT ELR, K1IFJ (80/35), W2s IWC (257/247), JGQ (53), K2s ALA (74/50), QXG UYG, W3s GAU LMA (275), NHA (105/63), W4IUO, K4s CEF (111/88), IGD PHY RJN (114/72), TEA (90/51), W5s GAI JPC, K5s ABV HYB JPZ TER (74), W6JQB, K6s CJF (34/27), STI, W7s DJU YAQ, K7s ABV (122/90), AWH (97/72), W8s CSK IBX (182/165), KX (160/151), YGR, W9JJN, WØQGI (238), A. Rugg, EL4A and I1ER report the workability of **BV1s** US USB, **CEs** ØAD (16), ØZA, **CNs** 2AQ 1, 2BK (57) 8, 8AQ 8BP

8HO 9CF 9CK, CP3s CD CN, CR6AI, CT2BO (6) 1, CXs 1BO 6CB, DJ5CQ, DMs 2ACA 2AGK 2ALN 2ATL 3KFE, DUs 1DR 13, 1MPH 7SV, that strange EAAD95 feller, EAs 8CG (38), 9AQ ØAF (53), EL4A (10) 3-4, F2CB/FC, FAs 8JO 9VJ, FB8ZZ (40), FF8s BZ 0, CC (61) 8, FG7XC (42), FK8s AC AI 7, FL8CP (35), FM7WP, FO8s AC AX, FQ8s AJ AP, FY7YE, HAs 5DH 5FO 5KDO 5KFR 8CC 8KMG 9OX ØHN, HCs 1CT 1ET 1GP 1JU 2IU 4IE 5CN, HKs 3KG 10-11, 3TH 11, 4JC ØAI of San Andres, HRs 1FR 1MM 10, 2FG, HS1C, IT1s AGA (35), ZQK (65), JAs in every call area, JZØs DA (38), HA (32), Ks 6QPG/KW6 8LYK/KG6, KAs 2CDF 2DD 2RF ØIN of Iwo, KCs 4USB 6ZZ (44) 8-12, KGs 1AQ 1BO 3-4, 4AV 6NAA, KM6s BI BJ 10, KR6s AC GY HM HV JM LC LW USA, KV4s AA (80) 22-1, BO, KX6CJ, LU3ZL, LX1s DE RF, LZs 1AF 1KAD 1KBL 1KPC 1KPZ 1KSZ 2KAD (42) 3, MP4s DAA 0, QAO (42) 21, OA3D, OD5CI, OR4RW 7, OX3RH 1, OYs 7ML 8RJ (30) 4, Dutch PI1s NTB VKL, PJ3s AB (79) 1, CP, RAEM of Moscow, SL5AB just Sweden, SPs 1ADM 3AK 4KAI 6ACJ 8HC 8HR 8KCP, ST2AR (80) 5, SU1MS (75), SVs 1AJ ØWP (62), TG9LM, polar UA1KAE/6, UA9s AR DB (68) DP KCC KCK KDM KDN KJF WF, UAØs AG CC 9, KAR of Dickson isle, KDA KOA KOE KSA KUV, UB5s in abundance, UC2s AD AI AX KSA WG, UD6s FA AI, UG6AG, UM8KAB, (65), UN1AH, UO5s KAA (65), PK (73) 3, UP2s AT KCB (11), 0, KNP (50) 1, UQ2s AB (62) 2, AE/mm, AK AN CC, UR2s AR KAA, VKs 9GK 9VM ØCC (82) 11 of Macquarie, VPs 2GAF 5BL 5ME 6PJ 7BT 7NA 9DO 9EP, VQs 2GW 2IE 5, 2RB 8AD (67), VRs 1B 2DA (85) 5, 2DK 8, VSs 1AZ 4, 1JP 13, 4BA, VU2JY, W4GQM/KS4, XE1AX (105) 3, XW8AI (25) 12, YK1AT (77), YOs 2CD 3RI (82) 5, YVs 3BN 5AFR 5AHS 5BX 5EZ 5GO 6BI, ZBs 1FA (88) 0, 2I, ZC4s GT CS (55), ZDs 2HS 2MW (70), 2QT (49), 7SA, ZEs 3JO 8JJ, ZKs 1AK (58) 4, 2AD (44) 8-9, ZPs 5AY (90), 5HK 9AY, 4S7FJ, 4X4s GY JR JY, 5A3TR, 9G1CF, 9M2DQ and s veral questionable 9N1s.

20 phone yields ground to the beeper boys this month, K4s CEF RJN, K5s JPZ TER, W8s IBX KML, W9UBI*, W9QPI, EL4A, KZ5LC (129), KP4KD (96 on phone) and VE1PQ (113 likewise) turning up such finds as CN8s BB JR, DL4s GX* SD*, EA8BF, FM7WN, FO8AX (164) 15, FR7ZD (170) 12-13, HI8JBD, HRs 2DK 3HH, KAs 2AA 2DD ØIN*, KGs 4AL 6AIM (220) 14, KR6SS, KW6CL (220) 14, MP4BBW (315) 3, OD5LA, OQ5IE, PJ2CE, TG7CB (201) 4, UP2AT, VPs 1HA 1PF 7CA* (315) 1, VS9AH (330) 3 and DXpeditioner ZL3DX (315) 8, asterisks indicating single-sideband possibilities.

15 c.w. does well between magnetic storms, helping W2s GIX JGQ, K2s ALA QXG, W3CAZ, K4s CEF PHY RJN TEA, W5GAI, K5s ARV HYB JPZ TER, W7s DJU YAQ, K7ABV, W8s IBX YGR, W9JJN, K9GDF, WØQGI, KØLEQ, I1ER and EL4A to capture folk like CNs 2AQ 2BE 9CJ, CT2AI, CX2BT 1, DMs 2ACA 2ALN 3KML (74), 3KYN 17, DU1FM (70) EAs 6AM (57), 8CM 9AP, F2CB/FC 21, FAs 8EC 8JO (32), 8ZZ 9RW, FK8AI, FM7WU, FO8s AJ 19, HD (80) 22, HE, GC3CGK, GD3FXN, HA5s BU KAG (60) 4, HCs 1ET 21, 2IU, HP1GP (96), IT1AGA, JAs 1AG 1BKV (70) 22, 1CC 3AA 3FT 3SJ 3TT 4OP (55) 23, 5FT 7AD 22, 9GA, KA2DE 20, KC4USV, KG4AI (55) 0, LA1VC/g of Norway's antarctic holdings, LZ2KDO, OA3D (45) 2, OE9EJ, OD5LX (56) 4, OQ5s IG IP (53) 23, PJ2s CP ME, SL3AG 17-20 of the Swedish military, SPs 2DX 3AK 6NF 9DT 9KAO 18, ST2AR 7, SVØWP, TI2CMF, UAs 1KBW 4HP 4KED 5, 9VB ØKAR, UB5s KAB KCE MF UW 6, UN1AB, UQ2AB, UR2BU, VQs 2GW 6, 3CF 20, 3GC (50) 18, 4FK (89) 22, 4HT 5GQ, XE1s AAI AX, YN1MN, YO3KBN, YV5GY, ZBs 1JW (60) 22, 1US 2I, ZC4s AM RP (50) 23, ZD1EO (90) 20, ZE1JV, ZP9AY (100), 4S7NG, 4X4s FN (75) 23, FU IO (60) 23, 5As 2CV (55) 18, 5TO and 7G1A (50) 19. Now make way for the autumnal upswing!

15 phone dispatches disclose that W2s GIX JGQ, K2SFA*, K4s CEF PHY (127/109), RJN RYV, W5GAI, K5JPZ, W6JQB, W7YAQ, K7ABV, W8KML*, KØLEQ, DL4GX*, EL4A and GC2RS accumulated this assortment of 21-Mc. mikers: CE1BT, CN8FT, CO7AB, CXs 1NE 3AA 9BP, DL4GX*, ELs 2Z ØK/mm, FM7WU, GC2RS, HCs 1IF 6KA, HI8CM 0, HH2LD, HKs 1XT ØAI, HP1AC, KV4BI, KX6AF 4, LX1HM, OAs 4IGY 5N, OQ5s DG IK VD, OX3KW, PJ2AL, PZ1AA, SL7CN, TGs 7SS (260), 9TS, TI2s FFD WD, VPs 1GLG 4LP 5AA 5JW 5ME (330), 9ES, VQ4FK, VR2BC, XE1AAH, YA1IW, YNs 1MIN 1RE* (410), 1WW, YVs 3CB 5ACP 5HT, ZDs 2AMS 6DT, ZLs 1ADH (226), 1WP 4KI and 4S7BY, asterisks for s.s.b.

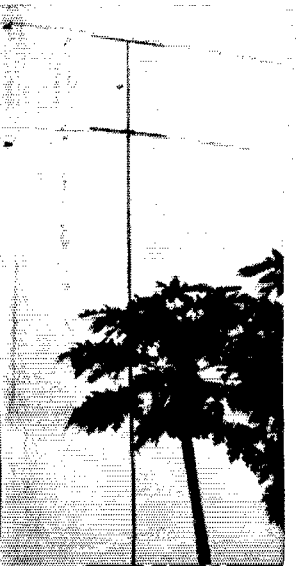
15 Novice shenanigans are shaping up for another zorch season. Meanwhile, KNs 1IVT (95/80), 3HWT (14/9), 5SLW (10), 6UMC 8NHC 9PNV and WV6CRQ merrily busy themselves with CEs 1DC 3AH 3NE, CN8GF, CT1CF, DM2s ACA ADC, DU7SV, EA8CP, FO8IIF, HH2s CB CL, HP1SB, IT1AGA, JAØAN, KL7CDF, KV4BI, LU8EN, OE1RW, ON4s PX WX, PJ2s CP ME, PYs 1BRA 2BTY 5IU, SP5s AR GJ, SM5WI, UA4KED, UC2BB, UQ2AN, VK4ZW, VPs 5BL 9EN, VQ2NN, W5FNB/KL7, WH6s CXD CYS DBF DEH, WL7CWH, WP4s AQB, AQK, YN5AV, YOs 2CD 3KBN, UY3VV, ZB2A and ZP5EC. Note that KN1IVT has a possible DXCC in prospect.

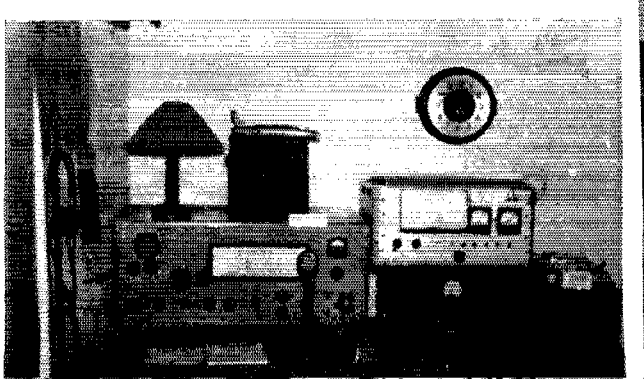
160 c.w., at this time of year, gives off subterranean rumbles of events to come. K2UYG hears that UA9CM and ZC4IP gird for 1.8-Mc. battle. ISWL sleuths perceive that Europe already is on the prowl with activity by GD3LXT, GI6TK, GM3KBZ, GW3LEW, HB9NL, OK1GA, UA3BS (1837) and YU1FC. Meanwhile, down on our ranch, W1BB and friends lay preliminary plans for their annual transoceanic attack.

80 c.w. hasn't hit stride yet but EA1AB, FA9VN, UAs 4FT 6WF 9DN 9KAG 9KCR 9KWB, UO5CA, ZL3QX and ZP9AY are deploying their 3.5-Mc. forces in the vanguard, according to ISWL, EL4A and K5HYB. All in all, it looks as though a humdinger of a DX season is shaping up once more for all bands!

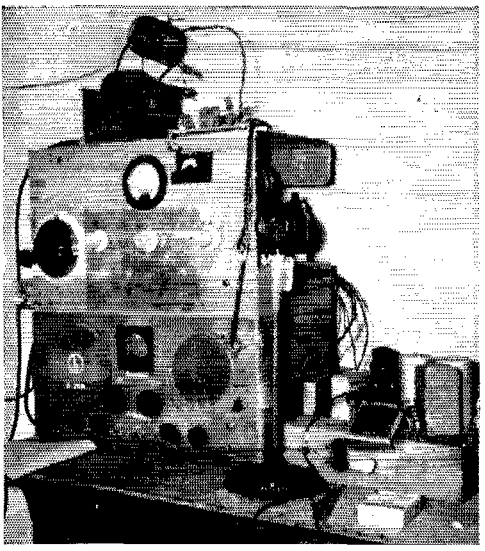
Where:

Asia — Mail routes in some areas of the world often are as rare as the countries themselves. In the case of YA1IW, for instance, VERON (Holland) points out that outgoing mail crawls 340 miles to Kandahar by truck, thence to Karachi by rail, and finally Statesward by more regular means. So it's easy to see why liaison between YA1IW and QSL manager W6DXI has lagged . . . VERON also confirms that KAØIJ operator Vince is reachable at 2553 Parkwood Av., Toledo, Ohio . . . Stationed at the scene, W8NYG of HL9KJ recommends Korea Amateur Radio League, Central Box 162, Seoul, for your HL-bound pasteboards. "There is no HL2AM now; this call was issued for an experimental license before the ITU ban was lifted in October, 1957. The call or group location was changed to HL9KR at that time and HL2AM was canceled, then bootlegged for a while until closed down." . . . ZC4PN ceased Cyprus operations on the 17th of May with this to say: "As I have QSLd one way or another 100 per cent, it's not really my fault if anyone still has need of my card. If I did not receive a W/K QSL direct by surface or air mail within 31 days of QSO, mine went forth via bureau." Pete





FE8AH luxuriates amid these hammy surroundings at Douala. Forty watts and rotary dipoles are sufficient to keep Jacques in close touch with the world of DX.
(Photos via W3s FWD HCO and ICQ)



FR7ZD uses this businesslike a.m. installation to provide Reunion Island DXCC credits freely near 14,170 kc. Guy's transmitter is a 6J7-EL84-807 v.f.o. arrangement with 6J7-6N7-6N7-6V6s modulator, and the receiver is a venerable S-20R. *(Photo via W8KML)*

finds that some DXers, apparently expecting immediate replies, ship their QSLs to overseas bureaus without considering the fact that most bureaus clear incoming cards on a once-per-month basis . _ . _ . _ WGDXC notes that W4ANE, handling QSLs on this end for XZ2SY, is occasionally held up by slow log shipments. QSOs for March and April of this year were particularly affected.

Africa — "Contrary to what postal guides may say, there is no air mail service to Tristan da Cunha," observes the *DX Bulletin* of WGDXC. "The route is air to Capetown, but boat from there. With good luck on sea schedules it still takes a good two or three months from the U.S.A." . _ . _ . _ W1AZW hears that 5A3TQ (ex-9K2AQ) gives quick reply by air to each QSL received with two IRCs and self-addressed envelope attached . _ . _ . _ CR4AV is another addition to W2CTN's QSL-service clientele as listed here last month — s.a.s.e. required . _ . _ . _ W8KX advises those who await ET2KY QSLs to stand by for action from Bob's new K4LUI/6 QTH. ET2VB is forwarding late incoming cards to ex-ET2KY. Bob writes Walt, "I have a large number of unanswered QSLs that recently came in but I'm unable to answer them until I can get at my logs."

Oceania — From K6TSQ/KG6, now back home: "Have QSLs all my Guam contacts except for the last two contests, and for these QSOs I answered cards received or heeded request made during contact. Those who have worked me and have not received cards direct should watch their local bureaus. I can be QSLd now to [the address following] or via the ARRL bureau." . _ . _ . _ "By the time this appears in print all QSLs for KR6AK contacts will have been forwarded to bureaus, including contest work, QSOs dating from May 5 to June 13, 1959. Any cards strayed, mutilated, etc., will gladly be replaced upon application to [the following address]. It s been fun!" . _ . _ . _ "I'm another who receives QSLs from stations not worked," observes K6QPG/KW6. "I wonder if anyone makes DXCC this way." (It has been *tried*, with considerable regret.) Mary also is bombarded by s.w.l. reports, one typical day's mail including five from Japan, five from UA1-3-4-9-Ø and one from Ireland . _ . _ . _ Add FK8AI to the rambling roster of industrious W2CTN's QSL-service beneficiaries. *All* DXers are beneficiaries in such arrangements, come to think of it . _ . _ . _ W2IHMJ notifies, "Ex-ZM6AS, now home, at ZL2ANB [QTH follows], will answer all cards received but desires no IRCs." . _ . _ . _ Ex-VR2DG-VE7AFP-VK4DE writes from new diggings at VK5BP: "Nearly all, if not all, FK8AS QSOs in the c.w. portion of the 1959 ARRL DX Contest were made with me at the key. QSLs for all these contacts have been sent via bureaus. I'm having more VR2DG cards printed to answer requests still being received. These must go via bureau unless IRCs are provided. I can be contacted at VK5BP for any further QSL inquiries." More about Ben's voyage with KN4TJI aboard *Dirigo II* appears in "Whence" . _ . _ . _ Through WGDXC, K4LNM declares that all VR5AC (ZL3DX) QSLs went forward by late June.

Europe — "Anyone who worked SVØWAE before April 17, 1959, and who did not yet receive confirmation should reapply to my new Alabama address [which follows]." This from K4ASR who requests s.a.s.e. from W/K applicants, IRCs from foreign petitioners . _ . _ . _ WGDXC notes that QSLs to the home QTHs of Aland Island DXpeditioners OH1s RX and SS will merit direct air reply at two IRCs each . _ . _ . _ Via ISWL, G3HTC declares his VP8CR QSL debts liquidated but welcomes further inquiries on the subject.

South America — OA4KF informs, "All QSLs for my OA7I contacts have been cleared, but if there are any questions, please check with me at my new address [see following]." . _ . _ . _ "HC1JU signed HC1XJ, a temporary call, until he met all the local amateur requirements. Monte still can be QSLd through K8CZJ." This from K4TEA . _ . _ . _ K4MQG encountered ex-VP8CC via the mike of G8KS. The former Grahamlander asserts he has QSLd all QSOs via the RSGB bureau. "Colin said he had answered hundreds of cards, plus a stack of s.w.l. reports."

Hereabouts — KZ5LC assures us that W/Ks *can* employ the KZ5KA bureau route to reach Canal Zone stations. Len also comments cogently on the interesting individualized QSL-manager kick now permeating the DX field, and he wonders what happens when two extremely rare DX stations armed with punctilious Stateside QSL managers finally work each other. Who QSLs first, and are the QSL agents likely to be trampled in the action? Life grows more complicated all the time, DX not the least of which . _ . _ . _ "If you happen to know of some poor overworked DX station who is weary of filling out QSLs, I would be glad to help him out," volunteers K5HYB . _ . _ . _ "What do you do when you ask your local postmaster for a few IRCs and he replies, 'What are they?' I have inquired at almost every town within a 60-mile radius of my QTH and, although a few postal employees recalled having heard the Coupons mentioned, none could supply them." Hmm — the curse of bigness and all that. Jeeves suggested a post card with inquiry to the PMG at Washington, but wait till K5KBS tries to run down some International Reply Postals . _ . _ . _ *K2UYG* muses, "I was working a ZL on 20 a while ago and found that he was using a 1948 *Call Book*. Let's send our more recent back issues to DX stations where they'll be put to good use." Additional moral: If you're a DX hound, never change QTH . _ . _ . _ All right, let's get down to cases. Like, you know, exactly where to and whereas:

CE3AH (via RCC)
CO2WI, E. Gonzales, Maloja 381, Havana, Cuba
CR4AV (via W2CTN)
DJ0BL (via W9KAL or DARC)
DL4LA (via K3AHR)
DL4SD, Col. W. L. (Lee) Martin, Signal Officer, 7th U.S. Army, APO 46, New York, N. Y.
DL4WO, S. Llewellyn, 603rd AC&W Sqdn., APO 12, New York, N. Y.
EA9s IA IB (via URE)
FE8AP, P. Minot, B.P. 77, Yaounde, Cameroons
FK8AI (via W2CTN)
FP8AB (*to K2JGG*)
FP8BG (to W1YIS)
FQ8HE, R. Crevisier, B.P. 298, Brazzaville, Moyen Congo, Fr. Eq. Afr.
HA5BU, Box 195, Budapest 4, Hungary
HC1IF, P. O. Box 69, Quito, Ecuador
HC2IU, H. Jirsak, Box 5200, Guayaquil, Ecuador
HC1JU (via K8CZJ)
HH2AD, P. O. Box 1103, Port-au-Prince, Haiti

1959 Pan-American Contest

Peru's RCP invites amateurs in North and South America to work one another in its 1959 Test, this to take place from 1200 Sept. 12 to 2400 Sept. 13 (phone) and again from 1200 Sept. 19 to 2400 Sept. 20 (c.w.), times Eastern Standard. The customary five- or six-digit exchange, made up of RS/RST plus QSO serial number, will prevail. One's own country may be worked once per band for purposes of multiplier, which follows the ARRL Countries List except that HP and KZ5 count as one. For score, multiply contacts, worth one point apiece, by total band-multiplier. Logs must include at least 20 contacts, including at least two OAs, and be mailed within 20 days to RCP, Casilla 538, Lima, Peru. A handsome array of prizes is available to winners in the various countries.

HL9KJ, USOM (Philco), APO 301, San Francisco, Calif.
HL9KR, Osan Air Base, Osan, Korea
IL1AIM (to I1AIM)
JA5AI (via K2QXG)
ex-K6TSQ/KG6, E. C. Baker, c/o Wm. Flaharty, 9111 Crenshaw Blvd., Apt. 1, Inglewood, Calif.
K8LTZ/VO1, R. J. Biss, Radio Dvn., AEWRON 11 (VW-11), FPO, New York, N. Y.
KC4USV (to K1NAP)
KL7DDD, APO 716, Seattle, Wash.
KP4AMY, J. Hallet, P. O. Box H2, Navy 116, FPO, New York, N. Y.
ex-KR6AK, F. D. Castle, WØNMH/4, 317th USASA Bn., Ft. Bragg, N. C.
ex-KR6BP, M/Sgt. Willard S. Purdy, jr., K1LHE, 42nd Opns. Sqdn., Loring AFB, Maine
KZ5RR, G. T. Roberts, Box 302, Albrook AFB, Canal Zone
LA4KG/mm, Radio Ofer., ONB, M/T *Tobiasuborthen*, c/o Fanfani & Co., Via Fiume 15, Livorno, Italy
LU9AH (via LU1EC)
MP4QAO, Bryan A. Bisley, c/o Aviation Dept., QPC, Umm Said, Qatar, Arabian Gulf
OA4KF, E. Kaleveld, Leonidas Avendano 145, San Isidro, Lima, Peru
ex-OA7I (to OA4KF)
OD5CG, F. Regier, Box 1408, American U., Beirut, Lebanon
OY8RJ, J. R. Jensen, Box 184, Torshavn, Faeroes Islands
PJ5CC (to W2BC)
PX1DE (via W2KUW)
PX1PF (to DL9PF)
PY4CB, H. Fontes, P. O. Box 41, Juiz de Fora, M.G., Brazil
ex-SV0WAE, H. T. Cogburn, K4ASR, 2414 Cone St., Mobile, Ala.
TI2IL, P. O. Box 4155, San Jose, Costa Rica
UA0LA, P. O. Box 29, Vladivostok, U.S.S.R.
UC2KAB, Post Box 71, Minsk, U.S.S.R.
VE8TQ (non-VEs via VE1FQ)
VK5BP, B. R. J. Pooley, 13 Spruance Rd., Elizabeth East, S. A., Australia
VP3IG, P. O. Box 231, Georgetown, British Guiana
VP5JW (via KØLFY)
VP5ME (via W5TGY)
VQ2RD (via K6VYU)
VQ3GC, N. Jackson, Box 164, Tabora, W. Tanganyika
ex-VR2DG-VK4DE (to VK5BP)
VS9AIR, Box 1185, Aden, Aden
VS9MB (via K2QXG)
W4GQM/KS4, F. Finger, 529 Altara Av., Coral Gables, Fla.
W5YQO/VE8, R. E. Simon, 920th Sqdn., Frobisher Bay, N.W.T., via Montreal, Canada.
W9ZFZ/KL7, H. F. Smith, APO 716, Seattle, Wash.
XE1AAH (via LM1RE)
XEØWYC (via LM1RE)
YA1TD (via W6DXI)
YK1AT, B. Hurek, Box 2249, Damascus, Syria, U.A.R.
YS1MM, M. Molina, P. O. Box 1561, San Salvador, El Salvador
YS1MS (VEs via VE3AMI)
YS1RE, R. Daglio, P. O. Box 517, San Salvador, El Salvador
YV5s ADP AHB, P. O. Box 2755, Caracas, Venezuela
YV6BF, L. A. Hernandez, Calle Bello 101A, Puerto Ordaz, Venezuela
YV6BS (to YV6BI)
ZC4CS, Signal Regt., Nicosia, BFPO 53, Cyprus
ex-ZC4JU (to G3JU)
ex-ZC4PN-DL2SU (to G3ICH)
ex-ZC4RP, S. J. Butlin, 148 Yew Tree Ln., So. Yardley, Birmingham 26, England

VK/ZL DX Contest

The WIA, of Australia, invites world-wide participation in the 1959 VK/ZL DX Contest on October 3–4(phone) and October 10–11(c.w.) from 1000 GMT Saturday to 1000 Sunday. VK/ZLs will work as many non-VK/ZLs as possible and, of course, vice versa. The serial exchange is the usual five-digit(phone) and six-digit(c.w.) figure — RST001, RST002, etc., and your initial Test QSO can start with any number between RST001 and RST100. Score five points per contact, each station to be worked once per band, with fifty "bonus" points for each different VK/ZL call area worked per band (ZL1, 2, 3, and 4; VK1 through Ø, excluding VK8). Log the date, GMT, band, call, and serial numbers sent/received in that order, indicating contact and bonus points for each QSO in right-hand columns adjacent. Attach a summary sheet bearing total claimed score, a brief station description, and a signed declaration that rules have been observed. Entries must be postmarked not later than October 31, 1959, and addressed to the Federal Contest Committee, WIA, Box 2611W, GPO, Melbourne, C.1, Victoria, Australia.

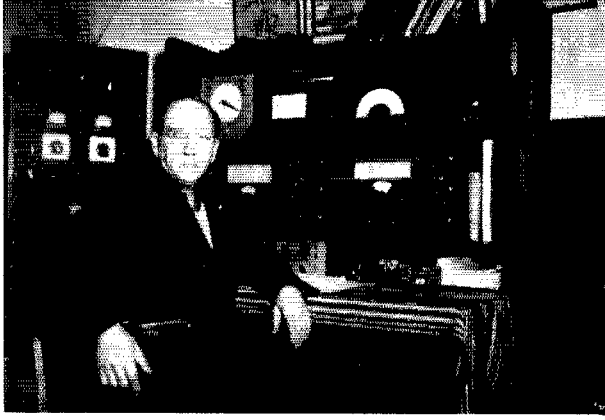
ZE1JV (via KØDQI)
ZK2AD (via W6ZVQ)
ex-ZM6AS, F. H. Fenton, ZL2ANB, 28 Blake St., Waitara, N. Z.
ZP5JP, Lota de Rodriquez, Box 832, Asuncion, Paraguay
4S7FJ (via W5GHK)
5A2CW (to G3JFC)
7G1A (via CAV, attn. OK1PD)
9M2GB, c/o R. W. Gray, 7 Roseberry St., Christchurch, N. Z.

Thanks to Jeeves & Co. for the foregoing would be grossly misdirected, for W1s CCM DGT ELR, K1IFJ, KN1IVT, W2s HMJ IWC MUM, K2s ALA QXG SFA UYG, W3s GAU NHA, K4s CEF PHY RJN RYV ZKI, KN4FMA, W5JPC, K5s KBS TER, W6KG, W7s DJU YAQ, W8s CSK GIU KX NYG YGR, W9s JJN SFR, WØs QGI QPI, DL4GX, D. Claunch, A. Rugg, DeRidder DX Club, DX Club of St. Louis, Hamfesters Radio Club, Hong Kong Amateur Radio Transmitting Society, International Short Wave League, Japan DX Radio Club, Northern California DX Club, Southern California DX Club, VERON *DXpress* and West Gulf DX Club really brought you the bacon.

Whence:

Europe — This month SRAL (Finland) sponsors the first Scandinavian Activity Contest, a potential gasser for the competition-minded DX buff. Amateurs throughout the world are invited to participate on c.w. (1500 GMT September 19th to 1800 on the 20th) and phone (September 26th-27th, same times), the objective for non-Scandinavians being to work as many LA LA/p OH OHØ OX OY OZ and SM-SL brethren as possible, each station once per band, on 3.5 through 28 Mc., single-op or multiop classification. The serial exchange is the usual RST001, RST002, etc., the "T" dropped for phone. Scoring? At one point per completed QSO, multiply all QSO points by total band-multi-

YA1PB, since early May, has enabled many a 20-meter phone DXer to catch Afghanistan for the first time. A special aerial survey assignment makes such an exotic field day possible, together with rugged ART-13 and BC-348 gear. Second-op Bill is shown in the interior view, Paul and their Afghan interpreter in the front-yard shot.
(Photos via KH6OR)



CE4AD and CE3DZ are two of Chile's best-known long-distance specialists. As east-west propagational paths slowly deteriorate with decreasing sunspot activity, Adalberto and Alfredo will find themselves shouldering increasing loads of North America DX contacts. ***(Photos via W1s VG and RST)***

pliers, the aforementioned prefixes accounting for a possible maximum of forty. (LJs apparently are lumped with LAs as in the Swedish case.) Log transcripts are to include the date, GMT, station worked, number sent, number received, band, notation of new band-multiplier and operator signature(s), and must be mailed no later than October 15, 1959, to SRAL, P. O. Box 306, Helsinki, Finland. "Two highest scoring stations in both operating classes, separately on c.w. and phone, will receive Contest Award certificates in each participating country as well as in each participating U.S. call area." It's a golden opportunity for the acquisition of Finland's OHA, Denmark's OZ-CCA, Norway's WALA and Sweden's WASM diploma. Next year's affair will be sponsored by SSA (Sweden), then Norway and Denmark before Finland's turn comes 'round again. Clear that North Atlantic path, WWV! . . . . . Via W2ECU comes word that I1ADW plans c.w. action from the Vatican this month or next with 50 watts on 14 and 21 Mc. . . . . IP1ZGY, operated by IT1s ZGY GO and PA in the Pelagian Islands in April, piled up 1250 contacts including some 600 with W/K comers, statistics courtesy K2UYG . . . . . HB1TC/fl, manned in Liechtenstein by HB9s TC TF and UZ early this summer, amassed 650 DX contacts plus 32 v.h.f. QSOs. "The Principality still is a much desired country. Very often, on account of the great competition, we had some trouble hearing stations calling." Another problem, of course, is that ambiguous suffix, "/fl", quite enough to convince the uninitiated that they are hearing French Somaliland. We vote for return to the old crystal-clear "/HE" appendage . . . . . K7CCC (ex-WØGCT) concludes a three-week U.S.S.R. visit this month. Murph handled an RCA color-TV exhibit at Moscow's American Fair . . . . . DL4GX of recent I1EZZ/M1 fame has friendly but firm local QRM from his boss, DL4SD. The pair vie for s.s.b. DX on 15 and 20 meters . . . . . SM5WN/LA/p terminated his Svalbard DX spree on a skeletonized Saturdays-only hamming schedule because of generator fuel shortage . . . . . OY7ML's pet sideband slots are 14,303, 14,306 and 14,319 kc. W3ICQ finds Martin readying a 1625s Class AB_1 linear for higher peaks . . . . . W7DJU revises our caption for that June photo of UA3FM and daughter. The little lady's label is Lena, not Carol. "A rose by any other name . . ." . . . . . Club Continental comments from VERON, WGDXC, NCDXC and HKARTS: EA2s CA and CB, thanks to W2KUW's KWM-1, added PX1DE laurels to their July EA9DE triumph. Next objective? Rio de Oro. . . . HV1CN, with a 120-ft.-high 2-element beam, moves toward 150-watt s.s.b. status. . . . W6SAI closed his 3A2AF DX books after collecting some 70 countries and 1600 W/K QSOs. At the end of a leisurely tour of picturesque European points Bill should be home in L. A. by now.

Asia — Cyprus briefing by G3ICH, recently ZC4PN: "After two years I wound up with 123 countries worked and about 100 confirmed. I expect to claim DXCC when I return to the U.K. in August or September. But I got nowhere near WAS, only 36 worked with 31 confirmed. Never even heard South Dakota and Vermont! I think activity here was at an all-time high last season but now lots of ZC4s are going QRT. However, three recently licensed stations in Nicosia are ZC4s MM RK and SR. Late shutdowns in the Nicosia area include ZC4s GS JC (a GC-type back home), JU (returning to G3JU) and QK." . . . . . Regarding the YA1PB photos appearing in these pages, KH6OR adds, "It's truly an operation from a rockpile. Enough rocks had to be scraped away to permit room for that tent. They are on top of a 6500-ft. mountain and even their drinking water has to be carried in. That one tent is their castle and serves as home and hamshack." According to K4CEF, VQ4FM finds YA1PB most workable around 14,200 kc. at 1630 GMT. Neighbor YA1IW regularly tries 21,250 kc. between 1550 and 1630 . . . . . VU2CQ's first sideband QSO was with friend W8OUH. Mickey further writes, "After operating a.m. for thirty years I now have s.s.b. on 14, 21 and 28 Mc. with the May '58 *QST* outfit, somewhat modified." VU2CQ should have his 807 final replaced by an 813 linear by the time this gets around, and gives warm thanks to the W/K friends who aided his sideband switch with parts and advice . . . . . From our Korean correspondent, W8NYG: "HL9KR was reissued in early July making a total of five calls over this way — HL9s KJ KR KS KT and TA. The latter is a club-type station with eight operators including Miss Im, the first Korean YL ham. HL9KR is active at Osan Air Base with c.w. on 7015 and 14,030 kc., a.m. on 7090 and 14,180 kc." W8NYG, as you may recall, formerly signed SVØs WD WX and KR6MN . . . . . W4IUO ran across SM6AZL/mm radiating a fat signal on 14 Mc. from the Red Sea area . . . . . HB9EU and SM5LL turned in the top non-4X4 scores in Israel's Jubilee DX Marathon which ran from April to October of last year. High totals on other continents were recorded by FA9VN, LU9FAY, UA9DN, W3IMV (W4KFC second) and ZL1APM. Other victors by country: CE3AG, CO7PG, CR7LU, CT1PK, DL2AE, DM2AHD, F8PI, G3LZF, HA5KDQ, I1RC, KP4KD, KR6JF, LA5QC, LX1DE, OE1HJ, OH1RX, OK1HI, ON4EG, OZ1JW, PAØVB, PY4CB, SP7HX, TG9US, TI2WD, UB5KAG, UC2AR, UD6KAB, UF6FR, UP2AT, UR2BU, VE3JZ, VK3CX, VQ4KRL, XE1AE, YO2KAC, YS1O, YU1SF, ZC4IK, ZE6JL, ZP5CF and ZS6ASR. Leading the home team were 4X4s KK and GY . . . . . MP4QAO, who expects to be quartered in Qatar for two years or so, tells W1ELR he clobbered over 100 countries in his first five days of action there, and now is putting the finishing touches on WAS . . . . . Nebr., Wyo. and Utah are bugaboos for BV1USB. In fact WØBTD, returning to the DX fray after an eight-year layoff, is tempted to invade Nebraska from Missouri to help finish off a few WASs at the DX end . . . . . Asian items courtesy HRC, DXCSL, VERON, ISWL, WGDXC, SCDXC and HKARTS: YA1IW should be around for a few more months. . . . HB9VW intimated possible Afghanistan activity on his part around now. . . . VE3EGD/SU aims for more VE3EGD/ZC6 work, a.m. fashion. . . . AC5SQ, formerly AC3SQ, is said to be workable each Sunday near 14,185 kc., 1200 GMT. . . . SV1KH is believed heading for Yemen and possible 4W1KH doings with 200 watts on 15 and 20. . . . CR8SM shakes up the mike mob near 14,130 kc. . . . VS6DS, able HKARTS *News Letter* editor, relaxes on U.K. leave. . . . A few English-speaking Siberian phones: UAØs KAA KAR KCA KIA KKB and LA.

Africa — ET2KY knocked off in Asmara, leaving Eritrea considerably rarer on DX bands. Bob writes W8KX, "I doubt if there will be much c.w. activity in ET2 for some time to come. ET2VB will be there for at least another six months but he burned up his plate transformer the other day. The boys at ET2US are showing some c.w. interest since the government put the lid on their third-party phone traffic but they're not enthusiastic about it. My next assignment will be the last prior to my retirement from the Army next year. Then I can really start building ham gear, knowing that I won't have to move around." . . . . . W9CKB, materiél services chief for the United Christian Missionary Society, plans to make use of March '56 *QST* receiver ideas in outfitting a mission communications net in the Belgian Congo. He formerly signed W6JUQ . . . . . Cotton scientist ST2KO (G3JKO) departed the Sudan in favor of Nigeria but K2UYG finds ST2AR still available . . . . . Further notes from EL4A (W7VCB) on ham life in Liberia: "Total QSOs now 825, 232 added in June, for a 105/40 DX record in 90 days of activity. I still

need Liberia! Several breakdowns, poor summer conditions and five days of malaria held me down. The ARRL Field Day certainly crashes the DX end, for I heard only a solid wall of QRM that week end. I've been using the company rig so far and it cramps my style, but my own gear will be here at any time. Several fellows have asked me to get on in Togoland, which I'll do if it can be arranged. My biggest gripe right now is the large number of African and South American phones that continually overmodulate, buckshotting wide portions of each band with splatter. It's really rugged." Every continent has its share of hash-producers, so we'll broaden Ken's indictment . . . . . EA3s GF and IS followed EA9DE into Ifni with a summer session as EA9IA. Then EA4s FU and GA undertook a mopping-up action there as EA9IB . . . . . The Nyasaland notion of ZEs 3JJ and 8JJ headed them for the highest spot in ZD6, according to W1ELR. WØBTD adds that ZE8JJ admits to early VQ1 operational intentions . . . . . VERON and WGDXC add these Africa sundries: A Czech signing 7G1A in Guinea on 15 and 20 c.w. is a newfangled DX variety. . . . FB8ZZ frequently round-tables with F2FB, FB8XX, FR7s ZC and ZD on phone near 14,290 kc., but brush up on your French. . . . . EAØAC tries sideband near 14,305 kd. daily from 1500 to 1600 GMT with additional Wednesday and Friday sessions at 0700-0800. . . . ZD9AC of Tristan schedules ZS3VC on Sundays at 0730 on 14 Mc.

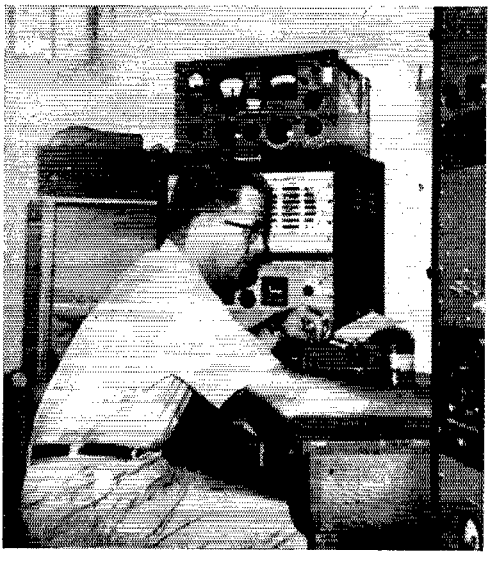
Oceania — Odyssean oddment from ex-VR2DG, now VK5BP: "As already noted in your columns, I left Fiji at the beginning of the year with KN4TJI on his 60-foot schooner, *Dirigo II*. I operated on board as VR2DG/mm but this activity was very limited because the batteries couldn't stand much drain. The rig was a Globe Chief running 90 watts, the receiver an English Eddystone 750, and the antenna a piece of wire up the 60-foot mainmast topped by a wire-wrapped bamboo pole. I also used my own 15-watt transmitter occasionally. We went to New Caledonia from Fiji where we stayed two months and, thanks to FK8AS, I was able to do some operating there. We were hoping to go to the Chesterfield Islands following FK8 but the wind would not permit this. Instead we went straight to Brisbane where we anchored on April 16th. All my Fiji mail since January 8th had been forwarded to Brisbane so General Delivery presented me with quite a stack of QSLs to answer! These kept me so busy that I found little time to use my new call, VK4DE. Then I got a job here in South Australia and I'm on the air now as VK5BP. But I still have intentions of working my way slowly around this old globe.!' . . . . . Another rover, HB9QP, signed ELØA/mm in QSO with W7YAQ while sailing the North Pacific . . . . . W2HMJ finds ex-ZM6AS back at ZL2ANB on 20 c.w., still intending a future ZM7 activation . . . . . W9JJN identifies Ponape's KC6ZZ as ex-W3AFM, 14-Mc. c.w. preferred . . . . . OT W9UJ also gets around from Danville, Ill., home base, having recently brought his suntanned hide back from a South Pacific sojourn . . . . . K6QPG/KW6 and OM KW6CQ personally visited DU1s AL GF SA, JA1CAS, KA2HA and other DX colleagues on summer tour. Mary understands that KW6CX soon will scoot for Eastern Carolines assignment. "At K6QPG/KW6 we keep the Ranger and HQ-150 running continuously to ward off humidity. I do not use any special frequency what with QRM from radioteletype, FAA rigs, and a near-by scatter system to contend with. Doing lots of swimming and fishing lately — time sure flies!" . . . . . K6TSQ/KG6, closing down for return to Uncle Sugar, writes, "I've had a very enjoyable tour on Guam for the past thirty months thanks to hams the world over. Haven't counted my QSOs yet but there must be several thousand. Guam has a few new Novices who are looking for QSOs on 15 meters, WG6s AIV and AIW among them. Marianas Amateur Radio Club is in process of making up certificates for a Worked All Guam award which will replace the Worked All Coral Isle Radio Club certification. Five QSOs with five different KG6s since January 1, 1959, will qualify one for this wallpaper. I'll be looking for all my c.w. friends again as soon as I can get set up in San Diego." You may have worked Earl in other days as WØIQP, W7PVS or OX3BF . . . . . Pacific notes via VERON, WGDXC, HRC and DXCSL sources: VS5GS made it all the way to 5A5TO on 0.2 watt. . . . The ZK3 prefix may soon see action on Nauru. . . . ZC5BE is quite amenable on 21,275-kc. s.s.b. . . . KC6KR offers Western Carolines around 14,055, 1000 GMT. . . . VK9AD retreated under recent pile-up pressures, feeling that some W/K DX-chasers are getting out of hand. Next month may be Stan's last stand on Norfolk.

Hereabouts — KG1AQ continues very workable with WA6CEJ, W4WRL and K1CQP at the buttons. K2UYG notes this, and also alerts us for another potential contest wizard: WV2GHD, nephew of W2IOP, now practicing up with a Ranger and RME-4300 . . . . . Those YL types are moving in, men. K6GAC assumes editorship of the So. Calif. DX Club *Bulletin*, a periodical of long and substantial standing in the DX community . . . . . "OA7I is no more," writes OA4KF, relinquishing his rare Andes status for a Lima location. "Most of the OA7s remaining are interested only in 7-Mc. phone rag-chewing, so the prefix will be hard to catch. I hope to be very active again from OA4KF, mainly c.w. Anyone interested in 7-1 or 3.5-Mc. Peru contacts can make skeds with me. I also still hold my Dutch call, PAØXE." . . . . . Via G8KS, K4MQG learns from VP8CC that the latter had to abandon his gear to Grahamland's icy grip when he returned to England . . . . . Last month

(*Continued on page 166*)

1959 Labre Contest

Brazil's LABRE Contest for 1959 will be held the first two weeks of September. The c.w. section will be held 0001 GMT Saturday Sept. 5 through 2400 GMT Sunday, Sept. 6; the phone section 0001 GMT Sept. 12 through 2400 GMT, Sept. 13. The customary five or six-eight digit exchange, made up of RS/RST plus QSO serial number, will prevail. Contacts between amateurs (a) in the same country count zero points but are permitted for the purpose of obtaining multipliers; (b) in different countries outside the American area each count one point; (c) in different countries in the American area each count two points; and (d) in the American area and in all countries of the world count three points. One may work anybody for contact points, multiplier credit, or both. Only the 3.5 through 50 Mc. bands may be used, with no cross-band contacts allowed. LABRE's "American area" agrees with ARRL Countries List entities in North and South America. Multipliers: one for each American-area country and one for each Brazilian call area (PY1–9) contacted per band. Multiply total QSO points by total multiplier for score. Certificates for first and second place in each country in single- and multiband (three or more bands) categories when your log, postmarked by December 30, is received by the LABRE, Contest Commission, Caixa Postal 2353, Rio de Janeiro, Brazil.



ET2KY, just returned home to K4LUI/6, worked well over 100 countries and a logful of W/K/VEs with a ground-plane atop the heights of Asmara, You may have worked Bob previously as W2EAL, W2EAL/KL7, W6MHP and W7ZHS. ***(Photo via W8KX)***

Happenings of the Month

Election Notice

Technicians Get 145-147 Mc.

ELECTION NOTICE

To All Full Members of The American Radio Relay League Residing in the Atlantic, Canadian, Dakota, Delta, Great Lakes, Midwest, Pacific and Southeastern 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 1960–1961 term. 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 21. 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 1960–1961 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 21st day of September, 1959. 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.

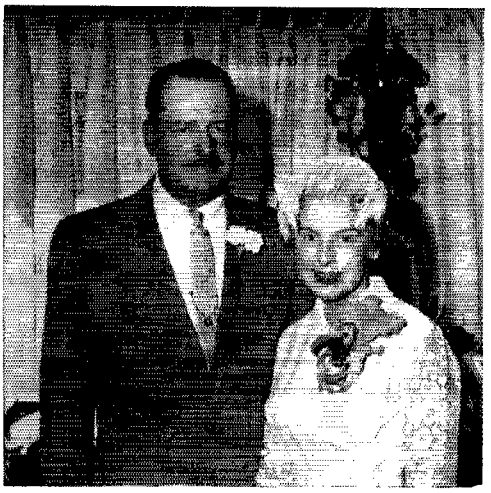
League members are classified as Full Members and Associate Members. Only those possessing Full Membership may nominate candidates or stand as candidates; members holding Associate Membership are not eligible to either function.

Voting by ballots mailed to each Full Member will take place between October 1 and November 20, except that if on September 21 only one eligible candidate has been nominated, he will be declared elected.

Present directors and vice-directors for these divisions are: *Atlantic:* Gilbert L. Crossley, W3YA, and Charles O. Badgett, W3LVF. *Canadian:* Alex Reid, VE2BE, and

It's fast getting to be unanimous—45 states, 5 Canadian provinces, Puerto Rico and the Canal Zone now issue call-letter license plates to amateurs. In Alberta, the drive for the privilege was led by the Northern Alberta Radio Club. Here club president VE6KC and VE6BY flank provincial Premier E. C. Manning as he presents a plate bearing the club call.

ARRL's President and First Lady —



WØTSN AND W5DEW

Don't be startled if you hear a soft, feminine voice sharing the mike with the resonant baritone at WØTSN. ARRL's President Goodwin L. Dosland and Mary G. Palmer, W5DEW, widely known as the "Dew Drop of Texas" (see page 60, March QST), were married at our prexy's home in Moorhead, Minnesota, on July 31. Hearty best wishes to Dos and his lovely bride!

William R. Savage, VE6EO. *Dakota:* Alfred M. Gowan, WØPHR, and Charles G. Compton, WØBUO. *Delta:* Victor Canfield, W5BSR, and Sanford B. De Hart, W4RRV, *Great Lakes:* John H. Brabb, W8SPF, and Dana E. Cartwright, W8UPB. *Midwest:* Robert W. Denniston, WØNWX, and Sumner H. Foster, WØGQ. *Pacific:* Harry M. Engwicht, W6HC, and Ronald G. Martin, W6ZF. *Southeastern:* James P. Born, W4ZD, and Thomas M. Moss, W4HYW.

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

For the Board of Directors:
July 1, 1959

A. L. BUDLONG
Secretary

TECHS ON TWO

Technician Class licensees are authorized to operate, effective August 21, 1959, in the same portion of the 2-meter band available to Novices. FCC modified its original proposal in Docket 12728 by limiting the new privileges to the 145–147 Mc. portion of the band in its Report and Order adopted July 15. The text of the Commission's decision follows:

FEDERAL COMMUNICATIONS COMMISSION

Amendment of Part 12 of the Commission's Rules, Amateur Radio Service, to permit operating privileges for the Technician Class amateur operator in the 144–148 Mc. band.	Docket 12728

REPORT AND ORDER

By the Commission: Commissioner Lee absent.

1. On January 7, 1959, the Commission adopted a Notice of Proposed Rule Making in the above-entitled matter which was released on January 13, 1959, and published in the Federal Register of January 16, 1959 (24 FR 396). In that Notice it was proposed to amend Section 12.23(d) of the rules to permit the holders of Technician [1] Class amateur operator licenses to operate in the 144–148 Mc. amateur band. Ample opportunity was afforded interested parties to submit comments in support of, or in opposition to, the proposed amendment, and the time allowed for filing such comments has expired.

2. Rule changes proposed in this proceeding were engendered by a petition filed by Mr. Robert K. Wallace, R. R. 1, Box 7, Bellbrook, Ohio, licensee of amateur station K8BYQ.

The Commission has received a very large number of comments, both for and against the proposal, from individuals and from organizations representing large numbers of interested parties including the American Radio Relay League, Inc.,[2] and a number of amateur radio clubs.

3. The League filed its comment in support of the proposed amendment to the rules and stated: ". . . We agree with the Commission's conclusion that several of the pertinent considerations have undergone changes in the four years since a similar proposal was dismissed, largely at our request. The League feels that, in general terms, the arguments set forth are valid and meritorious."

The principal arguments which were advanced by comments supporting adoption of the proposal may be summarized as follows:

(a) "The 144–148 Mc. band offers a 'stepping stone' between techniques of communication in the HF region and those in existence and under development for the UHF region. (Example: 144 Mc is probably the lowest amateur-assigned frequency for effective application of parametric amplification techniques now being developed.) This band thus offers a real challenge in advancing the state-of-the-art as well as the achievements obtainable from known techniques." Furthermore, it offers the less experienced amateurs an easier transition to the higher VHF and the UHF than the present span of 50 Mc. to 220 Mc.

(b) "The normal short range propagation characteristics of the frequency band under consideration make it well suited to limited range emergency communications."

(c) "Civil Defense activities will be accelerated inasmuch as there are many areas which utilize the band for their activities, and which do not utilize the 50–54 Mc. amateur band." This would be the "best band for civil defense work open to all amateurs."

(d) "In case of emergency (CD nature) it would create a pool of skilled operators on a band that would be more useful for short range communications than 6 meters 50–54 Mc.'

(e) The Civil Air Patrol and the Military Affiliate Radio System will be assisted because CAP and MARS personnel who are "Technicians" will be encouraged to purchase VHF equipment capable of being operated on the CAP and MARS VHF frequencies adjacent to the 144–148 Mc. amateur band as well as in that band.

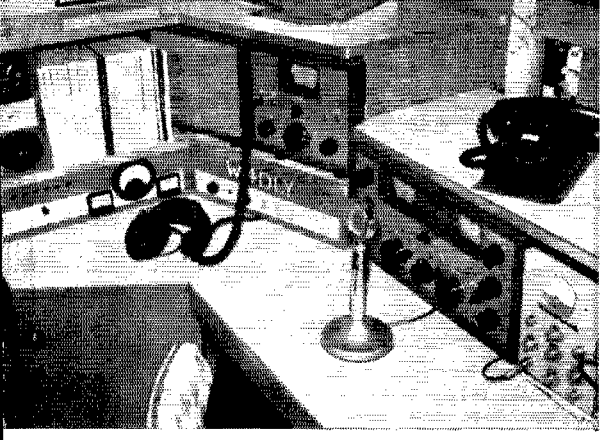
(f) The rule change would provide a common meeting ground "wherein Novice and Technician licensees may communicate with each other . . ." on the same band ". . . whereas none now exists."

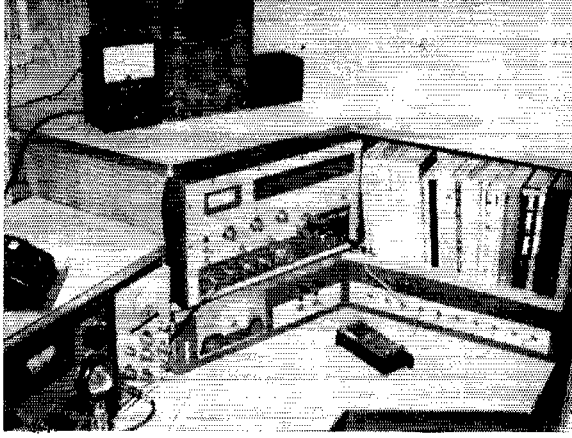
(g) It would relieve an economic hardship now imposed upon Novice licensees who progress to the Technician Class but not to the General Class in that they would, under the proposal, be enabled to continue use of their 144 Mc. equipment.

(*Continued on page 158*)

[1] Hereinafter referred to as "Technicians."

[2] Hereinafter referred to as the League.





Never underestimate the power of compactness. W4DLY sends these photos of equipment he had installed in a trailer bedroom while he was a radar controller for the Air Force in Virginia. W4DLY, Richard Johnston, is now home again in Newington, Conn.

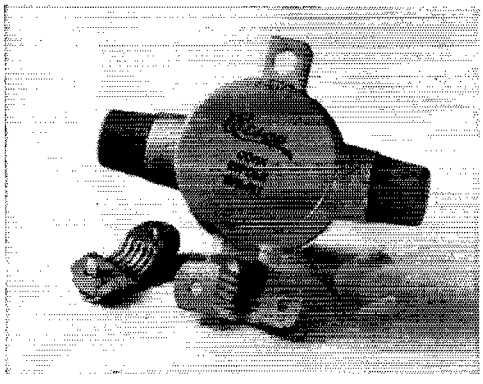
The room was air conditioned (behind the receiver). Antennas were a High-Gain vertical, a tri-beam and a v.h.f. beam. Parts and tools were stored in the cabinets left and right of the sitting position. The room was originally designed as a child's bedroom. "The reason I got so much equipment in the trailer," said W4DLY, "is — I guess — because I'm a bachelor."

The left photo shows a variac, push-to-change ledex controlled antenna switch, voltmeter, frequency meter, ampmeter and telephone monitor amplifier, speaker, GSB-1 sideband adapter, GPR-90 receiver and Heath Sideband adapter. The right photo shows a GPR-90 receiver, Heath sideband adapter, Heath Apache, s.w.r. bridge, two antenna rotor controls and master electrical control panel.

• *New Apparatus*

New Antenna Connector

THE Cesco Dri-Fit connector shown in the accompanying photograph is a cast-aluminum fitting that has been designed to provide a weatherproof and mechanically-rugged joint between a coaxial line and the center of a dipole



antenna. Both sides of the connector have flat round snap-on covers, fitted with neoprene gaskets to keep moisture out, which can be removed to give access to the inside of the casting. The ends of the dipole wires are pushed through small holes in the neoprene-capped "ears" that protrude from the circular body of the connector. One of the ears has a plastic insert which insulates one leg of the dipole from the connector itself; the other is uninsulated, thus the dipole wire on this side is directly connected to the fitting. With a coax transmission line this side is connected to the outer conductor. Small loops at the ends of the dipole wires will prevent their being pulled out through the ears when the antenna is erected, and these loops also can serve as soldering terminals.

Any of the ordinary types of coaxial line can be used. With small-diameter cable such as RG-58/U the plastic sleeve shown at the right can be slipped over the line to make a tight joint where the line is clamped in the fitting.

The eye on the top of the connector can be used to support the antenna at the center. The entire assembly measures 3¼ inches across 3 inches high, and 1¼ inches deep, and weighs 2 ounces. The manufacturer is Continental Electronics & Sound Co., 6151 Dayton Liberty Road, Dayton 18, Ohio.

September 1934

. . . The editorial commented that ham radio's biggest practical problem continued to be the interference caused by congestion, and suggested that three solutions to this problem were more frequency space, technical improvements, and better operating practices.

. . . R. B. Dome discussed increased radiating efficiency for short antennas by top loading.

. . . Ross Hull described experimental gear for 2½ and 1¼ meters.

. . . Ludlum Smith, W6BJM, described a simple method of break-in.

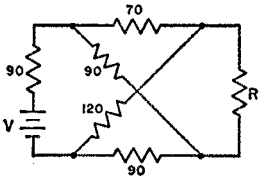
. . . There was a report on the sixth International Relay Competition. It is interesting to note how many of the high scorers twenty-five years ago are still active.

. . . Also a report on the second ARRL Field Day. All the scores were contained in about three quarters of a column of *QST* space. Compare that with the report of the 1958 Field Day in *QST* last December.

. . . Lester Yates, W1KQ, discussed automatic vacuum-tube regulation control for power packs.

If you are handy at juggling networks you won't have any trouble with this month's Quiz, sent by F. R. Neuenschwander, W5FQR, of Austin, Texas. If it turns out to be over your head, you can rest assured that you are not alone.

In the circuit shown, what value of resistance at *R* will receive maximum power from the (perfect) voltage source? (W5FQR admits this isn't the most efficient way to transmit the power!)



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Solution to last month's black-box-and-voltmeter query, in case you didn't get it, was that the box contained a set of N (the large number) a.c. generators, each operating on a different frequency and each delivering the same r.m.s. voltage. Each generator has a terminal going to one of the N terminals and another to a common that is not brought out. Thus a measurement between any pair of the N terminals will measure the r.m.s. of two generators in series, each of different frequency and the same voltage. The net r.m.s. value is the square root of the sum of the squared values of voltage.

Silent Keys

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

W1ACD, Michael J. Sands, Riverside, Conn.
W1CG, Wylie F. Woodworth, Ipswich, Mass.
K1DQL, The Rev. Francois R. Boudreau, Woonsocket, R. I.
W1GHU, Wesley O. Davis, Leicester, Mass.
W1VCJ, Peter F. Popko, Wellesley Hills, Mass.
W2ATT, George J. Doherty, New York, N. Y.
W2BIF, William S. Carpenter, East Orange, N. J.
W2CEC, Henry W. Linker, Wawarsing, N. Y.
W2CGG, Garth G. Sheldon, Livingston, N. J.
W2DOY, Elmer H. Bond, Pompton Lakes, N. J.
W2ICV, Victor P. Rolleri, Newark, N. J.
W3OXQ, Vernon W. Kroamer, Sellersville, Pa.
W4EVL, James R. Humphreys, Birmingham, Ala.
W4KUG, Ernest Morris Stuckert, Alexandria, Va.
W4NZB, Harry Heath, Orlando, Fla.
K4OTG, Eugene A. Grumich, Fairfax, Va.
W5DOK, Charles L. Culley, Melville, La.
W5FLS, John C. Wood, jr., Tyler, Tex.
W5HB, Olin L. Cox, Grand Prairie, Tex.
W5HJF, Junius G. Hancock, Portales, N. Mex.
W5ITF, Charles F. Gillespy, Newkirk, Okla.
W5JOH, Neal L. Radford, Metairie, La.
W5LEZ, John Grady Owen, Dallas, Tex.
WV6EGD, Richard A. Kneppel, Elk Grove, Calif.
K6JKK, John D. Sutherland, Santa Cruz, Calif.
W7APD, Joseph G. McKay, Rainier, Ore.
W7OXN, Mark Langdon Hill, Tucson, Ariz.
W8ADX, Harry L. Donegan, Niles, Ohio
W8CRN, Anton K. Rehor, Cleveland, Ohio
K8JGI, Edgar A. Hike, St. Petersburg, Fla. (formerly Kalamazoo, Mich.)
W8ND, Carl H. Wesser, Wyandotte, Mich.
W8QIE, John G. Hunt, West Middletown, Ohio
W9TQX, Leslie W. Galloway, Hammond, Ind.
W9WI, John Arthur Holmes, Rockford, Ill.
WØBP, Boyd Phelps, Minneapolis, Minn.
KØBSR, Alice Jacquelin Clark (Mrs. W. J. Clark), Robertson, Mo.
WØESG, Dewey M. Pickel, Fort Scott, Kans.
WØITQ, Adolphus A. Emerson, Minneapolis, Minn.
WØRGV, Alonzo D. Uhls, Kansas City, Kans.
PAØGN, Han B. Gortz, Glimmen Gr, The Netherlands
VE3ALN, Guy H. Fetterley, Chippawa, Ont.
VE3WX, Robert C. Hunt, Byron, Ont.

W2EQS dropped into the novice band briefly one night only to hear "CQ CQ CQ de WV2EQS." "This really stopped me dead in my tracks," reports W2EQS, "as in 27 years of hamming I have heard only one other EQS but never QSOd him."

Turned out WV2EQS had received his license only 24 hours earlier and this was his first QSO. Both hams are named Charlie, both are Irish and they live in adjacent towns.

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W3YAZ/3 in Philadelphia renewed acquaintance with W3ZRQ, after 18 months off the air, with a 50-minute QSO on 80 c.w. As they prepared to sign off, W3YAZ/3 discovered his antenna was disconnected. W3ZRQ was copying him 569 over a 100-mile ground-wave path, using a 25-year-old NC-101X for receiving!

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

JUST about as this issue of *QST* goes into the mails the first Technicians will be tuning up on 2 meters. The practical effect of the FCC move making 145 to 147 Mc. available to Technician Class licensees, effective Aug. 21, will be to give them almost unrestricted operating privileges in the world above 50 Mc. How will this affect the course of amateur radio on the v.h.f. bands and higher in the years to come?

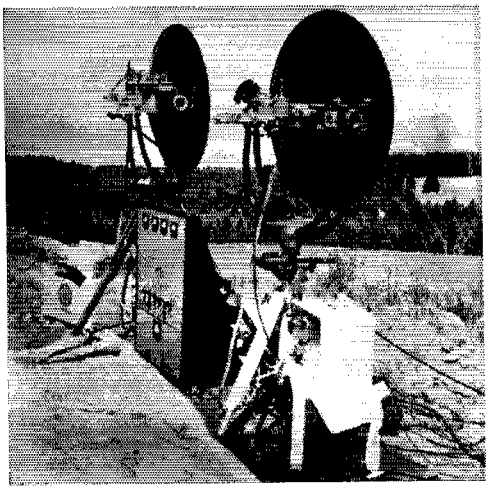
Few will quarrel with the objective of greater amateur interest in our higher frequencies. With every statistical curve relating to our hobby showing something approximating an exponential rise these days, a substantial percentage of the growth must be channeled to the bands above 50 Mc. if amateur radio is to avoid bursting at the seams.

The 6-meter band has enjoyed a phenomenal spurt of activity since 1955. It can stand more. There is plenty of room in the 2-meter band, particularly that portion above 145 Mc. We have hardly more than begun to use the bands from 220 Mc. up, in terms of their potential for amateur activity of the kind we know on 50 and 144 Mc. Recent experience on 50 Mc. shows what we can expect from the opening of the 2-meter band to Technician occupancy. There will be a substantial increase in activity in short order, we can be sure. But will there be a lowering of technical and operating standards at the same time? Will the Technicians abandon the higher bands, where a fair number have migrated of late? Will the 50-Mc. band be deserted, after its gains of the past four years?

We feel that the answers to these questions depend to a large extent on the people who are already active on the v.h.f. and u.h.f. bands. The thousands of Technicians who will come into the game in years ahead will not be greatly different from the generation of hams who preceded them. They will react to the challenges and opportunities of v.h.f. work in the same manner that hams always have, if we take pains to interest them in the true potential of our chosen field. Some will use the Technician Class license as a stepping stone to a higher grade of amateur ticket, but many, with all bands above 50 Mc. now available, will see little reason to go further.

Whether the permanent Technician becomes an asset or a liability rests, in the last analysis, with those of us who have been in the game before he appeared on the scene. Thousands of us feel that there are no more fertile fields in the whole radio-frequency spectrum than the v.h.f. range and higher. If by our energy and enthusiasm we inspire the new recruits to something more than mere yakking — if we lend a helping hand when it is needed — if we show patience and tolerance with the newcomers and try to instill in them a recognition of the respon-

Southern end of the new 10,000-Mc. record was W7JIP, a former record holder. Gear for 144 Mc. was used for liaison, though tropospheric bending eventually brought the 10,000-Mc. signals up to S9 levels. Location: Roundtop Mountain, Oregon.



Ernest Manly, W7LHL, with the equipment used at the northern end of the 187-mile record on 10,000 Mc. Location is on the side of Green Mountain, northeast of Everett, Washington

sibilities that are inherent in the holding of an amateur license — then we need have little fear for the future of the world above 50 Mc. in their hands.

Here and There on 6 and 2

In compiling this department we often glance back through *QST*s of one, two, five or ten years ago, to see how things were going on the v.h.f. bands in the month we're about to write up. This little investigation turns up interesting coincidences now and then. In the September issue of 1948 we were lamenting one of the poorest summers for sporadic-*E* skip. In 1949 it was just the opposite; that summer had been one of the best on record, with openings almost around the clock, and double-hop sessions galore.

The summer of 1948 followed what was then the highest solar activity peak known to man. If sporadic-*E* skip were directly related to solar activity, 1948 should have been tops. Instead it was extremely poor; openings were widely scattered and of short duration, and there was almost no double hop. Ten years later it was the same story. The observed sunspot number peaks of all time were in November, 1957, and February and March, 1958, yet the summer of 1958 was a dismal season for 6-meter men.

The sporadic-*E* season of 1949 was a dilly. We were looking for a term other than "sporadic" to describe *E*-layer ionization in June and July of that year. It's the same this year. Even graybeards will be hard put to it to recall anything better than the skip season just concluded. The band was open on something like two-thirds of the days from May through July. Double-hop propagation was excellent, and widespread. Ionization densities rose high enough to permit skip propagation on 144 Mc. on at least five different occasions. (See this department in August *QST*.) Makes one wonder what it would have been like in the 1937 to 1939 period, if we'd had the kind of v.h.f. gear and activity we now enjoy!

Another intriguing thing about sporadic-*E* skip, never explained satisfactorily to our knowledge, is the different ways it manifests itself in various parts of the world. The same may be said for transequatorial propagation. For example, the sporadic-*E* seasons in North and South America are far from alike. We have two, the major one having just been concluded. The other is much shorter, but still well defined, spreading either side of the shortest day of the year. There is no counterpart of this in Latin America, if our records over the years can be believed. Reliable PRP participants, LU5CK, LU3EX and CX1AQ, report no DX whatever on their June logs. These are year-round enthusiasts; it seems unlikely that they would miss 50-Mc.

50 Mc. WAS

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

VE7CN	45	SM6ANR	30	LU9MA	26	LA7Y	20
KL7AUV	44	XE1GE	30	ZS3G	26	VQ2PL	18
VE1EF	42	SM7ZN	29	CT1CO	24	JA8AQ	18
VE2AOM	38	PZ1AE	28	CO6WW	21	JA8BU	17
KH6UK	37	SM6BTT	28	LA9T	21	JA1AAT	17
E12W	37	CO2ZX	27	LU3DCA	20	JA1AUH	16
VE4HS	41	ZE2JV	26	SM5CHH	20		

RECORDS

Two-Way Work

50 Mc.: LU3EX — JA6FR
12,000 Miles — March 24, 1956
144 Mc.: W6NLZ — KH6UK
2540 Miles — July 8, 1957
220 Mc.: W6NLZ — KH6UK
2540 Miles — June 22, 1959
420 Mc.: SM6ANR — G3KEQ
650 Miles — June 13, 1959
1215 Mc.: W6DQJ/6 — K6AXN/6
400 Miles — June 14, 1959
2300 Mc.: W6IFE/6 — W6ET/6
150 Miles — October 5, 1947
***3300 Mc.: W6IFE/6 — W6VIX/6**
190 Miles — June 9, 1956
5650 Mc.: W6VIX/6 — K6MBL
34 Miles — October 12, 1957
10,000 Mc.: W7IHP/7 — W7LHL/7
187 Miles — July 25, 1959
21,000 Mc.: W2UKL/2 — W2RDL/2
14 Miles — Oct. 18, 1958
Above 30,000 Mc.: W6NSV/6 — K6YYF/6
500 Feet — July 17, 1957
***Band now 3500–3700 Mc.**

openings consistently, with the fairly high level of activity on 6 in South America.

South Americans also reported their last trans-equatorial propagation in early May, yet ZE2JV, Salisbury, Southern Rhodesia, logged *TE* signals from the north on June 1, 4, 15 and 18. ZC4WR, Cyprus, heard ZE2JV the night of June 18. Most remarkable of all, G4LX, Newcastle, England, heard the 50-Mc. test transmissions of ZE2JV on June 5, 6, 19 and 22. In miles this path is an almost exact duplicate of the W1-to-LU haul — but whoever heard of W1s working LUs in the summer months?

Also from the PRP file for June, we find VK4NG, Rockhampton, Australia, logging Japanese stations 7 evenings in June. VK9XK, Port Moresby, Papua, heard or worked JAs 13 nights. Again, these paths are not too greatly different in length from the other two. The only obvious difference is their position with respect to the geomagnetic equator and the auroral zones. From the map on page 49 of June *QST*, we see that the geomagnetic equator swings to the south as it passes over South America, making it far below the midpoint of our shot to Argentina, whereas it more nearly divides the other two paths. This still far from explains why DX activity of all kinds is nil in South American 50-Mc. circles from May to September, while all other areas, both north and south of the equator, seem to have two E_s seasons centered on the shortest and longest days of the year, and, in the case of Africa and Europe, *TE* propagation that lasts almost the year around.

K2RRG, Upper Saddle River, N. J., raises the question of how there can be double-hop propagation when no single-hop signals are heard. This used to be common in the days of low activity. Many times we've heard W6s or 7s coming through all by themselves, but with the band swarming with stations almost everywhere the chances of hearing this enviable state of affairs are certainly reduced.

W6BJI, Fresno, reports that from May 1 to July 17 the 50-Mc. band was open at least 48 out of 78 days. There was double-hop on 13 different days in June. Gib heard 42 states this summer on E_s alone.

Here's an interesting 50-Mc. DX opportunity. HR2DK is on 6 every night between 1915 and 1930 CST. This is the first 50-Mc. activity in Honduras that we know of. No language barrier in this case — HR2DK is also K5RBE.

Amateur TV on 50 Mc.? WA2BCW, Nutley, N. J., author of the articles on a slow-scan system in August and September, 1958, *QST*, has a setup running on 6.

Another "impossible" path has been broken down on 144 Mc. If you've driven over U. S. 40 from Sacramento to Reno you don't have to be told that there are few more rugged stretches of country. In years past nobody in his right mind would have attempted to work between these cities on a v.h.f. band. Sacramento is not far above sea level. Reno, 115 miles airline to the east, is approximately 4700 feet. Directly between, and close to Reno, lies 10,000-foot Mt. Rose, and west from Mt. Rose, nothing but more rugged mountains, for many miles.

W6GDO, Sacramento Valley SCM, and W7MAH, Reno, met at the San Jose ARRL Convention and decided to try 144-Mc. c.w. skeds. First tests were made with W6GDO using vertical polarization and W7MAH horizontal. No results showed until July 9 when W6GDO heard W7MAH S4. It turned out that John had torn the feedline off his 2-meter array earlier, and was using a 6-meter coaxial vertical. Next day W6GDO put up a 10-element horizontal Yagi and W7MAH a twin-6 vertical. These paired with the original twin-10 vertical at W6GDO and the long horizontal Yagi at W7MAH, enabled them to try both polarizations and crosses between the two both ways.

Tests on July 10 showed vertical to have a considerable margin over horizontal, with cross-polarization again nil. Tests will continue with these and other antennas, to see if a consistent pattern will emerge. W6PIV, also of Sacramento, has worked W7MAH, using an 8-element extended-H array, also vertical.

(Continued on page 176)

220- and 420-Mc. STANDINGS

220 Mc.

W1AZK	9	3	412	W5RCI	7	4	700
W1HDQ	11	5	450	W6NLZ	3	2	2540
W1OOP	12	4	400	K6GTG	2	2	240
W1RFU	11	5	480	W6MMU	2	2	225
W1UHE	11	4	385	K8AXU	5	5	680
W2AOC	13	5	450	W8IJG	8	5	475
K2AXQ	8	3	230	W8LPD	6	4	480
K2CBA	8	5	315	W8PT	7	3	550
K2DIG	4	3	140	W8SVI	6	4	520
W2DWJ	13	6	740	W9EQC	8	4	740
W2DZA	12	5	410	W9JCS	5	2	340
W3AHQ	4	3	180	W9JFP	7	4	540
W3LCC	8	5	300	W9OVL	5	2	290
W3LZD	14	5	425	W9UED	4	4	605
W3UJG	11	5	400	W9ZIH	5	2	270
W3ZRF	5	3	112	KH6UK	1	1	2540
W4UBY	7	5	320	VE3AIB	5	3	350
W4UMF	11	5	420				

420 Mc.

W1HDQ	8	3	210	W4HHK	3	3	520
W1RFU	8	4	410	W4VVE	6	4	410
W1OOP	9	3	390	W5RCI	4	3	340
W1UHE	3	2	130	W7LHL	2	1	180
W2AOD	6	4	290	W8HCC	3	2	355
W2BLV	11	5	360	W9GAB	6	3	520
W2DZA	5	3	130				

2-METER STANDINGS

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

W1REZ	30	8	1175	W5VY	10	3	1200
W1AZK	24	7	1205	W5SWV	10	3	600
W1KCS	24	7	1150	W5YYO	5	3	1330
W1RFU	23	7	1120				
W1AJR	23	7	1130	W6NLZ	12	5	2540
W1HDQ	20	6	1020	W6WSQ	12	5	1390
W1MMN	20	6	900	W6DNG	9	5	1040
W1IZY	19	6	875	W6AJF	6	3	800
K1CRQ	19	6	800	W6ZL	5	3	1400
W1AFO	17	6	920	W6MMU	3	2	950
W1CLH	17	5	450				
				W7VMP	15	5	1280
W2NLY	37	8	1390	W7JRG	10	4	1040
W2CXY	37	8	1360	W7LHL	4	2	1050
W2ORI	37	8	1330	W7JIP	4	2	900
K2GQI	30	8	1200	W7TU	4	2	353
W2AZL	29	8	1050				
W2BLV	27	8	1020	W8KAY	38	8	1020
K2IEJ	25	7	1060	W8PT	34	8	985
W2AMJ	25	6	960	W8LOF	33	8	1060
W2DWJ	23	6	860	W8RMH	32	8	910
K2HOD	23	7	950	W8SVI	30	8	1080
W2PAU	23	6	753	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	680
W2RXG	20	6	700	W8BAX	27	8	960
W2UTH	19	7	880	W8DX	26	8	720
W2RGV	19	6	720	W8ILC	25	8	800
W2WZR	18	7	1040	W8JWV	25	8	940
W2ESK	18	5	850	W8GFN	23	8	540
K2RLG	17	6	980	W8NOH	21	8	975
				K8AXU	21	8	750
W3RUE	30	8	975	W8LCY	21	7	610
W3GKP	29	8	1020	W8BLN	21	7	610
W3KCA	28	8	1110	W8GTK	17	7	550
W3TDF	28	8	915				
W3SGA	26	7	700	W9KLR	41	9	1160
W3EPH	22	8	1000	W9WOK	40	9	1150
W3BYF	22	6	660	W9GAB	33	9	1075
W3NKM	20	7	730	W9AAG	32	8	1050
W3LNA	20	7	720	W9REM	31	8	850
W3LZD	20	7	650	W9ZIH	30	8	830
				W9LVC	27	8	950
W4HJQ	38	8	1150	W9EQC	27	8	820
W4HHK	35	9	1280	W9ZHL	25	8	700
W4ZXI	34	8	950	W9BPV	25	7	1030
W4AO	30	8	1120	W9AQP	24	7	900
W4MKJ	28	8	850	W9PBP	24	8	820
W4UMF	28	8	1110	W9OJI	23	8	850
W4VLA	26	8	1000	W9LF	22	7	825
W4EQM	25	8	1040	W9KPS	22	7	690
W4WNH	24	8	850	W9PMN	19	6	800
K4EUS	24	6	765	W9ALU	18	7	800
W4JCJ	23	6	725	W9CUX	18	7	800
W4VVE	21	6	720				
W4TLV	20	7	1000	W9SMJ	29	9	1075
W4IKZ	20	6	720	W9IHD	27	7	890
W4OLK	20	6	720	W9BFB	27	8	1060
W4AIB	19	7	840	W9GUD	25	7	1065
W4CPZ	18	6	650	W9RUF	23	7	900
W4RFR	18	7	820	W9QDH	22	8	1240
W4MDA	17	6	750	W9INI	21	6	830
K4YUX	16	8	830	W9UOP	21	7	900
W4RMU	15	7	1080	W9TGC	21	7	875
W4LNG	15	6	1080	W9RYG	20	8	925
				W9IFS	16	6	1100
W5RCI	34	9	1215	W9IC	13	6	1240
W5DFU	25	9	1300				
W5LPG	25	7	1000	VE3DIR	29	8	1350
W5AJG	23	8	1360	VE3AIB	27	8	1340
W5KTD	23	8	1200	VE3BQN	19	7	790
W5JWL	21	7	1150	VE3DER	17	8	1340
W5PZ	16	8	1300	VE3AQG	17	7	800
W5VKH	15	5	720	VE3HW	15	7	1350
W5ML	12	5	700	VE2AOK	13	5	550
W5SFC	12	5	1390	VE3BPB	14	6	715
W5HEZ	12	5	1250	VE7FJ	2	1	365
W5FYZ	12	3	735				
W5CVW	11	5	1180	KH6UK	1	2	2540
W5NDE	11	5	625				

June V.H.F. Party Results

DEPENDING on where you were and what bands you worked, the week end of June 13–14 was "the worst on record," "just fair," or "terrific!" For most of northeastern U. S. A., the first evaluation was most common, regardless of band. The weather was cold, wet and worse, and all bands were dead. In parts of the South and Middle West, a fine tropospheric opening livened things up for the 2-meter gang, but it came mostly too late to do much good. Most of the Far West and South enjoyed 50-Mc. DX, both double and single hop, but not for as long as the 6-meter gang would have liked.

Almost one-fourth of the scores in the tabulation are for portable stations. Some of the rugged individuals who manned these mountain-top setups had the toughest going weatherwise, and the poorest conditions DX-wise they'd ever experienced in a June contest. Many told tales of snow and driving rains, of antenna masts snapping and tents blowing away. In below-freezing cold this is not much fun, especially in the "month of roses!"

Despite all this there was some fine work in the field. W2YPM/2 on Overlook Mountain in the Catskills made 320 contacts on 50, 144, 220 and 420 Mc. With a section multiplier of 38, they posted a score of 13,490 points, the country's highest. Their nearest rival was the Two Meter and Down Club of Los Angeles. Operating W6EMM/6 from Green Valley Lake, these fellows worked 322 stations on 7 bands, for 11,490 points. The only other 5-figure total was the work of the Electric City Radio Club, W3KX/3, in the Pocono Mountains of Eastern Pennsylvania, with 291 contacts for 10,080 points.

The highest contact total was made by W6SDM/6: 452 stations worked. One of the operators in this group, W6DQJ, was the southern end of the new world record on 1296 Mc., as reported last month. W6SDM/6 also worked the same 400-mile circuit on 432 Mc. W1UIZ/1 on Mt. Equinox, near Manchester, Vt., ran up a section total of 39, to lead the country in that department. George had the moral and physical support of W1WID in this effort, which ended in a sizeable snowstorm, but he handled all the operating himself. Encumbered as he was with mittens and earmuffs most of the time, this wasn't easy! High spot of their week end was a 60-mile contact on 1296 Mc. with K2ISA. Gear for this band was the handiwork of W1WID.

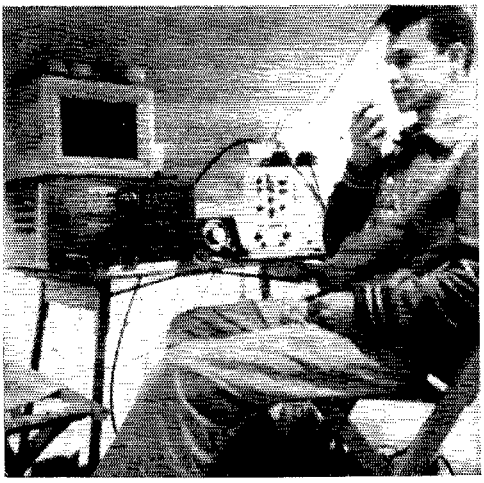
W1ZIG/1 atop the highest spot in Massachusetts, Mt. Greylock, had snow and 70-mile gusts to contend with, and the temperature was below 40 most of the time. We heard of another group on Mt. Whiteface, in the Adirondacks, operating in a stone tower, minus glass in the windows, with the temperature in the 20s.

Cold was no northeastern monopoly. K6TJL/6, the station of the Southern Peninsula Old Timers' Society, was set up on Goat Mountain, a 6121-foot elevation about 150 miles north of the Bay Area. During the day the air was clear and the sun was hot, but at night the temperature dropped into the 40s, and the wind came up. Part of the crew, operating outside the VW bus shown in one of our photos by K6LHJ, just about managed to last through the night. They worked on 50, 144, 220 and 420 Mc. and ran up the creditable total of 4848 points on 181 QSOs. Best DX was W6FZA/6 on Frazier Peak in Southern California, worked on both 144 and 220 Mc.

One of the most rugged operations of all was in the Sunny South. W4FWH and W4LNG were planning a combined effort for Brasstown Bald Mountain, 75 miles north of Atlanta, and the highest point in Georgia. W4LNG was called away on business, so Walt set off alone, with transmitters for 50, 144 and 220 Mc., a communications receiver, three converters, 2-kw. power plant, tent, cooking equipment and plenty of warm clothing. The woolens were needed; even in Georgia in June, an elevation of 4784 feet can be cold at night.

Propagation was generally poor, until just before the end of the party, when W5PZ, Ponca

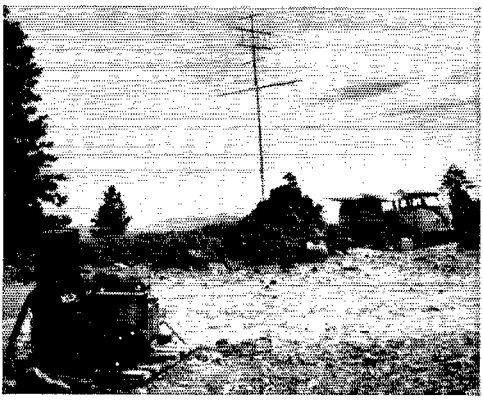
This is June? W1WID, left, and W1UIZ survey the wintry scene atop Mt. Equinox, near Manchester, Vt., the morning after the June V.h.f. Party. W1UIZ/1 worked 214 stations on 50, 144, 220, 432 and 1296 Mc., for 9360 points.



Six-meter position of K1GAY/1, Mt. Agamenticus, Maine, with K1GLM at the controls.

City, Okla., broke through on 144-Mc. c.w. This signaled the start of a tremendous tropospheric opening all up across the Middle West — just at the time that W4FWH was completely bushed and ready to break camp and head for civilization. Walt stayed with it, even though his QSOs could not be counted in the contest, and before he finally gave up he worked Oklahoma, Kansas, Missouri, Nebraska and Minnesota. Probably each was the first QSO on 144 Mc. with these states from Georgia — but Walt was too far away from home to allow them to count on his states total. Only two of the contacts fell in the contest period. "Who had the big idea of cutting one hour off the contest?" Walt wants to know. This was done to make it easier for the portable operators! Score of W4FWH/4: 127 contacts on 50, 144 and 220 Mc. for 2580 points. Best DX on 144 Mc.: WØBTG, Lincoln, Neb., 800 miles. W5RCI, Marks, Miss., 325 miles, was worked on 220.

Home-station scores over much of the country were well below average. A fellow who has led the field many times did it again. W1RFU, Wilbraham, Mass., worked 50, 144 and 220 Mc. for 5952 points, the country's No. 1 score, and the Western Massachusetts section award. W2PEZ, Northern New Jersey award winner, worked



Goat Mountain, in Northern California, was the scene of operations for K6TJL/6. Antennas for 144, 220 and 432 Mc. are shown. Stations also operated on 50 Mc., working 181 stations on the four bands, for 4848 points.

many more stations on the same bands, but with a lower section total he made 5520 points.

Sporadic-*E* skip helped some areas that normally show low contest totals. W7QDJ, Clearfield, Utah, worked 121 50-Mc. stations in 10 ARRL Sections, for 1210 points. W7UFB, Casper, Wyoming, found 101 stations on 6. W7RUX, Phoenix, Ariz., worked 110 in 25, for 2825. WØQDH, Salina, Kan., used 50 and 144 Mc. in working 103 in 23, for 2369 points. K5IQL, Roswell, N. Mex., worked 71 in 12. One of the most unusual logs of all was from WØGNS, Minot, N. Dak., who worked not a single local. All his 24 50-Mc. contacts were with anxious Washington, Oregon and British Columbia stations. We'll bet he got 24 "Please QSL" cards in the next few days' mail!

The contest was no walk-away for 50-Mc. men. K1CRQ, Bethlehem, Conn., made 183 contacts in 14 sections for 2562 points, and W2GOO, Farmingdale, L. I., 165 in 13, for 2145, all on 144 Mc. K1CRQ's total was the highest one-band score in the country.

SCORES

In the following tabulation, scores are listed by ARRL Divisions and Sections. Unless otherwise noted, the top scorer in each section receives a certificate award. Columns indicate the final score, the number of contacts, the section multiplier, and the bands used. A represents 50 Mc. B, 144 Mc.; C, 220 Mc.; D, 420 Mc.; and E, 1215 Mc. or higher. Multiple-operator stations are shown at the end of each section tabulation.

ATLANTIC DIVISION

E. Pennsylvania

W3MPX..720- 90- 8-A
W3HXX/3
704- 88- 8-AB
K3ATX..690-115- 6-A
W3CSG/3.630- 90- 7-A
W3JXT[1].594- 66- 9-A
W3WJC...574- 82- 7-AB
K3DBV...320- 80- 4-A
W3ULC...330- 55- 6-B
W3CLQ...318- 53- 6-B
K3DOX...276- 69- 4-AB
K3BTU...156- 26- 6-A
K3CHF...135- 45- 3-A
K3HNG....62- 31- 2-A
K3HRF....60- 20- 3-A
W3RHT....16- 8- 2-A
W3KX/3[2] (9 oprs.)
10,080-291-32-ABCD
W3RCI/3 (6 oprs.)
2544-158-16-ABC
W3LXM/3 (6 oprs.)
1736-124-14-AB
W3SOM/3 (5 oprs.)
1606-146-11-AB
W3CL/3 (8 oprs.)
810- 79-10-ABC
W3LDA/3 (W3LDA W2LGO)
384- 64- 6-A

Md.-Del.-D. C.

W3CGV..1050- 70-14-ABCD
W3BBG..1023- 93-11-AB
W3MNE/3[1]
360- 72- 5-A
W3CBW[3]..285- 53- 5-AB
K3DQA...240- 60- 4-A
KN3HIA/3
176- 44- 4-B
K3AZH...172- 43- 4-A
W3LMC.145- 29- 5-B
K3DLB...132- 22- 6-AB
W3SQP....42- 21- 2-B
W3JZY/3 (14 oprs.)
9576-320-28-ABCD

S. New Jersey

W2BLV..2508-110-22-ABD

K2SXN...114- 57- 2-A
K2MXN[4]...54- 27- 2-B
K2ITQ[2] (4 oprs.)
7695-276-27-ABC
W2REB (W2REB, K2MPV)
2955-197-15-AB
W2MBC/2 (5 oprs.)
224- 56- 4-B

Western New York

K2ERQ..1695-113-15-AB
W2FDI...1072-134- 8-A
K2GUG...664- 76- 8-ABC
K2SQB....220- 44- 5-A
K2QPC....135- 45- 3-AB
K2MYP...129- 43- 3-A
W2RXG....90- 18- 5-B
K2CUQ....36- 18- 2-A
W2MYN...32- 16- 2-B
K2KWK/2
23- 23- 1-A
W2ZKF....13- 13- 1-B
WV2DGL....9- 9- 1-A
W2ALL/2[2] (7 oprs.)
9842-249-37-ABCD
W2MAU/2 (15 oprs.)
2625-175-15-AB
W2JGJ/2 (4 oprs.)
2058- 91-21-ABC
W2SPU/2 (7 oprs.)
1386-152- 9-ABC
K2ZER (7 oprs.)
1190-119-10-AB
W2FRL/2 (5 oprs.)
791-113- 7-AB
W2CFY/2 (4 oprs.)
328- 41- 8-B
W2JQA (4 oprs.)
165- 55- 3-A

Western Pennsylvania

W3RUE..1125- 70-15-ABC
W3BWU..384- 64- 6-A
W3APR...165- 55- 3-A
W3MSR/3 132- 33- 4-B
K3AUE....14- 7- 2-B

W3KWH (4 oprs.)
744- 93- 8-AB
W3TIF/3 (4 oprs.)
649- 55-11-ABC

CENTRAL DIVISION

Illinois

K9DWR..600-100- 6-AC
K9DTB...474- 79- 6-A
W9OKB...268- 67- 4-AB
K9EEC...228- 57- 4-B
W9BQC...186- 30- 6-ABC
W9OEV...150- 30- 5-B
W9JCI/9...114- 38- 3-A
K9KTR....92- 23- 4-B
W9VCZ....48- 12- 4-B
K9DUA....44- 11- 4-AB
W9KCM...12- 6- 2-B
W9ROS[2] (W9s ROS DXG JCI)
3200-189-16-AC
W9VCR/9(5 oprs.)
1924-148-13-A
W9GLR/9 (W9s EUZ GLR SWE) 1330- 95-14-AB

Indiana

K9HEY..1518-138-11-A
K9MMH.1176-147- 8-AB
W9MHP...330- 55- 6-A
K9IXD[1]...310- 62- 5-A
K9PED...301- 43- 7-A
K9KSH...164- 41- 4-A
K9AQP...102- 17- 6-B
K9MZV...120- 40- 3-A

Wisconsin

W9JFP...2145-135-15-AC
W9TQ....308- 44- 7-AB
KN9OXY...56- 14- 4-B
W9RTZ....54- 27- 2-A
K9MWQ/9..36- 12- 3-AB
K9OHE....22- 22- 1-A

K9KBL....14- 14- 1-A
K9KHW/9[2] (W9NHE, K9KHW)
882-126- 7-A
W9YT (K9EOP, W9SZR)
136- 34- 4-A
K8IFM/9 (5 oprs.)
116- 29- 4-AB

DAKOTA DIVISION

North Dakota

W0GNS....72- 24- 3-A
W0HVA....72- 12- 6-A

DELTA DIVISION

Arkansas

K5AZH....18- 6- 3-A

Louisiana

W5FYZ...112- 16- 7-B
K5OGU....39- 13- 3-A

Mississippi

W5RCI...308- 28-11-AB

Tennessee

W4ZZ.....308- 28-11-AB
K4PZJ....170- 34- 5-A
W4HHK....96- 12- 8-B
W4YRM....87- 29- 3-A
W4TDZ....60- 20- 3-A

GREAT LAKES DIVISION

Michigan

K8KFL...1168-146- 8-A
K8ACC[1]...736- 92- 8-A
K8AKQ...534- 89- 6-A
K8BGZ...320- 32-10-AB

K8OHC....25- 5- 5-A

Ohio

W8BAX
639- 62- 9-ABCDE
W8SGX...553- 79- 7-A
K8DKE...402- 67- 6-A
K8KXS...390- 78- 5-A
W8NEE...364- 49- 7-ACD
K8BPX...270- 54- 5-A
W8BMO..266- 38- 7-ABCD
W8LCA....32- 16- 2-B
W8SPG[2] (4 oprs.)
1836- 94-18-ABC
K8DJB/8 (5 oprs.)
1310-131-10-A
K8COJ (K8s COJ LCZ)
1278-142- 9-AB

HUDSON DIVISION

Eastern New York

W2HBC...913- 66-11-ABC
K2JYG....108- 18- 6-B
WV2CLV...56- 14- 4-B
WA2AKK...24- 8- 3-B
W2TMM...20- 10- 2-A
W2YPM/2[2] (6 oprs.)
13,490-320-38-ABCD
K2CQG/2 (5 oprs.)
7366-229-29-ABC
K2CXP/2 (6 oprs.)
2480-115-20-ABC

N.Y.C.-L.I.

K2DVX/2
3152-197-16-AB
W2YHP..3111-183-17-AB
K2VIX[1]..2156-196-11-A
W2GOO..2145-165-13-B
W2AOC..1870- 78-17-BC
W2SEU...1100-110-10-AC
K2JQA...1078-154- 7-A

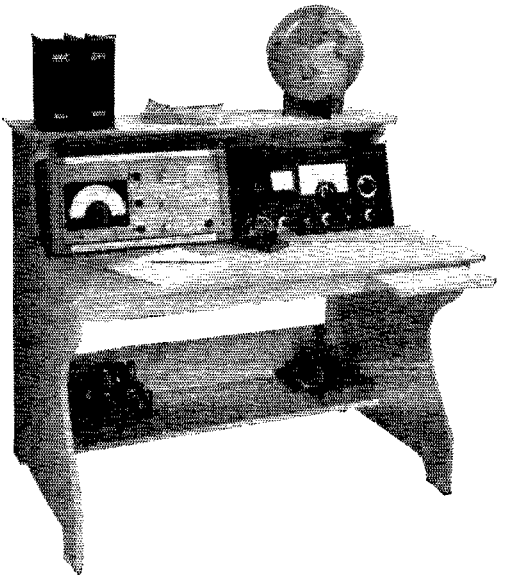
(*Continued on page 182*)

• *New Apparatus*

Delta Ham Operating Desk Kit

THE desk shown in the photograph was designed as an equipment shelf and operating desk for the radio amateur. The desk is made from ¾-inch particle board which is pre-cut and ready for assembly. All necessary hardware, along with step-by-step instructions, is included.

Over-all dimensions are 4 feet wide, 42¼ inches high and 28½ inches deep, with a top writing-operating area of 1¼ × 4 feet. As the photograph shows, the equipment shelf (which will hold a piece of equipment 15 inches deep) is tilted about 16 degrees from the horizontal writing area so that the operator, when seated at the desk, gets a good straight-on view of the equipment. A 1 × 4-foot top shelf may be used to support other equipment or accessories; a 1 × 4-foot shelf below the desk serves as storage space for power supplies, modulators, magazines, books. One of our six-foot-six employees tried the desk for size and found this shelf did not interfere with the comfortable placement of his feet. A small pull-out shelf is provided which will support a typewriter or can be used for additional writing or operating space. The desk is supplied unfinished but can be varnished, enameled, stained and will take practically any type of finish. Since it is made from composition material, there is no end gain showing along the edges. It is manufactured by the Delta Products Co., 49 South Day St., Orange, New Jersey. — *E. L. C.*



The Delta Ham Operating Desk Kit is supplied pre-cut and with all necessary hardware. The only tool necessary for assembly is a medium-sized screwdriver. The transmitter (right) and receiver units come from the ARRL lab and will probably be described in future ARRL publications.

Announcing the September V.H.F. QSO Party

ARRL is pleased to announce another of its popular V.H.F. QSO Parties, open to all amateurs who can work any band or bands above 50 Mc. The contest gets under way at 2 P.M. your local standard (*not* daylight) time Saturday, Sept. 19, and continues until 10 P.M. local standard time Sunday, Sept. 20. The rules are exactly the same as for the party held last June.

Call "CQ V.H.F. QSO Party" or "CQ Contest" to raise other participants. During contact, operators must exchange names of their ARRL Sections (see page 6) to receive contest credit. Signal reports, operators' names, and equipment line-ups may also be exchanged, of course, but such information is not required by the contest rules. Figure your score as shown in rules 4 and 5.

A certificate will be awarded to the top scorer in each ARRL Section. In addition, certificate recognition will be extended to the high-scoring Novice, Technician, and multioperator station in each section from which three or more valid entries in these three special categories are received.

In preparing your log for submission, please follow the form shown on page 50 of last June *QST*, or ask ARRL now for free log forms. Reports should include your call, class of license, and ARRL Section, as well as times, calls, and sections of all stations worked. Mail your entry by October 7 to assure eligibility for awards and *QST* listing.

Rules

1) The contest starts at 2:00 P.M. local standard time, Saturday, Sept. 19, and ends at 10.00 P.M. Local Standard Time, Sunday, Sept. 20. All claimed contacts must fall within this period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

2) Name-of-section exchanges must be acknowledged by both operators before either may claim contact point(s). A one-way exchange, confirmed, does not count; there is no fractional breakdown of the 1-, 2- or 3-point units.

3) Fixed-, portable- or mobile-station operation *under one call*, from one location only, is permitted. A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

4) Scoring: *1 point* for completed two-way section exchanges on 50 or 144 Mc.; *2 points* for such exchanges on 220 or 420 Mc.; *3 points* for such exchanges on the higher v.h.f. bands. The sum of these points will be multiplied by the number of *different* ARRL sections worked per band; i.e., those with which at least one point has been earned. Re-working sections on additional bands for extra section credits is permitted. Cross-band work does not count. Contacts with aircraft mobile stations cannot be counted for section multipliers.

5) A contact *per band* may be counted for each station worked. Example: W2TBD (S.N.J.) works W1PHR (Conn.) on 50, 144 and 220 Mc. for complete exchanges. This gives W2TBD 4 points (1 + 1 + 2) and also 3 section-multiplier credits. (If W2TBD contacts other Connecticut stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

6) Each section multiplier requires complete exchange with *at least* one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

7) Awards: A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multi-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received. Certificates will also be given to the top Novice and Technician in each section where three or more such licensees submit logs. Award Committee decisions will be final.

8) Reports must be postmarked no later than October 7, 1959, to be eligible for awards. Follow the sample log (p. 50, June *QST*) for correct form, or a message to Headquarters will bring printed blanks for your convenience. QST

OUR COVER

Our cover this month shows W1ICP's latest contribution for the Novice and beginner. It uses parts that can be scrounged from a TV set, and surplus tubes that sell for a real reasonable price. The result is a transmitter that can be built at a cost which is competitive even with the excellent kit values.

That log book cover is by way of being a slight needle applied to W1ICP. There are times when he *might* fill a log book in 24 hours, even though there are 1015 lines to fill in an ARRL log. However, this summer W1ICP has been so busy rallying and trying to find a way to beat the rest of the Hq. rally contingent that his on-the-air time has been slightly reduced.

FEEDBACK

A slight typographical error in August *QST* on page 53 should be corrected. In the second paragraph of the first column, change SX-100 and SX-100-B to read DX-100 and DX-100-B.

Strays

Fred Mason, KH6OR, received a call the other day from an extremely irate TVI sufferer. "And don't tell me to install a high pass filter," he snapped before KH6OR could speak. "I have already done that and you still interfere with both my audio and video."

Fred asked where and how he installed the filter. Back shot the huffy reply:

"I put it up on the antenna as high as I could get it, of course!"

Strays

There's nothing earth-shaking about a QSO between Atlanta, Ga. and New Zealand — but W4EJN *was* shaken when he discovered ZL1AAX was transmitting on an 11-transistor phasing-type s.s.b. rig, powered by a 12-volt flashlight battery.

"It was the most exciting moment in my nearly 25 years of hamming. Indeed, I feel that this is the forerunner of the 'wrist-watch radio' that will be heard 'round the world," said W4EJN.

ZL1AAX had a power input to the final p.a. which is a 2N247 transistor of 20 milliwatts power. He was using a cubical quad antenna.

W4EJN, wandering with ear cocked through the bands on May 1, first heard ZL1AAX rag-chewing with ZL3AB. W4EJN, Jim Fields of Atlanta, broke in to tell ZL3AB, an old friend, that he was reading ZL1AAX Q5 S6-7 although ZL1AAX appeared to be having some difficulties with his rig.

Jim arranged to have the New Zealander listen for W4EJN on s.s.b. inside the American phone band (the two ZLs were on 14315 kc.) they had a one-hour QSO, ending at 2350 EST.

W4EJN tape recorded the conversation and sent the tape to ZL1AAX to take with his rig to the N.Z.A.R.T. annual convention. W4EJN received on a SX-100 with a tri-bander beam.

Jim Ford, W1FLQ, of Middletown, Conn., was QSO'd by a real early bird with more enthusiasm than good sense. Loud, Morse-like clackings started pouring into the shack at 6:30 A.M. — even with the receiver turned off. Seems a woodpecker couldn't tell the difference between Jim's steel radio tower and a nearby oak tree.

—•••—

The Hampden County Radio Assn., Inc., in Massachusetts had a fine Field Day. Now the club would like to return a red-and-black waterproof carrying case and a Boy Scout mess kit left behind by their owners — and get back a coax relay and other tools that got lost in the shuffle.

—•••—

Both W8NSS and K8NSS have a mail address of Hastings, Mich. — K8LHM

(More on page 10)

Ohio — The Greater Cincinnati Amateur Radio Association will hold its 22nd annual stag hamfest at Stricker's Grove in Mt. Healthy on Sunday, September 27. Admission will be $4.00. All you can eat and drink at buffet lunch and supper.

Adolphus A. Emerson, WØITQ
Boyd Phelps, WØBP

IT IS WITH DEEP REGRET we report the deaths of two well-known amateurs, Adolphus A. Emerson, WØITQ, and Boyd Phelps, WØBP/W9BP/XEØBP. The two men, vacationing in Mexico between ham conventions in the Southwestern U.S., were killed in a head-on collision with a truck near Zimapan on June 15.

Adolphus Emerson, 61, long active in League affairs and an ardent traffic man, was a retired engineering department employee of the City of Minneapolis. A past president of the Minneapolis Radio Club, Emerson had served as Alternate Director of the Dakota Division from January 1, 1940, to May 20, 1941, and as Acting Director from that date to the end of the year.

Boyd Phelps, or "BeeP" as he was widely known, has been a pioneer in new radio techniques for more than thirty years. As 1HX in Hartford, Boyd was regularly in contact with a station in Boston on 130 meters in 1922 and was conducting experiments on wavelengths as low as 70 meters during this period. BeeP served as Assistant Editor of *QST* from March 1922 until February 1923.

In the late twenties, BeeP worked on amateur TV. He was one of the early pioneers on 5 meters. In recent years, his name has become almost synonymous with RTTY. Very active on the air himself, he also was continually encouraging and assisting other hams in this phase of the hobby.

Phelps, 60, who had seen service in both world wars, ending up as a commander in the Naval Reserve, operated a precision frequency-measuring service for the past several years. His home was in Morningside, Minn., a suburb of Minneapolis.

Both amateurs will be sincerely missed by the whole fraternity.

Correspondence From Members-

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

HIGHER DUES

Route 1
Arnold, Missouri

Editor, *QST*:

. . . My hat is off to the evidently good financial wizards you must have at headquarters who have avoided the need *of a raise in membership dues long before now. When my* insurance bills, grocery bills, etc., all come back higher than before, of course I grumble, but this is one increase I don't begrudge. This is one thing from which we feel we really get our money's worth. I say "we" because even the XYL, who is half-ham, half anti-ham enjoys the "Strays." Although the highly technical articles are way over my head, I enjoy reading the operating news, learning what other hams are doing, and yes, I enjoy seeing my traffic report, meager as it may be, right along with the other reports from my state.

QST is worth every bit the entire amount, and I have received more than the total amount in personal helps, aids, etc. I looked, almost shamefully, at the staggering amount spent on postage, knowing that part of that was spent on my requests. So feel confident, gents, that when next February rolls around — regardless of the too-many technical articles on s.s.b., reports on too-high-priced new equipment, and the like — you'll be receiving my check for another year of fine reading and services.

— *J. Howard Kim, KØOEP*

1625 West 3rd Avenue
Vancouver 9, B. C.

Editor, *QST*:

Just a word to let you know I am fully in accord with your move to raise the membership dues. ARRL is doing a good job. Keep up the good work.

— *Wm. L. McCarter, VE7WM*

4627 Briarcliff Road
Baltimore 29, Maryland

Editor, *QST*:

My membership in ARRL is worth all of five dollars to me. *QST* is strictly a bonus. After 20 years membership I feel the same way.

— *Whitney S. Gardner, W3IBX*

P.O. Box 145
Clemson, South Carolina

Editor, *QST*:

With reference to your article on "Membership Dues" in the July issue, I wish to put in my two cents worth. I would much rather pay an additional dollar than lose the fine service the ARRL has been rendering amateurs for so long a time.

This is my third year as an amateur and I can truthfully say the ARRL has helped me to enjoy my hobby to its greatest extent. Keep up the good work.

— *Joseph D. Hancammon, W4IFT*

AREN'T WE REMEMBERED?

131 Roosevelt Avenue
Cranford, New Jersey

Editor, *QST*:

I would like to complement Mr. Rolf, K5JOK, on his "Hey! Why Aren't We Remembered?" on page 166 in your July issue of *QST*. It was great! I was able to place quite a few of the characters he mentioned among my acquaintances on the air and here in town. I especially got a kick out of the "Ham who managed to work every monitoring station in the country with only 25 watts" because there is a Novice a few blocks away from me that has done just about the *same thing only he is running about 100 watts.* I myself have called CQ 10 on 2 meters so I think the one in there pertaining to that should be struck from the list. Hi. Would like to see more articles like that one.

— *Watt A. Clod, K2EWM*

4321 Collins Court
Mtn. View, California

Editor, *QST*:

An award, also, to you and your staff who continued K5JOK's article on page 166 of July *QST*!

— *Harry E. Davidson, W6JTY*

STATE OF THE ART

1603 Garfield Avenue S.W.
Canton, Ohio

Editor, QST:

While tuning across the forty-meter band the other day I was surprised at the relatively clean signals in the Novice band, while in the General band there were chirps, a.c. notes, and key clicks. Who says the Novices are the lids??

And in the phone band!! Overmodulation, swishing v.f.o.'s and these half-hour transmissions some guys make without signing their calls. Some of the phone men have even admitted forgetting the code. How do these amateurs keep their tickets?

— *Tom Sponhour, K8GVV*

CODE PRACTICE QRM

Box 381
Hennepin, Illinois

Editor, *QST*:

I am trying hard to get my General ticket and I sometimes wonder if all the present Generals remember what it was like to try to increase their code speed in preparation *for the exam. After I take time off that could be spent on the* air or studying theory to copy W1AW's code practice session, I am rewarded with a maze of QRM on the frequency. I really fail to see why these interfering stations couldn't move to a point above or below W1AW's frequency.

I'm sure that many other people who copy the practice sessions, like myself, want their General tickets, too. How about giving us a break, fellows, we'd like the privileges you have just as much as you do. And if you don't care about us Novices, then think about this: Hiram Percy Maxim was the man who started ARRL and ARRL is the only thing *that prevents ham radio from disappearing. How do you* think the Old Man would like to hear all that QRM on his station's frequency? If you don't respect us, at least respect his memory! In closing, I move that we add a new clause to the Radio Amateur's Code:

THE AMATEUR IS CONSIDERATE . . . In consideration to newcomers as well as to present members of the hobby, he will not transmit on any frequency used by the League's official station, W1AW, while that station is on the air.

— *Jim Young, KN9RII*

BEEPING THE BOSCH HORN

317 Rosemont Blvd.
San Gabriel, Calif.

Editor, *QST*:

Yes, sir, you're darned tootin' that the back pages of *QST* are read — I even read the front ones. Hi!

That's how come I gotta report that both K6HV, W5IQ and W8DAE (see STRAYS on page 172 April and page 38 June 1959 *QST*) are just kids when it comes to the use of an auto horn wid a key. Guess I should have reported this long ago but thought nothing of it as it was often done at hamfests in the Atlantic Division.

Four of us guys from the old Lansdowne Radio Association (Lansdowne, Penna.) took a Bosch horn, speed key and *a 6-volt battery to the Atlantic Division Convention in* 1922 or 1923, I can't remember which now, at the Adelphia Hotel in Philadelphia.

All went well until we got too eager in using the thing in

(*Continued on page 172*)

Operating News

F. E. HANDY, WIBDI, Communications Mgr.
GEORGE HART, WINJM, Natl. Emerg. Coordinator
JOHN F. LINDHOLM, WIDGL, Communications Ass't.

ROBERT L. WHITE, WIWPO, DXCC Awards
LILLIAN M. SALTER, WIZJE, Administrative Aide
ELLEN WHITE, WIYYM, Asst. Comm. Mgr., Phone

Get in Fall Activities. The new radio season now just starting is one to be greeted with enthusiasm. You can kiss that summer QRM goodby and from now on expect more crisp, effective signal reception. This can promote either pleasant casual radio chats or assist your purposeful operation in nets and in AREC/RACES tests. (Contact the nearest ARRL Emergency Coordinator or Radio Officer to ask about those.) May we suggest you give a little of your time to perfecting your ability to handle formal and informal two-way amateur radio communications. Know message form and procedure *as well as* how to rag chew and work DX. Polish up the know-how of quickly shifting bands and modes and timing your appearances on the air *after listening in* so that you get answers, contacts and communication with minimum fuss and interference and wasted time. Study your own operating to add new kinds of amateur ability. If not already in hand, work for full top amateur privileges from FCC. Enjoy *every kind* of amateur activity for what it has to offer.

If you have never held an appointment, get next the Operating Booklet, and with your SCM and live with the idea. *Organized* amateur radio and its procedures and results have more to offer than you as an individual amateur licensee can get by disorganized or casual efforts. You and I can get more QSOs, a higher level of results and more fun and worthwhile feeling out of life, by belonging to a net, a club, or to ARRL. But just belonging isn't enough. Make it a point to contribute something and get any practical benefits and ideas. It has been our experience that the more licks you put in, the more unexpected and surprising benefits and adventures pop out. Anyway, we assure you that you can't lose by trying for SCM appointment.

The League has numerous recognitions for your operating activities and progress. The code-proficiency awards (W1AW *practice* runs are made nightly) will continue to help you new fellows get General Class or perhaps twice that far with your code. That in turn can help make DXing and accurate communicating under all conditions easy. Besides RCC and DXCC and WAS certifications you can aim at working in your Section Net. This doesn't take much time. If consistent, you may thus earn a net certificate from your SCM. Then there's the National Traffic System, the emergency group under EC or RO, and the chance to test your station in CD Parties or in the variety of major contests announced in *QST* before each comes along. Get in the swim and you will find excellent radio results, knowledge, and fraternal values coming your way. Fall certainly holds inviting prospects. So start a new page in your log. Be operational and give the new season a chance to write up progress and accomplishments for you.

DX and the Penetrating Peanut Whistle. "Less than 100 watts is considered by some amateurs to be like a toy whistle in a boiler factory, particularly on 20 meters. Yet *properly used* that peanut whistle can hold its own. Herb Brooks, K2BG and our SJRA treasurer, has quite a collection of exotic QSLs from around the world to testify to his ability to work DX with considerably *less* than 'the gallon.' He runs about 65 watts on 20 meters. What's the trick, you ask? First, K2BG is a dyed-in-the-wool c.w. man, which eliminates some of the need for high power. Second, Herb has a vertical antenna that seems to work so well it's a virtual pipeline to world-wide DX. Finally, he fishes where the fishing's good. Herb is most likely to credit his antenna. He has a rather unique system of constantly checking field strength and attributes his success to efficiency in this respect. If you're running a modest rig and have a hankering for DX, take heart from Herb's experiences. It can be done!" — *Harmonics*, South Jersey Radio Ass'n.

Field Day Concensus. "It was a real pleasure to be a part of our Field Day operation this year. The enthusiasm, the cooperation, the physical setup, the things learned, all made the 24-hour period enjoyable. The outstanding feature was the excellence with which the 80 meter set-up worked . . . The area was excellent for our setup. The logs were ready for use, bound in binders for ease of writing. The new system for checking stations contacted to avoid duplication worked smoothly. We pulled some boners, but at least we were out there plugging. More coordination between the groups and their chairman would be helpful to increase efficiency and avoid duplication. If called to the field for emergency communications, we would be better prepared, but still make some mistakes . . . But having made them we are better able to cope with just such problems, if and when a real test comes." — *K9ADH* in *The VFO*, Vermillion County Amateur Radio Ass'n.

Improving Your QSL Returns. Besides its wallpaper uses, the QSL has high importance today. With the written confirmations one can

claim his 100-countries DXCC Award or apply for any number of foreign and domestic certifications. (Remember we mentioned here last month over 200 in W3RPG's compilation of such certifications!) It is of course necessary to have authentic cards to back up claims. The ARRL QSL Bureau, when kept supplied with a few stamped addressed 4¼" x 9½" envelopes, is your practical and inexpensive way to collect almost all your incoming DX cards. All W's and VE's send direct to each other, of course. To make *your* cards most attractive and useful, put yourself in the place of the recipient. See what you would like to get or which cards or information received you find most worthy of acknowledgment. We suggest a reading of "QSL Cards" by W1VG (May '57 *QST*) before designing your new card. The card must convey the vital information, be relatively easy to fill out, and be *complete* in every respect that W1VG has cited. *The band, mode, date, signal report and authenticating signature* are items to check on to make sure your card, as sent, is really complete and adequate for the recipient in terms of all of today's awards. Don't forget *your own call, name, address and the other station's call, and the vital statement that your card confirms a contact.* Use utmost care not to make out or send cards marked over in any way on the call, report or other significant data, for presentation of an altered QSL is disqualifying and such are unusable for DXCC workers.

Besides the attractiveness of your own card, interesting personal information or photograph of setup, special data and signal comparisons with others on the band from the same area or commentary on operations in progress or remarks during a contact may make your QSL of real fraternal significance. V.h.f. experimenters may like to know about the weather conditions or other areas you heard or worked at about the same time. The recipient is interested in the special need you have for a QSL, also in the type of interference and the conditions, and the newer operator *very* especially in signal observations as to quality, and stability. Any DX gossip or news will magnify the service represented in your card.

Make *yours* the best card, so it may be rewarded by one of the same kind. Remember that it helps to get replies especially from rare states or DX amateurs, if you can help conserve the other fellow's time and postage. In extreme cases a return-form to be checked and authenticated and dropped in the mail can be used. Just the difference in the postage matter (enclosing IRCs) perhaps with a self-addressed envelope can mean a redoubled return where amateurs are not working through a given QSL bureau.

September FMT and V. H. F. Party. Ever do any frequency measuring? The September ARRL Frequency Measuring Test is open to all amateurs. Special W1AW transmissions for checking are scheduled to be sent on three different amateur bands, on the evening of Sept. 16. All details for a try are given elsewhere in these columns. FCC's Sec. 12.135 requires each amateur to have means independent of the frequency control of the transmitter to measure frequency. Sufficient accuracy is required only to assure operation within the band used. One always has to allow for inevitable drift and inaccuracies in calibration. However, the greater the precision with which we can measure (and control), the more closely we can work near our band and sub-band edges without fear of FCC citation.

Here is a chance to try to measure accurately. Report your results. Then after a checking interval for us to complete the complicated arithmetic, we mail a report showing how well you measured.

Let us close with a reminder not to miss the fall V.h.f. QSO Party. See the full announcement and give it a workout Sept. 19-20. Make it your aim this season to advance your Code Proficiency and other ARRL awards, and hold at least one SCM appointment for operating activity. Be known as a versatile amateur. We suggest you report your station activities to the SCM each month at its conclusion; then ask your SCM for information on the CD appointment you're qualified to hold.

—*F. E. H.*

Let's Have More Slow Speed Section Nets. New fellows in Amateur Radio are generally keen to get their code and procedure experience up fast. There's no better method than to take part in some regular operating in a traffic net, as a score of Novice nets have demonstrated. This season, those who are candidates for such nets should get together on the air and, unless there's an already going net to be joined, set a time to get rolling. Report your needs and activity to your SCM whose address is given on page 6 of this *QST*. Perhaps he can help. Our ARRL operating booklet gives basic information on netting; the Net Directory gives frequencies and times of many nets to monitor to see how nets function. Note comment on one net below.

"Our Kansas slow-speed net is working out well now, since the roll-call method was incorporated in our net. On a recent check-in approximately 16 stations were being called by NCS Duffy WØIFR. Should this net retain the snowballing effect it will eventually become one of the outstanding S-S nets in the area. Many fine new traffic men are being trained on slow speed nets, and all sections having slow speed nets will benefit from the time spent in training."

— *WØUOL, Midwest Relay.*

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

BRIEF

The following errors were made in recent contest listings in *QST*: (1) In the Club Totals of the Sweepstakes results, the Westpark Radiops should be raised one notch with a total score of 722,395. (2) The high claimed scores in the DX Contest should include W2BYP with a c.w. score of 523,905. (3) The Club Scores in the V.H.F. Sweepstakes results should show W2TMN, not W2WCR, as the winner for the V.H.F. Institute of New York. Sincere apologies to the above concerned.

This is the issue in which we usually write about the forthcoming Simulated Emergency Test, in October. But what is there to say that has not already been said? We could simply refer you to the last three or four September issues of *QST* and let it go at that. We *could*, but we won't; because if we did, you probably wouldn't bother.

To begin with, the SET is not another murderous ARRL contest. It is at once both a public demonstration and a test of our own AREC facilities, not necessarily in that order of importance. Since AREC activities involve various other agencies, they too each play a part in the exercise. In particular, the Red Cross and civil defense come in for a lion's share of consideration — the former because it has traditionally been a primary to-be-served agency for us amateurs, and the latter because of its present-day importance in the amateur picture through RACES. Both these agencies have a number of representative stations in participation during the SET. More details on this in the SET announcement in next month's *QST*.

The thing we want to emphasize in this column, now, is the importance of participation by *every* AREC group and, afterwards, the importance of *reporting* your participation. Last year only 154 AREC groups reported on the regular reporting form, although we did receive a total of 216 reports one way or another. This is only about 11%, not a good reporting record at all — and yet, it was one of our best showings in years. The reasons given for not having an SET are numerous, no single reason being prevalent, such as: (1) we didn't get the SET Bulletin in time to make plans; (2) my EC appointment expired long ago; (3) there is no activity in this town; (4) there is too much activity here already, we don't need an SET; (5) we don't like our c.d. director; (6) our c.d. director doesn't like us; (7) our people are all tied up in RACES and we don't have time for the AREC; (8) no one will give us any equipment; (9) we don't need any practice, we're perfect as we are. And so on, ad infinitum.

In case you haven't seen it in the Activities Calendar, this year's SET is scheduled for October 10–11. If this week end doesn't suit your group, have your test some other week end — anywhere within a month of the one specified. Get the group together and make a decision, decide on what kind of an exercise you're going to put on, start laying your plans *right now*. Don't wait for the SET Bulletin, which probably won't reach you until around the end of September, or early in October. The SET is our face to the world. If you are in it, you are helping demonstrate the amateur potential for public service emergency communication.

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Three amateurs, members of a San Jose State College (Calif.) seashore study group, were involved in a dramatic attempt to save the lives of two fishermen trapped in a violent storm off the Gulf of California on Mar. 24. The violent sand storm came up out of the western dunes and raised havoc in the San Felipe area. Native fishermen had come in to shore at the first signs of the storm's approach, but three outboard motorboats with vacationing Californians aboard were immediately in trouble. Two of them finally made it to shore, but the third capsized four or five miles out. The director of the college group tried to get assistance from local commercial fishing boats, but without success. It was then that K6BMP, operating under a Mexican government permit as XEØBMP with the college study group, contacted the Mission Trail Net for assistance.

A call to the Long Beach Coast Guard station brought K6MCA on the frequency. The Coast Guard obtained permission from the Mexican government to search the area involved, but it was not until the following morning that the Coast Guard plane could arrive over San Felipe. After about three hours of searching the victims were found, both wearing their life jackets but both dead. Besides K6BMP, operators at XEØBMP included K6TWW and K6BDD. During the night the station was in contact with *W6s* EIC KUU WGO and K6MICA, among others, and during the search the next day it acted as ground-to-plane relay station.

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During the Cuyahoga County (Ohio) Green Cross membership drive, in which the AREC participated, W8ZEP/m witnessed a three-car collision and requested police assistance. Reports of the accident were on the way to the police even before the dust had settled, and help was on the scene some six minutes later. — *W8NZI, Asst. EC, Cuyahoga Co., Ohio.*

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More on the Cleveland flood of June 1: A net of 22 stations was formed on six meters, another net of 16 stations on 10 meters. Mobiles entered the flooded areas and reported to net controls. Two mobiles, W8PVQ and W8UZJ, were damaged by high water. K8KNJ was NCS on six, W8OXY on ten. Other participating stations not mentioned in last month's report: W8EXL, K8NAA, K8JBJ. — *W8BAH, Asst. EC, Cuyahoga County, Ohio.*

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The propane gas explosion near Pottsville, Pa., on June 2, brought out many amateurs from the surrounding countryside to lend a hand with disrupted communications facilities. SCM W3ZRQ was called by Pottsville Radio Officer W3JLQ and informed that telephone service out of Pottsville was completely disabled except for lines to Shenandoah and Tamaqua. W3ZRQ thereupon established contact with Lehighton, Allentown, Harrisburg and Reading. The RACES frequency of 3997 was used during the day, and traffic later cleaned up on the Pennsylvania Fone Net on 3850 kc. W3DGX set up a two-meter rig at Auburn and handled inquiries locally. W3HKF set up at the scene of the explosion and later moved his two-meter equipment to Orwigsburg, where temporary emergency headquarters were set up; he was later assisted by W3OML. W3JLQ was the Pottsville and Schuykill Haven outlet on six and two meters. K3BHU operated from Pine Grove on six and two meters and passed outside traffic to W3ZRQ on 80. K3BHU was net control for the whole set up.

Most of the local traffic concerned identification of the victims, most of whom were mangled beyond recognition. This was handled on six and two meters. C.D. items and press dispatches were handled via the 80-meter stations. W3WEM also assisted. The newspaper clipping publicizing this activity managed to tell the whole story without one single mention of amateur radio or RACES. — *W3ZRQ, SCM Eastern Penna.*

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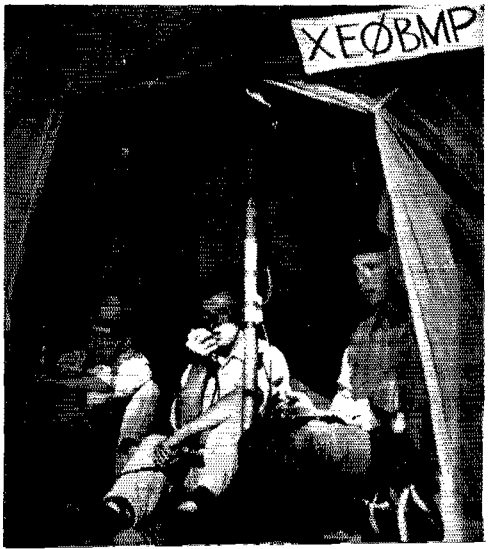
At approximately 1500 local time on June 10, a brush fire at Goose Bay, Labrador, completely destroyed nearly a mile of cable linking the Department of Transport's



A severe storm in the Gulf of California prompted XEØBMP to provide emergency communication in the search for victims of a capsized craft. Shown operating are K6BMP, K6BBD, and K6TWW.

The Cleveland Safety Council "Green Cross Fund Drive" found the Cuyahoga County AREC in action. Photo shows from left to right W8NZI, K8JHZ, and K8GJW.

remote transmitter site with its main office, cutting off all communications. VO2AH immediately set up a transmitter at the main office and organized a radio link to the remote site until 1200 on June 12, when the lines were restored. Participating in the link were the following members of the Goose Bay Amateur Radio Club: *VO2s* AA AH IA MK NA and UA. — VO2NA.

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On June 18, the services of the Pensacola (Fla.) area amateurs were offered in the search for a four-year-old boy lost in the swamps of Perdido Bay, Ala. At 1330, K4RMO/m went to the scene of the search with the party from the Naval Air Station, from which point communication was maintained with the base via W4OOW. K4SOI/m stood by at the base and handled traffic between K4RMO/m and the base officer in charge of the search. By 1630 W4IIF/m went to relieve K4RMO/m, while K4SOI stood by to handle his traffic. At 1830 K4SOI/m relieved W4IIF/m at the search area. K4IVD acted as fixed relay station with W4EWG and K4DDD/4 standing by to assist. K4IVD, K4RMO and W4OOW prepared the club's emergency power supply and W4OOW's emergency transmitter and brought them to the search area, while W4NBF, the club station at the base, took over as net control. This emergency unit was in operation by 2130. K4SOI/m returned to Pensacola, but K4IVD, K4RMO and W4OOW remained at the scene until 0230. W4EWG and K4DDD brought supplies and equipment and remained until 0400. K4SOI acted as net control. The search was called off at 0530 but W4EWG/m remained for several hours in case communication was needed. — *W4AXK.*

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The AREC of Cuyahoga County, Ohio, participated in the Island Road Races at Put-In-Bay, Ohio, on June 6, for the fifth time. Communications were furnished on behalf of various VIP's, lost children and police. By taking a load off the telephone circuits, better performance in the control of the race itself was permitted. For a considerable period of time, quite a few of the telephones were out of order and were backed up with amateur radio coverage. One of the principal functions of an amateur group in this type of activity is taking care of normal emergencies experienced by residents and visitors. In one case a woman collapsed and required medical aid. In another, a small child's face was seriously lacerated by a dog. In both cases a track ambulance was immediately summoned by AREC hand-carried units. — *W8AEU, EC Cuyahoga County, Ohio.*

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Twenty-six SECs reported May activities on behalf of 8678 AREC members. This is one less report than we received for May of last year, but it shows a definite increase in the number of AREC members represented. Two of the sections were new ones in the 1959 records: Tenn. and B.C. Other sections reported: NYC-LI, Ore., E. Bay, Mich., Colo., So. Texas, W.N.Y., Ind., Nevada, E. Fla., San Joaquin Valley, N. Mex., Kans., W. Va., W. Mass., Minn., Ala., Wis., Wash., Santa Clara Valley, Ont., Vt., Maritime, Wyo.

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On May 30, members of the Mt. Diablo Amateur Radio Club (Calif.) participated in a demonstration of amateur radio operation and equipment. W6HOF set up a complete station of home-built gear on two meters at the Civic Center in Walnut Creek. Members of the club and other amateurs checked in, for an impressive demonstration. Many amateurs from out of the area were contacted, including an aeronautical mobile near Modesto, Calif.

RACES News

The Los Angeles RACES group, among the best organized and most active RACES groups in the country, has recently completed two test exercises with the Los Angeles Fire Department. They were termed "Operation Firedog" and "Operation Firedog II" and were held on January 25 and May 9, 1959, respectively.

"Operation Firedog" provided an opportunity for the RACES group to demonstrate its ability to parallel existing county radio fire dispatching circuits. Fifty amateur stations were selected for the test, contained in an area approximately 15 miles wide and 30 miles long. Activation began at the County Command and Information Center with the 15 county districts activating in turn and reporting availability of mobile and portable units. This information enabled operation commanders to direct the movement of mobiles from the various districts to the fire stations selected. Frequencies on 160, 75, 10, 6 and 2 meters were used, and in many instances a single fire station would be provided with two or three different radio circuits. As soon as activation was 90% completed, all fire dispatches which were being handled concurrently by the normal county fire department system were relayed through the Command and Information Center. In addition, test messages were prepared which were individually addressed to each fire station and were handed to the RACES group at the rate of approximately one per minute. At the time each message was filed, a telephone call was placed to the fire station, then the elapsed time before delivery of the radio message was noted. Official results showed that 18% of the messages were delivered within one minute, 52% within two minutes and all within three minutes. Since the delivery involved the amateur's leaving his mobile and going into the fire station to make delivery, it can be seen that these elapsed times represent extremely fast traffic handling.

"Operation Firedog II" was designed to demonstrate the ability of RACES units to provide communication from locations where normal fire department radio systems experienced "dead spot" effects. Activation proceeded under the same general plan as in the first test, but thereafter the mobile units were directed to two of the county's district control centers. Command was located at one of the fire department's dispatch centers, with contact maintained to the two district centers mentioned. Operation commanders were handed slips giving the exact location of "dead spots" they wished covered. This information was relayed to the appropriate district control and a convoy consisting of one unit in each of the RACES bands was dispatched to the "dead spot," where it was met by fire department equipment, so that side-by-side tests could be made. Attempts were made to contact Operation Command on each band and results noted. In all tests except one, the RACES group was able to provide direct contact. In the other location, a relay through another RACES unit completed the circuit. The area involved in this operation was approximately 30 by 10 miles and was situated in terrain ranging from 1,000 to 5,000 feet in elevation.

Both operations have been highly praised by county officials and have led to even closer cooperation between such officials and the RACES group. Further tests are being planned. With the county RACES membership approaching the 1,000 figure and operation nets every day of the week except Saturday on all bands with a weekly check-in averaging close to 600, is it any wonder that the L. A. RACES group claims to be the biggest and best organized? We detail the above activities in L. A. not so much to heap lavish praise on this group (although they certainly deserve it) as to give other RACES groups some ideas for perfecting their own organizations in similar ways.

TRAFFIC TOPICS

The summer slump in traffic hasn't seemed to materialize, this year. The nets seem as busy as ever, some of them busier. Since there doesn't seem to be anything particularly different about *this* summer, perhaps the increase in traffic volume over previous summers is merely a harbinger of things to come this fall, now nearly upon us. Are we ready for the deluge that starts building up in October, gets worse in November, hits a screaming climax in December? Can we handle it all with any degree of efficiency? Only time will tell.

Meanwhile, we had best look at some of the reasons why our traffic handling isn't all it might be, and that's what we hope to do in this column the next two or three months.

This month, on the subject of originations. It goes without saying that traffic origination is of prime importance to the game. That's why we give it some special BPL consideration, along with deliveries. It is unfortunate that some operators don't use common sense when they originate traffic — because once it is originated, no relaying operator can change its content, and most good operators will not refuse it.

Recently, we have received several letters griping about the *length* of messages. One operator we know actually serviced the originating station informing him that his message was being *canceled* because of undue length. This is going a little too far, we think. No one can force you to accept any traffic you don't want, but once you have accepted it you should do your best to handle it. On the other hand, originators should be more considerate of handling stations. Twenty-five words is about the maximum that should be in the text of the average amateur radiogram. So, should we restrict them to this? No, that wouldn't make good sense; sometimes it is necessary to use more words than that. Let's just use a general maxim: keep the messages as short as possible. When you are originating one yourself, keep it short. If a third party is originating one at your station, ask him to keep it short. In very few cases is it necessary to go over 25 words.

Put a word count (check) on *all* originated messages — yes, even service messages. Many of the inaccuracies in the traffic we handle could be avoided if we "checked" our messages — and goodness knows there are enough inaccuracies as it is! Every time an operator gives us a message with "NC" or "no check" in the preamble, we want to get out the rettysnitch. Make sure every message you send has a check count on it, whether you are originating it or relaying it.

In originating traffic, the golden rule applies. Ask yourself how *you* would like handling the message if someone else originated it. This applies to both its form and its content, but especially the latter — because relaying operators can correct the former if improper, but not the latter. Their only defense against this is to refuse to handle it, and when they do this it makes both you and amateur radio look bad.

So, originators: make your traffic originations unimpeachable. Originate lots of traffic, but make it *good* traffic.

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The month of June marked the 100th post-war BPL for Stan Surber, W9NZZ, winner of the 1953 Edison Award. In March 1952 *QST*, in this column, we said: "The call of W9NZZ has been appearing in the BPL right along without anybody thinking very much about it, especially since the totals submitted were not particularly high. We thought you might be interested to know that practically all of those messages came from people "frozen in" in the Far North with no other form of communication available to them for months on end, and that most of the messages were 300 to 500 words in length. Ordinarily, we discourage messages with texts this long, but we have to admit that in this case it's different, and that maybe W9NZZ's call in the BPL ought to have a gold star after it.'

Stan never asked any thanks or recognition. All he wanted was to help alleviate the loneliness and homesickness of the personnel in the Arctic. The traffic he handled was not the kind of traffic most of us traffic hounds handle. These were letters, some of them long letters, and they were treated as such — that is, mailed from or to Peru, Indiana. After receiving the Edison award for 1953, he kept right on doing it; in fact, the publicity probably give him more "business," because his traffic totals kept going up higher and higher. Look in any BPL listing; you'll find W9NZZ, usually up near the top. One hundred BPLs takes over eight years, chum! And when you stop to think about the kind of traffic he handled — well!

W9NZZ isn't the first amateur to break the C-mark with BPLs, but if anyone ever made it the hard way, that was Stan. One hundred gold-star BPLs deserves at least a gold medal. We traffic men salute you, W9NZZ!

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National Traffic System. Every participant in an NTS net is a potential NCS — or should be. This is an NTS standard operating procedure that becomes especially applicable in the summer: that if no NCS shows up within three minutes, *any* net station can and should QNG (take over as NCS) so that the net will not be delayed. Once this station is in charge, he should *carry through* to the end of the net, even if the regular NCS should show up late. Turning over the controls to a late NCS is also a waste of time. If possible, the late-arriving NCS should be assigned the duty that the substitute NCS had before he found it necessary to QNG.

We know, being NCS is a thankless, time-consuming, nerve-wracking job. Also, it requires special training. This column has had discussion regarding NCS-ship in past

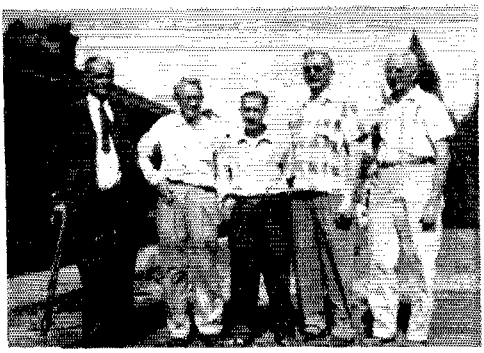
NATIONAL CALLING AND EMERGENCY FREQUENCIES (KC.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

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

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

David Gifford (left), president of the Bristol, New Hampshire, Lions Club, presents a plaque to J. Langdon Prescott, K1BCS. "Press," well known in traffic circles, was commemorated for his outstanding public service in handling traffic.



The merry month of June found this gathering of old timers at a picnic. Two-letter-call boys are left to right W8AL, SCM Ohio; W8VO; W8RB; W8AQ; W8NP.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for May traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3CUL	317	3957	3251	569	8094
W2KEB	387	1692	1556	379	4014
W7BA	24	1242	1191	49	2506
WØBDR	7	919	827	22	1775
K2UTV	316	692	671	21	1700
WØLGG	17	659	964	34	1674
W9NZZ	434	617	0	617	1668
W6ZJB	140	677	646	13	1476
W7PGY	21	691	643	38	1393
W4PL	12	757	579	25	1373
W5RCF	51	535	508	57	1151
WØOHJ	10	555	541	14	1120
W9DYG	26	542	516	17	1101
KØONK	160	385	374	8	927
W6RSY	38	417	278	154	887
W8UPH	11	435	393	41	880
K6HLR	25	454	369	17	865
W9SCA	10	437	416	0	863
K4BUL	20	403	421	2	846
W6GYH	56	344	324	15	769
K5FHU	34	358	229	129	750
W9DO	16	359	97	278	750
K8JLF	31	347	319	27	724
K3ALD	101	310	309	1	721
W3VR	38	334	322	4	698
K1BCS	162	281	200	52	695
W6WPF	5	338	310	28	681
K1GRP	43	304	289	15	651
K9DAC	16	309	304	5	634
W8DAE	43	296	160	128	627
W1AWA	14	302	291	11	618
K1ADH	85	258	162	102	607
W7DPW	19	294	269	19	601
WØLCX	23	273	258	15	569
K4ZMT	87	241	192	44	564
K6YBV	38	283	198	40	559
W7JBV	18	260	240	38	556
WØBLL	1	278	276	1	556
K5IPK	75	214	249	8	546
K1CIF	76	361	83	16	536
W6EOT	10	274	220	24	528
W7BDU	3	261	247	11	522
W4RLG	26	259	227	8	520
W9ZYK	20	250	171	74	515
K6GZ	331	91	50	41	513
W7ZB	8	253	237	12	510
W9IDA	9	248	240	6	503
WA6BLM	9	249	238	5	501
Late Report					
K6YBV (May)	41	351	275	53	720

More-Than-One-Operator Station

Call	Orig.	Recd.	Rel.	Del.	Total
W6LAB	75	1840	1801	39	3755
W6YDK	2196	399	214	170	2979
K6MCA	280	886	860	27	2053
KG1DT	228	182	2	180	592

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

K4QLG	274	K7AEZ	126	K9BSU	105
W4SHJ	177	W5ZHN	118	WØOME/5	105
K4CNY	175	K4ZML	115	K2VVL	102
W8LUS	172	K1IIK	111	K5HTM	101
W5DWB	161	W9DGA	111	K6PLW	101
K4QER	133	KØBIX	107	W9USR	100

More-Than-One-Operator Stations

K4UJP/4 250 K4WCZ 111 W9TUS 103

BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: K1DIO K1IIK W1SMU K4QLG K4VDL W7QLH W7YHS.

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.

months (e.g., Mar. '59). The purpose of such discussion was to acquaint *all* with NCS methods. If you are in NTS, you may be called upon some time to control a net.

Of course, one solution to this problem is to be sure your net controls are reliable. But we're all human, and none of us get paid for this; we all miss once in a while. Alternates? Certainly, every NCS should have an alternate, but during the summer months both the NCS and his alternate often fail to show up. This in itself is bad. But what is even worse is the on-the-air spectacle of ten or fifteen stations floundering around at net time asking each other who is NCS, who is supposed to be NCS, discussing his probable whereabouts, and in general doing everything but handle traffic for five or ten minutes after net starting time, and as often as not winding up by having a QNF-type net with its attendant confusion, or no net at all.

Perhaps it would be a good idea to designate certain regular net stations as "NCS caliber," with the understanding that any such station on the net would QNG if no NCS showed up within three minutes after net time. This designation would logically be a function of the net manager. In any event, fellows, let's do something about this. Get those nets started within this three-minute period. Let's not sit on our hands waiting for tardy NCSs. NTS operates on a time schedule, and time flies.

June reports:

Net	Sessions	Traffic	Rate	Average	Representation (%)
1RN	29	0472	.427	16.3	86.2[1]
3RN	60	426	.293	7.1	87.8
4RN	59	537	.262	9.1	63.7
RN5	60	768	.316	12.8	92.6
RN7	60	623	.295	10.4	37.3
8RN	54	381	.261	7.1	87.7
9RN	56	1106	.477	19.7	86.6
TEN	60	776	.504	12.9	61.9
ECN	18	55	.137	3.1	74.1[1]
TWN	30	573	.468	19.1	68.0[1]
EAN	26	950	.723	36.5	96.8
CAN	30	909	.672	30.3	97.8
Sections[2]	776	5907		7.6	
TCC Eastern	56[3]	312			
TCC Central	64[3]	1009			
TCC Pacific	114[3]	1045			
Summary	1318	15839	EAN	10.2	CAN
Record	1287	13818	.857	15.9	100.0

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

[2] Section nets reporting MDD (Md.-Del.-D. C.); GSN (Ga.); CN & CPN (Conn.); KYN & KNN (Ky.); Iowa 75 Phone; SCN (Calif.); NJN (N. J.); TLCN (Iowa); VN (Va.); S. Dak. 75 Phone, S. Dak. 40 Phone & SDN (S. Dak.); AENP, AENC, AENP Morning & AENB (Ala.); SCN (S. C.); Tenn. CW; NWFN, FTPTN, Gator & FPTN (Fla.); MSN, MPN Noon & MPN Evening.

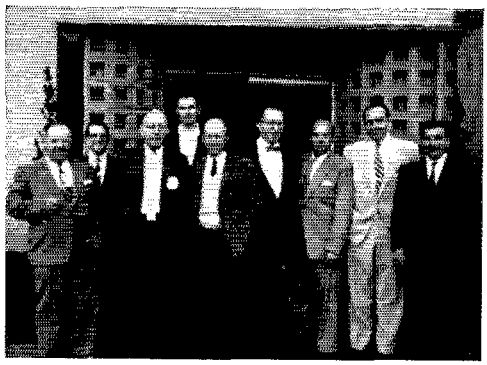
[3] TCC schedules kept, not counted as net sessions.

This was a record-breaking June, despite the absence of a couple of crucial west coast reports and despite the fact that last June reporting was 100%. We urge upon net managers the advisability of mailing your reports not later than the tenth of the month. Our deadline is the fifteenth. If all NCS haven't yet reported on that date, it's not your fault; seems as though a minimum of ten days ought to be long enough to get NCS reports in. We can't hold up our reports because we have one or two delinquent NCS.

W3UE says he is well pleased with the 3RN "summer sked of sweat." Eastern Pa. is definitely dependable again, Western Pa. only fair. RN7 certificates have been awarded to W7s APS DPW DZX GIP PGY BDU YHS ZFH ZB, K7EWX and VE7AAF. W9ZYK reports 9RN still going strong, with Illinois falling down a bit.

Transcontinental Corps. Those purty aurora displays we've been getting may be nice to look at, but they raise the old Ned with our TCC schedules. The percentage of successful

A passer-by was drafted to snap this photo at Fishermen's Wharf in San Francisco last summer, after a dinner for traffic, DX and ARRL official brass. From left to right: W6GGC (ex-SCM San Fran.); W6OPL (ex-SCM S. F.); W6HC (Director, ARRL Pacific Division); K6OHJ; W6YHM (ex-SCM S.C.V.); W6BIP; EA6AF (who owned the camera); W1NJM; K6ANP (SCM S.F.).



schedules will probably go down during the summer months, but the TCC is still doing its job.

Vacancies? You bet. If you want to fill a TCC schedule and think you have what it takes, contact your TCC Director: W3WG in the Eastern Area, WØBDR in the Central Area or W6EOT in the Pacific Area (including mountain states). TCC is no picnic in the summer, but it's a sure-'nuff challenge. C'mon, gang, are we men or mice?

Area	*Functions*	*% Successful*	*Traffic*	*Out-of-Net Traffic*
Eastern	56	85.7	1014	312
Central	64	87.5	1332	1009
Pacific	114	90.4	2054	1045
Summary	234	88.5	4400	2366

The TCC roster: Eastern Area — W1AW, W1NJM, W1SMU, K2SIL, K2SSX, W2VDT, K2UTV, K2QBW, K3ANA, W3COK, W3WG, K8JLF, W9DO. Central Area — WØLCX, WØSCA, WØBDR, WØLGG. Pacific Area — W5DWB, *W6s* EOT HC GYH, *K6s* LVR OJV CPQ HLR GID, WA6ATB, *W7s* ZB GMC BDU, K7CWV, WØKQD.

Net Reports. The Early Bird Transcon Net reports 29 sessions, 423 messages handled. Sundown Traffic Net had 30 sessions, 39 messages, 99 check-ins. Mike Farad Emergency and Traffic Net conducted 22 sessions in which there were 199 check-ins and 81 messages. Transcontinental Phone Net reports a traffic total of 1377. The 7290 Traffic Net had 41 sessions and handled 401 messages with 1160 check-ins. North Texas-Oklahoma Net had 30 sessions, 357 messages, 609 check-ins.

W1AW SUMMER SCHEDULE

(All times given are Eastern Daylight Saving Time)

Operating-Visiting Hours:

Monday through Friday: 1300–0100 (following day).

Saturday: 1900–0230 (Sunday). Sunday: 1500–2230.

Exception: W1AW will be closed from 2230 Sept. 6 to 1300 Sept. 8 in observance of Labor Day.

A map showing how to get from main highways (or from Hq. office) to W1AW will be sent to amateurs advising their intention to visit the station.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules.

Frequencies (kc.):

C.w.: 1820, 3555, 7080, 14,100, 21,075, 28,080, 50,900, 145,600.

Phone: 1820, 3945, 7255, 14,280*, 21,330, 29,000, 50,900 145,600.

Frequencies may vary slightly from round figures given; they are to assist in finding the W1AW sginal, not for exact calibration purposes.

Times:

Sunday through Friday, 2000 by c.w., 2100 by phone.

Monday through Saturday, 2330 by phone, 2400 by c.w.

General Operation: Use the chart on page 103, May *QST* for times and frequencies for W1AW general contact with any amateur. Note that since the schedule is organized in EDST, the operation between 0000 and 0100 each day will fall in the evening of the previous day in western time zones.

Code-Proficiency Program: Practice transmissions at 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and at 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday are made on the above-listed frequencies (except 1820 kc.). Code practice starts at 2130 each day. Approximately 10 minutes' practice is given at each speed. On Sept. 16, Sept. 21, and Oct. 20, instead of the regular code practice, W1AW will transmit qualifying runs and a frequency measuring test.

*Single sideband.

FREQUENCY MEASURING TEST, SEPTEMBER 16

ARRL invites all amateurs to try their hand at frequency measuring. W1AW will transmit signals for this purpose starting at 9:30 P.M. EDST (6:30 P.M. PDST), Wednesday, September 16. The signals will consist of dashes interspersed with station identification. These will follow a general message sent to help listeners to locate the signals before the measurement transmission starts. The approximate frequencies used will be 3635, 7113 and 14,186 kc. About 4½ minutes will be allowed for measuring each frequency, with long dashes for measurement starting about 9:36 P.M. It is suggested that frequencies be measured *in the order listed.* Transmissions will be found within 5 or 10 kc. of the suggested frequencies.

A.R.R.L. ACTIVITIES CALENDAR

Sept. 3: CP Qualifying Run — W6OWP
Sept. 16: Frequency Measuring Test
Sept. 19–20: V.H.F. QSO Party
Sept. 21: CP Qualifying Run — W1AW
Oct. 7: CP Qualifying Run — W6OWP
Oct. 10–11: Simulated Emergency Test
Oct. 17–18: CD Party (c.w.)
Oct. 20: CP Qualifying Run — W1AW
Oct. 24–25: CD Party (phone)
Nov. 5: CP Qualifying Run — W6OWP
Nov. 7–8, 14–15: Sweepstakes Contest
Nov. 18: Qualifying Run — W1AW
Dec. 2: CP Qualifying Run — W6OWP
Dec. 17: CP Qualifying Run — W1AW

OTHER ACTIVITIES

The following lists date, name, sponsor, and page of this *QST* on which more details appear.

Sept. 5–6: LABRE DX Contest (c.w.), LABRE, p. 77.

Sept. 12–13: LABRE DX Contest (phone), LABRE, p. 77.

Sept. 12–13 Pan-American Contest (phone), RCP, p. 74.

Sept. 19–20: Scandinavian C.W. Activity Contest, SRAL, p. 75.

Sept. 19–20: Pennsylvania QSO Party, Etna Radio Club, p. 100.

Sept. 19–20 Pan-American Contest (c.w.), RCP p. 74.

Sept. 26–27: VE/W Contest, Montreal Amateur Radio Club, p. 49.

Sept. 26–27: Scandinavian Phone Activity Contest, SRAL, p. 75.

Oct. 3–4: VK/ZL DX Contest (phone), WIA, p. 75.

Oct. 10–11: VK/ZL DX Contest (c.w.), WIA, p. 75.

At 12:30 A.M. EDST, September 17 (9:30 P.M. PDST, September 16), W1AW will transmit a second series of signals for the Frequency Measuring Test. Approximate frequencies used will be 3555, 7018 and 14,006 kc.

Individual reports on results will be sent to all amateurs who take part and submit entries. When the average accuracy reported shows error of less than 71.43 parts per million, or falls between 71.43 and 357.15 parts per million, participants will become eligible for appointment by SCMs as Class I or Class II OOs respectively.

This ARRL Frequency Measuring Test will be used to aid qualification of ARRL members as Class I and Class II observers. Present observers not demonstrating the requisite average accuracy will be reclassified appropriately until they demonstrate the above-stated minimum required accuracy. Class I and Class II OOs must participate in at least two FMTs each year to hold appointments. SCMs (see listing, page 6) invite applications for Class III and IV observer posts, good receiving equipment being the main requirement. All observers must make use of cooperative notices, reporting activity monthly through SCMs, to warrant continued holding of appointment.

Any amateur may submit measurements on one or all frequencies listed above. No entry consisting of a single measurement will be eligible for *QST* listing of top results. Listing will be based on over-all *average* accuracy, as compared with readings made by a professional lab.

REGISTER YOUR NET

You know, this net directory we get up each year is quite a document. It lists all nets registered not only alphabetically by name of net, but also by frequency from low to high, and by state of coverage where the coverage is within a single state. By using it, you can look up all operating data on any net by name, you can tell its exact direct coverage, which other nets operate at the same time, and whether or not it's part of the National Traffic System. If you want to know which nets operate within any particular state, you will find them listed under that state (or Canadian province). If you want to know which nets operate on a certain frequency, you have but to refer to the frequency listing. It's a handy thing for any traffic or emergency man to have in his shack. Its cost to you? Nothing! It's free for the asking. Its cost to the League? Plenty, bothin money and personnel time, which amount to the same thing in the end.

You can help us to get out the net directory quickly, accurately and at minimum cost (and minimum cost to us is minimum cost to you) if you take the trouble to register your net promptly, accurately and completely, in accordance with the rules we have to set up if the net result is to make any sense. This item is to help you to help us to get out a decent net directory in a decent time. Please read it carefully before and while you make out your net registration.

Only public service nets are registered. If your net is a rag-chewers "roundtable" or serves some other strictly social function, don't bother to register it. We are interested, for the purpose of this directory, only in nets dedicated to emergency or traffic work or training for either. This includes civil defense, of course.

If your net now has an asinine name, how about dignifying it a little? We're proud of our net directory and we like to show it to important people so they will realize that we amateurs are really doing something in the public service. When VIPs run incredulous eyes down the list and see names like "Gum Beater's Net," "Moron Net," "Horsefeather Net" and "Woman-Hater's Net," they give us the horse laugh. It's downright embarrassing. So be forewarned: even if your net does perform a public service, any net with a ridiculous name is liable to be thrown out of the net directory. We have as much sense of humor as anybody (and more than some), but when it comes to public service work by amateurs, we ain't foolin'.

Don't register any nets that do not operate in the amateur bands. This excludes MARS and "citizen's band" nets.

Make your registration information *legible*. If we can't read it, we can't register it.

Generally speaking, we cannot engage in correspondence regarding net registrations. Neither can we go through reports, bulletins or miscellaneous correspondence to ferret out net registration information. Take the trouble to send in your net registration separately, and mark it as such. We'll reply if you ask us something, but chances are if there is something wrong with your registration we won't be able to write you asking for correct information. So try to

NET REGISTRATION

Name of Net.....

Net Designation.....Freq.....Days.....

Mgr.....Starts.....Ends.....ST

Direct coverage.....

Purpose of Net.....Starting date.....

NCSs.....NTS?.....

Liaisons.....

This info submitted by.....
(Name and/or call)

CD-85 (Rev. 9/54)

make it right the first time. If it doesn't appear, or appears wrong, it may be too late to tell us about it.

If you have not registered your net with us since August 1, 1959, it is in the "inactive" file and will not be reinstated unless you act. Here are the deadlines: (1) For appearance in the first net list in November *QST*, Sept. 15. (2) For appearance in the supplementary list, in January *QST*, Nov. 15. (3) For appearance in the printed cross-indexed net directory, Nov. 1. (4) For appearance in the supplementary net list in March *QST*, Jan. 15. (5) For appearance in the supplementary net list in May *QST*, Mar. 15.

The best way to register (or re-register) your net is to get a copy of CD-85 (see cut) from us, fill it out and send it in. If you don't have CD-85 and don't want to wait for us to send you a copy, here's the information we need (Items 1, 3, 4, 6 and 8 are *absolutely required*):

1. *Name of Net.* Enter this carefully, because we will enter it *exactly as received.* Make sure that any subsequent registrations or corrections list the name exactly the same or we'll have to change it.

2. *Net designation*, if any. The set of letters which identify the net on the air, in writing or in conversation.

3. *Frequency* or frequencies, in kc. If more than one frequency, be sure the time and days of operation on each are clear. Frequency bands or segments are not sufficient.

4. *Days.* Tell us on *which* days the net operates, not how many. "Daily" means *every day*, including Sunday.

5. *Call of Net Manager.* This is the amateur who organizes the net, arranges for NCS, conducts correspondence, or otherwise is the person to be contacted about the net.

6. *Net starting time(s).* Net ending time(s). Nets registered under "daylight saving" time are *not* corrected to standard time without notification by the registrant at the time the change is made. This constitutes a change in operating time (no matter what your clock says) and requires notification. Don't count on us to make the change automatically; all nets don't change, and neither do all localities. If your net has no specific ending time, indicate it approximately so we will have some idea how long the net normally lasts.

7. *Direct coverage.* Only the coverage afforded by net stations, not coverage effected by contacts outside the net.

8. *Purpose of net.* Indicate traffic, emergency, or both. Nets not performing a public service are not eligible.

9. *Starting date.* If a new net, the date it started or will start. If a net recessed for the summer, indicate its fall starting date. If an old, continuously-operating net, just jot down the year it was founded.

10. *Net control stations.* There is no such thing as a net without control stations. List the calls of the stations who *regularly* control your net.

11. NTS? We want to know if your net is a part of the ARRL National Traffic System. If you don't know, it probably isn't.

12. *Liaisons.* We'd like to know the names (or designations) of nets with which regular direct traffic interchange is conducted.

13. Call letters of the amateur submitting the information.

Important note: registration of your net in our net directory gives you no special status as over an unregistered net. The net listing is for *information only.*

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

Sept. 21 at 2130 Eastern Daylight Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted Sept. 3 at 2100 PDST 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. Approximately 10 minutes' practice is given at each speed. Reference to tests 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 Test from July *QST*
Sept. 2:	*San Marino Calling*, p. 46
Sept. 8:	*Dialing the Code*, p. 48
Sept. 14:	*Ivory Tower Confessions*, p. 55
Sept. 17:	*An 800-Watt P.E.P. Input Linear*, p. 11
Sept. 22:	*Station Control Circuits*, p. 14
Sept. 25:	*A Modern High-Selectivity Receiver*, p. 16
Sept. 30:	*High-Power Triode Amplifiers . . .* , p. 24

DXCC NOTES

Your attention is called to the closing date for DXCC credit in the December list. It is September 30, 1959.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....294	W8BRA....289	W3KT.....287
W6AM.....294	W3JNN....289	W6MX.....286
ZL2GX.....293	W5ASG....289	W3BES....286
W8HGW....293	G3AAM....289	W8DMD....286
PY2CK.....292	G2PL.....289	W8BKP....286
W3GHD....292	W2HUQ....289	W6ADP....286
KV4AA.....291	ZL1HY....289	W6EBG....286
W9NDA....291	W1ME.....289	W7AMX....285
W8JIN.....290	W6CUQ....288	W7GUV....285
W6SYG....290	W6DZZ....288	W5ADZ....285
W2AGW....290	W9YFV....287	W4TM.....285
W6ENV....290	W9RBI....287	W7GBW....285
	W6GFE....287	

Radiotelephone

PY2CK.....292	W1FH.....282	ZL1HY.....278
W8GZ.....284	W8BF.....280	W8KML....275
ZS6BW....283	W3JNN....280	W6AM.....274
W8HGW....283	W9RBI....279	W6YY.....274
VQ4ERR...283		W9NDA....272

From June 1, to July 1, 1959, DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

W2ZX.....219	K2GKU....105	W7ESN.....101
W6JHV....208	K9DJN....105	W7PJC.....101
K6CYO....202	W9YZG....105	K8IQQ.....101
G3AIZ.....190	K3CIO.....104	K8JXK.....101
SM5DW....175	K6DED....104	KH6BG.....101
K2KCE....160	W8GMK....104	OE5GR.....101
W4ARR....152	K9GJD....104	SM5BFE....101
G5DJ.....127	SP6GX....104	W2BXB.....100
JA3FT.....123	SP9DT.....104	K2EYZ.....100
OH9RD....120	K5ABV.....103	K2FG.....100
W3UDN....119	K6OYD.....103	K4JKR.....100
DJ3EN....114	K9BGL....103	W4NPT.....100
UC2AR....113	W9CBE....103	K4TFI.....100
VE2AYY...112	DL1FZ.....103	K4TWK.....100
K2EUH....111	K1CDN....102	W5ARV.....100
VE1KM....109	K1DMG....102	K6COP.....100
WA2CCC...108	K2SGO.....102	K6JGN.....100
W8BIE.....107	W6CQW....102	K8DYX.....100
G3KXT.....107	W8NNR....102	W9DCN.....100
W2OWX....106	K9BHD....102	K9IYW.....100
W8CDV....106	DJ2NN.....102	W9NGB.....100
W6HPB....106	DJ2UT.....102	WØBTD.....100
KH6CQS...106	W1GZP.....101	FQ8AG.....100
ZL2VN.....106	KØKWY/4..101	VE8MX.....100

Radiotelephone

W9LNM....182	K4SKI.....105	W2CGJ.....101
LX1HM....137	I1TC.....104	W3KDP.....101
W3AYD....131	SM5DW....104	W4JFV.....101
K1CJV.....113	K4GZL.....103	K4SXO.....101
W1AOY....112	SM3AZI....103	K9HCG.....101
W1ZW.....112	W9JFJ.....102	W1PCD.....100
W9VTV....111	VE3ES.....102	DL4ZC.....100
G5DJ.....108		VE1PQ.....100

ENDORSEMENTS

LU6DJZ....283	WØBFB.....250	W2UVE....226
W6LDD....274	W7HIA.....244	K2PIC.....225
W2KUW....271	K6UYC.....241	K9HVR.....225
W2CYV....270	W7HXG....241	W6RLP.....224
W4FIJ.....262	W1HA.....240	OK1HI.....224
W1ZW.....261	W6DBP.....232	W2LSX.....221
W6CTL.....260	W5HJA.....231	W3WU.....221
K6EVR.....260	W9UIG.....231	W1RKP.....220
W6QNA....260	CN8JX.....231	W2QJM.....220
W6KSM....260	W1QNC.....230	W1OJR.....218
K2BZT.....256	W2FBS.....230	SM5CCE....216
W6CHV....252	W2SSC.....230	W6BSY.....213
W1IAS.....251	W4DHZ.....230	W4UXI.....211
W8EV.....251	W6IBD.....230	DL3RK.....210
W2BYP....250	PA0FX.....230	W1BAV.....205
K2OEA.....250	K6CJQ.....228	W1ELR....205
W5LW.....205	KØHGB....166	K6OYE.....140
W9VP.....205	W1WAI....164	W8HEV.....140
K5LIA.....202	W4EFX....164	WØSLB.....140
W5PM.....201	G4FN.....164	I1ZQ.....140
K2LWR....200	VP9BM....164	K1CJV.....139
W3DBX....200	W1MLJ....162	G2AFQ.....139
W4JII.....200	W8IBX....162	ZS3S.....137
W4NBV....200	W3BYI....161	W3CLP.....132
WØAJU....200	W2FZY....160	KØLFY.....132
JA1CR.....200	EA7CP....160	K2PFC.....131
SM5BCE....200	K4LTA....159	K4RXQ.....131
VE3DKY....200	ZL3IS.....158	W1UCA.....130
ON4KT.....196	W3KHU....156	K4BCN.....130
W9HKL....195	JA2DN.....156	W4HTV.....130
WØDMA....195	W6BAG....155	W6JH.....130
K9ATZ.....193	I1VS.....155	K6SHJ.....130
W5KLB....192	W5BUK....154	W7ZAS.....130
W3KFQ....190	DL1JW.....153	K8BOD.....130
K8AGB....190	ON4BX.....153	K8IKB.....130
W1WLW....185	K2SHZ.....151	W8VVD.....130
WØCPM....185	W3MSR....151	K9CAZ.....130
OY7ML.....185	W4SKO....151	CX2CN.....130
W1AW.....182	W5AUJ....151	W4SHX.....128
W2GTL....182	WØIDI....151	KØESH.....125
W1ORP....181	DJ3KR....151	VE8PB.....125
W4IEH....181	W2PCJ....150	4X4KK.....125
W6ZMX....181	W3DYU....150	W2WMG....124
I1FO.....181	W3IPO....150	WØCDV....124
VE2YU.....181	W6MUM....150	W8BWS....122
W2RDD....180	W9OAN....150	SM3AZI....122
W2VYX....180	GW3BNQ....150	W4SNR....121
W4EEO....180	W3QMG....148	SM6AMR...121
W4QT.....180	W6CHL....147	W1HGT....120
W6BIF.....180	K6CTV....147	W7TPE.....120
VE6JR.....180	G3BDS....146	OE8SH.....120
KP4AIO....176	W6HJ.....145	K2MDL.....119
PY4AJD....173	ZE3JO.....144	W5TJ.....118
OH1QE.....172	K2QHL....143	W9SD.....116
W4HKJ....171	K4BNA....143	WØETV.....116
W4PLL....171	K4QIJ.....142	W4WDI.....115
CR7LU.....171	WØGBJ....141	W7CWE.....112
W1OOA....170	OH2OJ....141	K8GHG.....111
W2BXY....170	W1EKO....140	K2UKQ.....110
K6KII.....170	W2BAC....140	W4YWX.....110
W7NRB....170	W3CDG....140	W7OQO.....110
W8PCS.....170	K5KBH....140	W7YEY.....110

Radiotelephone

I1SM.....242	W4EFX....162	W7KT.....132
W5KBU....240	W5JRF....162	K2PIC.....131
W7HIA.....237	W8MXS....160	W3MDE....131
PY2AHS....217	K9ATZ.....160	W4HKJ....130
VK4FJ.....211	K2BZT.....157	F8VU.....130
W5GXP....210	I1VS.....155	I1BWN.....125
W5HJA.....210	W4EEO.....152	W2GBC.....122
W6CHV....200	KØACC.....151	W3BNU.....121
WØZSZ.....184	W1JYH....150	K4BCN.....121
W2LV.....182	W1PMZ....150	W1BAV.....121
W6CPM....182	HB9JW.....146	W3AZQ.....119
WØKOK....182	W1BIH....145	W2PFL.....113
WØQVZ.....181	W5HAD....145	W4UWC.....113
WØBFB.....172	W3QMG....143	I1ZQ.....113
K6LAS.....171	W6BSY....142	W8IJZ.....112
PY1ACP....171	PA0FX.....141	K4REXQ....110
W2KUW....170	K5JEA.....137	W9FVU.....110
K6EVR.....170	G2AFQ.....135	VE1ADE...110
W7HXG....170	W8CUO.....133	

U.S.-Canada Area and Continental Leaders

WØELA.....277	VE3DIF....242	VE7ZM.....272
KL7PI.....202	VE4XO.....180	VE8AW.....195
VE1EP.....230	VE5RU.....185	VO1DX.....211
VE1PQ.....230	VE6NX.....241	4X4DK.....276
VE2WW....250		ZS6BW.....283

Radiotelephone

W2HTI.....221	KL7AFR....190	VE5RU.....178
W4DQH....245	VE1NH.....122	VE6TF.....134
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• 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. RM: AXA. PAM: TEJ. The PFN meets Mon. through Fri. at 1800 EDST on 3850 kc. The EPA C.W. Net meets nightly at 1930 EDST on 3610 kc. *CQ HAM RADIO*, a Japanese amateur magazine, featured the QSL card of YYL as outstanding. ELI needed a week to recover from Field Day. Didn't everyone? FWI is back on with an Apache and vertical antenna. KJ received the "Michigan Week" award on 40-meter phone. KGK accomplished WAC on 10-meter phone. New appointments are CPR as OES. K3DZB as ORS. BFF made a high score in the Frequency Measuring Tests and is now OO. VR, the OM of CUL, is a new ORS and both made BPL. K3EXW is now General Class. Through the efforts of the Bucks County ARC and an FCC examination held in the Firehouse at Morton the following made General Class: K3HRZ, EGD, HBB and GNU. K3ANU has modified his DX-100. K3AHT received the Eastern States Net certificate. HNK received "Keystone" and "W-Del" awards. K3HXC is on the air with a new Viking Navigator and worked Oregon for his QSO. The Lancaster Transmitting Society had 30 members participating on Field Day. New club officers are as follows: Mt. Airy V.H.F. Society CL, Pres.; HKZ, vice-pres.; SAO, secy.; CPT, treas. West Phila. Radio Assn. K3EID, pres.; FHR, vice-pres.; KN3DOR, treas. Short Skip RC—ILN, pres.; AAU, vice-pres.; K3BHX, secy.; K3ANU, treas. Bucks County ARC—K3DVB, pres.; KN3GSV, secy.; K3BKP, treas. FkE and KMD have worked out a link between the Boy Scout Camp Minsi in the Pocono Mts. for passing traffic during the camping season. K3ALD qualified for CP-25. The members of the Knuckle-Head Net held a gabfest and picnic at Lancaster Aug. 9. BPZ is the new EC for Lehigh County. There are some Emergency Coordinator appointments for a number of eastern counties still available. Anyone interested can inquire via DUI, our SEC. BNR has changed his QTH to Strafford, Pa. CMN is back handling traffic with a new Viking Valiant. JNQ is doing quite a bit of rag-chewin' with his new SSB-100. K3HGM recently became General Class but before moving out of the 80-meter Novice band worked VP1AA. BQA now as 200/220 for DXCC. Traffic: W3CUL 8094, K3ALD 721, W3VR 698, K3DZB 455, BHX 141, W3NNL 122, FKE 70, AXA 69, ZRQ 68, K3DFS 56, ANS 31, W3HNK 26, K3AHT 25, W3WHK 24, AMC 22, KMD 21, BFF 18, BUR 16, ZLP 14, BNR 10, EU 8, ELI 5, K3DCB 4, W3DUI 3, NF 2, K3HXC 1.

MARYLAND-DELAWARE-DISTRCT OF COLUMBIA—SCM, Arthur W. Plummer, W3EQK—Asst. SCM Delaware: P. R. Decourcelle, 3DQZ. SEC: PKC. *From Delaware*: EEB reports activity in two scout Troops. He is also Little League manager and takes lessons in Spanish so does not have too much spare time. B&O RR Club certificate No. 11 went to JFR, Hartley, Del. *At random:* K3DCP received his WAS in May. Congrats! He also is s.s.b. with a new HT-32. Irv reports that K3CWZ's XYL has received her Novice license and is KN3ITU. JME reports the June 15 meeting of the BCEN was well attended. K3GEK, who has been rockbound for some time, is working on a home brew v.f.o. and will sign up for net work when it is completed. MSR was active with TMZ in the V.H.F. Contest from W. Pa. and on all bands including 2 meters from W. Va. on Field Day, making 375 contacts despite the wrong balun coil impedance. CDQ is working a little 20-meter c.w. DX. K3CIO reports that after 26 years he finally has made DXCC (104). ST2AR, ZB2I, YK1AT and UD6AM are new ones for 169 worked. EOV is mobile again but with slight antenna trouble. ZAQ is becoming mobile as fast as possible. The PVRC met at BKE's shack June 22. The club operated Field Day under EIS/3. K3GJD reports Field Day activity with YVQ/3. GQF has a quad and tower. ECP reports WRC's Field Day operations were much more effective this year than last. AHQ is spending most of the time on 50 Mc. now because of more openings and less restrictions (?) on other v.h.f. bands. PQ reports Iron Man UE is doing a great job keeping the MDD Net in operation. The Md. Marstest worked at 5th Regt. Armory in Baltimore Aug. 8. K3GKF reports his DX now is at 126/97 and he needs OY and M1 for WAE. FNM is moving to the West Coast. PQ is very active in MDD, 3RN and EAN and frequently acts as RM. Eddie Martin, who many years ago was W3GRT, celebrated his 25th wedding anniversary June 20. Eddie and Boots are now residents of Richmond, Va. where he is a manufacturers agent. The following members of the BARCS visited the United States Naval Radio receiving facility at Cheltenham, Md. JNM and his XYL, PSP, KDD, QA, ex-AMU, K3CBW, ex-8KIB and son and K3IIW, as well as yours truly. The group was welcomed by Capt. Gifford Grange, 4HZ, who turned us over to Lt. Albert J. Scoles, GFP, who conducted the tour. All were amazed at the fabulous items seen and well explained by GFP. BVL reports the AARC made a tour of NSS Annapolis which was enjoyed by all. QIV has completed his Apache and now checks into the B&O Net on 75-meter phone. GJY is running his countries total up near 200 with his new beam. K3AKB now holds an Amateur Extra Class license, thanks to W1AW code practice and the *Handbook*. EQK attended a recent meeting of the AREC group in Baltimore County. Heck! Almost forgot PKC; he went too! Ask IRA what happened to the plastic spoon when JCL's coffee was poured in the cup! New officers of the BARCS are K3EFR, pres.; K3DCP, vice-pres.; BKT, treas.; and ROS, secy. Sorry, fellows, I have more to go in this column but our MD.-Del.-D.C. section space is limited; wish all the sections might be allowed more space. Traffic: (June) W3PQ 237, K3ANA 134, W3AHQ 122, K3WBJ 110, W3TN 93, K3GJD 78, W3COK 70, CN 35, ECP 31,

(Continued on page 114)

THIRD PENNSYLVANIA QSO PARTY

September 19 and 20

The Etna Radio Club, Inc., W3EXW, announces sponsorship of the 3rd Pennsylvania QSO Party, and cordially invites all interested amateurs to take part. The party will enable those working toward WAPC to complete same or build up their current totals.

Rules: (1) The Party begins at 6 P.M. EST Saturday, September 19, and ends at 6:00 P.M. EST Sunday, September 20.

(2) No time limit and no power restrictions.

(3) Scoring: Penna. stations count 1 point for each Penna. contact, plus 2 points per outside contact; stations outside the state count 2 points per Penna. contact. Both multiply by the number of counties worked.

(4) A *Radio Amateur Call Book* and engraved certificate goes to leading scorer in the U. S. and Possessions and leading scorer outside the U. S. Certificate to each four succeeding runner-ups. For the purpose of this contest, KL7, KH6, KP4, KZ5 and VE stations will be regarded as overseas contestants.

(5) The same station may be worked for additional credit on more than one band, phone or c.w.

(6) General call: "CQ PA" on c.w., "CQ Pennsylvania QSO Party" on phone. Penna stations are requested to sign *de PA W3EXW* on c.w.

(7) Contact information required: report and QTH (including Penna. County), stations, and number of QSOs. Logs must be postmarked not later than October 31, 1959, and should be mailed to John F. Wojtkiewicz, W3GJY, 434 Glenwood Drive, Ambridge, Penna.

WHERE IS THE FPM-200?

THIS transistorized transmitter/receiver has been undergoing extensive field tests since early this year. Five hand-built engineering prototypes have been sent to literally every corner of the world.

DURING "Operation World-Wide", a 40-day around-the-world flight, the FPM-200's signal was heard by thousands of amateurs. Over ten miles of tape-recorded QSO's were carefully edited for comments and on-the-air reports to help our engineers improve the product.

IN recent months, several FPM-200's have been field-tested in mobile operation, and others have been used for demonstrations at various conventions.

YOU probably have heard the clear signal of the FPM-200, and you gave us good reports; but since this is truly a ham station of the future, we want to make sure it is capable of years of dependable service . . . so the field tests go on.

WE WILL soon build fifty FPM-200's, using production people, parts and tools. These fifty sets will be field tested in the same way as the engineering prototypes. These tests will take us through the end of this year . . . then the ham station of the future will be ready for production.

—TRAV MARSHALL, K9EBE

Bill Halligan Jr. W. J. Halligan W9AC for hallicrafters

G-33 — *Second* receiver for #1 man *First* receiver for #2 man.

G-33, low priced all-wave receiver of really modern design, pays big pleasure dividends to everyone in the family. For you . . . excellent standard BC and SW reception in your leisure hours . . . sports, news, music, entertainment. And important! Checks instantly on amateur band conditions . . . from your easy chair. Sir, here is *your* number two receiver.

To your young man who aspires to follow in dad's footsteps . . . a new world at his fingertips! Amateur 75-40-20-15-10 meter bands comfortably spread out with vernier tuning as an assist to fingers that do not yet quite have that "touch." CW reception and, to him, those curious "funny whistles" adds an incentive for learning the code.

During the day with the male members of the household safely out of the way, the lady of the house when relaxing, might just sneak in a quick listen to her favorite soap opera . . . or to London . . . or Tokyo.

All of you will like this receiver. Its performance, its appearance, its low price.

See and hear it soon — *Price* — 89.95

ALSO G-43 . . . another excellent receiver . . . with many extra features and refinements for both casual listening and amateur communications. Be sure to see it also when you next visit your Gonset distributor. *Price* — 159.50

Watch for the new Gonset Mobile SSB!

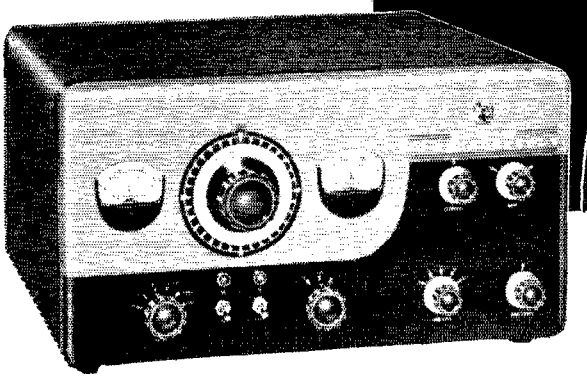
GONSET **GONSET** *Division of Young Spring & Wire Corporation*

801 SOUTH MAIN ST., BURBANK, CALIFORNIA

NEW!
NEW!
NEW!

"6N2"

Thunderbolt Power Amplifier



*1200 watts P.E.P. input SSB and DSB,
1000 watts CW, 700 watts AM linear!
Bandswitching 6 and 2 meters!

*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 1200 watts or more depending upon individual voice characteristics.

It's new! The Viking "6N2 Thunderbolt" Power Amplifier!

Rated at 1200 watts P.E.P. input SSB and DSB, Class AB_1; 1000 watts CW input, Class C; and 700 watts input AM linear, Class AB_1. Continuous bandswitched coverage on 6 and 2 meters — effectively TVI suppressed and filtered — wide range pi network output. Efficiency is outstanding — losses on 2 meters are held to approximately 5%, instead of common 25% losses experienced in some other 2 meter circuitry! This is possible due to the unique silver-plated Hi-Q coaxial line; silver-plated anode and other external metal portions of the 7034 tubes; silver-plated inductors; capacitors; and switch!

Final amplifier of the "6N2 Thunderbolt" employs two bridge neutralized RCA 7034 coaxial type tetrodes — kept cool by a self-contained high capacity blower system. Two meters permit constant visual check of operation — plate current meter also reads watts input . . . the second meter reads grid current, screen current, plate voltage, RF output voltage, and screen supply current. Completely self-contained in an attractive maroon and grey cabinet with high voltage power supply, internal blocking bias, voltage regulator, screen and bias supplies. Complete with tubes.

Drive requirements are approximately 5 watts in Class AB_1 linear, or 6 watts Class C continuous wave.

Cat. No. 240-362-1 Viking "6N2 Thunderbolt" Kit.....**Amateur Net** **$524.50**

Cat. No. 240-362-2 Viking "6N2 Thunderbolt", Wired and Tested.....**Amateur Net $589.50**

TUBE COMPLEMENT

(2) RCA 7034 Tetrode-Final Amplifiers
(2) 866AX High Voltage Rectifiers
(1) VR-75 Bias Regulator
(2) VR-105 and (1) VR-150 Screen Voltage Regulators
Selenium Bias Rectifier

For detailed specifications, write for Data Sheet 714.

E. F. JOHNSON COMPANY
2848 SECOND AVENUE S.W. • WASECA, MINNESOTA

no matter what you expect from a transmitter...

VIKING "RANGER" TRANSMITTER

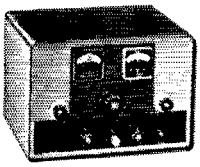
Effectively TVI suppressed and completely self-contained, the Viking "Ranger" transmitter/exciter is a complete phone and CW transmitter for 10 through 160 meters, and may also be used as a flexible exciter without modification.

As a transmitter, the "Ranger" is a rugged and compact 75 watt CW input or 65 watt phone unit. Pi-network coupling system will match antenna loads from 50 to 500 ohms and will tune out large amounts of reactance. Built-in VFO is extremely stable, temperature compensated—unit may also be operated by crystal control. Timed sequence (grid block) keying provides ideal "make" or "break" on your keyed signal, yet the "break-in" advantages of a keyed VFO are retained.

As an exciter, the "Ranger" will drive any of the popular kilowatt level tubes and will provide a high quality speech driver system for high powered modulators. Control functions for the high powered stage may be handled right at the exciter—no modification required to shift from transmitter to exciter operation. Complete with tubes, less crystals.

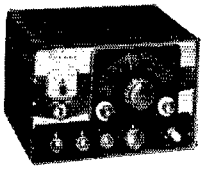
Cat. No. 240-161-1 ..... Kit ..... **Amateur Net $229.50**
Cat. No. 240-161-2 ..... Wired ..... **Amateur Net $329.50**

you'll get more with a Viking



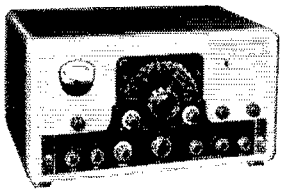
"CHALLENGER" — 70 watts AM input 80 through 6, 120 watts CW input 80 thru 10 —85 watts on 6. With tubes.

Cat. No.	Amateur Net
240-182-1	Kit ...$114.75
240-182-2	Wired .$154.75



"NAVIGATOR" — 40 watts CW input — serves as a flexible VFO/Exciter. Built-in VFO. With tubes.

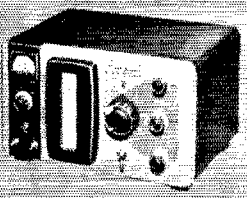
Cat. No.	Amateur Net
240-126-1	Kit $149.50
240-126-2	Wired $199.50



"VALIANT" — Instant bandswitching 160 through 10. 275 watts input CW and SSB (P.E.P. with aux. exciter) 200 watts phone. With tubes.

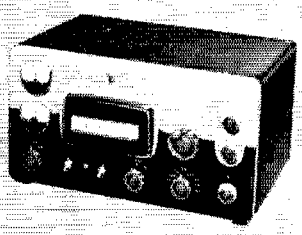
Cat. No.		Amateur Net
240-104-1	Kit	$349.50
240-104-2	Wired	$439.50

3 feature-packed amplifiers!



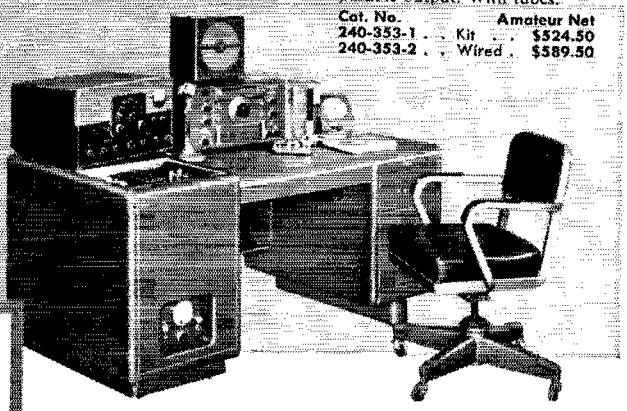
"COURIER" AMPLIFIER — Class "B" linear rated 500 watts P.E.P. input with aux. SSB exciter—500 watts CW and 200 watts AM! Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts. With tubes.

Cat. No.		Amateur Net
240-352-1	Kit	$244.50
240-352-2	Wired	$289.50



"THUNDERBOLT" AMPLIFIER — Rated 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear! Continuous coverage 3.5 to 30 mcs. May be driven by "Ranger", or other unit of comparable output. With tubes.

Cat. No.		Amateur Net
240-353-1	Kit	$524.50
240-353-2	Wired	$589.50

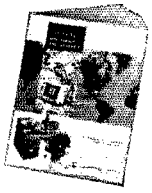


"KILOWATT" AMPLIFIER — This exciting unit is the only power amplifier available which will deliver full 2000 watts SSB* input and 1000 watts CW and AM! Continuous coverage 3.5 to 30 mcs. Excitation requirements: 30 watts RF and 10 watts audio for AM; 10 watts peak for SSB.

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.*

New Catalog



Yes, dollar-for-dollar and feature-for-feature you'll get more of everything in a Viking transmitter . . . that's why Viking transmitters outsell all others! Write for your free Viking Amateur Catalog and you'll soon see why your best transmitter buy is a Viking!

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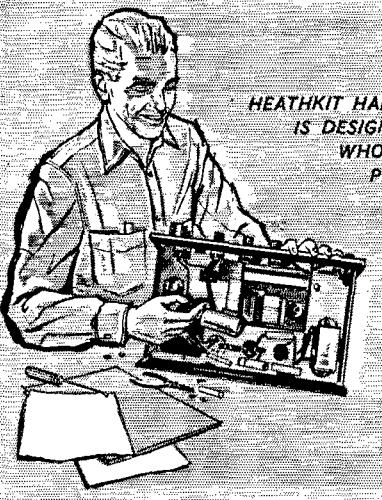
FIRST CHOICE AMONG THE NATION'S AMATEURS

BUILD YOUR OWN HEATHKIT® HAM GEAR



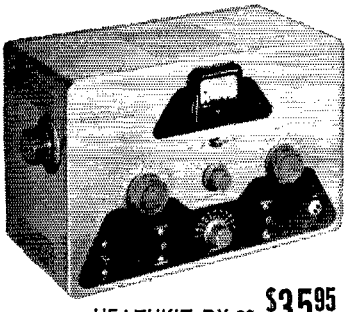
HEATHKIT HAM EQUIPMENT IS DESIGNED BY HAMS WHO KNOW YOUR PROBLEMS AND NEEDS.

PROVEN, "ON THE AIR" PERFORMANCE

"SENECA" VHF HAM TRANSMITTER KIT

Beautifully styled and a top performer of highest quality throughout. The "Seneca" is a completely self-contained 6 and 2 meter transmitter featuring a built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions, 2 power supplies, 5 radio frequency stages, and 2 dual-triode audio stages. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. An auxiliary socket provides for receiver muting, remote operation of antenna relay and remote control of the transmitter such as with the Heathkit VX-1 Voice Control. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings slightly reduced in the 2 meter band. Ideal for ham operators wishing to extend transmission into the VHF region. Shpg. Wt. 56 lbs.

HEATHKIT VHF-1 **$159.95**



HEATHKIT DX-20 **$35.95**

DX-20 CW TRANSMITTER KIT

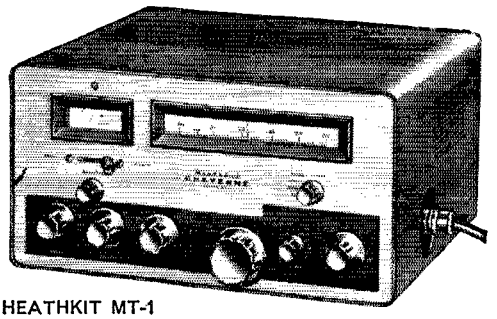
Designed exclusively for CW work, the DX-20 provides the novice as well as the advanced-class CW operator with a low cost transmitter featuring high operating efficiency. Single-knob bandswitching covers 80, 40, 20, 15 and 10 meters using crystals or an external VFO. Pi network output circuit matches antenna impedances between 50 and 1,000 ohms. Employs a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. Easy-to-read panel meter indicates final grid or plate current selected by the panel switch. Complete RF shielding to minimize TVI interference. Easy-to-build with complete instructions provided. Shpg. Wt. 19 lbs.

HEATH COMPANY Benton Harbor, Michigan — a subsidiary of Daystrom, Inc.

Mobile Gear...for the Ham on the Go!

"CHEYENNE" MOBILE HAM TRANSMITTER KIT

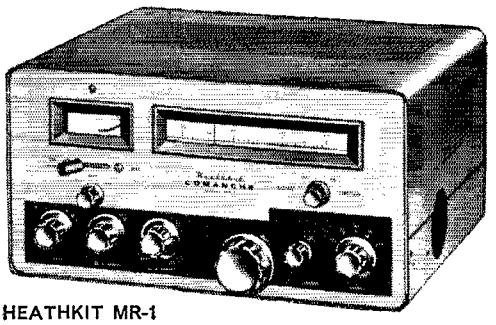
All the fun and excitement . . . plus the convenience of mobile operation are yours in the all-new Heathkit "Cheyenne" transmitter. The neat, compact, and efficient circuitry provides you with high power capability in mobile operation, with low battery drain using carrier controlled modulation. All necessary power is supplied by the model MP-1 described below. Covers 80, 40, 20, 15 and 10 meters with up to 90 watts input on phone. Features built-in VFO, modulator, 4 RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. High quality components are used for long service life and reliable operation, along with rugged chassis construction to withstand mobile vibrations and shock. Thoughtful circuit layout provides for ease of assembly with complete instructions and detailed pictorial diagrams to insure success. A spotting switch is also provided. A specially designed ceramic microphone is included to insure effective modulation with plenty of "punch". Plan now to enjoy the fun of mobile operation by building this superb transmitter. Shpg. Wt. 19 lbs.



HEATHKIT MT-1
$99.95

"COMANCHE" MOBILE HAM RECEIVER KIT

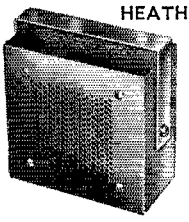
Everything you could ask for in modern design mobile gear is provided in the "Comanche" . . . handsome styling, rugged construction, top quality components . . . and, best of all, a price you can afford. The "Comanche" is an 8-tube superheterodyne ham band receiver operating AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. A 3 mc crystal lattice-type IF filter permits the receiver to use single conversion without image interference, and at the same time creates a steep sided 3 kc flat top IF bandpass characteristic comparable to mechanical type filters. The neat, compact and easy-to-assemble circuitry features outstanding sensitivity, stability and selectivity on all bands. Circuit includes an RF stage, converter, 2 IF stages, 2 detectors, noise limiter, 2 audio stages and a voltage regulator. Sensitivity is better than 1 microvolt on all bands and signal-to-noise ratio is better than 10 db down at 1 microvolt input. One of the finest investments you can make in mobile gear. Shpg. Wt. 19 lbs.



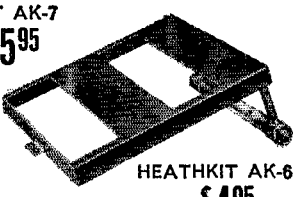
HEATHKIT MR-1
$119.95

MOBILE SPEAKER KIT

A matching companion speaker for the "Comanche" mobile receiver. Housed in a rugged steel case with brackets provided for easy installation on fire wall or under dashboard, etc. Uses 5 PM speaker with 8 ohm voice coil. Measures 5" H. x 5" W. x 2½" D. Shpg. Wt. 4 lbs.



HEATHKIT AK-7
$5.95



HEATHKIT AK-6
$4.95

MOBILE BASE MOUNT KIT

The AK-6 Base Mount is designed to hold both transmitter and receiver conveniently at driver's side. Universal mounting bracket has adjustable legs to fit most automobiles. Shpg. Wt. 5 lbs.

HEATHKIT MP-1
$44.95

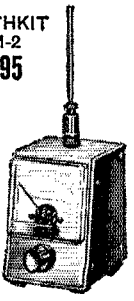
MOBILE POWER SUPPLY KIT

This heavy duty transistor power supply furnishes all the power required to operate both the MT-1 Transmitter and MR-1 Receiver. It features two 2N442 transistors in a 400 cycle switching circuit, supplying a full 120 watts of DC power. Under intermittent operation it will deliver up to 150 watts. Kit contains everything required for complete installation, including 12' of heavy battery cable, tap-in studs for battery posts, power plug and 15' of connecting cable. Chassis size is 9 1/16" L. x 4¾" W. x 2" H. Operates from 12-14 volt battery source. Circuit convenience provided by self-contained relay which allows push-to-talk mobile operation. Shpg. Wt. 8 lbs.

POWER METER KIT

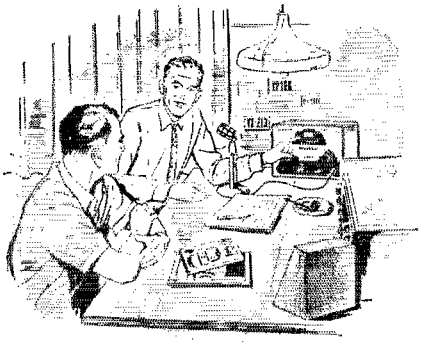
This handy unit picks up energy from your mobile antenna and indicates when your transmitter is tuned for maximum output. A variable sensitivity control is provided. Features a strong magnet on a swivel-mount for holding it on a car dashboard or other suitable spot. Has its own antenna or may be connected to existing antenna. Sensitive 200 ua meter. Shpg. Wt. 2 lbs.

HEATHKIT PM-2
$12.95



HEATHKIT®

COMPANION UNITS

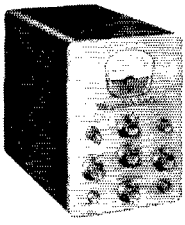


HEATHKIT TX-1 **$234.95**

"APACHE" HAM TRANSMITTER KIT

The many features and modern styling of the "Apache" will provide you with just about everything you could ask for in transmitting facilities. Emphasizing high quality the "Apache" operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission using the SB-10 External adapter. The newly designed, compact and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample bandspread and precise frequency settings. The bandswitch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. A cooling fan is also provided. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and control panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button enables the operator to "zero beat" an incoming frequency without putting the transmitter on the air. Equip your ham shack now for top transmitting enjoyment with this outstanding unit. Shpg. Wt. 110 lbs. Shipped motor freight unless otherwise specified.

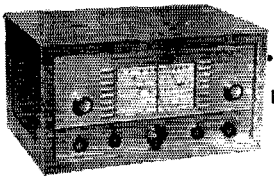
HEATHKIT SB-10 **$89.95**



SINGLE SIDEBAND ADAPTER KIT

Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter, this unit lets you operate on SSB at a minimum of cost, yet does not affect the normal AM and CW functions of the transmitter. By making a few simple circuit modifications, the DX-100 and DX-100-B transmitters can be used, utilizing all existing RF circuitry. Extremely easy to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. An easy-to-read panel meter indicates power output to aid in tuning. A built-in electronic voice control with anti-trip circuit is also provided. 10 watts PEP output. Unwanted sideband suppression is in excess of 30 db and carrier suppression is in excess of 40 db. An EL84/6BQ5 tube is used for linear RF output. Shpg. Wt. 12 lbs.

MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. **$8.95.**



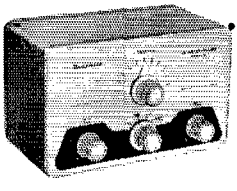
HEATHKIT AR-3 **$29.95**

(less cabinet)

ALL-BAND RECEIVER KIT

A fine receiver for the beginning ham or short wave listener, designed for high circuit efficiency and easy construction. Covers 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. Transformer operated power supply. Features include: bandswitch, bandspread tuning, phone-standby-CW switch, phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Shpg. Wt. 12 lbs.

CABINET: Opt. extra. No. 91-15A. Shpg. Wt. 5 lbs. $4.95.



HEATHKIT QF-1 **$9.95**

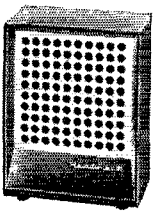
"Q" MULTIPLIER KIT

Useful on crowded phone and CW bands, this kit adds selectivity and signal rejection to your receiver. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Provides an effective "Q" of approximately 4,000 for extremely sharp "peak" or "null". The QF-1 is powered from the receiver with which it is used. Shpg. Wt. 3 lbs.

OF DISTINCTIVE QUALITY

ACCESSORY SPEAKER KIT

Handsomely designed and color styled to match the "Mohawk" receiver this heavy duty 8" speaker with 4.7 ounce magnet provides excellent tone quality. Housed in attractive ¾" plywood cabinet with perforated metal grille. Speaker impedance is 8 ohms. Shpg. Wt. 7 lbs.

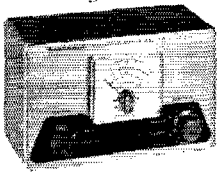


HEATHKIT AK-5
$9.95

HEATHKIT RX-1 $274.95

"MOHAWK" HAM RECEIVER KIT

Styled to match the "Apache" transmitter the "Mohawk" ham band receiver provides all the functions required for clear, rock-steady reception. Designed especially for ham band operation this 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. Specially designed for single sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled wired and aligned front end coil bandswitch assembly assures ease of construction and top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, bridge T-notch filter for excellent heterodyne rejection, and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Each ham band is separately calibrated on a rotating slide rule dial to provide clear frequency settings with more than ample bandspread. Front panel features S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, Bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and illuminated gear driven vernier slide rule tuning dial. Attractively styled with die-cast aluminum control knobs and escutcheons. No external alignment equipment is required for precise calibration of the "Mohawk". All adjustments are easily accomplished using the unique method described in the manual. An outstanding buy in a communications receiver. Shpg. Wt. 66 lbs. Shipped motor freight unless otherwise specified.



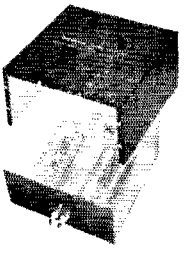
HEATHKIT AM-2
$15.95

REFLECTED POWER METER KIT

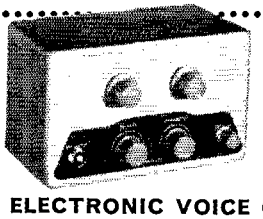
The AM-2 measures forward and reflected power or standing wave ratio. Handles a peak power of well over 1 kilowatt of energy and covers 160 through 6 meters. Input and output impedance provided for 50 or 75 ohm lines. No external power required for operation. Use it also to match impedances between exciters or RF sources and grounded grid amplifiers. Shpg. Wt. 3 lbs.

BALUN COIL KIT

Match unbalanced coaxial lines, found on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance with this handy transmitter accessory. Capable of handling power input up to 200 watts, the B-1 may be used with transmitters and receivers covering 80 through 10 meters. No adjustment required. Shpg. Wt. 4 lbs.



HEATHKIT B-1
$8.95



HEATHKIT VX-1
$23.95

ELECTRONIC VOICE CONTROL KIT

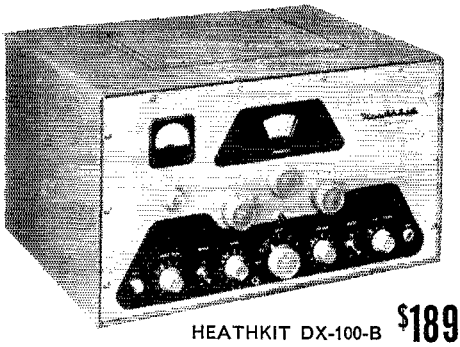
Eliminate hand switching with this convenient kit. Switch from receiver to transmitter by merely talking into your microphone. Sensitivity controls allow adjustment to all conditions. Power supply is built in and terminal strip on the rear of the chassis accommodates receiver and speaker connections and also a 117 volt antenna relay. Shpg. Wt. 5 lbs.

HEATHKIT VF-1
$19.50

VFO KIT

Far below the cost of crystals to obtain the same frequency coverage this variable frequency oscillator covers 160, 80, 40, 20, 15 and 10 meters with three basic oscillator frequencies. Providing better than 10 volt average RF output on fundamentals, the VF-1 is capable of driving the most modern transmitters. Requires only 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a. Illuminated dial reads direct. Shpg. Wt. 7 lbs.

Save 1/2 or more...with Heathkits



HEATHKIT DX-100-B $189.50

DX-100-B PHONE AND CW TRANSMITTER KIT

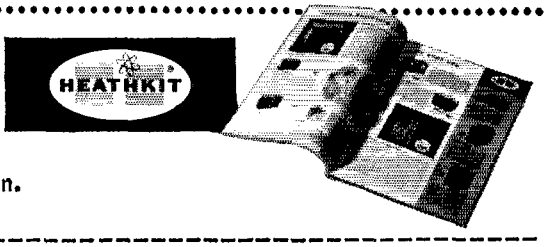
A long standing favorite in the Heathkit line, the DX-100-B combines modern styling and circuit ingenuity to bring you an exceptionally fine transmitter at an economical price. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The rugged one-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. The chassis is punched to accept sideband adapter modifications. Featured are a built-in VFO, modulator, and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience single-knob bandswitching and illuminated VFO dial on meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage modulated by a pair of 1625's. Shpg. Wt. 107 lbs. Shipped motor freight unless otherwise specified.

HEATHKIT DX-40 $64.95

DX-40 PHONE AND CW TRANSMITTER KIT

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob bandswitching is combined with the pi network output circuit for complete operating convenience. Features a D'Arsonval movement panel meter. A line filter and liberal shielding provides for high stability and minimum TVI. Provision is made for three crystals easily accessible through a "trap door" in the back of the cabinet. A 4-position switch selects any of the three crystals or jack for external VFO. Power for the VFO is available on the rear apron of the chassis. Easy-to-follow step-by-step instructions let assembly proceed smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.

Free Send now for latest Heathkit Catalog describing in detail over 100 easy-to-assemble kits for the Hi-Fi fan, radio ham, boat owner and technician.



HEATH COMPANY BENTON HARBOR 9, MICH.

pioneer in do-it-yourself electronics

a subsidiary of Daystrom, Inc.

Send latest Free Heathkit Catalog.

NAME

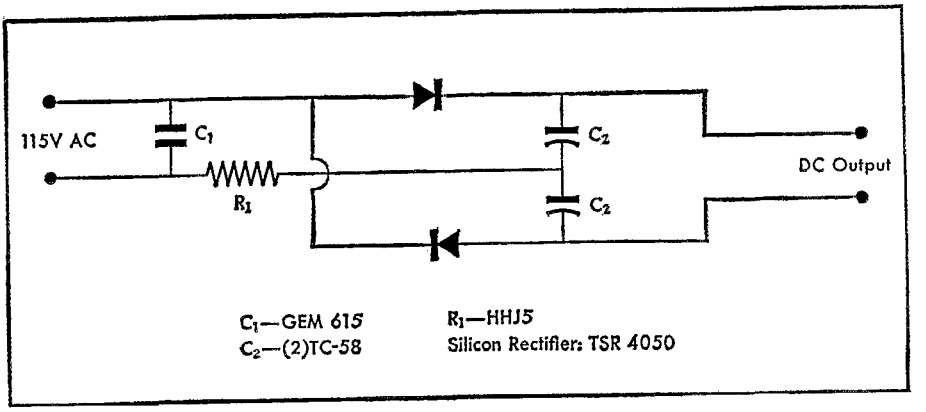
ADDRESS

CITY ZONE STATE

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.

QUANTITY	KIT NAME	MODEL NO.	PRICE

MALLORY HAM BULLETIN



Build a small, inexpensive power supply around Silicon Rectifiers

Here's a compact-size low-voltage power supply that should appeal to any amateur, from novice to old-timer. It's simple and economical to build for those jobs where you haven't much room to work in. What's new about this circuit is that it uses a brand new kind of silicon rectifier developed by Mallory, which gives excellent operating characteristics.

This is a typical full wave voltage doubler with low ripple output. DC voltage should be nearly twice the AC input, since the new, high efficiency Mallory Type T Silicon Rectifier has only about 0.5 volt drop through it. The Type T also gives you low reverse leakage . . . does a superior job of rectification.

Two separate Mallory FP capacitors must be used, since the cathodes are not common. We've indicated the Mallory components that fit into this circuit, so you can be sure you'll get dependable results.

The new Mallory Type T silicon rectifier goes well in any kind of low voltage rectifier circuit . . . half wave, full wave, bridge, doubler, tripler or quadrupler. Your local Mallory distributor is ready to serve you with a complete selection of them and all other Mallory components.

P. R. MALLORY & CO. INC.
P. O. BOX 1558
INDIANAPOLIS 6, INDIANA

P.R. MALLORY & CO. Inc.
MALLORY

IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—with only 65 watts and a $16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California
January 31, 1959

GOTHAM
1805 Purdy Avenue
Miami Beach 39, Florida

Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,
Thomas G. Gabbert, K6INI (Ex-TI2TG)

List of 105 countries/stations worked with 65 watts and a V-80 vertical

BV1US	KG4AI	VK3YL
CE3DZ	KG6FAE	VK9XK
ZL5AA	KH6IJ	VK9AT
CO2WD	KL7BUZ	VKØCJ
CN2BK	KM6AX	VP2KFA
CN8FB	KP4ACF	VP2AY
CR9AH	KP6AL	VP2DW
CT1CB	KR6BF	VP2MX
CX2FD	KS4AZ	VP2LU
DL1FF	KV4AA	VP2SW
DU7SV	KW6CA	VP5CP
EA1FD	KX6AF	VP5BH
EI4N	KZ5CS	VP6TR
F8VQ	LA3SG	VP7NM
FB8ZZ	LU2DFC	LU1ZS
FG7XE	LZ1KSP	VP9BK
FK8AL	OA4AU	VR2DA
FM7WT	OE9EJ	VR3B
FO8AD	OH2TM	VS1HC
G3DOG	OK1FF	VS2DW
GC8DO	ON4AY	VS6LN
GI3WUI	KG1AX	XE1PJ
GM3GJB	OZ2KK	XW8AI
GW3LJN	PAØFAB	YN1JW
HA5KBP	PJ5AA	YU3FS
HC4IM	PJ2ME	YV5HL
HC8LUX	PY2EW	ZC5AL
HE9LAC	PYØNE	ZE1JV
HP1LO	SM5AQB	ZK1BS
I1MV	SP6BY	KH6MG/ZK1
JA1ANG	TI2LA	ZK2AD
JZØHA	UA1AU	ZL1ABZ
W1AW	UAØKKB	ZL3JA
KB6BJ	UQ2AB	ZM6AS
KC4AF	VE8OJ	ZS1OU

FACTS
ON THE GOTHAM V-80 VERTICAL

- If K6INI can do it, so can you.
- Absolutely no guying needed.
- Radials not required.
- Only a few square inches of space needed.
- Four metal mounting 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.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price.

73,
GOTHAM

AN APPEAL TO INTELLIGENCE

A product that is consistently advertised in *QST* month after month, year after year, has to be good. Over 10,000 GOTHAM antennas have been purchased by *QST* readers. Even the "price-is-no-object" customers choose GOTHAM antennas on the basis of performance and value. Select your needs from this list of 50 antennas:

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST

1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TWO BANDER BEAMS

A full half-wave element is used on each band. No coils, traps, baluns, or stubs are used. No calculations or machining required. Everything comes ready for easy assembly and use. *Proven Gotham Value!*

6-10 TWO BANDER.....	☐	$29.95
10-15 TWO BANDER.....	☐	34.95
10-20 TWO BANDER.....	☐	36.95
15-20 TWO BANDER.....	☐	38.95

TRIBANDER

Do not confuse these full-size Tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

☐ 6-10-15 $39.95 ☐ 10-15-20 $49.95

2 METER BEAMS

Gotham makes only two different two meter beams, a six-element job and a twelve-element job. They are both Yagi beams, with all the elements in line on a twelve foot boom.

☐ Deluxe 6-Element 9.95 ☐ 12-El 16.95

6 METER BEAMS

New records are being made every day with Gotham six-meter beams. Give your rig a chance to show what it can do, with a Gotham six-meter beam.

☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95

10 METER BEAMS

Ten meter addicts claim that ten meters can't be beaten for all-around performance. Plenty of DX and skip contacts when the band is open, and 30-50 miles consistent ground wave when the band is shut down. Thousands of Gotham ten meter beams have been perking for years, working wonders for their owners, and attesting to the superior design and value of a Gotham beam.

☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95

New! Ruggedized Hi-Gain 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

☐ Beam #R6 (6 Meters, 4-El)....$38.95
☐ Beam #R10 (10 Meters, 4-El).. 40.95
☐ Beam #R15 (15 Meters, 3-El).. 49.95

15 METER BEAMS

Fifteen meters is the "sleeper" band. Don't be surprised if you put out a quick, quiet CQ and get a contact half-way around the world. Working the world with low power is a common occurrence on fifteen meters when you have a Gotham beam.

15 METER BEAMS

☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95

20 METER BEAMS

A beam is a necessity on twenty meters, to battle the QRM and to give your signal the added punch it needs to over-ride the high power boys. Hundreds and hundreds of twenty meter beams, working year after year, prove that there is no better value than a Gotham twenty meter beam.

☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

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

ALL-BAND VERTICAL ANTENNAS

J. E. Bloomcus
209 N. 83rd Ave. NW
Enumclaw, Wash.

Gotham Antenna Company
1805 Purdy Ave.
Miami Beach 39
Fla.

Dear Sir:

While I was in Enumclaw I purchased a Gotham V-80 antenna and took it back to Tibet with me. On my way back I stopped off at Tokolau (ZM7) and was on the air for two days and worked many other stations all over the world with 25 watts. I was very surprised at the strength of one station whom I worked. This was W7PHO, who I later found out was using a Gotham vertical. I received very loud reports from all over the world from here.

I went to Tibet and used the V-80 on all bands and got excellent reports from W stations. I have never called a CQ yet and not had quite a large number of stations calling me. This was true at ZM7C as well as AC4AZ. Here in Tibet I heard W7PHO again on 20 meters using his V-80. He is running 100 watts and was the loudest signal on the band.

I am very pleased with all of my results and certainly hope that you can encourage your patrons to use it even more by reproducing this letter as an excellent recommendation.

Sincerely,

J. E. Bloomcus
ex ZM7C - AC4AZ

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

FREE! FREE! FREE!

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

Name.....

Address.....

City.....Zone.....State.....

Station Activities

(Continued from page 100)

BUD 20, EOV 19, W1HOB/3 12, W3KHA 6, WSE 4, MSR 1, JME 1. (May) W3WV 10, WSE 8.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG. SEC: W2YRW. RMs: W2BZJ, W2HDW and W2ZT. New appointment: W2ETF, Camden, as OO. All Field Day committees report increased activities this year. W2BZJ, DVRA secy., advises the club plans a mobile trip to High Point, N. C. There are 55 active members. K2OOK, Pennsauken, will be in Cincinnati for the balance of the year. W2ZT, Jersey phone and Traffic Net mgr., reports 58 regularly report in. K2CPR's DXCC total now is 248/242. Also he made 5-band WAS with less than 100 watts and no beam. W2BET, Audubon, boasts League membership since 1932. W2TAM, Trenton, expects to be on RTTY soon. K2LEM is a new NJN member. Congrats to K2JGU on having received his A-1 Operator ticket. W2EZM, Maple Shade, attended the National Convention at Galveston. K2SOX, Vincentown, has moved to Northfield. The SJRA's Hamfest will be held Sept. 13 at Molia Farms. SJRA's Field Day committee included W2GQO, W2REB, W2JAV, K2HPJ, W2PAZ, W2TBD, WA2ABF and W2PAU. W2BLV won top honors in the recent V.H.F. Contest. K2GHJ, *DVRA News* editor is assisted by W2TAM and K2TQI. K2AZJ, Princeton, submitted a Field Day report. W2BAY, Haddonfield, contacted K2AA on all bands during Field Day. K2HBA reported on the Southern Counties Amateur Radio Assn. Field Day activities. We regret to report that K2HHO and W2PFQ are hospitalized, and wish them a speedy recovery. Many thanks to the fellows who filed nomination petitions in my behalf. All appointees are urged to mail Form 1 reports promptly the first of each month. Traffic: (June) W2RG 124, W2ZI 30, W2BEI 8, K2CPR 5, W2BJZ 4, K2OWM 3. (May) W2BZJ 47.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2GBX. RMs: W2RUF and W2ZRC. PAMs: W2PVI and W2LXE (v.h.f.). 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 3509.5 kc. and 3993 kc. at 0900 Sun., TCPN 2nd Call Area on 3970 kc. at 1900, IPN on 3980 kc. at 1600. K2HUK made DXCC via 2-way s.s.b. W2VDX has been appointed EC for Tioga County. K2TJZ, NCS for the 6-Meter C.D. Net in Hornell, has been appointed Asst. EC for that area. K2DXE is mgr. of NYSPTEN and W2PGA is asst. mgr. W2ZMQ has completed three years of perfect attendance in the Erie County Emergency Net. Welcome to WA2BPU, who has his Tech. and Novice Class licenses; also new Generals WV2FXJ, WA2BCB and K2KJF. W2UCZ and W2THG worked VP9EI on 6 meters. W2EJO has built a beer-can converter for 220 Mc. which he demonstrated to the SWNYVHFA. Your SCM and SEC attended the Penn-York Hamfest, which was sponsored in part by the Corning ARA and Elmira Clubs. They had a fine turnout and a good program. K2KGN got his General Class license, a new HQ-110 and a Globe Scout. The Niagara Frontier DX Assn. claims 7938 points in the two-transmitter class for Field Day. I visited many area Field Day groups and found much true amateur spirit and good fellowship. Please remember to mail your reports to the SCM on the first of each month. Form 1 activity cards may be obtained from ARRL Hq. by dropping them a postcard. All members are invited to report monthly. If you are interested in appointment write to the SCM. Traffic: K2SIL 453, K2SSX 451, W2OE 108, K2GWN 101, K2RTH 101, K2IYP 61, W2FEB 47, K2RWV 39, K2DXV 38, K2QDT 35, K2GQB 28, W2RQF 28, W2ZRC 24, W2TPV 21, K2EE 15, K2OFV 13, K2AOQ 11, K2IMK 10, K2HUK 8, W2PVI 8.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA. RMs: GEG, NUG and LXU. PAM: AER. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The Penna. Fone Net meets Mon. through Fri. at 1800 EST on 3850 kc. A new ORS appointee is K3ICN. LSS has a Ranger converted to 6, now operating 160 through 6 meters. K3BWI will attend Penn. State University this fall. K3ERO has a new 15-meter beam. New Novices in the Butler Area are KN3IRN, KN3IFZ and KN3IHQ. The North Pittsburgh Brass Pounders and Gum Beaters participated in Field Day under the call DTZ/3. W3KWO passed his Extra Class license and purchased an HQ-145. K3CLX received his first-class radiotelephone license. The Etna RC reports via *Oscillator:* RSB is back on 10-meter mobile; TVW now is off the sick list; TOC and KSJ and the XYLs took in the ham picnic at Corry. The members of the Friendly Amateur Radio Trans. Society held Field Day at Lake Chautauqua under the call K2ZMA/2. Up Erie way: New officers of RAE are

(Continued on page 116)

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[LONG ISLAND—144-24 HILLSIDE, JAMAICA]

JOQ, pres.; FVH, vice-pres.; K3DDX, secy.; and KPM, treas.; LSS is busy setting up Boy Scout station K3ERK for Erie County. Steel City RC reports via *Kilo Watt Harmonics:* K3EKL has his Gonset six installed in his car; NKM has over 240 confirmed for DXCC; FML and RYC are working on 6-meter rigs; ZPZ got his 20-meter beam working. The newly-formed Foothills RC meets at Greensburg YMCA the 2nd and 4th Tue. at 2000 EST. New Novices around Greensburg are KN3IWQ and KN3IYX. A new Novice around Donora is KN3ITC. From all indications Field Day was a tremendous success in W. Penna., even weather wise. Attention ORS appointees: Traffic still is being handled on the nets. Are you doing your share? The WPA Traffic Net is in need of more assistance in handling section and regional traffic. Traffic: K3CLX 85, ICN 78, W3KUN 73, LSS 35, WRE 25, UHN 23, ZEG 11, K3COT 4.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PPN—Asst. SCM: Grace V. Ryden, GME. SEC: HOA. RM: PCQ. PAM: RYU. EC Cook County: HPG. Section net: ILN, 3515 kc., Mon. through Sat. at 1900 CST. The combined Central-Midwest Divisions Convention held at St. Louis was a very successful event with a very good attendance. Now that the reports are in on Field Day, it appears that conditions were much better than last year and some very high scores have been reported. The Great Lakes Naval Training Center has a new amateur radio station and club with K9RNU, K9BKS and KN9TEN as officers. K9HWC is now on 220 Mc. with a Tecraft. JJN is working on a photo QSL card. CAG is recuperating from a recent illness and will be on the nets soon. BP, one of the old-timers of ham radio and also founder of radio station WRRR and Rockford, met his death in an auto accident outside of Mexico City. RQR is the new c.d. director for Belleville. K9IEJ, KN9QAK, KN9PVL and K9HXC are the officers of the new Dupage County Emergency Service Radio Assn., which is made up of scouts and scout officials. K9OTB has a new Apache and is rolling in the DX on 20-meter c.w. BRD copies 55 words per minute in a c.w. copying test from 1NJM. He remains one of the few remaining super c.w. men. PNO has a new Seneca on 6 meters and sure is trying to get a WAS certificate on the u.h.f. bands. The Shawnee Amateur Radio Association's annual picnic was well attended and League officials PRN and GPI attended. Southern Illinois is producing many new amateurs each year. Their sideband dinner the night before the picnic was very well attended. The Illinois SEC, HOA, has Red Cross station RGU now on the air. KN9REX is sweating out his WAS on 40 meters. K9DWR has a new eleven-element beam to bring in the tough ones on 220 Mc. RYU reports that construction has been started on a new c.d. building in the Bluffs forest preserve area. The Hamfesters (Chicago) presented the new Collins color cartoon, entitled "New Dimensions in Electronics" at its regular meeting. The Von Steuben High School Radio Club (Chicago) has applied for a club license with K9GDQ as trustee. K9BLY has finished building a mobile transmitter for 6 meters and reports that it is working FB on contacts. CSW and the North Central Phone Net handled 298 messages during the month. K9LLU and K9LLT are building a new Heath mobile transmitter. K9JSV received his ILN certificate. SKR will be on the air shortly with his new home-brew rig. K9JXO is working toward his WAVE on 6 meters with his SR-34. News is scarce at this time with vacations and outdoor activities taking the place of hamming. New calls in St. Clair County are KN9SSO, KN9TPL and KN9TDX. 5OTA/9 is now located at New Baden, Ill., running a 32V-2 and a 75A-2 to a doublet. Traffic: (June) W9DO 750, 1DA 503, USR 354, W5OTA9 218, W9MAK 168, SXL 100, FAW 55, K9JSV 48, W9SKR 9, JJN 5, K9LON 5, W9PRN 5, TZN 4, K9BLY 3, OZM 1. (May) K9JSV 89, JIN 85, LON 2. (April) K9JSV 132.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: SNQ. PAMs: BDG, BKJ, MEK and UXK. RMs: DGA, TT and VAY. Net skeds: IFN (a.m.), 0800 daily and 1800 M-F on 3910 kc.; ISN (s.s.b.), 1900 daily on 3920 kc.; QIN, 2000 daily and RFN, Sun. at 0800 on 3656 kc.; QIN (slow speed) M-W-F at 1800 on 3745 kc. New appointments are K9JCU EC Lake County, RNC EC Daviess County and BUQ and K9IXD as OESs. I would like to see more OES applications coming in soon. Field Day was a big event in the State this year and conditions were near perfect. Field Day messages were received from the following: Tri State ARS, Winslow ARS, Indianapolis RC, Mobile RC, RCA ARC, Home Brew Club, Bloomington ARA, Hoosier Hills Ham Club, Bluffton Scottsburg RC, Duneland ARA, Tippecanoe ARA, Club, Michiana ARC, Allison ARC, Martinsville ARC, Lake County ARC, Old Post ARS, Faeyette County

(Continued on page 120)

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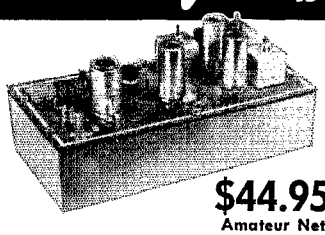

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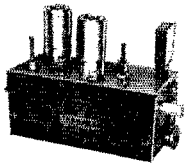

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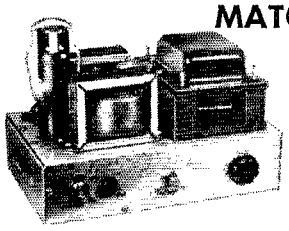

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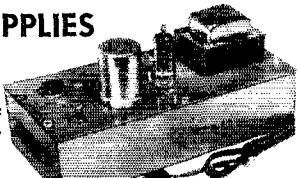

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RC, WEARC, Miami County ARC, Gibson County ARC and YQV, Ft. Wayne. K9KBW/9 is operating from Camp Crossland Boy Scout Camp handling lots of traffic for the boys. K9CFG reports K9SGP as a new call on 6 meters in Galveston. K9HMC reports that K9KLW has a new Globe King 500 and POX is building a kw. linear. K9AQP is building a rig for 220 Mc. YSX made all-phone WAZ; others also making it were YSQ and WHM. MAF is active on the nets under the call FVR from I. U., at Bloomington, using a DX-100 and an HQ-100. VAY reports QIN traffic as 402, 21 of this was on the slow-speed net. This net should be in full swing as the heavy traffic season gets here. Don't forget to check in once in a while and give the newcomers a helping hand. IFN traffic was 319, as reported by BDG. TT reports RFN handled 46 messages. The s.s.b. boys are going strong with a count of 164 for ISN from MEK. K9GLL reports traffic of 80 on the IMO Net. Those making BPL were DGA, K9BSU, NZZ and ZYK This is BPL No. 100 for NZZ and is particularly remarkable when you consider that the last three were earned while restricted to bed by doctor's orders. Stan's traffic is directed to the Far North and each message is usually quite lengthy. Traffic: (June) W9NZZ 1668, ZYK 515, FJR 231, QFQ 210, K9AYI 184, BSU 162, W9VAY 150, BDG 144, DGA 132, TT 128, MEK 80, TQC 80, JOZ 70, EJW 56, SNQ 45, K9KBW 35, JKK 34, W9SWD 33, RTH 30, YYX 29, K9IXD 28, W9PMT 26, DOK 20, IMU 19, ZPP 18, RVM 12, CC 11, K9HMC 10, PTS 9, W9WTY 8, DZC 7, FWH 7, K9LZJ 6, W9NTA 6, BDP 5, ENU 5, WAU 5, K9DWK 4, GSV 3. (May) W9OCC 10.

WISCONSIN—SCM, George Woida, W9KQB—SEC: YQH. PAMs: NRP, GFL and K9IQO. RMs: SAA, K9AEQ and K9ELT. K9JQA is a new Class IV OO and K9OTQ a new OES. K9ELT is the first to receive a "Worked 99 Wis." certificate. The Teen-Age Net, TAN, operates daily on 3955 kc. at 0645 for traffic in Wisconsin. K9DAC has his new, well-deserved A-1 Operator Club certificate, also his CP-25 credit. BPL certificates were earned by DYG and K9DAC. SEC YQH reports that some ECs are slow in renewing their appointments. Please, fellows. K9COA, now in his 78th year, has been a Morse operator for 60 years. WIN's YL traffic operator LGR is now on 6-meter c.w. UTV's bulletin, *W9-er*, is celebrating its 5th year of publication. FZC has his new commercial telegraph license. K9BSE works his DX on 75-meter s.s.b. K9ALP acting as counselor at the YMCA camp, will attend Northwestern U. in the fall. K9PTL suggests that all trafficikers check with local hospitals for traffic from out-of-town patients. Note to all club secretaries: Please send montjly reports of club and individual members' activities to the SCM no later than the 4th. This column is in need of more news. YT has worked 35 states on 6 meters plus KP4. DYG is at 227/220 DXCC totals and has 380 WPX. QYW now has WAZ. How about more news for this column on your monthly report cards, fellows? Make it usable news, not that which may or will happen but that which has happened. The BEN will be needing a new manager. NRP's doctor has ordered Sid to take it easier. Remember the "Talk Wisconsin" project; also club volunteers to revive the "Wisconsin Council of Radio Clubs." Traffic: W9DYG 1101, K9DAC 634, GYQ 401, DTK 222, W9KQB 51, CBE 49, YT 28, K9ELT 26, W9VHP 26, NRP 20, SAA 20, K9DOL 16, LWV 15, JIG 14, W9SIZ 12, K9CJL 10, W9PJT 9, K9ESN 7, IQO 7, W9VIK 7, K9GSC 3, GDF 2, W9CCO 1, RKP 1.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold A. Wengel, WØHVA—SEC: KØJLW. After only a few months as State Radio Officer for North Dakota for RACES, KØIQJ is leaving Bismarck to make his home in Billings, Mon. Field Day activities in North Dakota were hampered by cold weather and wind. The Bismarck Club had 2 tents set up northwest of Bismarck and ran 2 fixed portable and 2 mobile rigs. The Goose River 160-Meter Net held a picnic at the home of KØGGI. Hams attending and participating included two from Minnesota, KØAUI and IRH, and IHM, CPS, ZVL, ZVM, VRN, CDO, KIQ, KØGGI, DHB, RNQ, MIK and 7HTV/Ø. Wives and children attending the picnic made the total number 36. North Dakota amateurs acting as communications officers for the "Powder Puff Derby" included CAQ at Fargo and HVA, KØJLW, KØRLI and KØMHB at Bismarck. Traffic: KØMPH 8, WØPHC 5, BHF 4, KØITP 1.

SOUTH DAKOTA—SCM, J. W. Sikorski, WØRRN. Section news will be a little "thin" this month, but I hope you can get in the habit of sending station activities to me before the 6th of each month. My sincere thanks to those of you who elected me SCM. New appointments or verifications of old ones will be made in the near future. KØDYR is mobile with a "Cheyenne" transmitter

(Continued on page 122)

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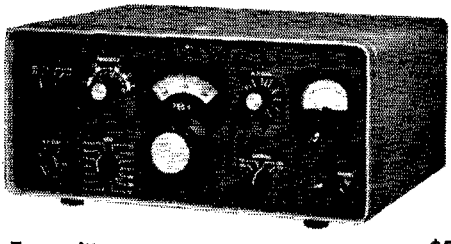

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and Regency converter. KØMDF is now located in Milwaukee. KØKOK is working for Park Service in Yellowstone. LXP passed his first class Commercial Phone and OOP has second class. New calls, all KNs, are UQS, Freeman; UXC and SEJ, both of Corsica; SZI and SZO, Winner. PAW, Marion, has dropped the "N". EXX has a new Lincoln with a complete Gonset mobile rig. KØQYB has moved from Custer to Hill City. South Dakota amateurs extend their sympathy to the family and friends of KØIAW, Waubay, who recently passed away. KØGJX put a new Apache on the air for two weeks before entering the Missiles Service. He's now in Camp Carson, Colo. KØQLN, formerly of Newport, Nebr., is now located in Oral. The Black Hills ARC, Rapid City, Sioux Falls ARC, Prairie Dog ARC, Aberdeen ARC and Redfield-Huron Clubs operated on Field Day. Traffic: (June) WØSCT 252, BMQ 68, DVB 48, LKH 24, FJZ 8 DUR 6, NNX 6, KLR 5, LXH 4, OFP 3, QLN 1. (May) WØINZ 6.

MINNESOTA—SCM, Mrs. Lydia S. Johnson, WØKJZ—Asst. SCM: Rollin O. Hall, LST, SEC: WØTUS. RMs: WØRIQ and KØIZD. PAMs: TUS, TCK and QVR. We deeply regret to have to report that two of our well-known operators, WØBP and ITQ, were killed in an auto accident in Mexico. ITQ was an A-1 Operator and was known for his traffic-handling and was a former TEN manager. BP at one time was QST assistant editor, but was particularly known for precious frequency measuring, RTTY and v.hf. Our heartfelt sympathy to both families. MJN and KMG nets have been discontinued until September. The Forrest Bryant Trophy was awarded to TKX. Congratulations, Bob! Others honored previously with this award are YLZ, ITQ, GYH, AUI, KLG, KJZ and BUO. It is good to hear ex-SCM MXC on the air after a long absence. OMC's jr. operator's call is KNØTW1 and he can be heard on 40 meter c.w. TUS made BPL. Congratulations, Bob! KØOIW is building a cubical-quad anetnna for 20 meters. WØHEN renewed his OPS and EC appointments. KØMEQ, EC, signed up two Novices, TXP and UBC, as supporting AREC members. OPS KØMNY has 85 countries towards WAM. His XYL is KNØUOZ. WMA and his XYL returned safely from their vacation, and Ken can be heard on the bands s.s.b. SLD is e.d. director of Crystal Village. KØQLM was appointed EC of St. Louis County and MZR of Nobles County. KØIZD has to resign as EC because of illness. A new Novice in Aitkin is KNØVAG. SEC, TUS and his XYL VPO visited Vice-Director BUO and SCM KJZ. A special "thank you" to Asst. SCM LST and to BUO, IDV, FGP, TUS and PML for helping to gather traffic reports and news during my absence because of the death of my mother-in-law. Traffic: (June) WØTUS 273, KØIDV 156, WØKJZ 117, OPX/RIQ 115, KLG 82, GCN 75, LST 66, MGT 63, JCF 49, IKU 39, KYK 34, HEN 32, FGP 30, IZD 28, UMX 24, EPT 22, PML 22, OJG 16, QLM 16, OJK 14, BUO 13, MAH 12, TCK 12, AINY 11, OIW 10, QVR 10, MXC 8, QVB 8, OET 8, WMA 6, IRJ 4, URC/Ø 4, RA/Ø 2. (May) KØOIW 21.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: K5CIR. PAM: DYL; RM: K5TYW. The Arkansas C.W. Net meets each evening at 1900 on 3790 kc. Mon. through Fri. The Arkansas Emergency Phone Net meets Mon. through Sat. at 0600 on 3885 kc. Both of these nets are a part of our NTS and we urge all of the amateurs in this section, and invite amateurs in neighboring states, to participate in these nets. We feel very proud of our RM this month. He was the only one in the section to mail in an activities report. We are in the process of revamping our AREC system in this section. Anyone holding an EC appointment is being reminded to send in his certificate for endorsement. Many are overdue for endorsement at the present time. Traffic: K5TYW 130.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—June marked the passing of two Louisiana hams, DOK and JOH. DOK had recently become active again on the Delta 75 Net and was well known on 75 and 40 meters. JOH worked on 75 and 40 meters but poor health kept his activity down. JKU is moving to Ferriday from Melville, leaving K5CTR by his lonesome. ML, SUM, KTD, JSW, NXM and KQS all chipped in to make a real fine Field Day on 6 and 2 meters. We were all floored by the news when it was relayed by K5CZV—DEW is engaged to ØTSN and leaving for Minnesota to be married. CEZ had a three-week vacation with some time in Shreveport, a trip to Nebraska, spent a week at Galveston and attended the ARRL Convention, came back home and still handled 304 pieces of traffic. K5DPH, EC for Lafayette, with JUE, VAQ, WMU, AOV, K5EGW, SGY, CRE and others of the Lafayette ARC, provided a radio booth for "Tourist Appreciation Day" in Lafayette and took messages

(Continued on page 124)

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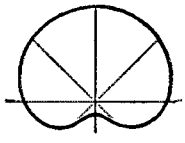

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for relay from tourists and visitors. Field Day messages were directed and received by the SCM DDI/5, Lafayette; IJH/5, Baton Rouge; QEG/5, Lake Charles; USN/5, Grand Isle; ADD/5, Algiers; MUZ/5, Monroe; K5ISI/5, Metairie and UK/5, New Orleans. K5ESW has his Gonset triband beam up and his score is now 99 countries worked with 75 confirmed. How about contacting your SCM about accepting an appointment? Drop the SCM a line for full particulars. Traffic: W5CEZ 304, DDL 130, MXQ 87, FMO 8, K5ESW 5, W5EA 4.

MISSISSIPPI—SCM, John Adrian Houston, sr., W5FHH—JEI, president Two Meter MARS, Inc. of Gulfport, reports that 14 club members participated in Field Day activities. BW operated his home station in the Field Day activities. W5SCM reports the Tombigbee ARC had two transmitters in Field Day activities. The CAC sent its emergency communications truck to Greenville to take part in Field Day activities. Equipment used was a Globe Chief transmitter, an HQ-160 and an emergency generator. Operators were K5TXZ, BGG, DLN, EEC, HYO, W5UXJ and EHH. DDY operated the A.F. MARS emergency communications truck on 40 meters. Bill operated s.s.b. only. His equipment was an HT-32, a BC-610 and SP-600 and a slicer. K5IUK reports he will be going back to Mississippi State before long and will operate club station YD. The Natchez ARC participated in Field Day activities. The JARC members were very active in Field Day activities and rolled up a nice score. EHH and family visited in Council Bluffs, Iowa, recently with nephew KØTOP and WØGG and family. K5QXF (NCS) invites teenagers to join in net operations on 3885 kc. at 1515 CST Mon. through Sun. K5OWC manages this net. Traffic: W5NRU 11.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—SEC: RRV. PAMs: PAH and UOT. RM: FX. Thanks to 4DIJ/4, QT, WQT and the Greeneville and Johnson City Clubs for their Field Day messages. We appreciated net reports from FX, PAH and K4TPY. OO stations reporting for June were TDZ, TZG and K4SGF. TDZ said he had a ball on 6 meters in June. Welcome to a new Novice in Chattanooga, KN4HUR, who is active on 40 meters. UVP reports his 6-meter standing is at 38 states and that he is keeping nightly schedules with VSN in Oak Ridge and ZXI in Greensboro, N. C., on 144-Mc. c.w. Traffic: (June) W4PL 1373, W5RCF 1151, K4CNY 227, W4VJ 144, FX 55, TZG 42, UIO 36, TDZ 21, UVP 16, EIN 15, PAH 15, PFP 14, PQP 12, UVL 10, VTS 10, K4LPW 9, W4RRV 7, ZBQ 4, K4OUK 3. (May) W4PQP 40, YRM 5.

GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thompson, W4SUD—Asst. SCM: W. C. Alcock, 4CDA. SEC: BAZ. RM: K4AIS. PAMs: GTC and K4MMW. S.S.B. PAM: MMY V.H.F. PAM: K4LOA. Kentucky Novice Net's (KNN) manager KN4DFZ reports a traffic total of 47 during 26 sessions. Good work, fellows. Look for KKN Mon. through Sat. on 3720 kc. at 1530 CST. SZB is working on his sixth year as EC for the Burkesville Area. Please note Kentucky had the highest percentage of EC annual reports in the ARRL. OO reports were received from SZL and K4BUB. OES K4SPJ reports 50 Mc. is open 85 percent of the time. He added 11 new states for a total of 32 confirmed. K4QHZ is staying active in the nets on mobile. K4IBF carried home the *Q* multiplier for his efforts in the Kentucky QSO Party. K4MOL has a new rig with a pair of 812s. A new Novice in Prestonsburg is KN4FRV. SZL is almost mobile. VJV reports 6-meter men QSL 100 per cent. K4HTO is working with 1300-Mc. gear. JUI reports better use could be made of 50 Mc. for short-haul traffic. KN7GIQ's call has been changed to KN4IMF. Traffic: K4VDL 376, ZML 312, SBL 177, CSH 103, AIS 102, W4SUD 80, GTC 58, BAZ 35, CDA 31, K4IFB 29, W4HTD 26, K4HCK 23, QCN 19, W4MMY 17, SZB 14, K4VTY 11, PNA 10, W4KJP 8, SZL 8, KN4ZIQ 8, K4LHQ 7, QHZ 7, KN4-IMF 5, K4SPJ 3, JOP 2, VDO 1.

MICHIGAN—SCM, Ralph P. Thetreau, W8FX—SEC: YAN. RMs: OCC, QQO, FWQ. It looks like Michigan had the biggest Field Day ever. The Livonia Radio Club had trouble with the township zoning code but ran up a good Field Day score. ORS appointments went to AQA and K8KVV and RAE; OBS to AHV and IWV; OES to FZ, HFA, NOH and WPD; OO to K8DJQ. Every Michigan Radio club should have at least one of each of these appointments. K8LPV has the d.s.b. transmitter finished. Also a "new" counterpoise/ground system. (Shades of 'ol spark!) IVK finished a 500-watt de luxe bandswitching series/parallel antenna tuner. TIC used *two* 1-kw. transmitters on Field Day with a 10.5-kw. generator. K8GJD worked KJ6 and PJ2M on 14 Mc. using a dipole 18 feet high. SCW had a nice visit from 2ZRC. NUL sold his gear,

(Continued on page 126)

but promises to be back on soon. K8KOX drops a wire out of his apartment late at night to work a few as no antenna is allowed there. No information was received from the BR and MEN Nets. The QMN is doing well so far. Traffic: (June) W8OCC 218, FWQ 185, K8BQD 135, W8FX 98, YAN 84, K8GJD 57, W8TBP 52, QIX 42, NOH 32, AUD 31, K8NAW 25, W8EU 20, DSE 18, EGI 13, SWG 13, K8DJQ 8, W8HKT 5, WXO 1. (May) K8MIC 8, W8TIC 3.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J .C. Erickson, 8DAE. SEC: UPB. RMs: DAE and VTP. PAMs: HZJ and WYS. YGE received WAC/YL certificate. K8EKG received W-Del. AL received P6-MNA. K8HUF has a DX-40, an SX-99 and a Tribander. K8DHJ now has an HQ129-X. OHU is back from California. K8KGD is a new Technician in Cambridge. The Coshocton County ARA holds a theory class. IBX received S6S, DUF2, DUF3, WAC/A3, YLCC and DXCC awards and was top Ohioan in the Minnesota QSO Party. VYU graduated with top honors from Navy ET school and was sent to Philadelphia. MJC has a new Globe King. K8GJU is mobile. Your SCM attended the Northeast Ohio 50-m.c. Group Annual Picnic, where more than 265 amateurs and their families registered, with a few from Pennsylvania, New York, Michigan, West Virginia and Florida. Prizes were won by ATH, K8CRO, K8KTB. K8s: IPD, LGB, MXI and NSI, received their General Class tickets. The Seneca RC had an R.C.A. man speak on "The New Sound" and demonstrated with a small truckload of sound equipment. TDB is in the hospital. UPH, DAE and LUS made BPL in June. WKN was appointed c.d. director in Piqua. K8MUU dropped the "N" and has a new HQ-170. The Piqua RCs 1959 officers are BZX, pres.; and K8MUU, secy.-treas. UPH has a new HT-32 and Viking Courier. JHJ is mobile WTQ is home from college and has a new Apache. BIM vacationed in Florida. KN8JOX is in the hospital. The Cuyahoga County AREC helped in welcoming the first foreign ship to pass through the seaway to dock at Cleveland, with AEU, LHX, TFW, K8s DBJ and JHZ participating and this organization helped establish communication during the Loyalty Day Parade with AEU, BHR, INW, NZI, K8s ABA, JHZ, JIO and MBW taking part using 6 meters and in May they helped in collecting funds for the Green Cross Membership Drive with BAH, LHX, NRI, NZI, UQS, ZEP, K8s AAG, ABA, CFH, GBH, GDF, GJW, GVK, HVH, INQ, IZL, JHZ, JIC, KAQ, LMF, MBV and MBW participating. Toledo's *HAM SHACK GOSSIP* names CFN as its "Ham of the Month." The Columbus ARA's *CARASCOPE* tells us that VDJ spoke to them on his Windward Islands trip as VP2DX. K8ANX received WAC on phone, VFI is now K4VMF. Amateur radio is receiving well-deserved publicity in the *Cleveland Plain Dealer* with BAH writing the column. Wonder if we could build fires under our local newspapers to start bringing the services we give the people before the public. I will keep the articles from the Cleveland paper and will send them to anyone who thinks he may be able to get the hometown sheet to help us. K8CMQ moved to Dayton. OTI received DXCC. HAO broke his foot painting in his new home. HOY fell and broke an arm and a leg. KN8LDX is in the hospital. Appointments in June were LUS as ORS and K8HZN as OBS. The Ohio traffic nets still are looking for outlets into two of Ohio's largest cities and it seems a shame that at least one station in each of those cities can't find time to get into either of the nets at least every other night. The Buckeye Net needs Cincinnati, who use to have one station and at times two and three stations. The Ohio Phone Net needs Cleveland. Handling traffic is one of the big services we amateurs give the public and if you could hear how grateful the people are who receive a phoned or mailed message from one of their loved ones you would be filled with pride. The Findlay Hamfest will be held on Sept. 13. Traffic: (June) W8UPH 880, DAE 627, LUS 188, QLJ 95, GKB 73, YGR 40, BZX 30, AL 23, VDA 19, GQD 17, K8DDG 13, KHS 13, HDO 10, W8IBX 9, ILC 9, HZJ 5, WYS 5, EQN 3, K8HEJ 3, MHO 3, EBO 2, MSJ 2, W8DDW 1, EAJ 1, EOQ 1, OWP 1. (May) K8JIX 62, W8GQD 21, K8EKG 4, HVT 4, EJL 1.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W2KGC. RM: W2PHX. PAMs: W2IJG and W2NOC. Section nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, IPN on 3980 kc. at 1530, ESS on 3590 kc. at 2130, ENY (emergency) on 29.490 Mc. (Thurs.) and 145.35 Mc. (Fri.) at 2100. MHT (Novice) on 3716 kc. Sat. at 1300. Appointment: K2RKY as ORS. Endorsement: K2SQV as OPS. It was nice to receive traffic from the Field Day groups. Those sending messages included W2DKW/2 (Albany Club), W2SZ (RPI Club), K2UTV/2 (Peekskill), K2TJM/2, W2WXP/2 (Peekskill Club), K2MBU/2, K2VSR/2 and W2EFU/2 (Schenectady Club). Congrats to new General Class licensees K2CRB and WA2CSQ. Welcome to WV2FYU. June was banquet month, with the Schenectady Club holding one on the 8th and the Albany gang celebrating on the 13th. According to the Ellenville Bulletin, K2KRP has 1800 feet of open line to his three-element 6-meter beam on a mountain. Ulster Co. RACES Net meets every Mon. at 2000 on 50.52 Mc. K2KTI won the jr. membership prize at the Albany Club. A Globe Scout and an SX-99 with a beam is reported by K2SMK. Those using new Valiants include K2CKG and K2OWQ. K2CRB has a DSB-100. State Radio Officer W2BGO reports that State Control handled 114 messages on statewide RACES nets. Radio is credited with more than 10 per cent of all traffic during Operation Alert, 1959. The Yonkers Club has a new gavel, courtesy of K2MQR. W2TMJ has left the section for Texas. K2BIG and K2LKI are sporting new mobile rigs. The 1959 Yonkers Club officers include K2BIG, pres.; K2SII, vice-pres. and treas.; K2HGN and WV2DDE, secretaries. Congrats to BPLer K2UTV. Traffic: K2UTV 1700, K2YZI 306, K2MBU 89, W2EFU 72, W2ATA 71, K2VTD 63, W2FVP 12, W2ZBS 10.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2VDT. PAM: W2UGF. V.H.F. PAM: K2EQH. Section Nets: NLI, 3630 kc. nightly at 1930 EDT and Sat. and Sun. at 1915 EDT. 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. through Sun. at 2000 EDT. It is my pleasure to continue as your SCM for another term after successful reelection. My sincere thanks to those who supported me in the election. Activity in our section continues to climb apace with the tremendous growth of this wonderful hobby of ours. Keep up with the overall aims of amateur radio by contributing some portion of your operating time to "service." Our AREC/RACES programs need your support. Our traffic nets which are geared to c.w. and phone on h.f. and v.h.f. can always use additional coverage. How about it? Can we count you in? W2KEB is the only BPL winner this month with another tremendous score. W2VDT, our hard-working RM, is looking for more stations for NLI. Call in or write Doug or your SCM for information. Field Day messages and reports were received from more than twenty clubs and groups. Despite some thunder and lightning and FD downpour, most of the boys and gals had an enjoyable time and the familiar "wait until next year" was heard many times. K2DEM/1 will be in Connecticut for the summer. W2DRD is looking for stations interested in forming a weather net. A 20-A and heterodyne unit have put K2RKL on s.s.b. on 6 meters. A 75A-3 is now in use at W2BO. K2RHG is operating portable from Maine for the summer. W2SEU reports from Texas, where he is now in the Air Force. K2SJP added a new HQ-170-C to the station and worked Haiti on 50 Mc. with a converted Adventurer. W2AYJ, with 255 countries worked, needs only two cards to confirm DXCC-250. K2RDA received the DUF III award. K2GCE received a WBE certificate and added a v.f.o. to his station. WA2CWX passed the General Class exam. Ex-K2DZU/4 now signs W4HVD from Orlando, Fla. Officers of the Grumman ARC are W2IYS, pres.; W2KVW, vice-pres.; W2VGQ, secy. and W2NUN, treas. The club held a fine reorganization dinner-meeting with 100 in attendance. WA2EPS is the club station of the James Monroe HSRC, active with 150 watts on 40-meter phone. Club officers are WA2DVA, pres.; K2BBK, vice-pres.; and WA2BZT, secy. K2VNS hopes to meet many European hams on his technical exchange program trip to Norway. K2UYV has a new 15-meter beam. K2HGR is portable in Arizona. K2AZT reports increasing 220-Mc. activity. Til is building for 432 Mc. and keeps his 50-Mc. rig going, too. He and K2ACD had a 1½-hour QSO with KØMKG, ex-K2UJT, on 6 meters. K2TPU worked 15 states on 50 Mc. during June and had an RCC contact with a K9 in Wisconsin. He is looking for information on conversion of an ARR-2 receiver to 220 Mc. By the time you read this column your SCM hopes to have his antennas up. Some building delays at the new QTH have not permitted the usual antenna-raising parties. However, monitoring the bands from 80 thru 1¼ with indoor antennas indicates much promise. See you on the air soon. Club secretaries are urged to send news of their clubs. How about a visit to your club some day in the near future? Please write and let me know the best day. It will be my pleasure to meet with your group. Traffic: (June) W2KEB 4014, W2VDT 204, K2MIG 171, K2KYS 105, K2RAN 75, K2DEM 74, K2UBG 67, K2PHF 59, W2DRD 58, K2RKL 48, W2JGV 37, K2SFS 36, K2QZS 35, W2EW 33, W2BO 27, W2JBQ 26, K2AMP 25, W2IAG 20, K2RHG 18, K2YQK

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17, W2DSC 15, K2AAW 9, W2SEU 8, K2SJP 8, K2MEM 6, W2MDM 4, WA2BVH 3. (May) K2HVY 39, W2UAL 18, W2AYJ 4.

NORTHERN NEW JERSEY—SCM, Edward Hart, jr., W2ZVW/W3NF—SEC: W2IIN. PAMs: K2KVR and K2VAC. RMs: W2RXL and W2ADE. The NJN (New Jersey Net) meets daily on 3695 kc. at 1900 EDST. Manager W2RXL reports 31 sessions in June with an attendance of 482 and 281 messages handled. K2VNL reports NJ6 is going strong with 8 sessions for 126 QNI and a message total of 45. NJ6 operates on 51,150 kc. NJSS reports, via acting manager WV2AYI, that 21 sessions were held with QNI 44 and 62 messages handled. WV2AYI and W2MLW are keeping K2ZHK in touch with home during his stay as an instructor at camp. K2KVR reports pepper in the water on Field Day. The poor boys had to drink beer! W2CVW took second place in the code-speed receiving competition at Galveston. Congratulations, but we expect you to be first next time. K2YJH was on Field Day with K2DN/2, an EC. KL7CXE sends his first report to this section from Ft. Monmouth and says he is interested in a 6-meter net. W2REH finally has cleaned up the trouble in his rig and expects to be more active. K2MFX has a 48-ft. tower with a new 10-meter beam. K2CBG is a new member of the New Jersey Phone Net, which meets on 3900 kc. at 0900 Sun. and at 1800 EDST daily except Sun. K2JTU will be a member of the PON (Post Office Net). K2VVL hits BPL again on originations and deliveries. K2SRD now sports a Heath VFO. K2AGJ has the back wave cleaned up and now has trouble with the oscillator. W2HXP also was with K2DN/2, both ECs, on Field Day. K2LWQ went to 2RN and came back alive. W2BVE got a certificate for Armed Forces Day on RTTY. W2LRO has a 150-watt linear for s.s.b. WV2GME, the father of K2ZMO, received his license and now there are two rigs at that QTH. K2VAB will be in Budd Lake until mid-Sept., and WA2CCF will be at Camp Berkshire in Winsted, Conn., until Sept. 1. W2ADE and W2ZVW spent Field Day at Norfolk, Conn., only about 8 miles from Winsted. W2MRV writes a heart-rending letter about Field Day mishaps, then reports he made 103 contacts in 12 hours. W2RZO reports from Vermont. Traffic: K2VVL 156, K2ZHK 134, W2RXL 133, K2MFF 88, W2ZVW 80, K2YJH 75, WV2AYI 74, W2RZO 60, W2CQB 58, W2BVE 56, K2AGJ 43, K2LWQ 42, W2EBG 34, K2VNL 25, K2VAB 22, W2EWZ 15, W2ADE 14, W2REH 14, K2CBG 13, K2ZMO 13, K2VAC 12, K2JTU 11, K2MFX 11, W2CVW 10, W2OXL 10, K2QYI 9, WA2CCF 7, K2KVR 6, W2DRV 4, K2IZN 4, K2VNK 4, K2VLU 3, KL7CXE/2 2, W2NIY 2, W2CJX 1.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—The 160 Meter Phone Net held its Annual Picnic at Webster City with 117 registered hams and about 350 persons attending. KØBLJ received an RM appointment. Appointment renewals are as follows: QVA, SCA, BDR and KØCLS as ORSs; UJC as Asst. SCM; QVA, SCA and BDR as RMs. FNR is going to summer school in Georgia. NGS went on a fishing vacation in Wisconsin. QVA reports that the first YL ham in Burlington is KNØUQR. WLR and KØCLI made a trip down the Cedar River from Waterloo to Cedar Rapids with a transmitter in their boat and towing a generator on a raft. The Cedar Valley Club is holding transmitter hunts again and helped locate lost model airplanes at a contest. NWX and BDR attended the 160-Meter Phone Net Picnic. BDR also went to a Waterloo Club meeting. New officers for the Tri-State Radio Club at Sioux City are KØMFT, pres.; RXN, vice-pres.; KGS, secy.; ILL, treas.; MHC, program director; KØMNS, assn. delegate; and OSO, assn. alternate. KØIGU is moving to California. EXN is temporarily in Nebraska. Twenty reports were received from Field Day stations. Most were better than last year. BLH is inactive this summer because of housebuilding. Traffic: (June) WØBDR 1775, LGG 1674, SCA 863, LCX 569, KØCLS 403, WØGXQ 117, KØBLJ 104, WØVWF 96, KØCYF 43, DPT 51, WØNGS 48, UTD 36, NTB 27, BTX 20, JPJ 19, KØIHC 17, WØSLC 16, KØAGJ 15, WØNYX 13, K_GOT 11, KØBRE 10, GXP 10, WØVQX 10, QVA 9, YDV 7, PTL 6, K_SEW 5, APL 4, KZC 4, KAQ 3, WØQVZ 3, KØENX/Ø 2, DPT/Ø 1. (May) WØPTL 9.

KANSAS—SCM, Raymond E. Baker, WØFNS—SEC: IFR. Asst. SEC: LOW. RM: QGG. PAM: VZM. VHF OESS: MOX and JAS. PAM: HAJ. VZM has taken over the duties of PAM for Kansas and I am sure she will do as fine a job as when she assisted me while I was PAM. Worked the following clubs and Field Day stations personally: ECD, Flint Hills Club, Verdigris Valley LIX, Central Kansas, INW, SeKan UTL, Southern Kansas BYC, Boot Hill PMW, UNT Lawrence,

(Continued on page 130)

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PB Hiawatha, DEP Hutchinson. IFR and MXG are running close on Worked all Kansas. Inquiries have been received from as far as New Jersey about this certificate. Kansas was an "also ran" in AREC work last year; we should be first in the current year. Please report your full activities. UTO, Mon. NCS/KPA has a new harmonic. It is with regret we have lost ESG to the Silent Keys. Pick was one of the sweetest c.w. men on the band and always a gentleman on the air. Two new fists on QKS, which we welcome gladly are RJF and KØKMZ. Traffic is in the summer slump. However, we believe it can be improved by stations originating good traffic to out-of-state regions. Traffic: (June) WØOHJ 1120, BLI 556, FNS 222, KØBLX 163, WØSYZ 141, KØIZM 137, WØTOL 105, KØKMZ 94, JVX 70, TOA 67, IRL 48, WØABJ 46, QGG 34, WIZ 26, UTO 15, GJG 14, FHT 13, KØEFL 11, WØIFR 11, YXB 10, WFD 8, ASY 7, KØGIG 4, WØTTG 4, JID 2. (May) KØHGI 47, WØFDJ 11.

MISSOURI—SCM, C. O. Gosch, WØBUL—Sec: KØLTP. RMs: OUD and QXO. PAMs: BVL, OMM and KØKLQ. Net report: MEN (1800, M-W-F, 3885 kc.) 13 sessions; QNI 402; QTC 108; NCS OMM 4, OHC 3, VPQ 2, OVV 2, DXL 1. KØOJC reports receipt of some rare DX QSLs. OUD has a new roof on the house, including a new paint job. During the process a new skywire of aluminum was installed with no bad effect. ARO received an Armed Forces Day certificate. Thanks to WYJ for a nice OO report. The SCM received a new publication, *The Funnel*, published by the Severe Weather Corps, U. S. Weather Bureau, St. Louis. It is a very informative bulletin containing technical articles, organizational notes and other valuable information concerning the newly-formed corps in that area. Cooperation between amateurs and government services of this nature is laudable and should be fostered wherever possible. KØIPD reports openings almost daily in the 50-Mc. band. Contacts are reported in all directions except to the west, especially with Canadian amateurs in the 3rd and 4th call areas. Appointments for the month include KØLTK, OO Class I and II; KØRAL, OO Class III and IV; TOD, OBS; KØDEW OPS. Endorsements: KØHHG ORS. Several appointees failed to return certificates for endorsement upon notification by the SCM. Until these are returned the appointments must be considered cancelled. The Mo. RACES Net has been reorganized into ten districts, coinciding with the State Highway Department organization, and five target areas each with its own local communications set-up and organization. More efficient, convenient and satisfactory operation has resulted. Traffic: KØONK 527, KBD 383, OJC 158, KIK 119, WØOVY 84, OUD 58, OMM 44, VPQ 43, MKJ 38, BUL 33, ARO 27, WYJ 16, KØLGZ 13, WØGEP 12, KØDEW 5, IHY 1, OEP 1.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—The Morning Phone Net, DGW reporting, had QNI 619, QTC 129. The Western Nebraska Net, NIK reporting, had QNI 537, QTC 57. The Nebraska 75-Meter Phone Net, ZWG reporting, had QNI 328, QTC 11. Field Day reports are as follows: KØCDG reports operation 2 miles south of Oak with 2 operators, no AREC members. KØDGC reports location at Lake Air Force Base 8 miles south of Omaha with 15 operators and 1 AREC member. AQQ reports location at Crete Air Port with 4 operators and no AREC members. YTZ reports Homesteader Radio Club location 2 miles west and 2 miles south of Beatrice with 8 operators. ZOU reports Blue Valley Radio Club location at Tamora with 12 operators and 9 AREC members. KØSOQ reports Hastings Radio Club location 2 miles east of Dewese with 5 operators. KØDUU reports the Fremont Radio Club location 3 miles north of Fremont with 4 operators. ELJ reports the Grand Island Radio Club operated 1 mile south of St. Libory with 2 stations on phone and one on c.w. Nebraskans who attended the Estas Park, Colo., Hamfest June 20 and 21 were KQX, NVE, UVU, YSK, PNV, KØTSU and EXP. Traffic: WØNYU 169, KØDGW 115, BDF 78, WØUOV 54, KØKUA 40, IJW 31, WØNIK 27, KØDFO 16, HKI 14, WØBOQ 10, K_RRL 10, WØVZJ 10, KØBRS 6, WØKFY 6, KØMSS 6, WØHTA 5, VEA 4, KØRQE 3, WØSWG 3, AQQ 2, HOP 2, OCU 2, URC 2, AFG 1, KØSLB 1, WØWZR 1.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1-TYQ—The Shoreline V.H.F. Society operated Field Day from Block Island. The Tri-City Amateur Radio Council ran 7 transmitters during Field Day and held a picnic for visiting families and friends. AW worked Ifni for a new country. KYQ advises CN handled 500 messages, including 88 on the second session, during 30 meetings. Average attendance was 14 stations. High QNI goes to K1HWF, RFJ and OBR. UWU has 33

(Continued on page 132)

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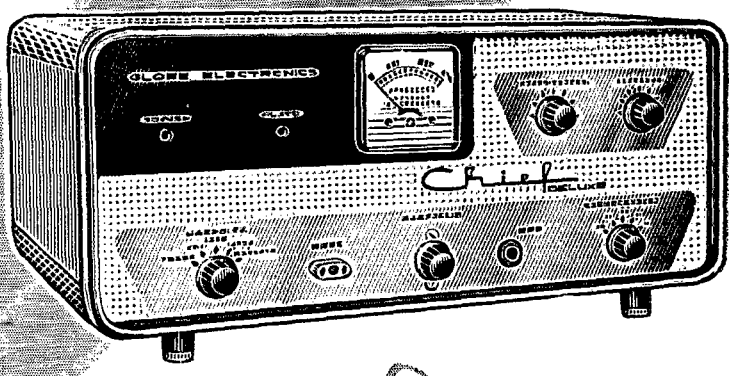

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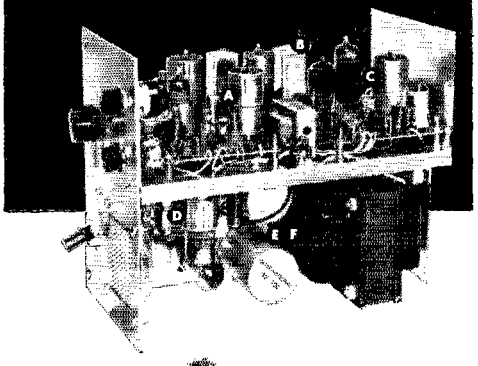
states on 6 meters using a Heath Seneca and an NC-300. TD is having power-supply troubles. YBH reports CPN handled 344 messages during 30 sessions with an average attendance of 32 stations. High QNI goes to K1-CBV, 30; FHP, 29; K1HOP, 28; K1BEN, DAV, YBH, 27; MDB, VQH, 25. New CPN members are HKT and K1HOZ. K1BMM spent his vacation skin diving in Massachusetts. The CQ RC provided communications for the Torrington Jaycee's Golf-O-Rama and the Soap Box Derby. BDI and HYF attended the National Convention. FHP advises CVN handled 24 charter messages during 13 sessions with 146 stations checking in. High QNI goes to KN1KEA, KN1KGI, FHP, 13; HJG 12; K1HMU, 8; FPF, 6. K2DEM operated portable from New Milford. CHR finds even the DX he works has traffic for him to handle. ROX has a new T-R switch. MWB has a new 'scope. K1DHU is chasing DX. LGE, who needs only Wyoming, Montana and Colorado for WAS on 6 meters, added CO and KP4 for 19 countries. UAC went to Europe. FYF will attend Northwestern U. this fall. K1BEN had transistor trouble in his new mobile rig while on vacation. K1BNQ has a new 7-Mc. antenna. If interested in RTTY, contact OUG. K1JAD paid RFJ a visit. IGG enjoyed his vacation but the 6-meter QSOs were too few. K1HEJ has dropped. the "N." KN1LEV is a new Novice in Willimantic. HNA has a new Heath SB-10. New Novices in Stratford, products of the SARC code class, are KN1LGB, KN1LFZ (father and son) and KN1LGC. FVV is busy putting his 6-meter equipment in a new station wagon. The Meriden ARC changed its club call to NRG in honor of Erwin Bischert, former station trustee and member. WPO and YYM are getting their antenna ready for some fall operating. WHL reports the 6-Meter Net handled 38 messages in June. The Candlewood member. WPO and YYM are getting their antenna ready for some fall operating. WHL reports the 6-Meter Net handled 38 messages in June. The Candlewood ARA of Danbury made 6091 points during Field Day. The CQ RC handled 4 messages during five 2-meter meetings. K1DPL received an OO appointment. Appointments renewed: EFW, LV, RFJ ,TYQ, YYM as ORSs; OUG as OBS; DEK and FYG as ECs; K1-BMM and YYM as OPSs; RFJ as OES. Reports received: OO from K1BNQ and MBX. OES from K1DPL, FVV and LGE. Traffic: (June) W1AW 351, OBR 327, K1WCM 322, W1YBH 228, KYQ 210, OQC 186, EFW 172, K1JAD 129, W1QJM 106, K1HWF 103, W1BDI 89, K2DEM/1 74, W1FHP 57, ROX 50, CHR 48, RFJ 43, MWB/1 35, TYQ 32, K1CBV 30, AQE 23, W1SKA 21, CUH 15, K1HOZ 13, W1FYF 10, K1BMM 8, BNQ 6, W1BFS 5, JZA 4, EJH 3, TUW 3, K1DPL 2, DHU 1. (May) K1JAD 72.

EASTERN MASSACHUSETTS—Frank L. Baker, jr., W1ALP—New appointments: 5IOU/1, MNK and K1BYV as OOs; K1BYV as OBS; LMZ as OES. Appointments endorsed: HLQ Stow, VYH Topsfield, VYI Area 1 RO, YHY Fall River, DPO Chatham, WNP Concord, HUP Dover, VYS Weston, QGJ Woburn, SMV Cohasset, BL State Radio Officer as ECs; K1-AGS as OBS; HUP, QGJ and NJL as OPSs; BGW, AYG and UBC as OOs; NJL as ORS. ALP is going to act as SEC until such time as someone is appointed. Any volunteers? NJL moved to Waban. OFK moved to Somerville and wants to thank all the gang who helped him to move. MSW is on 2 meters with a Heath Seneca. K1HSI also has one. We hear that MEV is on again. ASG had his 3rd son. SON is on 75 meters. GYZ is moving to Santa Barbara, Calif. UBC has a 75A-2 and a quad for 20 meters. New officers of the South Shore Club are UGH, pres.; KCR and CHC, vice-pres.; K1JZP, secy.; MME, treas. K1EEG has a Viking II, a Collins 75A-4 and a tri-band beam. All of the clubs were out on Field Day despite the rainy weather and I received many of their messages. C. J .Burke of Lynn has an SX-101, a Globe King 500B and a 2000-watt generator. Net certificates have been issued to the following for the 6-Meter Cross Band Net: W1s CAS, and JME. New officers of the Chelmsford Club are UX VYS, HIX, HIC, HHV, LMZ V,SV, LOW, EUT, NAD, MBA, K1s AVQ, BSM, GKA, GPH, HPX, 1UH, JDD and JME. New officers of the Chelmsford Club are UX, pres.; LDT, secy.-treas. C.D. has a new Gonset for 6 meters. K1DIO worked lots of stations on 6 meters during some good openings. K1KIN has 1 kw. on 6 meters. DEL is the new Radio Officer for Winthrop. KN1s KPD and KYN are new. OIR is on a long trip. The QRA had its annual Bean Supper. The South Shore and Braintree Clubs met. UGH took a trip to So. Dakota. HUP was home for a short time and then went back to Switzerland. KN1JYC was heard in Morocco by K9PEZ. BB is the head of C.D. 1HC is home from school. AAU is on c.w. FI is back on the air some. IHC is working on an antenna for 465 Mc. AYG has made some changes on his new HQ-170. The Framingham Club held its annual banquet. JDS is attending

(Continued on page 134)

International SUB-ASSEMBLIES



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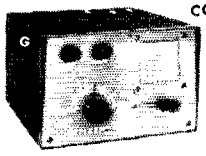
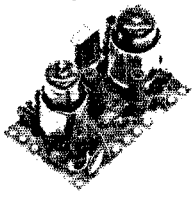
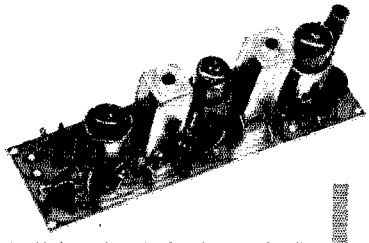


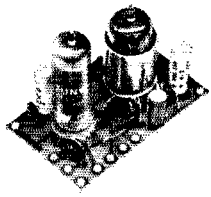


A RF Converter Unit (Printed circuit prewired) Two-tube crystal controlled converter. Converts Ham* frequencies to range of tunable IF. Can be used with IF unit (B) or any communication receiver. 6BA6 RF and 12AT7 mixer-oscillator. Shipping weight 2 lbs. $14.00.

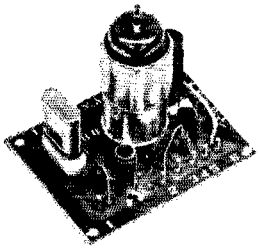
*20 meters, 10 meters, 6 meters.



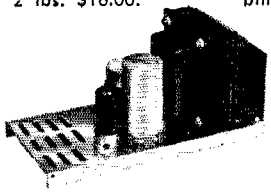
B IF Unit (Printed circuit prewired) Consists of mixer and tunable local oscillator feeding 262 KC IF stage. Includes noise-limiter and squelch circuits. 6AN8 mixer-oscillator, 6BA6 IF amplifier, diode detector, 6AL5 noise-limiter/squelch. Designed to work with units A and C. Makes dual conversion receiver. Shipping weight 2 lbs. $16.00.



C Audio Unit (Printed circuit prewired) Consists of speech amplifier for crystal microphone, first audio for receiver and power amplifier/modulator stage. Designed to follow unit B. 6AN8 speech amplifier/audio, 6AQ5 power amplifier modulator. Includes output transformer but not speaker. Shipping weight 2 lbs. $13.50.



D Transmitter Unit (Printed circuit prewired) Oscillator and amplifier. Crystal controlled. Requires Unit C for modulation. 6AU8 tube. Shipping weight 2 lbs. Complete with crystal and tube. $14.50.



E Power Supply 115 VAC only (not prewired). Consists of all parts necessary to construct a power supply to operate Units A, B, C and D. Shipping weight 10 lbs. $12.00.

F Power Supply 3-way 6 VDC, 12 VDC or 115 VAC (not prewired). Same as E but will operate from any of three different power sources. Shipping weight 10 lbs. $20.00.

G Cabinet (all metal) Includes all necessary hardware, switches, speakers, panel, case, etc., to combine Units A, B, C, D and E or F into a complete receiver-transmitter assembly. Complete with instructions. Shipping weight 10 lbs. $20.00.

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school in Oklahoma City for four months. DPO has an HT-32. K1GRP, ADH and W1AWA made the BPL. Our Mass. phone and c.w. nets need outlets in Fall River and New Bedford. AWA says the 6-Meter Cross Band net still is growing. K1ADH was in Maine for two months. EMG was on vacation. K1CMS has six calls in the family: ILA, XYL; ASY, son; IKY, daughter; KCN, son-in-law; KCO, daughter. HGN-ø has a new QTH. UAR worked 9HOT on 2 meters. AKN is busy on the MARS Net. RCQ went to Europe for a month. The Mobileers elected MEU, pres.; QXX, vice-pres.; K1ISL, treas.; K1KYB, secy. and director, K1AII has a six-element Long John on 6 meters and a 6N2 v.f.o. NJL was in Florida on a trip. ATX is at Mattapoiset for the summer. MIX is at Brewster. KYC spent 2 weeks in New Hampshire. KN1JAJ has an HQ-170. PEX has a ten-element Hy-Gain beam for 2 meters. K1BUF is working this summer. NF worked a VK9 and a VP2. Traffic: (June) K1GRP 651, W1AWA 618, K1ADH 607, W1PEX 99, EMG 80, K1DGI 79, DIO 72, W1HGN-ø 52, LMZ 51, K1CMS 48, W1AKN 44, K1BUF 41, W1ZSS 35, OFK 31, GEK 28, SIV 20, EAE 19, K1BYL 18, W1FJJ 13, ATX 12, QFO 12, TY 12, MIX 9, 1BE 8, RCQ 8, H1C 5, WU 4, AHP 2, K1AII 2, W1DIY 2, DTB 2, NJL 2, NUP 2. (May) W1FJJ 25, AKN 20, AOG 19, QFO 15, NVV 6.

WESTERN MASSACHUSETTS—SCM, John F. Lindholm, W1DGL.—Asst. SCM: Richard J. Kalagher, 1KGJ. SEC: BYH. RM: BVR. PAM: MNG. The West Mass. C. W. Net meets on 3560 kc. at 1900 Mon. through Sat. The Mass. Phone Net meets daily on 3870 kc. at 1800. The West Mass. Novice and Slow Speed Net meets Tue., Thurs. and Sat. on 3744 kc. at 1830, but has been QRT during the summer months. The Worcester County V.H.F. Traffic Net began its operation on 51 Mc. in June. This net meets at 1900 and is hoped to be the beginning of a more extensive v.h.f. net program for our section. Worcester county v.h.f. men are urged to give a listen on 51 Mc. Now, can we get something similar started in the western part of the State? Your SCM has caught wind of a 10-meter net possibility in Springfield. RM BVR calls for more activity on the c.w. net; Novice Net graduates please note. QKC is on with a Viking KW. DXS has been appointed EC for Holden and OPS. Endorsements went to AGM as EC and BYH as OPS. West Mass. stations were booming out during the Field Day week end; QRM-busting signals were heard from the Podunk Radio Club, Pittsfield Radio Club, Hampden County Radio Club and the Worcester Tech. Radio Club. Incidentally, your SCM was active with K1APR/1 on Mt. Wachusett. Let's hope for some big scores from the West Mass. gang. Orchids to K1CAU for aiding MNG in being Acting PAM during the summer months. ZPB has a new homebrew T.R. switch and a new antenna. AJX reports having been at the National Convention in Galveston. Hope to see many of you at the New England Convention in Hartford. Traffic: (June) W1-DXS 96, ZPB 90, BVR 58, DGL 35, BYH 25, AGM 20, OSK 9, QKC 8, AJX 1. (May) K1CAU 133.

NEW HAMPSHIRE—SCM, Robert H. Wright, W1RMH—SEC: BXU. RMs: K1BCS and K1CIF. PAM: HQ. V.H.F. PAM: TA. The GSPN meets at 1900 Mon. through Sat. and at 0900 Sun. on 3842 kc. The NHN (c.w.) meets nightly at 1830 on 3685 kc. The Northeast V.H.F. Net convenes nightly at 1930 on 145.8 Mc. The NH RACES Net meets Sun. at 1300 on 3993 kc. and 53.350 Mc. Note that the GSPN now has a Saturday night session. The Concord Brasspounders operated 8 simultaneous transmitters on Field Day from Oak Hill in Loudon. The weather was the worst in many years. YHF announces that K1GGI has been issued GSPN achievement award No. 2. The Contoocook Valley Radio Club has been issued the call K1LMW. An old timer, Charles Baptist, of Bennington, has been issued the call PB. K1IIK has been issued a WAC certificate. GSPN certificates have been issued to WIs GUE and YZL, K1s BGI, EEN, GBJ, GQH, HRE, IIK and IYQ and to 7ZKV/1. PFU has been reissued an ORS certificate. Watson is now heard on phone with a Viking II after 13 years of c.w. only. K1CIF is the new Strafford County EC. Endorsements: MEL as OBS, TA as V.H.F. PAM. YHI as OPS and OBS. Traffic: K1BCS 695, CIF 536, IIK 182, W1TA 62, EVN 47, QGU 28, JFJ 10, K1DKD 8, WICUE 6.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAMs: KCS and YRC. RM: BBN. Traffic: W1SMU 378, K4AKP/1 158, W1TXL 21, VBR 15, YRC 12, WED 7.

VERMONT—SCM, Harry A. Preston, jr., W1VSA—SEC: EIB. RM: K1BGC. PAM: ZYZ. Asst. PAM: K1GLO. Vermont frequencies: c.w. 3520, phone 3855, RTTY 3620 kc. Nets: C.W., Mon.-Sat. at 1830; VT-PN, Sun. at 0900; GMN, Mon.-Sat. at 1700; VEPN, Sun. 1700. The MARS and C.D. Picnic was held at Alis State Park, July 5 with a display by the civil defense and Vermont National Guard. A new "kilowatt"

(Continued on page 136)

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transmitter for the Net Control was on display. An RTTY set-up was in operation at the picnic grounds. ZJL has a new 5000-watt generator. BXZ worked TNO/M directly over 4800-ft. Mt. Moosilauke in New Hampshire on 6 meters. HRG is adding RTTY to his ham shack and now his score, with other RTTYers, will jump. K1GKL has just added a new "140" watter to the ether waves, and at the same time his SW presented him with the sixth harmonic. KN1KDJ is an announcer at WDOT. NLO, of Burlington, is the director of the International Field Day and Vermont Hamfest this year. KN1KKP is a new station on from Peru, Vt. The BARC emergency trailer expects to be on display in various activities around the State. K1HKI is counselor at Camp Holy Cross this summer. Congratulations to KN1KSS on receiving his Novice Class license. KJG supplied 8 round trips to Stave Island for Field Day participants. Traffic: K1GBF 88, W1AZI 49, K1BQB 26, IXB 23, DQB 21, HKI/1 20, W1KJG 17, K1GBE 8.

NORTHWESTERN DIVISION

IDAHO—SCM, Mrs. Helen M. Maillet, W7GGV—The Idaho Falls Valley Club held a hidden transmitter hunt with OAH as Bunny and 6 mobiles hunting. Winifred, K7BKH, won 1st, Weldon JAU 2nd and Lyle WEY 3rd. FD groups gaining 25 points through the SCM were using the calls WBK/7 at Warm River, TYG/7 at Ola and K7AXB/7 at Boise. Also operating were K7-EWE/7 Justice Park and ISY/7 Idaho Falls. K7ATO and ALA vacationed in Nebraska, and HAU in Oregon. QIS, Seattle, vacationed with his parents and gave exams to his mother and sister, then set up a complete station for them. Hamfest officers met at WBKs QTH. Velma, YON, is touring the Counties promoting CD and had an eyelash QSO with GGV. K7IMB is a new ham in Pocatello. BGB, now married, is back on the air after a year's absence. GMC attended the Lions Convention. EYR is striving for DXCC. W6GTJ/7 made 104 contacts on 6 meters in one month. Traffic: W7GMC 88, EEQ 26, VQC 12, FL 4, GGV 4, DHL 1.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI —SEC: KUH. PAM: ECI. RM: KGJ. MPN meets M-W-F at 1800 on 3910 kc. MSS meets T-T-S at 1900 on 3530 kc. At least ten Montana clubs participated in Field Day. Seventy-seven were registered at the Malta Ham Picnic. Amateurs in Miles City and Helena handled communications for the Powder Puff Derby. K7AWD/7 supplied communications for Boy Scout Camp Napi in Glacier Park. DJL and HAJ have a new baby girl. ZOH has a new baby girl. EWR got married. K7DTX moved from Crow Agency to Phoenix. OGT moved from Miles City to Lewistown with FAA. QYA and VMB vacationed in the islands of the Caribbean. RSI and RSK vacationed in Arizona. VOS vacationed in California. OIP vacationed in Oregon. K7AEZ made BPL and earned the BPL medallion. New calls: K7GQG in Bozeman; KN7ION at Wolf Point; KN7IQB, KN7IQC, KN7IQD and KN7IQE at Hardin and K7IUJ at Harlowton. ZPT has a new home. Traffic: K7AEZ 226, BYC 87, BKH 72, DVZ 22, W7LBK 11, NPV 11, K7EWZ 7, W7TRU 7.

OREGON—SCM, Herbert R. McNally, W7JDX—VIL reports good 2-meter activity in the Medford Area with tests and mobile hunts. K7CNZ is planning a nice trip with mobile operation. SNA is a new ORS. K7CLL still is making good traffic totals. ZB and BDU both made BPL again. OSN really is building up now but needs more c.w. operators. KN7GZB is starting an Oregon Slow Speed Net for Novices on 3730 kc. each Mon. at 6:30 P.M. Here's an opportunity for you Novices looking for c.w. practice work. The OEN picnic was held at Canby July 19. The new AREC Net is well under way on 3875 kc. Mon. through Fri. and the total check-ins are growing each night. All that is needed is to be a signed-up AREC member. UQI, our SEC, has been busy getting the new net under way and has been making some visits around the section. Nearly all the clubs of the section took part in Field Day and from reports it was much enjoyed by all. MORESCO had two operations in June, one on Mt. St. Helens and one on Mt. Hood. Rescues were completed in both cases and swell communications furnished. Those active were HIO, RCL, AOB, UTE, DAE, SAO, AXH, DGE, CHN, HIO, RVN, BLN, DPW, K7AMF, YKY, DZT, THX, WFP, PFA, FSU, NCW, K7BKS, JVO, CJY, SAP, HDN, NGW, UWD and MBX. Well, it looks like yours truly will continue as SCM for two more years, so please keep those reports coming in each month. Traffic: W7BDU 522, ZB 510, K7CLL 167, W7ZFH 110, RVN 93, SNA 88, K7CNZ 39, W7LT 34, MW 26, OMO 20, BVH 19, VIL 17, DIC 12, DEM 9.

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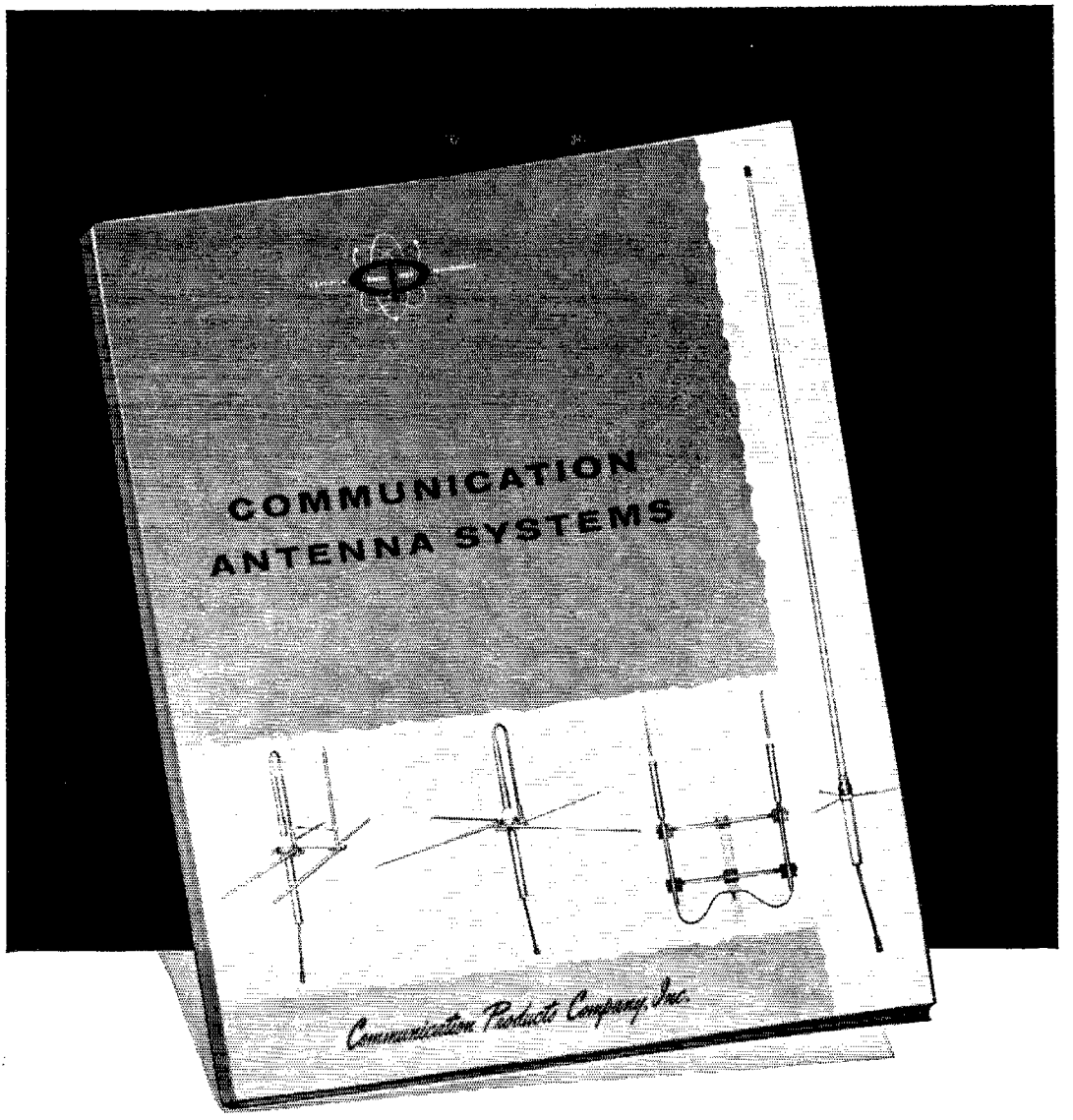

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WASHINGTON—SCM, Robert B. Thurston, W7PGY—SEC: PQT. RM: AIB. PAMs: LFA, PGY. Washington nets: CBN-3960 kc. 2000 PST; NSN 3700 kc. 2100 PST; Mon. through Sat. WARTS, 3970 kc. 1830 PST Mon. through Sat.; WSN 3535 kc. 1900 PST Mon. through Fri. JWD joined the ranks of Silent Keys June 20. The SCM received 22 reports from Field Day operations, which denotes a good turnout. FIX is back from vacation and QRL with PANN. AMC is taking in the Hamfest at Glacier Park, Mont. AIB worked seven new countries during the month. DYD got his 48th state on 6 meters. QLH has a new bright red Volkswagen. GIP moved to a new QTH and installed a new 50-ft. antenna. WAH is home from college, WVA and his XYL, ULK, and family are going to KH6Land for a vacation. NBD has moved to Hayden Lake, Idaho. K7BTS has a new Heathkit Comanche. OVU is mobiling in Northern Canada while on vacation. The VARO used a 40-meter two-element quad on the Field Day site with outstanding results. DNU has a new three-element tribander. K7GUK's XYL now is KN7HXH. OIV is the new EC for the Puyallup Area. New ORS appointees are GIP and PGY. Renewals: HUT as OPS, AMC as ORS. RGL passed his Extra Class test at the FCC in Seattle. EVU, MHL, HJY, BSN, UWT, HOD, RZO and FAN supplied the communications for the Poulsbo Liberty Club Hydro Race. K7BEO was elected Emergency Coordinator for Spokane AREC to replace EQU. OBH and KOH assisted in the communications net for the National Powder Puff Derby. EQU's daughter (age 13) is now KN7IMW. The Spokane AREC Net meets Tues. of each week on 146.16 Mc with 25 stations participating. CAM is enjoying a new all-band mobile transmitter (home brewed). K7ABB and HUT are working on an RTTY circuit between their stations. YFO has a quad and new windmill tower all ready to go for fall and winter. BA left on a trip to Victoria for ten days. Three made BPL in June: BA, DPW and PGY. GFM is waiting for a new Collins exciter. Traffic: W7BA 2506, PGY 1393, DPW 601, DZX 475, QLH 372, OEB 168, APS 129, HUT 118, AIB 99, AMC 75, K7AJT 61, W7GIP 36, WAH 26, IEU 24, FRU 22, LFA 22, WQD 21, REC 11, CZY 5, K7GNA 5.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—June was a big month for civil defense in the RACES group. The following received their RACES license from the FCC, KH6— ASX, BIB, BVM, BXE, CKW, COD, COL, CQB, CQD, CQG, CQJ, CRP, NV, OEL and SN. Note that all are on the Island of Kauai. Congratulations to all and you may display your RACES operators license proudly. The traffic report from KH6AJF is way down this month because of transmitter trouble and no replacement parts immediately available. KW6CGA reports a code class is in progress with seven students. He is active on 75-meter phone. KH6BG, who also writes the ham column of the *Sunday Advertiser*, has been appointed an OBS and will be on with the following schedule: Wed. 7260 kc. A-3, 2100; Fri., 14150 kc. A-1, 2100; Sun., 7260 kc. A-3, all HST. If work interferes with the Wed. and Sun. schedules the bulletins will be transmitted at 1300 and 2100 HST, respectively. Traffic: KH6AJF 103, KW6CGA 29.

NEVADA—SCM, Charles A. Rhines, W7VIU—JU received the very handsome IGY-PRP certificate illustrated in June *QST*. Congratulations, Ray. K7AHA has his phone WAC certificate. VIU has received the DC-25, KR-6 and WSKAD certificates. K6EE/7 has moved to Gardnerville. K7CWV/7 moved to Reno from Utah and is checking into the Nevada Net regularly on 3660 kc. at 1900. We could use more traffic men at that spot. K2YEX/7 is now K7LB and has 36 states on 6 meters. UPS and VIU went "Field Daying" de luxe with a trailer to Harrison Pass. VIU will transmit ARRL bulletins on 7240 kc. at 1800 Tues. and on 14,250 kc. at 1800 Thurs. I need activity reports from more of you. They should be in by the fourth of the month. Traffic: W7VIU 60, K7CWV/7 50.

SANTA CLARA VALLEY—SCM, W. Conley Smith, K6DYX—The Pacific Division Convention in San Jose was a huge success. The RTTY boys and the NCARTS deserve a prize for their fine display of equipment. The DX exhibit was particularly impressive. The technical talks were interesting and well attended. The Sunday Bar-B-Q was superb. The SCCARA and the West Valley ARC, uniting as the Associated Radio Clubs of San Jose, put on a convention long to be remembered. New officers of the Foothills ARS are K6DHO, K6GJ, W6JKJ, K6UJC, K6JTC and K6CSD. Assembly of a 2-meter transceiver, the club project, is in process. Joe Jennings spoke at the SCCARA's June meeting on an 8-pound 1-kw. transister mobile power supply. More than 50 attended the first annual Ex-PAA Flight Radio Officers Outing held June 7 at Coyote Point. W6WNI

(Continued on page 140)

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reports the PAA Net meets on 3830 kc. at 2100 Mon. Three General Class calls in one family are W6GGQ, K6JMV and WA6BWT. K6JMV is leaving soon for service overseas. W6PBC is going to Thailand on government business. W6YHM has returned from KL7-Land. W6DEF was selected Father of the Year in Redwood City on the nomination of his daughter Suzie. W6OII is the new secy.-treas. of the American Legion Net. The first USA-CE RTTY contact appears to be the June QSO of W6OWP-CE3AGI. W6RSY is building a 150-watt final and relocating the station in the garage. Among those working on s.s.b. exciters and finals are W6CBE, K6VQK and K6QCI. Traffic: (June) W6RSY 887, K6GZ 513, W6YBV 150, W6FON 122, K6DHO 100, W6AIT 83, K6DYX 70, W6HC 64, W6DEF 63, W6YHM 56, W6OII 37, K6HGV 26, K6YKG 26, W6ZLO 22, W6ASH 18, W6JCG 9, W6MMG 3, W6GGQ 2. (May) W6AIT 82.

EAST BAY—SCM, B. W. Southwell, W6OJW—Asst. SCM: W6PIR. SEC: K6DQM. ECs: W6LGW, W6ZZF, W6IUZ, K6EDN and K6JNW. New Novices in Dixon are WV6FWH and WV6FWI. The OCRC held its June meeting in Burlingame as guest of the San Mateo Radio Club. K6DMW is changing his QTH. WA6FSO is a new General Class licensee in Dixon. The Mission Trail Net Roundup was held at Mt. Shasta with the installation of new officers. The EBRC toured the Beckman Instrument Plant in June. The Hayward Amateur Radio Club's call is K6EAG. K6SWY and his XYL, K6SCS, bought a new station wagon. W6ROH and W6MAW, of Raytheon Mfg. Co., were guest speakers at the June meeting of the HARC. The mobile breakfast of the HARC was well attended by 16 mobiles. The Hayward Radio XYL Club held its June meeting at the home of K6TKL. K6JQR is QRL school in New Mexico. WA6BYR is moving to Los Angeles. K6TKL worked KX6BU and VK4UN with his mobile. K6MFA is awaiting the new Apache rig and beam. K6DEJ's s.s.b. rig went kaput. K6IRB is rebuilding. New Novices in the Hayward Area are WV6FKH, WV6DZT, WV6DOO, WV6FKU and WV6GCS. A new General Class license is WA6FMZ. It is with deep regret that I note the passing of W6ZZ, ex-W1WY. K6JNW has a Heathkit Mohawk and an Apache in action and says they're FB. Traffic: K6ZYZ 152, K6DMW 54.

SAN FRANCISCO—SCM, Fred H. Laubscher, W6OPL. This report was sent in by Rose Buskley at the request of W6OPL, K6SXX and W6JDN were hosts at the Mission Trail Net Roundup held June 20 and 21 at Mt. Shasta. W6RHA, of Watsonville, was talking on his mobile to K6IPM, of San Francisco, and K6SXX, of Mt. Shasta, when he came upon a bad accident which had just occured on the Shasta Highway. K6SXX immediately contacted the Highway Patrol and help was sent. Because of the speedy way the accident was reported and help sent a life was saved. W6RHA, Milan, always seems to be "Johnny on the Spot" when needed. When a whole truckload of hay was spilled on the highway south on Dunsmuir Milan, who was driving past, mobile-radioed word to the highway patrol. W6JWF had a tough time making it up the highway to Mt.Shastawhere all the gang took a ride up the ski-chairs. W6GGC enjoyed both his birthday and Father's Day at the Roundup and was surprised with a nice birthday cake. The San Francisco's 29ers Club hid its transmitter so well none of the hunters could find it. K6ANP, the hidden station, reported that although he could clearly hear all the mobiles not one came in sight of the location. W6KFS was the lucky fellow who found the hidden transmitter on the June Peninsula hunt. The hidden station was in a brand-new Rambler in a parking lot of Ramblers in San Bruno. KFS says that it took a lot of explaining to the local police as to what the excitement was all about when all the whips showed up, but a word from the manager stating that permission had been given the fellows to use the lot dispelled the policemen's views of "dirty work in view." W6PQK is moving from the San Francisco section so he can be close to his new job at the Stanford Research Lab. W6PHS now rates a private secretary and office of his own at Eimac Company. K6HYW likes his new duties at Eimac also. W6LOU, from Santa Rosa, took in the Mission Trail Roundup at Shasta with his wife and son. W6BIP is bragging about his "ham family." When jr. operator Bobby came through with his General Class license last year BIP was very proud but his buttons are really popping now that the XYL Elsie came through with her new call, WA6GQC. W6SLX reported that the club at Eureka went out for Field Day at Kneeland Park. W6NCK has opened his new radio store in Daly City. Drop in if you are in the vicinity. The San Francisco Radio Club, HAMS, (Red Cross Club) and the Ladies Club of San Francisco, the Baylarc Club, all joined forces and enjoyed a fine "Field Day" at McLaren Park. All agreed that the ladies did a wonderful job at sticking to the rigs and bringing in contacts. K6ANP attended the Galveston, Tex., Convention and says that he brings back wonderful memories of the grand time he had. W6QMO is just

(Continued on page 142)

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about set to go back on the air. Congratulations were extended to President Dosland at the San Jose Convention on his coming marriage. The Ladies Club of San Francisco, the Baylare Group, through W6BDE, initiated the bride into the "Swoop" at the ladies' breakfast and sent a copy of all the data to her. Lots of good luck to the couple. Everyone who attended the San Jose Convention came home with praise at the wonderful way everything was handled.

SACRAMENTO VALLEY—SCM, Jon O'Brien, W6GDO—Asst. SCM: William Van de Kamp, W6CKV. RM, W6CMA. PAMs: W6EWZ and W6PIV. Sorry to report that W6SLR has moved from the section and will be unable to continue as SEC. K6IKV is our new SEC. W6s GDO, HTS, KFL, KKI, PIV, RMT and K6s IKV, PWA, QIF and QPT are all proud possessors of new Gonset Communicator IIIs, 2-meter c.d. models. On July 4 a gathering of DXers was held at W6SXI's to honor visitors ZL1QP from Auckland and ZL3FB from Christchurch, N. Z. The following attended and enjoyed colored slides of the visitor's varied travels: W6s EFM, EII, GHG, GVM, NZS, SXI and K6ER. Field Day activity was well planned and attended by all Sacramento Area clubs, as witnessed by your SCM who visited five different sites. The San Jose Convention was well organized and very enjoyable. The convention committee is to be complimented. W6s GDO, OJB, PJP and K6s CH, GB, GR and HHD were among the nearly 900 who attended. W6HSB and HTS are now having lots of fun with RATT tape gear. W6GDO, Sacramento, is skedding with W7MAH, Reno, in an attempt to work over the Sierras on 2 meters. The Camellia Capital Chirps is helping 15-year-old Kathy Mertz, who is blind and wants very much to become a ham. Sacramento Area clubs all helped to man the c.d. communications van on display at the Sacramento County Fair. Traffic: (June) K6YBV 559, W6CMA 35, K6RPO 16, W6OJB 2. (May) K6YBV 720.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—New officers of the Downey High School Club are K6UVI, pres.; K6UFC, secv.; WV6EIF, vice-pres. W6USV is chasing DX now that school is out. W6FF/6 operated Field Day at Mickey's Grove, with six operators. W6TO/6 operated at Meadow Lake with 20 operators. W6BXN/6 operated at Wagner's Ridge and reports a good time was had by all. K6AXV won the "Golden Garbage Can" at the San Jose Convention. W6GRO is the new chief net control on the American Legion Net. The SJV Net boasts 22 stations with 390 check-ins with 36 messages handled for the month of June. K6JGH is being heard on d.s.b. K6LKJ traded an HQ-110 for a Drake 1A. K6ZCD lost his antenna during a wind storm. WV6GMP is a new call in Fresno. K6QOK lost his antenna. W6PXP, W6SMS, W6JPU, W6BJI, W6WME and XYL, K6LRQ and XYL, K6QJM, K6OGX, WA6CCP, W6QON, W6PSQ, W6PCC W6HKV and XYL, WV6CUV, W6JUK and XYL and W6DUD attended the Pacific Division Convention in San Jose July 3-4-5, 1959. W6LOS still is working over his Panadapter and should be quite an expert soon. This appears to be all the news as the summer slump has set in. Traffic: K6EJT 66, W6USV 39.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL, PAM: DRC, V.H.F. PAM: ACY, RM: PNM. The V.H.F. Contest proved very interesting. NC, of Winston Salem, had its communications center on Mount Mitchel with a good signal. GNF, of Greensboro, had its equipment on Grandfather Mountain with an excellent signal. Possibly some pictures will be forthcoming soon from both these clubs. Field Day activity this year was very limited as far as reports reaching this office. The Asheville Club, MOE, participated. The Raleigh Teen-Age Radio Club, DEJ, the Wayne County Amateur Radio Club, K4CYP, of Goldsboro, and The Morganton AUR Radio Club made reports. I am sure there were others who failed to send a message to the SCM. Lincoln County, with AMY as Radio Officer, reports the delivery of a Viking 500, a Viking II, 6-meter Gonsets, 2-meter Gonsets, a GPR receiver and an SX-100, all complete with antennas. Congratulations to Lincoln County for their faith in RACES. We need much more of this, fellows. "They said it couldn't be done" but 2 meters is working in North Carolina. Solid communications can now be had all over the State. MARS District One has 10 members on 2 meters and proves very satisfactory here in the mountains. ACY reports activity on 2 and 6 meters on the mend all the time. It can be done, fellows. Traffic: K4BUJ 846, W4GXR 423, DSO 127, RRH 89, ROB 19, BBZ 17.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE. PAM: K4IIE. RM: K4AUV. Field Day is over and scores are being totaled. Participation and interest were high throughout the State. Congratula-

(Continued on page 144)

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COSMOPHONE "1000"

▲ A Self-contained 1 KW Transmitter-Receiver
▲ A True Table-top Station with NO Sacrifice of Performance

SPECIFICATIONS

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INPUT: Full 1 kw on Voice Peaks (Meters Read 2500 V at 400 ma) into a pair of 4 x 300 A's
UNWANTED SIDEBAND: 42 db down
DISTORTION (SSB): Third order products approx. 32 db down
FREQUENCY STABILITY: Drift less than 100 cycles *from a cold start at room ambient*
CALIBRATION: Built-in 100 kc marker
AUDIO CHARACTERISTICS: 200-3100 cps

MIKE INPUT: High impedance
VOX: Built-in
LEVEL: Automatic level control
METERING: Screen, plate, and grid current, plus RF output
RF OUTPUT: 52 ohms
VFO's: Dual VFO's permit transmitting on the receive or any other frequency
CONTROLS: Vox, Qt, ALC, Grid Tuning, Plate Tuning, Antenna Loading, Audio Gain, Band Switch, Meter Switch

RECEIVER

SENSITIVITY: 1 microvolt for 6 db S/N
SELECTIVITY: 3.1 kc mechanical filter plus a T-notch filter
STABILITY: Drift less than 100 cycles from a cold start at room ambient
TUNING KNOBS: Coarse gear ratio of 20:1, fine gear ratio of 100:1 gives a 1 kc dial reading per division
CALIBRATION: Built-in 100 kc marker
IMAGE AND IF REJECTION: Better than 50 db
AUDIO DETECTOR: Balanced detector for SSB and CW, diode detector for AM
MODE SWITCH: Selects up or low SSB, or up low AM, or CW
DUAL RECEPTION: Two VFO's permit reception of any *two frequencies on one band with the flick of a* switch
BFO: Crystal controlled
METERING: S-meter
CONTROLS: T-notch filter, audio gain, RF gain, antenna trimming, tune selector, phone jack, tune A and B

"The **COSMOPHONE 1000**"—a complete Station, Receiver, and Transmitter.
Dimensions: 17 inches wide, 12 inches high, and 15 inches deep.
Power Supplies packaged separately, can be placed under operating desk.
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tions to K4HDX, DTQ and NTO on the splendid article and pictures of the 6-meter transceiver in July *QST*. PGS is president of the newly-organized "Flying Physicians Association" in South Carolina. CJD will depart for Japan in September. K4CIY is now in Bennettsville. PIK is in New York State. JBH is in Wadesboro. ECs endorsed and appointed this month are K4OLO, MBN, IBX, PJE, AVU, MXK, W4YLT, GIF, ZRH, CAL, GQO, HAQ, OAK, BNN, DX, MOT and MVX. Hurricane Cindy roared up to the coast on July 8 and gave up its winds in disgust after finishing the SEC, RACES, ECs and all three nets on c.w., s.s.b. and phone in full operation and fully prepared for any emergency. AREC members stood by with portable and mobile equipment. TLC has applied for OES appointment. See you at the Pawley's Island Hamfest Sept. 12 and 13. Traffic: K4GAT 269, WCZ 150, W4AKC 144, K4AVU 108, W4FFH 60, CNZ 56, K4PJE 45, W4CHD 43, K4VHC 41, VVE 29, W4CJD 25, K4IIE 22, W4GQV 19, K4LNJ 12, W4QCC 6.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC: K4MJZ. K4MJZ is on the lookout for willing volunteers for EC appointments in several areas now without active AREC groups. Virginia clubs were well represented on Field Day but a relatively small proportion of AREC members was noted. VFN, VN and VSN seem to be surviving despite summer QRN, although K4QER suggests the awarding of a "QRN Busters" certificate to the faithful. Other than Field Day reports the summer weather with vacations and other competing activities seem to have reduced the reports of much special activity. K4s EUS, KWW, BRK, LLL and W4OOL report considerable v.h.f. work, however. EUS says QRN even whammied the V.H.F. Contest and he made only 5 contacts in as many hours. KWW bemoans 6 meters closing tight during the contest, after being wide open just prior. Horace also reports K4s KWX and RZX are on 6 meters from Chatham, and that CB upped the Field Day score substantially by the ample use of 6 meters. On the move: MXU is silent while Clem is on AF duty in Turkey; K4MSG is Navy-bound and plans to make it a career; peripatetic CVO reports for June from Norway; CGE is back after duty in Morocco; and K4MBL is on the air from YIA, in Yorktown, during the summer vacation from U. Va. One more Field Day note: YE and sons YZC and K4CAX, along with K4OKZ (the son of super-contester KFC), and their own "Smith Family and Clark" Field Day group. Traffic: (June) K4ELG 430, MJZ 256, QES 242, AET 235, W4SHJ 214, K4QER 170, JKK 148, W4RHA 114, MXU 64, K4DSD 44, W4OOL 40, BGP 32, K4TFL 26, W4PRO 12, AAD 9, K4VWK 8, W4DVT 5, JUJ 3, K4RBQ 2, HTA 1. (May) K4ELG 441, ADD 128, JRE 13, (Apr.) K4DSD 21, JRE 5.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, W8PZT. SEC: ZA. PAM: GAD. V.H.F. PAM: K8IYU. RMs: GBF, FNI, PBO and VYR. K8JVR (OM) and K8JVS (XYL) now have their General Class tickets. The Roanoke Division Convention will be held in Richmond Oct. 3 and 4 at the Jefferson Hotel. Contact either 4IMP or 4JUJ for details. K8CSG attended National Guard camp for two weeks. New Asst. ECs for Kanawha Co. are SET, DAR, VMP, ADD, K8DZU, ETF and TVO. K8CSG is EC. IBF is quite active on 6 meters. BWK installed the 148-Mc. rig in the car. Many W, Va. hams are sporting auto call letter license plates. K8DDB visited the West Coast recently. The following stations were known to have operated Field Day this year: KEG/8, K8DZU/8, COE, UDB, K4BZX/8. ESH reported several good openings on 6 meters in June. K8GAG is doing a fine job in his several ham activities. IITLR is visiting in Charleston for two and one-half months. Joe is a fine amateur and was made an honorary member of the Kanawha Radio Club. His home is in Verona. However, he will be an instrument engineer at a new plant being built in Sicily. The following worked EA9DE in 1fni on 20-meter s.s.b. GCN, YBZ, IRN, DJP and PQQ. A few days later this same ham (EA2CA) operated in Andorra and was contacted by the same group (PX1DE). PQQ visited W4VAN recently. Traffic: K8JLF 724, KFK 66, W8BWK 27, K8BRM 24, DDB 6, GAG 5.

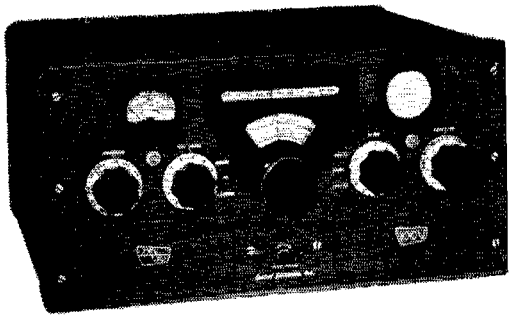
ROCKY MOUNTAIN DIVISION

COLORADO—SCM, Carl L. Smith, WØBWJ—SEC: NIT. RMs: WME and KØEDK. PAMs: CXW and IJR. As a word of explanation about reports in this space, there is a two-month delay from the time reports are received until printed in *QST*. Please keep this in mind when submitting reports for coming events and announcements. Target date for operation of the c.w. net is the first week of Sept. If you haven't joined yet, do it now. Copies of *KØQMH Splatter*, *The Ham Bone*, *Splatter Chatter* and *The Roundtable* have been sent in for club news items. If your club isn't represented, include the SCM on your mailing list. NCB, won a trip to

(Continued on page 146)

THE REVOLUTIONARY NEW CENTRAL ELECTRONICS 100V EXCITER-TRANSMITTER

BROADBANDED! ONLY ONE TUNING CONTROL, THE VFO ITSELF.



CENTRAL ELECTRONICS, THE PIONEER OF AMATEUR SSB IS PROUD TO BRING YOU THE FINAL RESULT OF THREE YEARS OF THE KIND OF PATIENT ENGINEERING, TESTING AND IMPROVING THAT MAKES FOR A SUPERIOR PIECE OF ELECTRONIC GEAR.

MANY OF THE TRIED AND TRUE PRINCIPLES AND FEATURES OF THE ORIGINAL MULTIPHASE EXCITERS HAVE BEEN RETAINED IN THE NEW 100V, ALTHOUGH IN VASTLY IMPROVED FORM. THE USE OF PATENTED BROADBAND CIRCUITRY THROUGHOUT PRACTICALLY ELIMINATES "COCK-PIT" TROUBLE.

REGARDLESS OF YOUR PREFERRED MODE OF OPERATION, IT'S ALL IN THE 100V. SSB, DSB, AM, PM, CW and FSK . . . AND ALL AT THE FLIP OF ONE SWITCH. ALTHOUGH THE 100V WILL PROBABLY FIND ITS GREATEST USE AS A SINGLE SIDEBAND SUPPRESSED CARRIER EXCITER-TRANSMITTER . . . NO ONE HAS BEEN "LEFT OUT IN THE COLD" IN ITS DESIGN. THIS IS THE KIND OF A RIG THAT HAMS DREAM ABOUT!

CHECK AND COMPARE THESE FEATURES

STABILITY: The new patented two tube permeability tuned VFO circuit is exceedingly stable and is immune to the effects of line voltage fluctuations and tube ageing. Built like a battle ship, it is tuned by a husky precision lead screw assembly running in ball bearings. This is a VFO to end all VFO's.

FREQUENCY COVERAGE: 80 METERS — 3.5 to 4.5 Mc. 40 METERS — 6.5 to 7.5 Mc. 20 METERS — 13.5 to 14.5 Mc. 15 METERS — 20.5 to 21.5 Mc. 10 METERS — 27.7 to 29.7 Mc. A spare X position provides for the installation of broad-band coils for 160 meters, MARS, etc. OR any 1 Mc. portion of the spectrum between 1.5 Mc. and 25.5 Mc. OR any 2 Mc. portion of the spectrum between 25.5 Mc. and 29.7 Mc. YOU DON'T SETTLE FOR HALF A LOAF OF FREQUENCY COVERAGE WHEN YOU HAVE A 100V!

THE TUNING DIAL: Band scales in the large slide rule window change with the band switch and are calibrated at each 100 KC point. Frequency is read directly in 1 KC increments by the circular KC dial without any computation whatever. Approx. 12 feet of bandspread on each band. A smooth running two-speed tuning knob allows fast tuning at 100 KC per turn and slow tuning at 750 CYCLES per turn. Calibration accuracy is 250 cycles between any two 50 KC points.

METERING: Reads POWER INPUT (0-200 watts) RF AMPS OUTPUT, AC LINE VOLTAGE and CARRIER SUPPRESSION IN DB DOWN TO 70 DB.

MONITORING: A 2" scope provides an instantaneous visual check on non-linearity resulting from improper loading. Also indicates proper setting of carrier injection for 100% AM modulation. Scope presents trapezoid pattern.

OTHER INDICATORS: Below the meter a neon indicator provides a check on the operation of the NEW AUDIO LIMITER CIRCUIT. Below the scope a second neon indicator starts operating if you have the antenna or load mis-matched.

NEW AUDIO FILTER-LIMITER: The new filter is composed entirely of R-C components, yet has the steep side response and rejection characteristics of a four toroid tuned filter but without the usual harsh, ringing effects. Bandpass is 200 to 3700 cycles. This filter precedes the phase shift system and will maintain 50 DB SUPPRESSION OF THE UNWANTED SIDEBAND. The new audio limiter maintains audio drive to the balanced modulator WITHIN 1 DB, REGARDLESS OF HOW HARD THE MIKE IS HIT. IT'S IMPOSSIBLE TO OVERDRIVE THE 100V BALANCED MODULATOR! Inverse feedback circuits allow 10 DB OF CLIPPING with negligible distortion.

NEW PS-2 AUDIO PHASE SHIFT NETWORK: A twelve cross-over point network is composed of heat-cycled components having .1% accuracy. Even changing the balanced modulator tubes has no effect on its maintaining 50 DB OR BETTER suppression!

POWER OUTPUT: The husky, ultra-linear type 6550 tubes in the final of the 100V will deliver 100 WATTS OF SINGLE TONE POWER, EVEN ON TEN METERS! AND WITHOUT GRID CURRENT FLOW. Two tone third order distortion products are down in excess of 40 DB. A new POWER OUTPUT CONTROL eliminates the need for power dividers when driving AB1 or AB2 linears, since power output is continuously variable from 10 watts to full output.

SET AND FORGET CONTROLS: These seldom used controls are all located behind the flip down magnetic doors on the front.

GENERAL CIRCUITRY: Crystal controlled master SSB generation is at 8 MC. VFO injection is 5 to 6 MC. Crystal controlled heterodyne oscillators operate into mixer stages for various bands. This system, originally developed by C. E. is today the standard of the industry. Blocked grid keying of mixers and final amplifier provides perfect CW and PHONE BREAK-IN.

PHYSICAL DATA: Panel is standard 19" width by 8¾" high. Finish is smooth grey. Attractive heavy duty rounded corner cabinet is 15" deep, is finished in grey wrinkle and has a latch type access lid. Shipping weight approx. 90 lbs.

MULTIPHASE 100V complete.....Amateur net **$695.00**

Orders entered prior to June 1, 1959 will be shipped at the original price of $595.00

COMING UP! MORE SUPERIOR GEAR FROM C. E. THE SSB PIONEER

A NEW COMPANION RECEIVER: Which will TRANSCEIVE THE 100V or separate the two VFO's at the flip of a switch. The 100V has the interlock control sockets built in.

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A NEW HETERODYNE CONVERTER: To cover all of the 2 and 6 meter bands with the 100V. Interlock control sockets are in the 100V.

SORRY: INFORMATION AND DELIVERY DATES ON THESE NEW ITEMS NOT YET AVAILABLE.

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WRITE FOR LITERATURE ON THE COMPLETE MULTIPHASE LINE

United Nations in July, presented by the French Embassy for her fine work in French. DXF organized communications for the Salida Boat Races. CYT placed in the top ten of the ARRL Sweepstakes winners. Have you noticed the close finish of the Denver and Montrose Clubs in the SS? Let's have more clubs represented in November. Field Day activities were reported from Boulder, Montrose and Denver. Results will be published later in *QST*. Hope everyone had fun during the summer months and will join in ARRL activities this fall. SLD reports WAC-phone and WAS in five months on the air (Layne is 14 years old). Traffic: KØEDH 167, EDK 129, WØWME 97, ANA 75, DQN 62, KØIIU 50, SLD 4.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 70CX. SEC: FSC. PAM: BBN. RM: JBV. V.H.F. PAM: Sp. Utah traffic-handlers really are making a name for themselves. JBV finally made BPL after coming close several times. This is quite an accomplishment for an operator in this part of the country. OCX has qualified for the Master Traffic Handlers Certificate (MTHC) which isn't easy to make either. Congratulations, fellows, and keep up the good work. K7CLO has a new tri-band beam. The summer slump and poor conditions haven't helped the Beehive Net but traffic still is holding up. K7CLO has an SWL card from Czechoslovakia and was running 40 watts on 40-meter c.w. at the time he was heard. HHW has sparked an AREC membership drive in Salt Lake County. Traffic: W7JBV 556, OCX 204, K7CLO 24, W7FSC 24, QWH 12, IBO 4.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. RM: ZHN. The NMEPN meets Sun. at 0700 on 3838 kc. Tues. and Thurs. at 1800 on 3838 kc. The Breakfast Club meets Mon. through Sat. at 0630 on 3838 kc. The NMBP meets Mon., Wed. and Fri. on 7080 kc. The TWN meets Mon. through Sat. at 1900 on 7060 kc. Please meet as many of these nets as you can. The new c.w. net is making great progress and handling lots of traffic but more New Mexico operators are needed. K5LOV, EC for Gallup, has moved to Arizona. We wish him luck and hate to lose such a good operator from New Mexico. With great regret I report the passing of HJF into the Silent Keys ranks. He will be greatly missed by all who knew him. CA is out of the hospital and doing very well. ZHN finally worked nephew KA2RF. There were 4 v.h.f. nets with a total of 31 check-ins. There were 3 RACES nets with a total of 9 check-ins. FPB really is working on the v.h.f. nets to build them up. From all reports the Farmington Hamfest, an annual affair, was a huge success. Traffic: (July) K5FHU 750, IPK 546, W5DWB 371, ZHN 181, WØOME/5 127, K5DAA 32, W5ETF 16, K5DAB 10, LWN 8, W5CIN 6, GD 4, BZB 2, K5IPA 2, W5VC 2. (May) K5LFE 104.

WYOMING—SCM, Lial D. Branson, W7AMU—SEC: CQL. The Pony Express Net meets Sun. at 0830 MST on 3920 kc.; 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. The YO Net had adjourned for the summer and will reconvene on Labor Day eve. The SEC and SCM met with the Sheridan Club and have a report showing the club has signed up fifteen AREC members. Nice going, Sheridan. K7CSW's XYL received her ticket with the call K7IVK. The Casper Club conducted classes in code and about 15 received their tickets; BHH received a certificate on the Armed Forces Day message. The Sheridan and Cheyenne Radio Clubs participated in Field Day exercises. The Sheridan Club was high up in Big Horn Mountains. Traffic: W7AMU 3, BHH 2, DTD 2, KØMDT 2, W7BKI 1.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4KK—SEC: WJX. PAMs: K4BTO and PHH. RM: RLG. Congratulations to K4PHH upon his election as net manager of the evening and business sessions on the AENP. Thanks to DGH for his fine job as net manager for the past 18 months. Have you noticed how the same faithful ones submit the traffic reports each month? RLG made BPL again. Why don't you join one of our nets and render a public service? If you have been handling traffic and don't know how to report it, drop me a line and I will send you the proper reporting forms. Don't forget the ham-picnic to be held at Chewacla State Park the first Sun. in Oct. See you there. Welcome to the following new members of AENB: ZKU, K4BVD, DOW and BAI. K4KJD adds Athens link for 6 meters. TOI now is representing Sheffield on 2 meters. Congratulations to PVG who was voted the outstanding NCS for the second quarter of this year by the members of AENP. Traffic: (June) W4RLG 520, K4PFM 98, W4KIX 64, PVG 64, K4SSB 43, W4MI 37, YRO 32, K4BTO 27, W4CIU 18, K4SAV 18, W4WHW 18, K4PHH 16, AJG 11, AOX 10, W4HKK 9, K4SRB 9, W4TOI 9, CEF 6, K4HKX 5, KJD 5, KN4CTB 4. (May) 4SSB 72, AJG 2.

(Continued on page 148)

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EASTERN FLORIDA—SCM, John F. Porter, W4KGJ. SEC: IYT. Acting RM; K4BY. PAM: TAS. V.H.F. PAM: RMU. Happy to have K4BY as acting RM. K4SJH is in Connecticut on a 3-month vacation. ATA is the new net mgr. of the Florida Net on 7105 kc. Mon. through Sat. at 1900. How about a QNI for your city? GN is going strong on 7105 kc. at 1000 under the eye of BY. RMU worked 1AZK on 2 meters and qualified for the 1000-mile club. FNR worked his 15th KP4 on 6 meters. K4RZQ made his CP-30. QLF is off to Yankee-Land for an extended leave. About 15 clubs report having good Field Day activities. K4LCD/LCE worked mobile all the way to N.Y.C. and back. New ARCACS officers are IYT, K4AHW, ENN, and W4JO. LVV had a wonderful vacation in Europe and visited many of his DX friends. The Ocala Hamfest was a big success. The second annual ARRL Divisional LO Meeting was held with ZD, PMJ, RKH, KGJ and IYT present. Don't forget nominations to the Florida Skip Award Committee. Hope you participated in JOCO 6 in Naples. AYV is active on 6 and 2 meters again. DEN is on 10 meters building up steam under ZCD. SJZ cracks the whip. SDR handled FMTN nicely during the Dade City tornado. The Floridora YL Net meets Fri. at 1330 with KN4ANR as manager. All you YL Novices, here's your chance to learn net procedure and have fun doing it. A4BI and A4OVO are doing a nice job with MARS in Florida. K4HIL and a kw. on 6 meters and now has 46 states. K4ODS is the new M.O. of the K. of Kcs. K4MTP has a buffer-doubler. The Ft. Myers RC is building up fast. Lets have more club news and traffic reports. Traffic: (June) K4QLG 453, KDN 283, ILB 281, LCF 176, BY 108, W4GJI 76, K4BLM 75, W4IYT 62, K4UII 62, ODS 60, COO 53, W4IMU 42, BIL 39, K4LCD 39, RNS 35, VEJ 28, W4TAS 23, K4MTH 20, ANJ 18, OSQ 15, TDT 11, W4KGJ 10, K4JJZ 8, IWT 7, MTP 7, MBB 5, LUT 4, K7CMZ/4 3. (May) K4RZQ 68. (April) K4RZQ 50. (March) K4RZQ 72.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: AXP and BVE. Club groups participating in the Field Day activity were Pensacola, Eglin AFB, Panama City and Tallahassee. Also the Thomasville, Ga., Club operated portable at Alligator Point, near Panacea. If there were others participating, please let me know. The PARC V.H.F. Club and NAS Club joined forces to make over 1000 contacts. During June your SCM had the pleasure of speaking at a meeting of the Tallahassee Club and installing officers of the Pensacola ARC and Auxiliary, UEU, the new Leon County EC, with the aid of ACB, is wasting no time in organizing an active AREC group. The new president of the PARC is K4IVD. League officials of the Southeastern Division met with Director ZD at Silver Springs to get the latest ARRL information and discuss mutual problems. Met UZB and several other West Fla. hams for the first time. KQP is the new Taylor County EC. More ECs are needed for the other counties around Tallahassee. Pensacola: K4RMO, K4SOI, OOW, K4DDD, K4PIQ, IIF, K4IVD, EWG and others participated in the *search for a lost boy near Perdido Bay. K4EYI has* an FB shack fixed up at the new QTH. AXP was heard on 10-meter phone! Traffic: K4UBR 207, W4BVE 111, K4PVU 74.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: PMJ PA.Ms: LXE and ACH. RM: DDY. GCEN meets on 3995 kc. at 1830 Tues. and Thurs., 0800 on Sun.; GSN Mon. through Sun. at 1900 EST on 3995 kc., DDY as NC.; 75-Meter Phone Net each Sun. at 1330 EST on 3995 kc., MV as NC.; Atl. Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc., KWC as NC.; GTAN Sat. at 1000 EST on 7290 kc.; GPYL Net Thurs. on 7260 kc. at 0900 EST, K4CYV as NC.; GAN on 7105 kc. at 1800 EST Mon. through Fri., K4KZP as net mgr. K4ZMT racked up a nice traffic report with a total of 564 messages handled. The Atlanta Teen-Age Radio Club has a new president, WKP. K4SVT and K4UWL are leaving Atlanta and the gang around Atlanta will miss them. K4KKS is the treasurer of the Atlanta Tean-Age Radio Club. K4LEM still is studying at Georgia Tech. The hams in Georgia were surely sorry to hear of the passing of CAN's wife on July 5. ACH is working on RTTY. Clubs who reported to the SCM on Field Day were HBB/4, ZOA/4, VTA/4, CVY/4, K4EEK/4, MM/4, K4JZH, K4YIN/4, DXI/4 and W4MQN/4. On the Sunday afternoon ending Field Day a train wreck occurred outside Savannah. KGP, EC for the county, did an excellent job of rounding up his AREC members and mobile units which furnished communication from the wreck back to Savannah. KGP is writing a complete story on this happening. June 22-28 was proclaimed Amateur Radio Week in Georgia by our Governor Ernest Vandiver. The Teen-Age Radio Club has a station in Davidson-Paxon Store in Atlanta all week with very good results. Traffic: K4ZMT 564, W4DDY 330, K4UPJ/4 250, BAI 122, BVD 43, LVE 37, HPA 24, CRY 19, VCM 11, W4RTY 7, FWH 6.

WEST INDIES—SCM, William Werner, KP4DJ. SEC: KP4AAA. Field Day messages were received

(Continued on page 150)

GONSET'S NEW G-11 . . .

Hundreds [illegible] Communicator: [illegible] in your home or office • [illegible] • fishing • hunting • camping • boating • auto racing • skiing • hiking • on golf carts • club activities • spectator sports • football games • country estates • baseball games • communications around the home or country property • use on farm • ranches • construction projects • mapping • mining • patrols • oil and gas • geological expeditions • forestry • park management • lumbering • [illegible] dispatching and control • fork lifts • use on trains • warehousing • [illegible] emergency communications • law enforcement • [illegible] railroads • airports • cycling

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from KP4AJN/KP4, one operator at Jobo Beach; KP4ARL/KP4, 4 operators at Roosevelt Roads; and KP4FAC/KP4, seven operators near Aguada. ABN received appointment as OES and Asst. EC for V.H.F. CK raised a 6-meter beam to a 50-ft mast. AAA is building a concrete shack and has ordered an HQ-170 and a Mosley Tribander beam. ALY is converting a DX-35 to 50 Mc. and has a stacked array for 6 meters to put up. AOD is operating KP4NY at the Colegio San Jose Radio Club for net schedules and Stateside contacts on 15 meters. AMs is building a kw. linear with a DX-100 driver. KV4BA is using a DSB-100 more than a Globe King now. AAM will study law at the U.P.R. instead of going to the States with the USAF. CK put up a good 75-meter antenna. WT has a new microphone. ALO, at Ramey AFB, reports to the Antilles Weather Net. NY now has a 50-kw. emergency power plant and is sending a 30-kw. plant to Colegio Ponceno, KP4AED. KV4BA, VP2LS and KP4NY helped the USCG locate a lost fishing boat in June. RA's 32V-2 is being repaired. RE gets hurricane weather maps from the Washington Office of the USWB. It is map No. 1565. ES and ABN are working many Stateside stations on 6 meters. MS added a Mosley Tribander to the array of 10- and 20-meter Telrex beams. RD has a Collins 51J receiver for general listening, using the 75A-4 for s.s.b. and c.w. only. Grandmother WT announced her fourteenth grandson in June. PZ cautions certain KP4 stations to observe correct operating procedure in signing call letters. W4LEA/KP4 FAA maintenance chief, has a new Apache on 21 Mc. KD has received the following new certificates: WAG, WAVQ, Kroonstad, Penn-Jersey YL, a silver medallion DUF-4 award, and a 150 sticker for YLCC. KD worked OD5 and CO3 for No 96 and 97 phone towards DXCC-phone and received a DXCC-240 sticker. Traffic: KP4WT 79, LC 3, AJN 1, ARL 1, FAC 1.

CANAL ZONE—SCM, Ralph E. Harvey, KZ5RV—RV and VR are on a Stateside vacation. VR had to leave Miami hurriedly to go to the bedside of her father, who is ill in Arcadia, Calif. RV visited W4LHZ in Fort Lauderdale and they had a party at the Ocean View Hotel when out-of-towners W8KCK and W8CMC came to celebrate. Other Florida hams visited by RV were K4AEE, W4EF, W4LN. K4BVP and K4KRJ. RM and KA left in July by boat to visit the Midwest then back to the East Coast where they will zero in at the QTH of K4AEE and K4GYF for a few weeks before returning home. KR is in New Orleans where he got K5KLN to fire up and call the Canal Zone to find out if his friends drove his car home from the airport. DS has a new harmonic—a girl. AD and TG have been checking in on the 7305 kc. Sun. morning MARS Net with good signals from the Atlantic side of the Isthmus. WA has been keeping an ear open nightly on 15 meters for W5-WUX awaiting news about a new grandchild expected in Little Rock any day now. Air Force MARS members operated Field Day stations at Albrook A.F.B. The Crossroads Club operated Field Day stations at Coco Solo. Traffic: KZ5RM 14, SW 14, CC 12, VR 12, RF 8, WA 8, HO 6, DS 3.

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 for the month: K6MCA, W6ZJB, K6HLR, W6GYH, W6WPF and K6PLW. Congrats, fellows! The Los Angeles gang really turned out in large numbers for Field Day! W6AM confirmed a new one with a card from KS4BB. K6TPL still is knocking off the JAs on 40 meters and has completed WAS. Congrats, Ted! K6OQD is working KJ6 at 0300! New officers of the LAYL are K6BUS, pres.; K6ANG, vice-pres.; K6OAI, treas.; WA6AOE, corr. secy.; K6MQS, rec. secy. K6PXQ is teaching radio and code to Boy Scouts. W6NAZ is a new member of the OTC. Congrats, Lenore! K6PZM is the new Asst. Manager of the SoCal 6 Net. Nice going, Joe! W6SRE is back at the beach for the summer. The section extends its welcome to our new PAM, W6BUK. Graham will be happy to hear from you regarding phone activities. W6EBK was up in Yellowstone for a vacation. K6DDO is putting up three-element quads on 20, 15 and 10 meters! Glad to hear that Ellen, WA6AKS, is home from the hospital. New officers of the Palisades Radio Club are W6AJU, pres.; W6CPI, vice-pres.; W6-GAA, treas.; W6GFW, secy. K6EOK reports some short skip openings on 6 meters. WA6AYF reports great interest by ZLs in the WACC Award. New officers of the San Gabriel Valley Radio Club are W6MEG, pres.; K6-DJO, 1st vice-pres.; W6PZM, 2nd vice-pres.; K6GXO, secy.; W6AGK, treas. Support your section nets: Phone, SoCal 6 Net on 50.4 Mc. at 1930 PDT; c.w., the Southern California Net on 3600 kc. at 1930 PDT daily. Traffic: (June) K6MCA 2053, W6ZKB 1476, K6HLR 865,

(Continued on page 152)

Transistor Power Supplies* and Components

* Complete Units

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Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at ½ selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**

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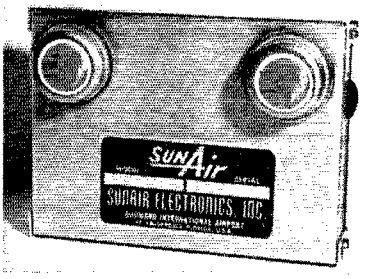
Continuous operation at 45 watts. 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA; 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 14 oz 12-V Input: **$57.50** 24-V Input: **$79.50**



Toroid Transformers for Transistor Power Supply Application

H SERIES

H-6-450-1 Input: 6-VDC. Output: 450-VAC center tapped...450 and 225 VDC from bridge rectifier...45 watts.

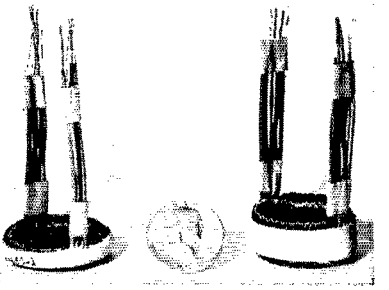
H-14-450-12 Input: 12/14-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...55 watts.

H-28-450-15 Input: 24/28-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...65 watts.

H-6-100-125-150-D Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

H-12-100-125-150-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

H-24-100-125-150-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.



Without Encapsulation (2 ozs.). 1-10 units: **$16.00 ea.** With Encapsulation (3 ozs.). 1-10 units: **$18.50 ea.**

HD SERIES — 2000 CPS

HD-14-225-300-2-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

HD-28-225-300-2-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$18.50 ea.**

With Encapsulation (4½ ozs.). 1-10 units: **$21.50 ea.**

HDS SERIES — 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

HDS-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$21.50 ea.**

With Encapsulation (4½ ozs.). 1-10 units: **$24.50 ea.**

400 CYCLE SERIES

14-115-1.5-400 Input: 12/14-VDC. Output: 115-V at 1.5 amp.

24-115-1.5-400 Input: 24/28-VDC. Output: 115-V at 1.5 amp.

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ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. PAM CSN: FMZ. We received word that OXN of Tucson, who used to be very active on Arizona traffic nets, passed away while down in Texas. 6EL, of Sunland, Calif. and Phoenix, passed away also. Frank was very active on the Arizona phone net. There were not as many groups in the field for Field Day this year. The Douglass Group was out at the Hester Ranch. UCA and DZG operated mobile from the White River. The AARC was on top of Mingus Mt. These were the only reports. We heard that there was another Mesa group and another Phoenix group as well as the Tucson Club out. Traffic for June was very low. K7DHL is taking traffic from the 12th regional net again for the Copper State Net.

SAN DIEGO—SCM, Don Stansifer, W6LRU—Your SCM received 8 Field Day messages from this section, and one from the Los Angeles section. K6ZCR and her OM, K6HAH, vacationed in the San Francisco Bay Area. K6BX has received his Award Hunters certificate. W6-EOT, RM for the section, vacationed in July. W6IAB, Marine Corps station at Camp Pendleton near Oceanside, has a June traffic total of 3755. Chief Operator is W7-DTM. K6LQR has a 5894 tripler on 433 Mc. W6VIV, a new OO in Costa Mesa, sends in a nice report this month. The Newport Amateur Radio Society enjoyed Field Day at the Buffalo Ranch in Orange County with 40 members present. K6IWU and K6IIR are both home from college for the summer. K6BEC graduated from M.I.T. in Boston, got married, then vacationed in VP7 and is now working in New England. W6CAE is driving a new Buick. K6EC spent part of the summer in Hawaii on business. The July meeting of the San Diego DX Club was held at the home of W6JH. The new TVI chairman for San Diego is a wellknown phone DX man, W6RGD. W6LRU now has 250 countries confirmed. W6CHV has more than 200 confirmed on phone only. He is high man in the section in this category. Traffic: W6IAB 3755, W6-YDK 2979, W6EOT 528, K6ZCR 112, W7YKN/6 41, K6-ZRD 9.

SANTA BARBARA—SCM, Robert A. Hemke, K6-CVR—The Santa Barbara section turned out exceptionally well for Field Day. The Santa Barbara Club reports having 942 contacts and the Ventura County Club 900 contacts. Other figures are not available at this time. W6FYW has his ORS appointment renewed for another year. WV6BGL has taken his General Class exam and is awaiting his ticket to show. WA6BLM received the first BPL certificate in the past two years with a total of 501 points. Congratulations, Jim, and keep up the good work. W6TNS gave a talk about the use of transistors in v.h.f. at the Santa Barbara Club meeting. Don's talk was so interesting that about half of the Oxnard Club showed up to hear him speak. Traffic: WA6BLM 501, W6FYW 1.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—Asst. SCM: E. C. Pool, 5NFO. SEC: K5AEX. PAM: BOO. RM: ACK. Once more the GCARC members proved their ability to work together and perform efficiently the duties of hosting the 29th West Gulf Division Convention in conjunction with the 11th ARRL National Convention. For many of us it was the first opportunity we have had for eye-ball QSOs with the gang at Headquarters. Start now with your plans to attend the next West Gulf Division Convention to be held in Dallas in 1960. BOO is the new EC for McClennan Co. ACK reports increasing interest in NTX. For the first time in many years they have sufficient NCS and ANCS. K5PXV has trouble in Richardson with a sleeper ordinance that restricts the height of all structures to 25 feet. This includes radio and TV antennas. VEZ is back on the air after a short stay in the hospital. The Tarrant County Disaster Control Net conducted an emergency drill June 13. The problem was to move patients from a major hospital partially destroyed by a tornado to a nearby city. The simulated emergency was well handled by mobile K5BTZ, EGB, HTM, IVL, LQN, ROF, W5-FJP and URG and fixed stations K5AEX-OCDM Denton, BNW Arlington, MZW (ANCS) UCR, SSD (NCS) VEZ, and WKH. Field Day messages were received from —CF, FC, LZW, ULO, TPG, US, CXJ, SDN, DAM, K5AEX, AXA and QHK. What is wrong gang, don't 25 points mean anything? Traffic: K5LZA 341, W5BKH 298, K5IPG 161, IDZ 148, HTM 146, W5AHC 115, LGI 110, K5ETX 76, W5BOO 70, K5IBB 32, OJI 6.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC—SEC: K5KFS. RMs: JXM and VVQ. PAMs: DRZ and

(Continued on page 154)

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GENERAL ELECTRIC

MFX. V.H.F. PAM: VCJ T.he Lawton-Ft. Sill ARC made over 800 contacts during Field Day. Other groups in the section also were heard hard at work during the event. New Novices in the Bartlesville Area are KN5-UZL, VIR, VMD, VMZ, VNI, VSP, VSQ, VSR, VSS, VST, VSV, VSW, VSX and VSY, all from their spring code and theory class. Congratulations to all concerned. The new call of the Lawton-Ft. Sill ARC is K5OZ. PNG received the Armed Forces Day c.w. certificate. K5BNQ needs items of ham news for her column in *Monitor*. EHC finally worked an African station after 27½ years. PAA used s.s.b. on Field Day and bettered last year's performance. K5KGO, with a new General Class license is on 3.8-Mc. phone. New officers of the Bartlesville Club are K5OVI, pres.; K5OXP, vice-pres.; and K5OVU, secy.-treas. We are sorry to report that ITF became a Silent Key July 4. Oklahoma's Ham of the Month: K5JGZ for his excellent participation in the c.w. and phone nets and his faithful reporting each month. Traffic: K5CAY 399, W5DRZ 275, K5JGZ 109, W5MGK 71, FEC 70, VVQ 57, K5INC 28, IWK 21, W5-CCK 12, WAF 11, MFX 10, K5MZM 10, CBA 8, LUR 8, W5PNG 8, K5JOA 7, W5EHC 3.

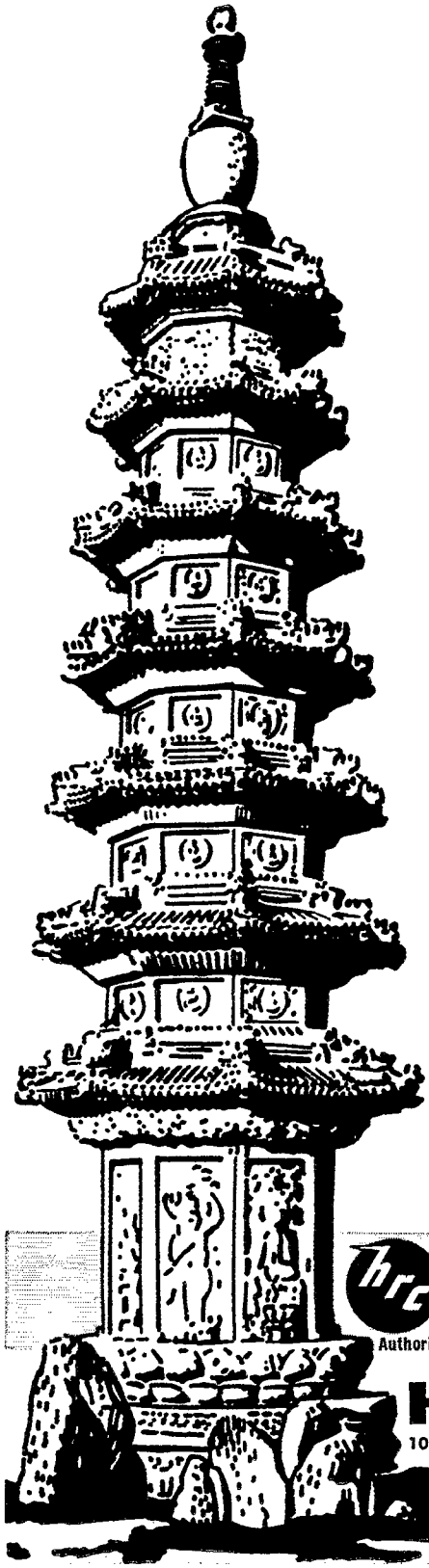
SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. PAM: ZIN. RM: K5BSZ. ZIN has been working DX on 20-meter c.w. The 7290 Traffic Net had 42 sessions; 1196 stations checked in and 458 messages were handled. QEM and QKF visited the Port Arthur Amateur Radio Club. JSJ now is on s.s.b. with a Valiant. MLV and MVL participated in Smokepuff from Holloman AFB. A hearty welcome to the Navy Corpus Christi Amateur Radio Club, at the Naval Air Station. KØDEX is a new OO for Southern Texas. He is a transfer from Missouri. Welcome, Sparky. K5JCC is a new ORS in Houston. Congratulations to AQN and the new XYL, KN5UYV. K5IXH has a new cubical quad for 10-15-20 meters, and a new 500-watt Globe King. K5TIZ has dropped the "N". KN5VJI is a new ham in Corpus Christi. He is working with an Adventurer and a Vertical. All of you who missed the convention in Galveston missed a treat. The members of the Galveston Amateur Radio Club deserve a rousing vote of thanks for this. Glad to hear 5CFK/6 on the air from 6-Land. We miss you, Charlie. Two new mobiles heard in Southern Texas are K5TGQ and K5MFS. We are sorry to lose ZMG, who is going to Germany; also K5EDM and K5RHD, who are going to Guam. AQK and BKG have been vacationing in Colorado. They said it was a vacation so they did not carry any gear, not even the mobile. Traffic: K5OEA 235, W5EGD 189, ZIN 75, BHO 31, DYV 26.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCMs: A. D. Solomon, 1OC, and H. C. Hillyard, VO1CZ. SEC: BL. New appointments include VO2AW as PAM (Labrador). VO2NA, who recently received his DXCC, reports the following departures from Goose Bay: VO2-IA (retired), K5HZE/VO2 to Florida, VO2AE and VO2-DA to Ontario, VO2EA to Vancouver, K6PDE/VO2 to Colorado. Newfoundland news: Wedding bells have been ringing for VO1BD, VO1BV and VO1DA! Congratulations, gentlemen. The Society of Newfoundland Radio Amateurs (SONRA) is now incorporated. VO1CZ has a new mobile transmitter. WP has been transferred to the VE2 district. Members of the St. Croix Valley Club, VEIs ABL, CL, ER, LT and WB, have completed construction and erection of home-built 55-ft. steel towers and are expanding their 2-meter activities. Congratulations to LT, who passed his Advanced Class Amateur exam. Sincere thanks to the editors of club bulletins for their assistance in preparing this column. Why not an exchange of bulletins or monthly letters containing items of interest between clubs in the section so that all may be better informed of what is happening in the area. Traffic: (June) VE1OM 35, AEB 3. (May) VE1ADH 52, OM 23, AEB 14, VEØNI 12.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The North Bay group had another successful hamfest, although rain again was king. The Hamilton ARC held a fine picnic at Aldershot. We regret the passing of ALN. He will be missed by many. The v.h.f. boys had a rare opening in June. AEZ worked W5YYO on June 17 while HW ran up a record (we believe) in working W5SFW 1335 miles on 2 meters three days later. CAB has a new QTH. The Quinte Club visited Kingston. Conditions on Field Day were fairly good in Ontario. BUR lost his antenna in a wind storm. The ARRL Ontario Section Convention is not far away. Hope you can all make this one. The London ARC had a terrific meet at Guelph. The Windsor Club runs an FB 10-meter net on Sunday mornings. DTO is on again with a Valiant. DZA is portable at Meaford. DVG is booming in from Meaford also. DRF is filling up his logs on c.w. Congrats to the Algoma RC members on the new format of their paper. AOG has a new jr. operator. DGW and DYR attended the S.S.B.

(Continued on page 156)



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Hamfest in Michigan in June. DRG has a new daughter and a plane. XN has returned from W4-Land. The Ottawa Mobile Club has a nice monthly paper, *The Rambler*. The Club's Pothole Net meets Sat. and Sun. on 3760 kc. at 1000. 2BE, our Canadian Director, was at North Bay. Alex goes to Geneva soon to represent our Canadian hams at the *big* convention. AIB is on 2 meters consistently. APC is on again. Scarboro holds FB hidden transmitter hunts every Sun. Traffic: VE3BUR 309, AUU 78, NG 73, DPO 71, BZB 58, NO 57, KM 42, BJV 30, OE 26, EAM 21, DWN 17, DTO 14, DZA 13, VD 2.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—Many Field Day groups enjoyed the annual outing with good conditions and fine weather. It might be a thought for next year to pay more attention to antenna set-ups. These always seem to receive scant attention. An efficient sky-hook makes all the difference. AYY should be complimented on excellent DX achievement. With relatively short operation he now has a total of 162/112. AHN moved to Ville St. Laurent. BCA, BCF, BCR and BCS are all hams from the Seminaire St. Sacrament in Terrebonne. BAQ operates club station BAR. AWF is ex-NY. AWO borrowed a DX-20 and has amassed a nice DX record. He is applying for RCC membership. WT is an up-and-coming traffic pusher. Well-known Andre Daigneault of the C.B.C. signs BAU. Code classes do pay off. The MARC is responsible for BAS, BBR, BBS and BBW, while the CJO takes credit for ED, BAZ, BBJ, BCG, BCL and BCP. DI used to sign PP. We learn from the D.O.T. (through ABE) that it still is taboo to communicate with stations in Cambodia, XU; Indonesia, PK; Iran, EQ; Jordan, JY; Laos, XW8; Roumania, YO; Thailand, HS; Viet-Nam, 3W8/XV5. Also, in view of the recent withdrawal of the frequency band 26.96-27.23 Mc. from U.S. hams, it must be borne in mind that you are not authorized to work any non-amateur stations which may be operating in this band. You are licensed to communicate only with other amateur stations. Traffic: VE2DR 88, WT 72.

ALBERTA—SCM, Gordon W. Hollingshead, VE6-VM—PAM: PV. The NARA meets the third Fri. of the month at the King Edward Hotel at 1830. Technical topics are featured. The NARA Annual Awards Night banquet was held June 19 with 132 in attendance. EH, BY, LY, RV, RM, NF, XO, KM and KC were recipients of various awards for outstanding achievements within the club. Special mention was made of BY and LY for their FB job on license plates this spring. "NARA Awards Night" promises to become an annual affair. XO, KM and KC had a threesome picnic at Iosgun river May 24 and still are wondering where the Grand Prairie bunch went to. AYY an .XYL, is a new licensee in Edmonton. BY and NT are working 2 meters from Ed. Beach and Pigeon Lake for the summer. CE and YG are operating c.w. from Fallis for the summer also. The NARA sponsored two Field Day parties and the CARA one. Reports indicated highly successful meets. A large measure of credit is due HG and AB from the Calgary end. Traffic: VE6HM 104, YE 30, TT 6, BA 2, FS 2, PV 2, TG 2.

MANITOBA—SCM, James A. Elliott, VE4IF—Two groups were active in the Field Day contest. AC, with five operators, set up a camp 14 miles north of Clear Lake and 4JW, with four operators, set up near Beausejour. Both stations worked all bands and had a good time. RO reports good operating conditions from his new QTH at Pine Ridge. SA is back on the air after a knee operation. HB is busy building a boat. HH and his XYL were recent visitors to Winnipeg. 5JK and Olive visited many of the Manitoba hams while on their vacation. Condolences are extended to AY on the passing of his XYL. Bris and Ethel, BR and 4CB, are too busy fishing to put their cubical quad back up. ER has gone back to work after being an invalid for two years. SL recently obtained his phone ticket and has been working out well with low power. JF has himself a new VW bus with plenty of room for a mobile. TJ is busy with a cabin cruiser on Lac Du Bonnett. Someone stole your SCM's PMR7 RX from his car and his 80-ft. lattice tower collapsed in a storm. JW has completed a 6-meter beam. The Beasejour Radio Club has acquired a 1500-watt a.c. standby power plant. We still are looking for a good c.w. operator to operated the 40 Trans-Canada Net! Traffic: VE4GE 10, QD 8, JW 5.

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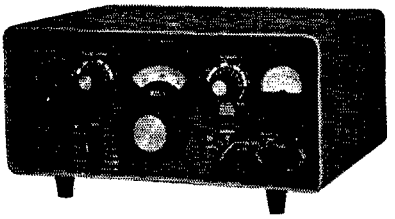

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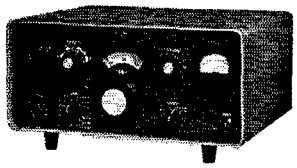

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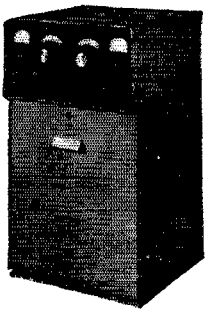

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Happenings

(*Continued from page 79*)

(h) The 144 Mc. band has not been developed to any appreciable extent in many areas. "Technicians" would greatly assist in developing it as they have the 50 Mc. band.

(i) The proposed amendment would greatly assist those "Technicians" living in TV channel 2 areas by providing a VHF band much less likely to interfere with television reception.

(j) The "Technicians," by increasing the occupancy of the band, will provide "greater potential for contribution to technical knowledge." The "Technicians" are presently hampered in propagation investigations by the great gap between the 50 Mc. and 220 Mc. bands at present available to them.

(k) "The harmonic relationship between 144, 432, and 1296 megacycles bands will serve to increase activity . . ." and experimentation in the UHF region.

(l) "There is no legitimate reason to single out one band in a contiguous group and deny "Technicians" the right to operate in it."

4. The principal arguments advanced by those opposed to the proposed amendment are:

(a) The Technician Class license was established in order to promote experimentation in the higher portion of the spectrum and to permit the study of propagation characteristics and the development of equipment and communication techniques by persons not interested in the routine exchange of communications. The experience gained since the 50–54 Mc. band was made available to "Technicians" indicates that little experimentation is conducted in that band by "Technicians" and that the predominant use of the band by this Class of amateur operator is for "rag chewing." The same situation would probably result in the 144–148 Mc. band, should it be made available to "Technicians," in that the great majority would use it for purposes other than experimentation. This is borne out by the very large amount of commercially built equipment being used by "Technicians" in the 50–54 Mc. band and the fact that much of this same equipment is also operable in the 144–148 Mc. band.

(b) As has happened in the 50–54 Mc. band, the proposed amendment would tend to reduce further the number of technicians who will increase their code speed to 13 words per minute and qualify as General Class licensees. This tends to lower the standards of the amateur service as a whole since it reduces the percentage of amateurs who are capable radio telegraph operators.

(c) The Technician Class license term is five years and is renewable. Therefore, the proposal to permit "Technicians" to operate in an additional band will reduce the incentive of this class amateur operator to obtain General Class privileges.

(d) "Technicians" at the present time do very little experimental work and have contributed little toward advancement of the art. To permit them to operate in the 144–148 Mc. band would lessen interest at 220 Mc. and above, thereby further defeating the purpose of the "Technician's" license.

(e) In a number of the larger metropolitan areas the 144–148 Mc. band is already well occupied. Permitting "Technicians" to operate in the band may well overload it in those areas. Furthermore, although "the importance of occupancy of these higher frequency bands for their future availability to the amateur service . . ." is fully realized ". . . it is felt that Technician privileges designed solely for occupancy are a step backward as far as improving the amateur art is concerned. An extremely important provision for Technician occupancy should be some means of promoting their participation in experimentation and development and not merely allowing general communications to prevail."

(f) The amendment, if adopted, will not add to the number of persons qualified to provide emergency

(*Continued on page 160*)

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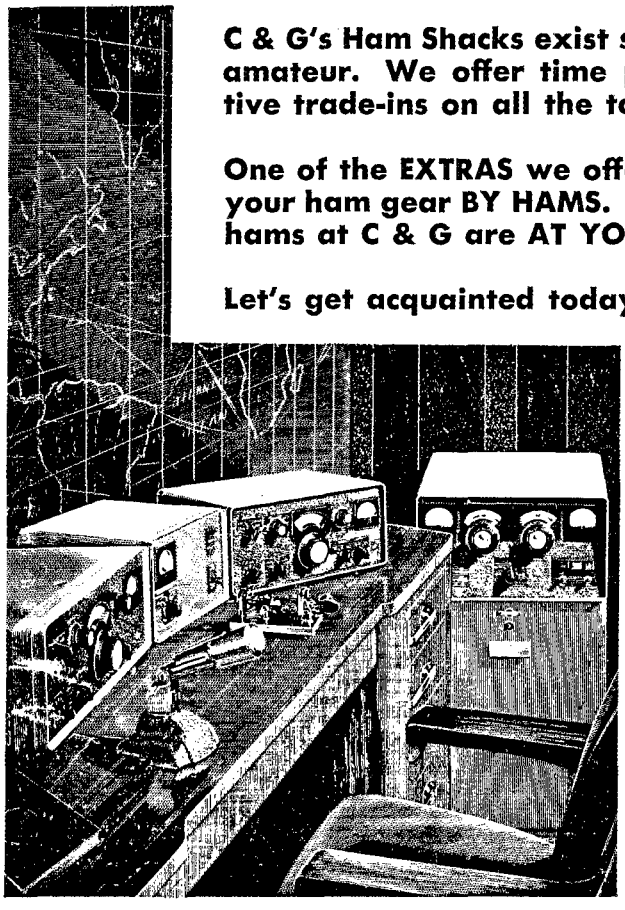

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communications since "Technicians" generally, are not concerned with message procedure nor interested in improving their operating practices. Also, since "Technicians" are not eligible for RACES station authorizations, no additional emergency communications stations would result from the proposal.

(g) "The Technician already has enough room in the 50 Mc. band and only uses the lower 800 kc. of that."

5. A considerable number of comments were to the effect that something less than the whole 144–148 Mc. band should be made available for "Technicians or that special conditions be made applicable to any such availability. These recommendations included a large variety of proposals for opening portions of the band to "Technicians." One of these was that 144.1 to 148 Mc. be made available to "Technicians" with the 144.1 to 144.2 Mc. segment being for A1 emission only. Others suggested 145–147 Mc.; 145–148 Mc.; and 145–146 Mc. with a 75 watt power limit. Some comments suggested that A1 and A2 emission only be permitted to "Technicians" operating in the band to encourage their increasing their code speed. Others suggested that the band be available to only those "Technicians" who have passed the 13 words per minute code test. A number of amateurs recommended that the band be made available to only those "Technicians" who have passed the examination under the supervision of Commission personnel; others that all "Technicians" be required to take the examination before a Commission examiner; still others that "Technicians" be required to take the Amateur Extra Class license written examination or an examination equivalent to the first or second class Radiotelephone Operator License examination.

6. The Commission has carefully considered every comment filed in this proceeding and has evaluated the soundness of the reasons given for each expressed position. As a result of this consideration the Commission finds:

(a) Frequencies in the 144–148 Mc. range have been demonstrated to be very useful and reliable for communication purposes over distances of up to and somewhat beyond line-of-sight. Furthermore, long range interference is seldom a serious problem at these frequencies. Consequently, the band could provide means for carrying on necessary civil defense and emergency communications over short and medium range distances and use of the frequencies may be duplicated in relatively closely spaced areas without mutual interference.

(b) "Technicians" are the only amateurs who presently have no access to the 144–148 Mc. band. Making this band available to "Technicians" would provide one area of the spectrum in which all amateurs could intercommunicate on one band, and the only area in which "Technicians" and Novices could so intercommunicate.

(c) Adoption of the proposal would permit experimentation by "Technicians" in the 144–148 Mc. band and thereby increase the potential for the advancement of general knowledge of this portion of the spectrum.

(d) Opening the band for "Technicians" would tend to more evenly distribute activity in the VHF amateur bands.

(e) Even though "Technicians" are not eligible for RACES station licenses, permitting them to operate their amateur stations in the 144–148 Mc. band would result in there being in use more equipment capable of operation in that band. This additional equipment could be made available for use in RACES operations thus contributing to the success of civil defense activities. Furthermore, the "Technicians" who gain experience in operating in the band would, thereby, become a vailable asset in the conduct of civil defense operation using these frequencies.

(f) Even though the 144–148 Mc. band is well occupied in a number of large metropolitan areas, the amount of use being made of it throughout most of the country is relatively small. Thus, the use of the frequencies by "Technicians" would aid materially in promoting overall occupancy of the band.

(g) A large number of the comments in opposition to the proposal contained the arguments that less than the entire 144–148 Mc. band should be made available to "Technicians." The reasons given were generally

(*Continued on page 164*)

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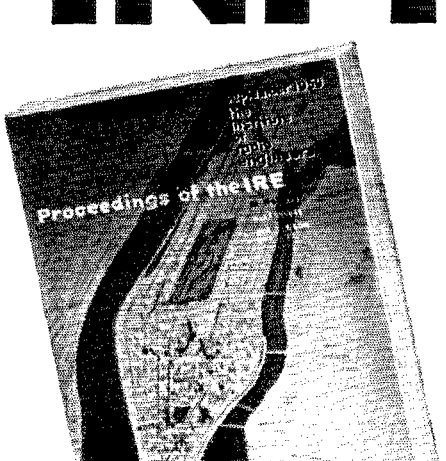

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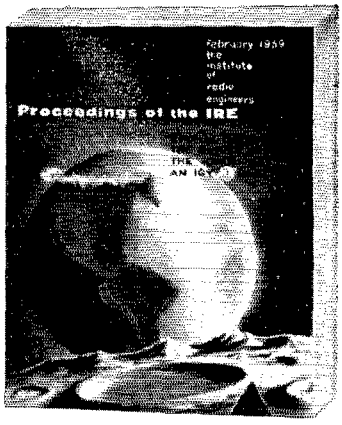

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5.0 mc quartz crystal filter—cuts unwanted sideband 50 db or more. Bridged-tee modulator, temperature-stabilized, compensated network provides carrier suppression in excess of 50 db. SSB, AM or CW output on 80, 40, 20, 15 & 10 meters. High-stability gear-driven V.F.O. 144 watts peak input. Ideal CW keying & break-in operation.

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Same as used in W2EWL SSB Rig—March 1956 QST. Three sets of CT windings for a combination of impedances: 600 ohms, 5200 ohms, 22000 ohms. (By using centertaps the impedances are quartered. The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, high impedance choke, line to grid or plate, etc. Size only 2" h. x ¾" w. x ¾"d. New and fully shielded.

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3 for **$3.49** 10 for **$10.75**

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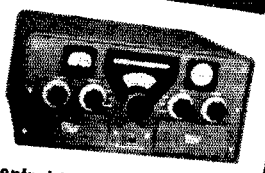

Central Electronics 100V Exciter-Transmitter

NO TUNING (except VFO). uses famous CE BROADBAND system. PRECISION LINEAR VFO—1 kc calibration. Single knob bandswitch 80 thru 10. SSB—DSB—AM—PM—CW and FSK. RF output adjustable 10 to 100 watts PEP. Meter reads Watts Input, Amps Output and Carrier Suppression. 2" RF scope. Speech level & load mismatch indicators. Audio filter—Inverse feedback—50 db Carrier and Sideband Suppression.

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Sub-Miniature 0-200 Microampere Meter

A high quality instrument made by international Instrument Co. (Model 100). Only 1" in diam. Ideal for limited space applications & transistorized circuits. A natural for transistorized grid dip oscillator as described in June '58 QST.

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2" round 0-500 microamperes. Bakelite case. Made by G. E. and Dejur.

Amateur Net $2.95 ea. **2 for $5.50**

Weston 2" 0-4 amp RF meter Model 507. A giveaway at

$2.95 ea. **2 for $5.50**

1½" square (ruggedized) 0-100 microamps.

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4 hy. 250 ma. cased filter choke. Shipping weight 5 lbs.

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"Wonder Bar" 10 Meter Antenna

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related to the belief that opening the whole band to "Technicians" would decrease the incentive of these amateurs to experiment with and develop higher portions of the spectrum, and to increase their code speed with the intent to advance to General Class licensees. These arguments appear to have merit and the Commission is led to concur therewith. It would appear that, to attain a more even distribution of occupancy of the VHF amateur bands, increase participation of amateurs in civil defense activities, and still retain some of the incentive for "Technicians" to gain General Class privileges, only part of the band under discussion should be made available to "Technicians."

7. In view of the foregoing, the Commission concludes that the public interest will be served by amending the rules so that only two megacycles,or half, of the 144–148 Mc. band are made available to "Technicians."

Further, the Commission concludes that the 145–147 Mc. segment of the band is a reasonable choice for the specific band segment for a number of reasons; namely, it would permit the "Technicians" and Novices to intercommunicate on the same band using voice or telegraphy; the two classes could take advantage of this for the purpose of increasing their code speed and, hence, qualifying for General Class privileges; it would result in the least disruption of General Class licensees who are presently using specific segments of the band; Novices who progress first to "Technicians" could continue to use their equipment without the necessity of shifting frequency; and this, coupled with the fact that amateurs tend to group in band segments so as to intercommunicate more consistently using the same mode of operation, appears to provide the best solution in arriving at a choice of band segment for "Technicians" in the band.

8. Accordingly, IT IS ORDERED, Pursuant to the authority contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended, that Part 12 of the Commission's Rules be and is amended, effective August 21, 1959, as set forth in the Appendix attached hereto.

9. IT IS FURTHER ORDERED, That the petition of Mr. Robert K. Wallace for amendment of Section 12.23(d) of the Rules is granted to the extent that the determinations herein are consistent therewith and is, in all other respects, DENIED.

FEDERAL COMMUNICATIONS COMMISSION

Adopted: July 15, 1959 — MARY JANE MORRIS, Secretary

APPENDIX

PART 12 OF THE COMMISSION'S RULES, AMATEUR RADIO SERVICE, IS AMENDED AS FOLLOWS:

§ 12.23(d) is amended to read as follows:

§ 12.23 Classes and privileges of amateur operator licenses.

—•••—

(d) *Technician Class.* All authorized amateur privileges in the amateur frequency bands 50 to 54 Mc., 145 to 147 Mc., and in the amateur frequency bands above 220 Mc.

MINUTES OF EXECUTIVE COMMITTEE MEETING
No. 269
July 20, 1959

Pursuant to due notice, the Executive Committee of The American Radio Relay, Inc., met at the headquarters office of the League in West Hartford, Connecticut, at 3:10 P.M., July 20, 1959. Present: President Goodwin L. Dosland, in the Chair; Vice-President Percy C. Noble; General Manager A. L. Budlong; Directors Milton E. Chaffee, John G. Doyle, and Morton B. Kahn. Also present were Vice-President F. E. Handy, Treasurer David H. Houghton, Assistant General Manager John Huntoon and Assistant Secretary Perry F. Williams.

The Committee first examined the matter of Docket 12912, an FCC inquiry into the status of the Amateur Extra Class license. The General Manager related the history of numerous unsuccessful attempts by the Board of Directors to achieve a solution to the problem of incentive licensing, subsequent to the Commission's abolition of a higher-grade license requirement for certain restricted voice bands. Ex-

(Continued on page 166)

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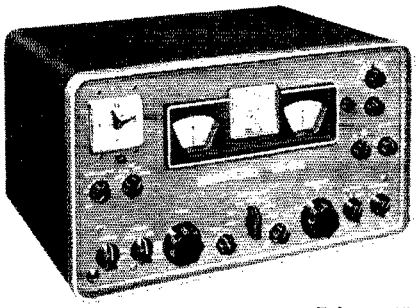

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- Separate vernier tuning
- Selectable upper, lower, or both sidebands
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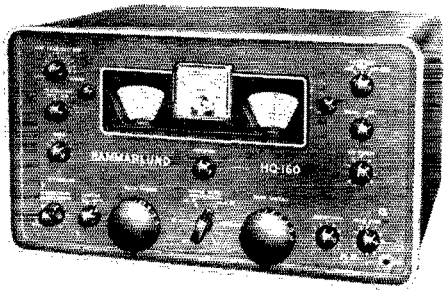

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tended discussion followed. Finally, on motion of Mr. Budlong, it was unanimously VOTED that, under the provisions of Article 7 of the Articles of Association, the following resolution is submitted to the Board of Directors for mail vote:

"RESOLVED, that the General Manager is instructed to file comment of the League in Docket 12912 stating simply that the League has made numerous extensive studies in recent years concerning an incentive program of amateur licensing and the place of the Amateur Extra Class license in such a program, but has been unable to evolve any practical solutions except those which were rejected by the Commission."

The General Manager reported briefly on Docket 12485, indicating that the League's filing in support of 100-kc. c.w. subbands at the low ends of the 6- and 2-meter bands would be substantially the same material as presented in our petition for reconsideration earlier this year.

The General Manager reported briefly on matters concerning the forthcoming Geneva conference. In respect of the probability that it would be desirable for President Dosland to attend the conference for one or two weeks, most likely in the latter stages, the General Manager indicated there was a question as to whether he was authorized to reimburse the president for loss of salary (the very minimum, in this case) while on League business at the conference, in the same manner as the Board has authorized the reimbursement of division directors for loss of salary while attending Board meetings. On motion of Mr. Doyle, it was unanimously VOTED that, under the provisions of Article 7 of the Articles of Association, the following resolution is submitted to the Board of Directors for mail vote:

"RESOLVED, that the Board authorizes the reimbursement, at the rate of $300 per week, of the president of the League for such period as it may become necessary for him to attend the Geneva conference on behalf of the League."

Without any formal action, the Committee discussed at length the matters of "reciprocal" amateur licensing and public-relations programs.

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

Aliquippa Area Radio Amateur Association.....Aliquippa, Pa.
British Columbia DX Club.....North Vancouver, B. C., Canada
Corning Amateur Radio Association, Inc.....Corning, N. Y.
Jersey City Radio Club, Inc.....Jersey City, N. J.
Sun City Amateur Radio Club...El Paso, Texas

On motion of Mr. Budlong, it was unanimously VOTED that George S. Stevans, jr., an assistant secretary of the League, is authorized to sign checks on League depositories on behalf of the General Manager, under the usual bond.

There being no further business, the Committee adjourned at 5:20 P.M.

A. L. BUDLONG
Secretary

How's DX

(Continued from page 77)

we acknowledged loss of old-time "How's" correspondent W6ZZ. Now we hear of K4OTG/6's passing in a Manhattan Beach, Calif., swimming mishap, and this costs us an ardent contributor of the new school. Many are the workers of DX, but relatively few are those who regularly take time out to help document the DX story in this, your ARRL organ . . . . . W3GAU and VE2WW meet the mild requirements of that DXCC² squib in our April 1957 column to become "members" Nos. 16 and 17, respectively. Like the preceding fifteen DXCC² filers, Joe and Don are old hands at the sport . . . . . W8KK visited friends W6EAY and WA6AMZ to sample conditions on the western front. "Enjoyed hearing DX from the Pacific that is normally not heard in Grand Rapids. This answers questions in my mind as to what the Sixes are working when we Eights are busy with UM8s, etc." . . . . . Need South

(Continued on page 168)

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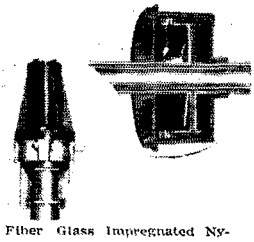

Fiber Glass Impregnated Nylon Base Assembly makes possible self support. Heavy cast aluminum mounting bracket is adjustable for various sizes of mast. Weatherproof internal coaxial fitting supplied.

The Hy-Gain Insu-Trap acts as an insulator at resonant frequencies, but allows radio energies of other frequencies to pass, making the Insu-Trap an automatic electronic switch which isolates various sections of the verticals to make them the proper length for each band. Exclusive adjustable capacitor plates are used, individually factory resonated for efficiency in high degree. Traps are completely weatherproof and airtight. Carbon activated polyethylene cover and cap. Traps rated to take full maximum legal input power. Just 2x3", trap's weight only 8 oz.

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for 10, 15 and 20 meters; only 13.5' high, wt.: 12 lbs. Self suporting.

Combination mast & Radial roof mounting kit, complete, $8.95.

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Dakota, dad? KØKWB and eight associates of the Ak-Sar-Ben Radio Club will try to oblige you with an operational excursion to Lake Andes, S. Dak., from the 30th of October through the 1st of November. They'll sign WØEQU around the clock with 500 watts and a triband beam on 10, 15 and 20 phone. Especially watch the ranges 28,600-28,750, 21,270-21,300 and 14,230-14,250 kc. _ . _ . _ KP4KD, nearing his 100th phone country after a long and honorable c.w. DX career, is not well pleased with the definition of a phone QSO embraced by some DXers. As in so many long-haul operating angles, the operator at the DX end has control here, and he stands to become a disrespected laughingstock if he issues phone-endorsed QSLs for essentially c.w. QSOs . _ . _ . _ WØQPI notes a brief 14-Mc. June appearance by W2BC as PJ5CC on phone . _ . _ . _ W1YNN, studying at the University of New Mexico, forwards evidence that the Mexican press was quite taken by the LMRE gang's XE4B venture to the Revilla Gigedos in July. Much coverage . _ . _ . _ K8LTZ/VO1, a top scorer in the '58 ARRL SS phone session, already is beefing up his Argentia installation for this year's classic . _ . _ VE1PQ reports VP2VB/mm of *Yasme* renown hard at work preparing for another Pacific voyage. ZL1AV and an unspecified Yank may join the jaunt as crew . _ . _ . _ W1YTS added a batch of Nova Scotia loggings to his hefty tile of June FP8BC contacts . _ . _ . _ KN4FMA observes KP4AOO panicking the Novice DX pack with 800 watts and an 800-ft. rhombic at San Juan . _ . _ . _ KZ5LC was gratified at receiving s.s.b. replies from KAØIN and an EA9 while operating 20-meter a.m. More such intermodulation QSOs possibly would be a boon to emissive progress. _ . _ . _ K9s I.TS and MDH turn out a creditable DX column for Hamfesters' *Ham Gab.*

Ten Years Ago in "How's DX?" — Your September 1949 column leads off with the admonition that operators at the DX end clearly indicate who they're working when pile-up complications arise _ . _ . _ LU7AZ and PY7WS leap the wall of 3.5-Mc. static to thwart a summer shutout on eighty _ . _ . _ VP5BD shatters the 7-Mc. quietude to provide Caymans credit for hundreds on the high end. KP6AE, OQ5RA and VK9NR also show on forty _ . _ . _ Twenty c.w. fireworks are fused by C1JH, EK1FO, EP1MN, HS1SS, I1s ALU and LT sporting in San Marino. MB9AJ, MDs 4GC 7WE, MI3GH, MI8UU, PK1AU, TA1AT, VK1s FE RA VU, VS7s RA RF, VT1RF, W6CRE/KC6, sunbathing W6s BKV EGX and GGT on Wake _ . _ . _ Phone favorites on 14 Mc.: AC4NC, AR8BC, F9QU/FM8, FF3CN, FT4AT, HL1BJ, MD2AC, MF2AC, PJ5KO, PKs 4PQ 5HI 6CS 6FQ, VK1ADS, VS7s BR SN, VU7AH, W6ATB/KC6, ZCs 1AL and 6UNJ _ . _ . _ Except for lonely ZD2FB on c.w., the 10-meter story is vocal: AG2AB, EK1WX, MB9BM, MT2FU and W9CVH/KJ6 _ . _ . _ HL1AA, SV6AA and YT2AM return to the States to tackle outstanding QSL chores _ . _ . _ We note that No. Calif. DX Club's *DXer* completes its first year of publication _ . _ . _ While Jeeves studies Dale Carnegie for DX purposes, photos of AG2AB and ZS8A complete the course.

QST

Novice Roundup

(*Continued from page 53*)

WV2CIG.....1710- 57-30-19
KN2RXI.....1302- 47-21-12

Western Pennsylvania

KN3DWM..10,440-261-40-36
KN3EMD.....666- 27-18-10
KN3ECZ.....12- 4- 3- 2

CENTRAL DIVISION

Illinois

KN9PQG....10,633-202-49-31
KN9OMK....7987-163-49-22
KN9LTU.....6179-157-37-39
KN9OUU....5680-122-40-27
KN9LIA.....5481-189-29-16
KN9OZY.....3045-105-29-39
KN9QFS.....2596-103-22-27
KN9ORC....2370- 79-30-13
KN9LKO.....2128- 61-28-14
KN9PUU.....672- 32-16-16
KN9PAJ.....564- 37-12-10
KN9PPV.....270- 45- 6- 8

Indiana

KN9LZX.....3080- 88-35- 8
KN9OPO.....2133- 79-27-18
KN9MAN....2054- 79-26-20
KN9PGC.....2044- 63-28-20
KN9LSB.....1533- 73-21-12
KN9MLH.....136- 17- 8- 2

Wisconsin

KN9PQT...19,093-303-61-39
KN9MBD....7682-147-46-21

KN9MAU....2752- 71-32-21
KN9PZP.....49- 7- 7-12

DAKOTA DIVISION

North Dakota

KNØRSA.....1508- 48-26-11

Minnesota

KNØQPG.....7155-149-45-36
KNØRKF....3240- 75-36-14
KNØRGP....2772- 84-33-30
KNØKNN....2059- 71-29-11

DELTA DIVISION

Arkansas

KN5SCC.....1742- 52-26-14

Louisiana

KN5SNH....2079- 77-27-18

Mississippi

KN5SVC...11,332-212-51-35
KN5PYX....5117-109-43-24
KN5RRG....4212-117-36-30
KN5TOB.....2888- 76-38-19

Tennessee

KN4BEM....4033-109-37-31

GREAT LAKES DIVISION

Kentucky

KN4YFB...11,908-219-52-35

(*Continued on page 170*)

KN4ZYZ.....608- 28-16-15
KN4ZGV.....192- 16-12- –

Michigan

KN8LJU....10,250-170-50-20
KN8MJZ....3325- 80-35-18
KN8LWP....1260- 55-18- –
KN8JRU....1045- 40-19-12
KN8JXT.....286- 22-13- 6
KN8KBP.....224- 28- 8- 6

Ohio

KN8KNT...14,896-266-56-36
KN8LEE....6732-204-33-40
KN8MTK....5624-133-38-36
KN8MXI....4107-111-37-16
KN8LWF....3828-106-33-33
KN8LCL....3636- 86-36-17
KN8MIG....2574- 89-26-11
KN8LBV....1950- 55-30-13
KN8MGK....1659- 79-21-21
KN8KSN.....782- 31-17-12
KN8MLO/8...741- 39-19-11
KN8LVW....686- 39-14-10
KN8MYG....416- 22-13- 9
KN8JSM....337- 29-13-10
KN8MRB....220- 20-11- 3
KN8LGA.....6- 3- 2- 5

HUDSON DIVISION

Eastern New York

KN2QBD...10,252-208-44-31
WV2AUC....4185-135-27-33
WV2AKK....2002- 62-26-21
WV2BLX....1890- 63-30-12
WV2BTJ....1320- 45-24-11
WV2BWE....767- 49-13-23
WV2ALO....414- 49- 6- 9

N. Y. C.-L. I.

KN2PEQ....5206-122-38-17
WV2CDQ....4064-107-32-40
WV2BKC....3198-113-26-13
KN2OGT....2691-107-23-26
WV2BWM...2068- 80-22-40
KN2DPX....1254- 47-22-17
KN2RFI....1092- 37-21-11
KN2OFD....429- 24-11- –
KN2QAI....248- 48-26- 6
KN2SDQ....220- 34- 5-15
WV2ALG....200- 25- 8- 7
WV2BEA....90- 10- 9- –
WV2CXA....20- 5- 4-11
KN2RHD....1- 1- 1- 1

Northern New Jersey

WV2BLK...12,750-240-50-35
WV2AWR....8967-168-49-39
WV2CBB....5720-133-40-40
WV2RUJ....3690-108-30- –
KN3MBX....1827- 63-29-26
WV2DKT....1785-105-17-20
KN2SHY....1729- 76-19- 5
WV2APF....1628- 64-22-16
KN2RBG....936- 37-18- 5
WV2DOS....126- 14- 9-13
KN2TGZ....40- 8- 5- 3

MIDWEST DIVISION

Iowa

KNØQAK....1798- 58-31-15
KNØRLW....120- 12-10- 3

Kansas

KNØPFV....3564- 93-33-24
KNØSAU....230- 13-10-25

Missouri

KNØPFF....8820-196-45-30
KNØOQA....2016- 63-32-13
KNØPUY....1764- 63-28- 9
KNØQCJ....1566- 58-27- 9
KNØPYB....1260- 43-20-14

Nebraska

KNØSIL....25- 5- 5- 6

NEW ENGLAND DIVISION

Connecticut

KN1HTV...11,528-242-44-36
KN1JGL....6450-150-43-30
KN1GIF....6132-204-28-40
KN1JBN....5828-173-31-23
KN1GRJ....4028-106-38-12
KN1HOP....1408- 68-16- –
KN1IXH....1326- 78-17-28
KN9ODJ/1...1100- 45-20-14
KN1JBS....533- 26-13- 6

Maine

KN1GVQ....2320- 65-29-34
KN1JGN....1768- 68-26-31

E. Massachusetts

KN1IYP....9600-182-50-35
KN1HVV....9516-183-52-38
KN1IYV....4576-128-32-30
KN1HPW...3042-102-26-25

KN1JKA....1652- 59-28- 8
KN1HBY....1596- 66-21-18

W. Massachusetts

KN1IJU....4340-104-35-28
KN1HRL....4332-114-38-22

New Hampshire

KN1IIK....12,103-232-49-31
KN1IID....5254-142-37-38

Vermont

KN1HMQ....4061-116-31-25
KN1GCX....810- 30-18-16

NORTHWESTERN DIVISION

Montana

KN7GHC....3010- 86-35-11

Oregon

KN7EQM...15,618-259-57-40

Washington

KN7GQH...10,285-187-55-32

PACIFIC DIVISION

Hawaii

WH6CXZ....441- 49- 9-32

Nevada

KN7GFD....350- 15-10-10

Santa Clara Valley

WV6AFX....4092-109-33-29
WV6BYA....270- 30- 9- 9

East Bay

WV6BXG....2640- 88-30- 8
WV6BPR....742- 33-14- –
WV6AXP....576- 21-16- 7
WV6ALQ....456- 38-12-10

San Joaquin Valley

KN6ROU....6248-122-44- –
KN6OZL....6123-157-39-18

ROANOKE DIVISION

North Carolina

KN4ZIW....5590-120-43-40
KN4VUR....4828-107-34-15
KN4YYG....3404- 82-37-14
KN4YCL....1125- 45-25-22
KN4BXY....315- 21-15- 7

West Virginia

KN8LGX...14,640-366-40-38
KN8MBH....7800-180-40-21
KN8LOU....3007- 87-31- 8
KN8MHB....532- 38-14- –
KN8KMB....451- 41-11-10

ROCKY MOUNTAIN DIVISION

Colorado

KNØREP/Ø...7740-157-45-19
KNØRXJ....5781-141-41-14

Utah

KN7DVT....9114-186-49-32

New Mexico

KN5QIN....3204- 79-36-19

SOUTHEASTERN DIVISION

Alabama

KN4YGS....1764- 69-21-24
KN4EDF....1050- 42-25-11
KN4YKL....756- 36-21- 8

Eastern Florida

KN4YWZ...10,032-228-44-40
KN4ZRU....8602-172-46-34
KN4ZSY....8208-196-38-35
KN4UPJ....5610-150-34-22
KN4UPE....4536-126-36-40
KN4ZDZ....1080- 40-27- 5

Western Florida

KN4UJD....1152- 48-24- 9

Georgia

KN4BVD....8592-164-48-19

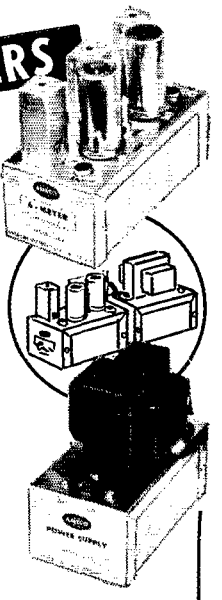
SOUTHWESTERN DIVISION

Los Angeles

KN6RGA...23,126-348-62-40
KN6PYS...10,150-203-50-26
WV6AAL....7238-134-47-31

(*Continued on page 172*)

NEW AMECO 2-METER and 6-METER CONVERTERS



Complete kit as low as 19.95

2-METER FEATURES INCLUDE:

- Crystal controlled.
- New 6ES8 high gain, low noise, cascode first RF amplifier. 6U8A second RF amplifier-mixer. 6AU6 oscillator.
- Spurious and image rejection—over 70 db.
- Gain—over 30 db.

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- Spurious and image rejection—over 70 db.
- Noise figure—better than 4 db.
- Gain—over 20 db.

The Ameco Converters are housed in a compact (2" x 2½" x 5") 2-piece brushed copper chassis. Brings in any signal that can be heard on any commercially available converter. The IF output on both converters are easily changed to allow converter to have any output frequency for hook-up to any receiver. The power requirements of 16 ma. at 100 to 150 volts DC and .85A at 6.3 volts AC for the 6-meter converter or 30 ma. at 100 to 150 volts DC and 1.15A at 6.3 volts AC for the 2-meter converter can be obtained from the receiver or from the Ameco Power Supply, Model PS-1, also housed in a 2-piece copper chassis. The power supply can deliver 50 ma. at 125 volts DC and 2A at 6.3 volts AC and may be used to supply power to many of the accessories around the ham shack.

	6-meter	2-meter
Converter complete with tubes and crystal for 7–11 Mc. or 14–18 Mc. in kit form with instructions	19.95	23.95
WIRED AND TESTED (with tubes and crystal)	27.50	33.95
Kit or wired models for any other output frequency—$1 extra		
Power Supply complete in kit form. Model PS-1	10.50	
WIRED AND TESTED, PS-1W	11.50	

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NAME_____

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CITY_____ STATE_____

Los Angeles (Continued)

KN6TUN	4536	108-42-13
WV6BNT	2511	71-31-19
WV6AYF	1450	50-29-10
WV6CDR	1215	45-27-16
WV6BCH	774	24-18-15
KN6STZ	660	24-15-24
WV6CRQ	245	35- 7-14
WV6CGA	110	11-10- 4

Arizona

KN7GCR	480	31-15-22

San Diego

KN6ORH	7700	175-44- –

Santa Barbara

WV6CPL	3240	75-36-29

WEST GULF DIVISION

Northern Texas

KN5RHZ	12,690	282-45-33
KN5SEK	10,810	225-46-26
KN5TBZ	10,396	226-46-35
KN5RWO	5977	124-43-34

Oklahoma

KN5QKK	19,140	348-55-38
KN5RIP	3876	102-38-21
KN5QDS	1274	49-26-11

Southern Texas

KN5SPD	10,535	200-49-39
KN5SCT	8880	185-48-36
KN5RNO	6732	133-44-16
KN5SOL	4840	121-40-32
KN5TKD	290	29-10- 5

QST

Correspondence

(Continued from page 90)

parts of the hotel where there were no ham activities, then the management took a dim view of our fun and issued one order, shut up or get out. We did the latter and saved the battery for the banquet where we really had fun. That old Bosch made a wonderful noise when we wanted to clap.

By the way, of the four fellows from the Lansdowne Club, I am the only one still in amateur radio. My call then was 3AKR and during a visit to California in the summer of 1922 I got the call 6BUK which I still hold.

Thought this might be of interest to some of the old timers like myself. Perhaps someone can beat me in use of the horn prior to 1922 or 1923. Believe me, I get just as much pleasure and thrill out of ham radio today as I did 37 years ago.

— *G. Graham MacConomy, W6BUK*

TRY A TRIODE

73 W. Garrison Street
Bethlehem, Pennsylvania

Editor, *QST:*

Congratulations to ARRL and W4UCH for "High Power Triode Amplifiers for 50 Mc." (July 1959, *QST*, page 24.)

I can't quite qualify for Old Timer's Club but was *brought up properly by those in the know. You still* can't beat a triode for high power in either amateur or commercial applications. A triode is more tolerant of overloads. And when it comes to neutralization, it is certainly much easier to neutralize a triode than a screen-grid or pentode.

For the enlightenment of the "youngsters," the latter two most often *do* require neutralization. Surprised?

— *L. Edwin Rybak, W3QAG*

EXTRA INCENTIVE

3833 N. Whipple Street
Chicago 18, Illinois

Editor, *QST:*

"Incentive" to sugar coat the Extra Class ticket? Nonsense — but only the Extra Class License should be renewable. The only change needed is to make the General Class a five-year, non-renewable license. For the benefit of ossified old-timers, the change could be introduced thus: Present holders of General Class may continue to operate for five years from date of new ruling, or for a period equal to the *number of years continuous holding of the General Class* License, whichever is longer. With educational facilities now available, and with the stepped-up need for competence in every field, anyone unwilling or unable to buck for the

(Continued on page 174)

Extra Class (yes, including 20 w.p.m. c.w.) in five years, would be better off in some other hobby.

— *Eric Leufstedt, jr., K9EZD*

THIRTY YEARS A MEMBER

2441 Balboa Street
Oxnard, California

Editor, *QST:*

Please find enclosed check for renewal of my membership in the League. This will be the beginning of my thirty-first year of continuous membership. It would be interesting to see how many other thirty-year members we have. I am sure there must be many more and even some in the forty-year bracket.

It has been both pleasant and educational being associated with the League and *QST* all these years.

— *W. O. "Andy" Anderson, W6UQG*

1296 Mc. Converter

(Continued from page 41)

data intended for wide-band applications. By proper cavity design the bandwidth can be kept low in amateur applications, and improved noise figures might result.

A good ready-made r.f. amplifier is the ASB-5 (CPR-46-ACJ) r.f. cavity. This was originally intended for use in the 500-Mc. region. Both input and output cavities will tune to 1300 Mc. as three-quarter wave lines. This cavity uses the 446A tube, but adapter rings have been constructed to permit the use of the 416B. The ASB-7 cavity is also useful. In many ways, this unit is more flexible than the former, and more circuit adaptations become apparent during its use. Fairly successful attempts have been made in other directions also. One such amplifier used a 6BY4 ceramic u.h.f. receiving triode on 1200 Mc. As nearly as could be determined, this tube performed as well as a 416B known to be operating properly.

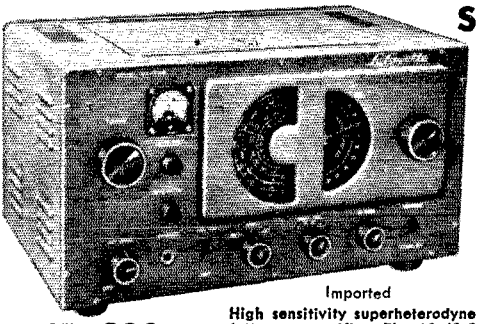
Crystal mixer diodes come in a variety of types. The most common ones are the 1N21 and 1N23 series. These have been made in suffixes ranging through the letter "E." The 1N21 series is intended for use from 1000 to 3000 Mc. It will work higher. The 1N23 is intended for use from 3000 to 10,000 Mc., and will work lower. As long as a mixer is operating poorly, or only fairly well, there is virtually no difference in the performance of any of these crystals. It is when a really effective mixer is coupled with an i.f. preamp of 1 to 3 db. noise figure that the amazing difference between 1N21A and the 1N21E becomes evident.

Newer crystals such as the MA421 give noise figures of 6 db. and better in standard test setups. Individually-tailored amateur circuits can be expected to perform even better. Because of semiconductor progress, both in mixers and amplifiers, the vacuum-tube r.f. amplifier at 1200 Mc. appears less desirable than ever.

The rectified crystal current flowing as a result of the local oscillator injection should be measured with a milliammeter having as low a d.c. resistance as possible. Degraded performance may result from the d.c. bias developed across this resistance. The experimenter is invited to try the use of small amounts of back bias on the crystal to improve performance. QST

Lafayette PROFESSIONAL QUALITY COMMUNICATIONS RECEIVER –ENGINEERED FOR THE AMATEUR

Superheterodyne Circuit Utilizing 8 Tubes & Rectifier Tube



- BAND SPREAD FOR EASY TUNING
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Imported

KT-200
IN KIT FORM
64.50 6.45 Down

HE-10 WIRED AND TESTED
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High sensitivity superheterodyne circuit utilizes 8 miniature tubes plus rectifier tube and transformer input, full wave rectifier. The 80-40-20-15 and 10 meter amateur bands are clearly indicated on the illuminated dial face, and can be easily tuned with the pre-calibrated band spread. The receiver has complete band switching, thus eliminating the need for bothersome plug-in coils. Band spread is laid out on easy-to-read 0-100 scale, and features a weighted control knob which offers smooth, precise tuning. Coverage of from 455 KC to 31 MC is obtained through the use of four switchable ranges (455-1600 KC/1.6-4.8 MC/4.8-14.5 MC/10.5-31 MC). All controls, switches and phone jack are located on the front panel, while an optional accessory socket delivering 360 volts DC and 6.3 volts AC is located in the rear of the receiver. Sensitivity is 3 microvolts (Signal to noise ratio is 20 DB at 3.5 MC) Selectivity is —60DB at 1MC, image rejection is —40DB at 3MC. Panel is grey metal with white lettering, and controls are black with aluminum trim. Hinged top makes inside of receiver readily accessible to operator. 7⅞" H x 15" W x 9" D. Shpg. wt., 22 lbs.

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80, 20, 10 meter coils $2.91 per band. 160 meter coils $3.60.

MODEL 242 FOR 6 METERS OR 2 METERS — 45 WATTS INPUT — 6146 FINAL. Complete with mobile connections, A.C. power supply, tubes, xtal. Xtal mike input. Uses 8 mc. xtals or Lettine VFO. Swinging link matches 52 — 300 ohm antennas. Same cab. as 240.....$89.95

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World Above 50

(*Continued from page 84*)

There was an unprecedented amount of v.h.f. activity during the ARRL Field Day week end, but perhaps the most pretentious antenna installation was that of W5MIL/5, Mt. Mira, La. W5KTD and W5JSW did most of the climbing involved in the erection of a 10-element long Yagi atop the 328-foot tower. W5KTD started the job a week ahead of time, using 400 feet of rotator cable and 350 feet of open-wire line. Despite generally poor conditions, stations more than 300 miles distant were worked. The result of the combined efforts and equipment of W5MIL, W5SUM, W5KTD, W5NXM, W5JSW and W5KQS, the antenna will be left up for future use. Mt. Mira is one of the highest points in northwestern Louisiana. Best DX: W5PZ, Ponca City, Okla., 320 miles.

Two well-known calls will be missing from the 2-meter band from here on. W8WXV and KØEMQ have moved to the Dallas area, W8WXV in Garland and KØEMQ in Richardson. This should mean competition for W5AJG in time, but W8KAY and WØSMJ can rest easier.

Major meteor showers are not always required for 144-Mc. burst QSOs. W4RMU, Jacksonville, Fla., and W1AZK, Chichester, N. H., made it on a 2-minute break the morning of June 24. They had been using 30-second procedure until W4RMU copied an entire transmission at 0623:30. From then on they worked break-in until signals dropped out 1½ minutes later.

Anybody like to work Idaho on 144 Mc.? The line is forming right now for W6LIT/7 who will work the Orionids from an Idaho location, Oct. 18–23. Don will have first-rate gear and will use 7095 kc. for liaison.

Another October event that will bear watching is the Giacobinids. This shower has a 13-year period, the last peak having been Oct. 9, 1946. For what it was like then (meteor work didn't start yesterday!) see this department in December, 1946, *QST*, page 43. The 1946 event lasted for about 3 hours, reaching useful intensity on 50 Mc. around 2030 EST. W4LTU's calendar (April, 1957, *QST*) indicates that it should be earlier this time. W6NLZ has information that it is supposed to peak at 1613, local time at the mid-point, with counts not quite up to 1946, but still good. We have been promised more dope on the Giacobinids, and will have it in the next issue, if it comes through as promised.

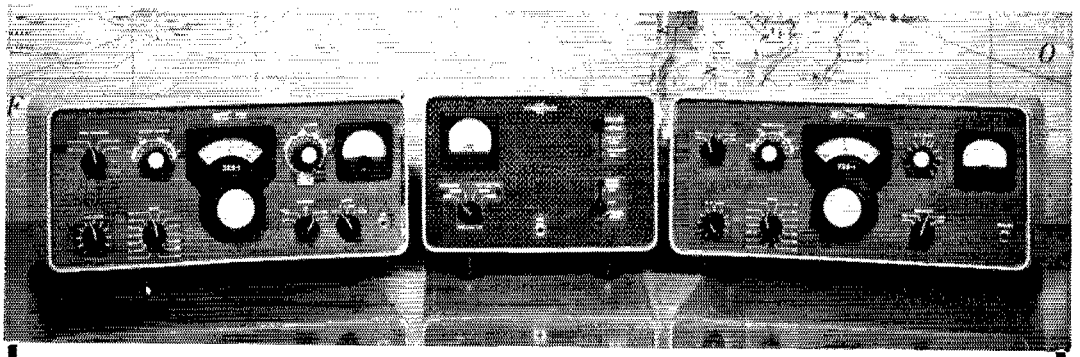
Mysterious signals department: On July 20, between 2005 and 2025 CST, a signal of unknown origin was observed by W9KQX, Springfield, Ill., K9JYB, Middletown, Ill., and WØLFE, Bowling Green, Mo. W9KQX says it was first heard on 144.35 Mc., where it remained for several minutes. It jumped frequency several times, but appeared to be steady on each spot. The range was 144.3 to 144.6 Mc. The signal was heavily tone modulated at about 500 cycles. Level was very high at first, but at about 2020 it started to fade. Beam direction was southeast when first observed, but had moved to west by the time the signal disappeared. Any info on what this may have been?

The World Above 220 Mc.

The American record for 420 Mc. was broken in July, but the world record remains in Europe, where some fine tropospheric propagation in June resulted in several contacts over distances in excess of 500 miles, as reported briefly last month. SM6ANR, Gothenburg, Sweden, one of the SMs well known in this country for his 6-meter activities, worked G3HBW, Hertfordshire, G2XV, Cambridge, and G3KEQ, Sanderstead (London), in June. G2XV is just short of the record, but G3HBW and G3KEQ are both beyond anything previously reported for 420 Mc. G2AIW, who handles v.h.f. coverage in the *RSGB Bulletin*, gives G3KEQ the nod, with 650 miles.

The best DX in this hemisphere on 420 Mc. is the work of W4HHK, Collierville, Tenn., and W9GAB, Beloit, Wis. The latter heard Paul working a Chicago station on 144 Mc. the night of July 2. He had just erected a new 432-Mc. array consisting of four 18-element Yagis, stacked 8 feet apart each way, and Paul was talking about his new 64-element job for 432. When they connected on 144, a test was made on 432 with no result, but a sked was made for 2000 CST the following night. This time W9GAB heard W4HHK immediately, though quite weak. After about 10 minutes W4HHK was able to hear W9GAB, but only

(*Continued on page 178*)



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briefly, though they stayed with it until midnight. A third sked was made at 0700 July 4, and after several tries a two-way was established over the 520-mile circuit, at 0712 CST. Conditions were only fair to good on 144 Mc. during all these tests.

From K2HUK comes word that the monthly award of the Niagara Frontier DX Association has been given to KH6UK and W6NLZ, for their Pacific-spanning feat on 220 Mc. This award is normally given to rare DX stations on lower frequencies, but all hands agreed that KH6UK and W6NLZ had turned a DX trick of first importance, regardless of frequency.

New 10,000-Mc. Record

The old line-of-sight idea has died hard, but ambitious microwave enthusiasts have proven it false on progressively higher frequencies, as they have gradually improved their gear, and taken weather possibilities into account in planning their record attempts. Now even 10,000 Mc. has been shown to have tropospheric DX possibilities.

The team of Leonard Garrett, W7JIP, and Ernest Manly, W7LHL, made attempts at extending the 10,000-Mc. record last year, but did not quite succeed in establishing two-way contact. Again on July 11, they had a go at a 265-mile path. This test was made with W7JIP/7 on Marys Peak, near Corvallis, Oregon, and W7LHL/7 on the side of Green Mountain, northeast of Everett, Washington. Fragments of W7JIP's 10,000-Mc. signal were heard intermittently for about 5 minutes, but there was no two-way on that frequency.

Over the week end of July 25 another expedition was undertaken. This time W7JIP/7 was on Roundtop Mountain, in Oregon, a distance of 187 miles. W7LHL/7 was on Green Mountain, as before. The previous try had been in the early morning. This time they made use of the sunset inversion. Contact was first made with m.c.w. at 1825. Later conditions were much improved, and at 2005 they were able to work on voice with S9 signals.

The setup at W7JIP/7 used a Varian X-13 transmitter oscillator, followed by a double-stub tuner and a 20-db directional coupler, for frequency and power measurement. Modulation was supplied in a manner similar to that described by W7JIP in *QST* for June, 1954 (when Len was co holder of the 47-mile record.) The receiver consists of a surplus short-slot hybrid mixer, using a pair of 1N23E crystals, followed by a cascode stage at 30 Mc. and a surplus radar i.f. strip. Noise figure is 6.5 db. Antennas are surplus 30-inch parabolas, with Cutler (slot) feed. These were originally designed for 9375 Mc., but Len was able to modify them to get an s.w.r. of 1.03 at 10,000 Mc. W7JIP was accompanied on the venture by W7VCM, Corvallis, Ore.

W7LHL/7 used similar equipment, except that he had 58-inch mesh dishes, as seen in the photograph of his setup. Gear for 144-Mc. liaison was employed at both ends.

People in the Chicago area who are interested in microwave experimentation will be glad to hear of the formation of the Chicago Microwave Club. Purpose is to encourage amateur operation on all bands above 1000 Mc. Gear is on hand for all microwave bands, with equipment in working order for 3500 and 10,000 Mc. Club President K9CNN is interested in high-power DX work on 1215 Mc.

Our request for more dope on amateur TV stations (July *QST*) has brought in three responses. The slow-scan work of WA2BCW is mentioned earlier. W3FLX, Philadelphia, has a converted CRV52ABW transmitter on the air, with about 30 watts input to the final 8025s. His camera is a CRV59AAE modified to permit reception of the signal on a standard TV set. Frank uses an ASB-3 converter ahead of a standard TV receiver. He says that the above-mentioned gear is from surplus Block II equipment, which can be bought cheaply. This stuff should not be torn apart, because it is practically made to order for amateur TV purposes. Don't write us for more information; this is all we know!

W8HCC, Sandusky, Ohio, has received the TV transmissions of W8RQI and W8JLQ, Toledo, W8DX and W8RLT, Detroit, and W8RRJ, Columbus, who is some 110 miles distant. Mel has a TV signal on the air, and has been seen in Toledo by W8JLQ. At present he is working on a new r.f. unit which will have a 4X150A multiplier and another as an amplifier working straight through. He is one of the several 8s on 432 Mc. nightly, looking for DX contacts by the more conventional modes, as well as on TV.

(*Continued on page 180*)

Better Trades on Better Used Gear!

Art Brown, W9IHZ

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We have most of the major ham equipment lines in stock for immediate shipment. Our rapidly expanding used gear stock is "loaded" with excellent buys. (Write for used equipment list.) Any equipment selling for $45.00 or more may be purchased on our Easy Payment Plan.

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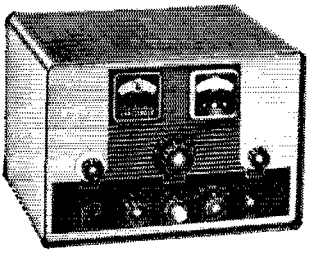

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The Viking "Challenger" is an ideal xmtr for novice or technician use which also gives excellent performance on general class bands. Only $114.75 in kit form; $154.75 wired. Gonset communicators and the Alpha 6-meter xmtr also in stock. Write for information on Novice Station Package with guaranteed trade-in.

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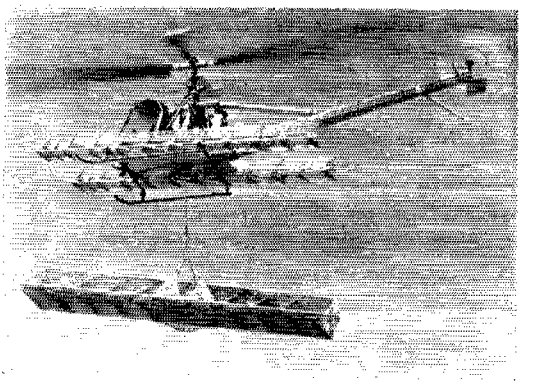


HILLER HELICOPTER EASILY MOVES ALPAR TOWERS TO REMOTE LOCATION

Alpar **aluminum** crank-up towers are lightweight, readily moved as required. Exclusive guy-as-you-go design permits one man to raise tower quickly. Strong . . . stands 100 mph winds, 100 lb. tower loading. Heights to 146 feet . . . manual or motor actuated . . . rustproof, corrosion resistant.

Hiller Aircraft Corp. Model 12E Helicopter shown transporting three Alpar Towers, one 146' in length

Send today for complete information

ALPAR MANUFACTURING CORP.
220 DEMETER STREET, PALO ALTO, CALIF. DA 6-8105

OES Notes

K1BOX, Southboro, Mass.—Can anyone supply information on a 420-Mc. coaxial grid circuit for a 4X150G? This tube has a coaxial base somewhat like a 2C39. Designs for the more familiar 4X150 and 250 series tubes are not usable.

W1CTW/W1IQD, Lempster, N. H. — Worked KP4AJK and heard KP4ABN June 28, 1630. Skip, presumably double hop, moved from W2 and 3, through W1 to VE1.

K1DIO, Winchester, Mass. — Worked all U. S. call areas and VE3 on 50 Mc. during June. Heard Puerto Rico and Haiti, and worked skip as short as Pennsylvania and Virginia.

W1EXZ, Danville, Vt. — Found another good obstacle-gain path in working W1TNO mobile, Pittsfield, N. H. This is an 85-mile path almost directly over 4800-foot Mt. Moosilauke. Ridge perpendicular to path, with 1300-foot elevations at each end, gives ideal obstacle gain conditions, resulting is steady S9 signals on 50 Mc.

W1HDQ, Canton, Conn. — Splendid inversion conditions night of July 17 gave strongest signals ever heard in 2-meter mobile work. Maintained solid S9-plus contact with W1AJR, Middletown, R. I., while driving from 100-foot elevation in West Hartford over 800-foot ridge and down to 150-foot elevations in Farmington Valley, through Avon and Canton. Signal of W1AJR, nearly 100 miles away, maintained level normally associated with best stations in Hartford area. Signals observed at home location immediately after were not unusually strong, except for stations inside 125-mile range. No unusual DX heard.

W1LGE, Windsor Locks, Conn. — Testing extra 4-element array aimed west, in conjunction with 5-over-5, rotatable. Objective: 50-Mc. contacts with Wyoming, Colorado and Montana.

K2CVG, Beacon, N. Y. — Sporadic-*E* skip made 6 sound like 10 during June. Worked DX 16 days and heard skip 4 others. Double-hop contacts included XE1PG, Mexico City, K7BHF, Salt Lake City, KP4ABN, San Juan, P. R., and VE4TX, Winnipeg, Manitoba. Many other areas heard but not worked.

W4FNR, Ft. Lauderdale, Fla. — Worked 19th KP4 on 50 Mc. Hope to make 25 for first 50-Mc. KP4 certificate. HH2W, KV4s and HR2DK reported worked locally on 6.

W4FWH, Doraville, Ga. — Only 6 days in June when no 50-Mc. DX was heard. All states, plus Mexico and Cuba heard. Good tropo opening on 144 Mc. June 14, to Oklahoma, Kansas, Missouri, Nebraska and Minnesota.

K8AXU, Elkins W. Va. — Worked W5RCI, Marks, Miss., on both 144 and 220 Mc. at 0001, July 2. W5RCI was S8 on phone on 144 and S5 on c.w. on 220. Rig at K8AXU runs 20 to a 6360, *Handbook* style, on 220. Distance: 680 miles.

K9HWC, Wheaton, Ill. — Now on 220 Mc. with 20 watts and 11-element Yagi.

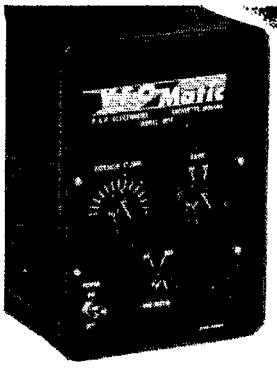
WØMOX, Overland Park, Kan. — Completed parametric amplifier for 144 Mc., but can observe no improvement over 416B, so do not use it often. Think it more worth while for 220 or 432 Mc.

Many 2-meter men miss good bet by not operating between 0600 and 0800 CST, especially when conditions have been good the previous night.

Moving to Boulder, Colo., and expect to be on 144 Mc. there. Will be looking for DX skeds. QST

Strays

Jim Hamlin, K2TDW, looked through a batch of sample QSL cards from a printer and chose the style on K3ALL's card. His first QSO that day? K3ALL, who else!



ME? OFF FREQENCY? NEVER!
I TRANSCEIVE . . . WITH A P&H VFO-MATIC

No foolin' — This character is right. With the VFO-MATIC your 75A2, A3, A4 or Drake 1A receiver simply takes over frequency control of the transmitter. May be used on such exciters as the 10B, 20A, HT-32, Gonset, Phasemaster or other 9 MC types.

The VFO-MATIC is a xtal mixing unit having one adaptor which simply plugs into a receiver tube socket and a second adaptor which plugs into a tube socket of the exciter. Calibration and sideband switching are not affected in any way.

Like SSB—TRANSCEIVING IS HERE TO STAY. If you are interested, drop a card or letter to Dept. 13Q for information on using a VFO-MATIC on your particular receiver-exciter combination.

VFO-MATIC complete, ready to operate, with xtals, adaptors, cables for your particular lashup.

Price.....$142.95

P&H ELECTRONICS INC.
424 Columbia Lafayette, Ind.

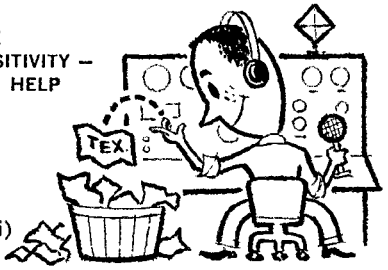
OTHER FINE P&H GEAR

600A . . . 6 meter transmitting converter
L600M and L200M Hi-Power VHF Linears
AFC-1 AFC-2 Audio compressor-Amplifiers
LA-400-C Linear Amplifier. 160-6 RF Choke.

Gather Multipliers in the next VHF-DX Contest with MA-H VARACTOR DIODES

REMARKABLE INCREASE IN YOUR RECEIVER SENSITIVITY — FROM 4 to 10 db WILL HELP YOU TO

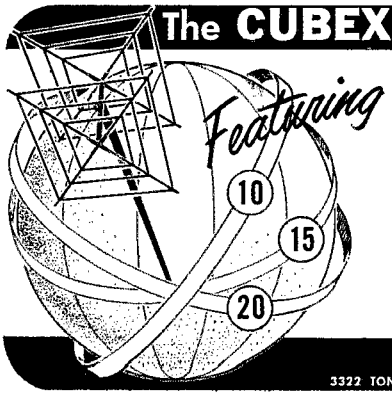
ADD A STATE
MAKE 48
(plus Alaska & Hawaii)



Your parametric amplifier and MA-H Varactors will do for your station what they're now doing for military communications.
They're available to ham operators only — for $10 via money-order or check WITH YOUR STATION CALL. (Instructions supplied with each Varactor).

MICROWAVE ASSOCIATES, INC.
BURLINGTON MASS. • Telephone BRowning 2-3000

The CUBEX MK III De Luxe 3 BAND QUAD



FOR 10 — 15 — 20 METERS

- HUSKY CAST ALUMINUM END SPIDERS
- HEAVY ALUMINUM BOOM-TO-MAST FITTING
- RUGGED 2" x 8 ft. TUBULAR ALUMINUM BOOM
- GAIN: 10 db on 10 and 15, 8 db on 20 • FBR: up to 24 db

Low Wind Resistance — Light Weight, only 27 lbs. — TV Rotor Handles — Low SWR — Pre-tuned Reflector Coils — No Stubs

The CUBEX MK III gives you 3 FULL SIZE, FULL EFFICIENCY, beam antennas with separate FULL WAVE driven elements on each band. All this in *half* the horizontal space required by a 3 el, 20 mtr. beam.

Only **$67.50** F.O.B. Factory
Other Models from $49.50

WRITE FOR FREE BROCHURE "MK"

CUBEX COMPANY
3322 TONIA AVENUE • ALTADENA • CALIFORNIA

V. H. F. Results

(Continued from page 87)

W2NDR . . 980-140- 7-B
K2AZT . . . 558- 51- 9-AC
W2RGR . . . 140- 88- 5-A
W2MBU . . . 378- 63- 6-B
K2TPU . . . 306- 51- 6-A
K2LEG . . . 290- 58- 5-B
W2AOD . . . 135- 27- 5-B
W2JBQ . . . 100- 25- 4-B
K2GKU 72- 18- 4-A
W2IN 54- 27- 2-B
WA2BOY . . . 32- 16- 2-A
W2LGK 30- 15- 2-A
W2LRJ 30- 5- 3-C
WV2DLT/2
14- 14- 1-B
K2MTT[2] (5 oprs.)
1580-158-10-A
K2IRS/2 (4 oprs.)
1300-130-10-AB
WV2BAP (WV2s BAP GHL)
92- 23- 4-B

Northern New Jersey

W2PEZ . . 5520-263-20-ABC
K2OQQ . . . 900- 90-10-AB
K2RRG[1] . . 585- 45-13-A
K2GAL . . . 549- 61- 9-B
W2QJY . . . 462- 77- 6-B
K2HFL . . . 432- 72- 6-A
K2DIG . . . 320- 23- 8-AC
W2DZA . . . 210- 21- 5-CD
WV2CLH
114- 57- 2-B
WA2BDP
104- 26- 4-A
K2RPZ 87- 29- 3-A
K2PQR 80- 20- 4-A
W2LRO 60- 20- 3-B
K2HAC 56- 14- 4-A
WV2FVW . . . 25- 25- 1-B
W2CVW . . . 18- 9- 2-B
W2ADE[2] (6 oprs.)
9913-419-23-ABCD
W2AF/2 (7 oprs.)
2304-128-18-AB
K2LSX/2
(K2LSX, WV2CLT)
1022-146- 7-B

MIDWEST DIVISION

Iowa

KØGEY 70- 14- 5-B

Kansas

WØQDH . 2369-103-23-AB
WØJAS . . 1054- 62-17-AB
WØYZZ . . . 371- 53- 7-AC
WØMOX . . . 36- 9- 4-B
KØGIA (KØs GAI GIC)
320- 32-10-AB

Missouri

KØJZL . . . 648- 71- 9-AC
KØAXU (11 oprs.)
800- 97- 8-AD

Nebraska

WØBTG . . 1386- 77-18-AB
KØDDV/Ø . 462- 42-11-A
WØWRT . . 287- 41- 7-AB
WØOHP . . . 147- 21- 7-B
WØRYG . . 140- 20- 7-B

NEW ENGLAND DIVISION

Connecticut

K1CKZ . . 3600-142-24-ABE
W1RJA . . 3588-156-23-AB
W1PHR . 3216-134-24-AB
K1CRQ . . 2562-183-14-B
W1YDS . . 1176- 80-14-ABC
W1HDQ[5] . 1007- 43-19-ABC
KN1KJD[6] . 950- 95-10-B
KN1IED . . 891- 99- 9-B
K1DZI . . . 837- 93- 9-B
W1AW3[7] . . 671- 61-11-AB
W1ORS . . . 585- 65- 9-AB
K1CMF . . . 504- 72- 7-B
K1CAT . . . 438- 73- 6-B
W1JZA . . . 304- 35- 8-BC
KN1KUW
265- 53- 5-B
W1FVV . . . 140- 20- 7-A
KN1IJO . . . 108- 27- 4-B
W1AMJ . . . 30- 15- 2-B
KN1INQ . . . 22- 11- 2-B
W1UED/1
7- 7- 1-B
W1QVF[2] . . (W1s FOR QVF)
2052-105-18-AC
W1ZTT (W1s JJL ZTT)
1782- 94-18-ABC
K1BCI/1 (7 oprs.)
581- 83- 7-B

Maine

W1GKJ . . . 261- 29- 9-A
K1DZS 132- 22- 6-A
K1GAY/1 (K1s BRO GLM, W1NKA)
3332-196-17-AB

Eastern Massachusetts

W1QXX . 2730-126-21-ABC
W1EUJ . . 2205-147-15-AB
K1DIT[1] . . 1992-166-12-A
K1DIR . . 1976-152-13-A
K1AII . . . 1080-107-10-AC
W1JSM . . . 637- 49-13-AB
W1HIC . . . 405- 81- 5-A
K1DRX . . . 352- 44- 8-A
W1NYL . . . 252- 36- 7-B
W1PEX 60- 15- 4-B
W1KSI/1 (8 oprs.)
2670-178-15-AB
W1WNJ/1 (11 oprs.)
2338-167-14-AB

Western Massachusetts

W1RFU . . 5952-192-31-ABC
W1ZWL/1
729- 81- 9-A
K1CZY . . . 270- 54- 5-B
K1DAJ . . . 140- 35- 4-B
W1UCB . . . 104- 13- 8-A
K1IUV 76- 19- 4-A
W1PHU 48- 12- 4-B
W1ZIG/1 (W1ZIG, K1HMU)
3553-187-19-AB

New Hampshire

W1FZ/1 . 1196- 92-13-AB
K1GBI . . . 671- 61-11-A
W1VAU . . . 390- 39-10-AB
W1IQD . . . 168- 21- 8-ABC
W1HPM[2] . (20 oprs.)
6507-225-27-ABCD
W1TNO/1 (W1s TNO YQH)
913- 83-11-AB
W1WMK/1 (W1s HIV WMK)
24- 6- 4-B

Rhode Island

K1CRN . . . 970- 97-10-B
KN1KPB . 230- 46- 5-B
K1DFU . . . 150- 25- 6-A
W1VXL/1 (5 oprs.)
2109-111-19-AB

Vermont

W1UIZ/1
9360-214-39-ABCDE
W1FSE/1 (W1ZIF, K1EBY, KN1KUT)
4788-225-21-ABC

NORTHWESTERN DIVISION

Idaho

W6GTJ/7 . . 30- 10- 3-A
K7GQE 8- 4- 2-A

Montana

W7SFK . . . 348- 29-12-A

Oregon

W7HBH . . 427- 56- 7-ABCD
W7ICS . . . 210- 42- 5-AB
W7GUH . . 184- 46- 4-A
K7BED 44- 11- 4-A

(Continued on page 184)

KN7GSR..26- 13- 2-B
W7UHF[2] (W7UHF, K7AAD) 1014- 73-13-ABCD
W7OTV (W7DTT, K7BDL) 850- 85-10-AB
K7AUO/7 (4 oprs.) 790- 75-10-ABD
W7RGS/7 (W7s GWB RGS) 468- 52- 9-A
K7CIY/7 (5 oprs.) 423- 47- 9-AB

Washington

W7UGK..1596-114-14-A
W7BJW..1248- 78-16-A
K7BBO...232- 5-- 4-A
W7ZOW..230- 23-10-A
W7HZ/7 (9 oprs.) 3630-161-22-ABCDE

PACIFIC DIVISION

Nevada

W7MAH..663- 51-13-AB
W7JU.....12- 4- 3-B

Santa Clara Valley

W7VMP/6 1800-120-15-AB
W6VMY..464- 58- 8-A
WA6BAN 260- 52- 5-B
K6SLQ/6 (8 oprs.) 3496-170-19-ABCD

East Bay

W6VEF...240- 48- 5-B
K6JIT....78- 13- 6-A
K6TJL/6 (7 oprs.) 4848-181-24-ABCD

San Francisco

W6AJF..1650- 64-22-ABCD
W6OKR..799- 43-17-ABCD
W6BNV/6..621- 63- 9-AC

Sacramento Valley

W6PIV....392- 45- 8-BD
WV6DQI...22- 11- 2-B

San Joaquin Valley

W6FZA/6 1768- 64-26-ABC
W6SDM/6[2] (W6s EIT SDM, K6DAH) 1360- 71-16-ABCD
W6TO (W6PXP, K6KYU) 1166-106-11-AB
K6HMK/6 (K6HMK, WV6BTK) 1152- 96-12-AB

ROANOKE DIVISION

North Carolina

W4VHH/4 217- 31- 7-AB
K5BLL/4...72- 18- 4-A
W4CAH....36- 12- 3-AB
W4BUU.....8- 8- 1-B
W4NC/4[2] (6 oprs.) 1470- 98-15-AB
W4MOE/4 (W4HHE, K4s, K8MPRG)
W4MOE/4 (4 oprs.) 574- 82- 7-A
K4MOU/4 (5 oprs.) 406- 58- 7-A
W4GNF/4 (5 oprs.) 336- 56- 6-AB

South Carolina

W4VIW...192- 24- 8-AB
W4TLC...110- 22- 5-A
K4HDX...39- 13- 3-A

Virginia

K4CSK/4 1625-125-13-AB
W4LTU..1582-113-14-AB
K4RAY...752- 88- 8-AC
K4RTG....54- 18- 3-A
W3ML/4....44- 11- 4-B
W4OOL[2] (W4OOL, K4s BRK LAL)...720- 72-10-AB
K6RCW/4 (K6RCW, K0RTF) 465- 93- 5-A
W4CB (4 oprs.) 399- 57- 7-AB

West Virginia

K8IYU....954-106- 9-A
W3DHQ/8 172- 43- 4-A

ROCKY MOUNTAIN DIVISION

Utah

W7QDJ..1210-121-10-A
K7CLX...468- 52- 9-A

New Mexico

K5IQL....852- 71-12-AB

Wyoming

W7UFB...909-101- 9-A
W7VTB...399- 57- 7-A

SOUTHEASTERN DIVISION

Alabama

K4GQK...378- 42- 9-AB

Eastern Florida

W4RMU..1197- 63-19-AB
W4GJO...847- 77-11-AB
K4GOX...110- 22- 5-A
W4FNR....88- 22- 4-A
W4AYV....75- 15- 5-A

Georgia

W4FWH/4 2580-127-20-ABC
W4GIS.....96- 24- 4-AB
K4KLD....72- 16- 4-AC

SOUTHWESTERN DIVISION

Los Angeles

W6NLZ 2784- 71-29-ABCDE
K6OJV...1833-141-13-AB
K6SSN....504- 56- 9-AB
K6EOK...252- 84- 3-A
W6BWG...91- 13- 7-AB
WV6EEO....58- 29- 2-B
W6EMM/6[2] (6 oprs.) 11,490-322-30-ABCDE
W6SDW/6 (5 oprs.) 8194-452-17-ABCD
W6PFE/6 (W6s GQB PFE, K6OOZ) 2920-146-20-AB

Arizona

W7RUX..2825-110-25-ABCD

San Diego

K6IBY...3400-164-17-ACD
K6COE...500- 50-10-AB
K6RCK...312- 52- 6-A

Santa Barbara

W6HPH/6 312- 33- 8-BD

WEST GULF DIVISION

Northern Texas

K5UFW..1045- 95-11-A
W5HXW..255- 51- 5-A
W5FEG...228- 38- 6-A
K5KVE..224- 56- 4-A
K5BDL....60- 15- 4-A
K5TXX....17- 17- 1-A
K5BYD/5 (9 oprs.) 2625-175-15-AB

Oklahoma

W5PZ.....341- 31-11-B
W5HTK...38- 19- 2-B

Southern Texas

W5HFF...826- 59-14-AB
W5HYN..350- 50- 7-A
W5KRH..192- 32- 6-A
K5RPX....56- 8- 7-A
K5VLF (K5s JFN PWX RNW) 350- 50- 7-A

CANADIAN DIVISION

Maritime

VE1EF...315- 35- 9-A

Ontario

VE3DIR..512- 64- 8-B
VE3AQG..272- 68- 4-B
VE3CIT..198- 66- 3-B
VE3HW....80- 40- 2-B
VE3CIL....42- 21- 2-B
VE3DWQ/3 40- 20- 2-B

Quebec

VE2ARH..52- 13- 4-B

British Columbia

VE7ASM/7 1936- 88-22-AB
VE7NM..189- 21- 9-A

Manitoba

VE4TX....70- 14- 5-A

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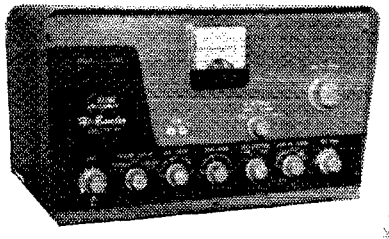
[1] Technician Award Winner; [2] Multiple Operator Award Winner; [3] K3DLB, opr.; [4] K2BNS, opr. [5] Hq. Staff, Not Eligible for Award; [6] Novice Award Winner; [7] W1WPR, opr.

ATTENTION
Technicians: Now
YOU CAN OPERATE ON

with the exciting

Hi-Bander 62



wired/tested: $149.95 **in kit form: $129.95**

60w CW, 55w AM

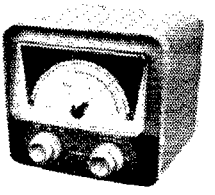
This outstanding Transmitter will give you operating capacities on both the 6 and 2 Meter bands, ideal to take advantage of the new FCC ruling. 52-72 ohm coaxial output matches all beams and most doublets. Variable antenna loading control. Regulated screen supply. Four stage RF section, all metered, allows straight through operation. Harmonic and TVI-suppression. Reserve power for accessory operation from chassis rear socket (VFO, Speech Clipper, Relay, etc.) Provisions for Antenna Changeover relay. Suitable for mobile use; provisions for plug-in power supply. New duo-band final tank circuit eliminates switching and increases efficiency.

AS WELL AS 6M

2 METERS
(145-147 mc)
for Added Penetration

with the quality

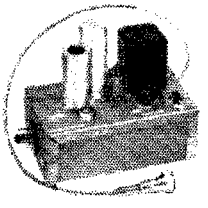
VFO 6-2



wired/tested: $59.95
in kit form: $49.95

Especially designed for driving the Hi-Bander on 6 and 2 meters, though may be used with similar transmitters. King size 7" tuning scale. Perfect zero beat with exclusive bandspread control. Built-in, well-filtered power supply with voltage regulation. Completely temperature compensated. Calibrate switch for zero beating signal frequency without turning on Transmitter. Approximately 50V RF output. Plugs directly into crystal socket of Transmitter. 13:1 tuning ratio.

Globe's Speech Booster FCL-1



Peak limiting audio preamplifier that clips and filters speech frequencies exceeding pre-set amplitude. Increases modulation intensity for most penetrating audio. Includes harmonic suppression. Plugs directly into Hi-Bander. May be adapted for use with other Transmitters.

wired/tested: $24.95 **kit form: $15.95**

NOW IN STOCK
AT
YOUR FAVORITE DISTRIBUTOR

GLOBE electronics
3417 W. BROADWAY
COUNCIL BLUFFS, IOWA

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 30¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) **A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously noncommercial in nature.** Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) **Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

NOTICE!

Commencing with the December issue of QST the Ham-Ad rate (paragraph 3) will be 35¢ per word. The special Ham-Ad rate (paragraph 6) will be 10¢ per word.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communications equipment bought and sold W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, mxed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

TRANSFORMERS (3) W2EWL Special. $3.00 postpaid. SSB, latest diagram, template. 3 xfrmrs, disc ceramic Emica condensers, coils L1 thru L7 for W2EWL Special (Mar. 1956 *QST*), $10.95 postpaid. Vitale, W2EWL, Denville, N. J.

COAXIAL Cable. New surplus RG-54A/U, 58 ohms impedance — 30 ft. prepaid, $1.00. Radio magazines, buy, sell, trade. R. Farmer, 3009 No. Columbia, Plainview, Texas.

ANTENNA 80-40-20-15-10, $21.95. Patented. Lattin, W4JRW, Box 44, Owensboro, Ky.

WANTED: Battery receivers of 1920s, Eria, Aeme, Radiola, Grebe-etc. Also UV199 thru UV206 tubes for electrical test. Buy or borrow, Grote Reber, Green Bank, West Virginia.

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. NOrmandy 8-8262.

SALE! NC-173 receiver, speaker, and manual, guaranteed gud condx, slick iron grey finish. Bargain: $125. R. A. Brown, 2551 Gentry Dr., Wichita, Kans. KØLEB.

WANTED: High quality military or commercial test equipment, receivers, transmitters, tubes, etc. Will pay cash or swap. Electronicraft, Box 399, Mt. Kisco, N. Y.

S.S.B. xfrmrs, exact set of 3 (hermetically sealed) for W2EWL Special, brand new, $3.00 postpaid. New compact G-E 100-watt modulation xfrmr, multi-impedance (10 lbs.), $6.25; new Elmac vacuum condenser, 12 $\mu\mu$fd at 32 kilovolts, $5.50. G-E Pyrarols, 20 μfd at 1000 v.d.c. (330 vac) plus min. 4 for $6.00; 4 μfd at 1000 v.d.c. (330 vac)-min. 4 for $3.50. Please include postage, no c.o.d.'s Tucker, W2HLT, 51-10 Little Neck Parkway, Little Neck 62, N. Y.

FOR Sale: DX-100, $185; SX-99 w/spkr, $125; Bud crystal calibrator, Dow-Key relay DKC-TR, VX-Lectronic Voice control, XM2 SWR bridge, CAL Conelrad alarm, balun coil, variable low pass filter. This is new equipment. Best offer. Roger L. Gayken, Box 134, Watson, Minn.

SIX Meter — ultra conservative kilowatt final amplifier; pushpull 1000T or 6C21 triodes with spare. Half-inch copper tubing tank lines; fully shielded; No TVI this QTH. Requires 50 to 100 watts drive; Made 6 meter W.A.C. with same; with power supply, $350; without power supply $225.00. W4UCH, Sterling, Va.

LEECE-NEVILLE 6 volt 100 amp. system — alternator regulator and rectifier, $45; also, Leece-Neville 50 amp. system, $50; 12 volt 100 amp. system, $85, guaranteed no ex-police car units. P.E. 75 D gas generator 2500 watt a.c. 120 volt, 60 cycle used 10 hrs., $250. Herbert A. Zimmermann, Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Tels. ULster 2-3472 or JAckson 2-2158.

QSLS? Rainbow-maps? State-maps? Cartoons? Mobile, Religious? Samples, 25¢ (refunded). Callbooks (Fall issue), $5.00. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Mich.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

C. FRITZ Says "If it's worth a QSL, let's do it right!" QSL-SWLS. In '59 try mine! Samples 25¢ deductible. 1213 Briargate, Joliet, Ill.

QSLS. Glossy 2 and 3-colors. Attractive, distinctive, different. 48-hour service. Samples 10¢. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples. 10¢ with catalogue, 25¢.

QSL-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

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.

COLOR Glamor, scenic & nature. Custom sketch and photo. Samples 25 refunded. K4LFZ QSLS. Summerfield, Fla.

QSLS. Reasonable. 10 days delivery. Catalog dime (coin), Dick Crawford, K6CJM, Box 607, Whittier, Calif.

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., KN5ZMT. Creative Printing, P.O. Box 1064-C, Atascadero, Calif.

QSLS Samples, 10¢. Refundable. Also Net Award Certificates and Membership cards. W3KPJ Press, 1806 Water St., Wesleyville, Penna.

QSLS Samples dime. Sims, 3227 Missouri Ave., St. Louis 18, Mo.

QSLS-SWLS. High quality, reasonable prices. Samples. Bob Teachout. W1FSV, 204 Adams St., Rutland, Vt.

QSLS. SWL'S VHF'S SYL-OM's. (Sample assortment approximately 9¾¢). Covering designing, planning, printer, arranging, mailing, eye-catching, comic, sedate, fatabulous DX—attracting, prototypal, snazzy, unparagoned, cards. Rogers, KØAAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!)

QSLS: Fast service, send stamp for samples. Koster, K2UAX Press, 2941 Ewell Place, Wantagh, L. I., N. Y.

QSLS. Get the best from DX, samples 25¢, 2 Kulik Street, Clifton, N. J. Shop telephone GRegory 3-4779. Residence, GRegory, 1-7885.

QSLS-SWLS, 100 $2.50. Samples 10¢. QSO File cards, $1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS. Taprint, Union, Miss.

SUPERIOR QSLS, samples 10¢, Ham Specialties, Box 3023, Bellaire, Texas.

QSLS-SWLS that are different. Colored, embossed card stock and "Kromekote." Samples 10¢. K8AIA, Turner, Box 953, Hamilton, Ohio.

QSLS: Send 25¢ (refundable) for samples. W6CMN, Schuch, 6707 Beck Ave., No. Hollywood, Calif.

QSLS, 3-color glossy, 100 — $4.50. Rutgers Vari-Typing Service, 7 Fairfield Rd., New Brunswick, N. J.

QSLS samples, free. Spicer, 4615 Rosedale, Austin 5, Texas.

QSLS, SWLS. Citizen's band. Samples 10¢. Onondaga Press, Onondaga, Mich.

PICTURE QSL Cards of your shack, home, etc. Made from your photograph. 1000, $12.00. Raum's 4154 Fifth St., Philadelphia 40, Penna.

QSLS-SWLS. Citizen's Band. Samples 10¢. W4BKT Press, 123 Main, McKenzie, Tenn.

QSL Special: $1.75 per 100 cards, postpaid U. S. only. Glossy stiock, red call letters, name and address. Green QSO information, etc. All orders mailed within 10 days. Free sample. Hobby Print Shop, Umatilla, Fla.

QSLS. Samples, 25¢ refundable. E. P. C. 341 W. Broadway, Council Bluffs, Iowa.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS. Samples free. Phillips, W7HRG, 1708 Bridge St., The Dalles, Oregon.

SEND $3.00 for 200 beautiful glossy QSLs. Samples free! Bolles, 7701 Tisdale, Austin 5, Texas.

QSLS. Cartoons, colors, something different. Samples, $25¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

RUBBER Stamps for hams, sample impressions, W9UNY, Hamm, 542 North 93, Milwaukee, Wis.

QSLS. Stamp brings samples, Eddie W. Scott, W3CSX, Fairplay, Md.

QSLS, SWLs. Samples 10¢. Onondaga Press, Onondaga, Michigan.

QSLS! Screen print ur own. Easy. Details, WAT, Box 128, Brecksville, Ohio.

QSLS-SWLS. Samples 10¢. W4BKT Press, Wilson, Main St., McKenzie, Tenn.

QSLS: $1.20, 100 with imprints. Arthur Greenberg, 3433 DeKalb Ave., Bronx 67, N. Y.

QSLS! Silver Flash, samples 10¢. The Printing Laboratory, 4441 Hyacinth Ave., Oakland 19, Calif.

QSLS, highest quality, reasonable. Paye, W4ZKK, 824 Avondale, Cocoa, Fla.

QSLS, stamp brings samples. Eddie W. Scott, W3CSX, Fairplay, Md.

QSLS. High quality, low prices. Fast service. Samples 10¢. Dave, 601 E. Maude, Sunnyvale, Calif.

"QSLS". Reasonable, nice designs, samples, dime. W2DJH Press, 31 Warren, Warrensburg, N. Y.

FREE Samples QSLS-SWLS. Harris 513 Pollock St., Richmond, Va.

WANTED: 6 to 12 304TL tubes. Callanan, W9AU, P. O. Box 155 Barrington, Ill.

SAN FRANCISCO and vicinity: Communications receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited, any equipment. Associated Electronics, 58 South P St., Livermore, Calif., W6KF, Skipper.

FOR Sale: KW linear with two 4–250As, $125, 500 watt audio with 500 ohm input, $60; Johnson Navigator, exc. condx, $130; Heathkit hi-fi WA-P2 preamp and W-5M 25 watt amplifier, $60; misc. transformers, Heathkit AR-3 and Q multiplier, $35.00. Send for list giving full details on the above and other items for sale. (HQ170C, perf. condx, $300.00) William Madigan, W1UGF, 159 Nott St., Wethersfield, Conn.

AUTHORIZED factory distributors for Adjustavolt, B&W, Elmac, Geloso, General Electronics, Glass-Line, Gonset, Hammarlund, Hexacon, Johnson, National, Penta, TMC, Tobe & Vocaline & Westinghouse. Wanted: xmttg, and special-purpose tubes and lab equipment. Trade-ins accepted. Open Monday through Saturday. Barry Electronics Corp., 51 Broadway, N. Y. 12, N. Y. Phone WAlker 5-7000.

FOR Sale: *QST*s, 1920 to 1936, Gepapa, North Grosvenordale, Conn.

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.

304TL Brand new Elmac, in orig. box, $23.95. Mark Sternheimer, 3816 Hickory Rd., Richmond 25, Va.

COMBO HT32, HT33A, $1100; KWS-1, $1375. Write for an excellent list of good buys. Wanted, an "H and R Handygun". This is a single shot target pistol with a 12-in. barrel. Will swap. W2ADD.

BACK Issues *QST*-CQ bought, sold. Tagan, Radio Co-op. Box 5938, Kansas City 11, Mo.

SAVE On Electronic, Radio and Communication Components and equipment for Hams and commercial use. See thousands of parts in stock — many more coming in daily — too numerous to catalog, all at unusual savings. If you live in or near Philadelphia, visit our new warehouse. Selectronics, 1206 S. Napa St., (at 31st and Grays Ferry), Philadelphia 46, Penna., or phone HOward 8-4645.

HAMS! Learn Calculus. Powerful mathematical tool. Easy practical lessons. First four $1.00. Matheo, 4256-2 Minmor, Cincinnati 17, Ohio.

WANTED: Radio gear of the 1920s: UV206 1 KW tube, Remler Infradyne, untuned R.F. transformers made by Aeme, All-American, Atwater-Kent, Branston, Dongan, Dubilier, DX, Fria, Federal, Marie, Miller, Mu-Rad, Rasia, Savannah, Sterling, etc. Buy, borrow or trade. Grote Reber, Green Bank, West Virginia.

RECEIVERS: Repaired and aligned by competent engineers using factory standard instruments. Authorized factory service station for Collins, Hallicrafters, Hammarlund, National, Globe, Harvey-Wells. Our twenty-second year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

TOROIDS: Uncased 88 mhy, like new. Dollar each. Five, $4.00. P. P. DaPaul Co., 101 Starview, San Francisco, Calif.

SILVER Anniversary Hamfest of Hamfesters Radio Club will be held Sunday, August 9, 1959, at Santa Fe Park, near Chicago. See July *QST* Hamfest Calendar or write Betty Sandberg, W9STR, 2957 N. Monitor Ave., Chicago 34, Ill.

SELLING NC-98, without speaker, no modifications, exceptionally clean, stable, $90 F.o.b. Want: UTC S-49, S-37, S-38, G. H, J. AB coils for HRO-50. 6 ft. enclosed rack. W2DXI.

KW1 and spare tubes, cash on the line. Take it away for $2050. HT32A, brand new, never used: $595. H. Langerman, W2LB5J.

4D32's, used but guaranteed good, $15 postpaid. W5AXI/4, 10419 65th Ave. North, Largo, Fla.

ALL Aircraft or ground radios wanted for cash. Especially wanted units made by Collins Radio. Communications receivers, transmitters test equipments needed. Ted Dames, W2KUW, 308 Hickory St., Arlington, N. J.

DON'T Fail FCC tests! Check yourself with a time-tested "Surecheck Test". Novice, $1.50; General, $1.75; Extra, $2.00. We pay the postage. Amateur Radio Specialties, 1013 Seventh Ave., Worthington, Minn.

FOR Sale: Prop pitch motor, Curtiss 24v., $15; rec. mod. RD2 200–400 Mc., $25. WA6CHB, 1015 Palos Verdes Dr. West, Palos Verdes Estates, Calif. Tel. FRontier 5-1539.

KWM1 wanted. Also few high plate dissipation tubes 304T1, 4–1000, etc., Ted Dames, W2KUW, 64 Grand Place, Arlington, N.J.

SELL: DX-100 for $185, and SX-100 for $210. Both in excellent like new condx. K6QXK. 1030 Oberlin, Glendale, Calif. CI 3-1425.

QSTS for sale: Dec. 1949; all 1950 and 1951; all 1952 less July and September; all 1953; all 1954 less Oct., plus extra Sept.; all 1955, 1956 and 1957. Fine condx. Make offer. CQs for sale: May 1952; Nov. and Dec. 1953; all 1954, 1955, 1956, and 1957. Fine condx. Make offer. W4RQO, 351 Del Mar, Melbourne, Fla.

SELL: NC-183D, w/spkr $239; HQ100C, $139; tubes and other parts for sale or trade; BC455 unmodified, excellent, $9.95. Stamp for list. M. Marshall, 455 Washington Ave., Dumont, N. J.

FOR Sale: Collins 51J3 with vernier tuning knob, in mint condx, $675; 32V2, $325; B&W 51SB, $185, both for $485; Ranger $185, Central Slicer "B", $75; MM-2, $90; Measurements Corp. "80" signal generator, $275. Morrow portable package (transmitter, receiver, AC power supply, and 12 volt supply), $450; Tecraft 2 meter converter, $23. Gonset 2 meter Communicator III, $195. Sid Gogel, 1096 Laux Place, No. Bellmore, L. I., N. Y. Tel. SUnset 1-0568.

SELL: DX-35, built-in relay, complete set of spare tubes, $45. Ray Edwards, 51 Beverly Rd., Wethersfield, Conn.

TRADE Perfect DX-100, 1958, for DX-40 or similar, plus $115. K3CNF, Jay Flocks, 2492 77th Ave., Phila., Penna. Tel. LI 9-5502.

DX-100, excellent operte, condx, with improved keying and output loading: $150. K2GKU, 248–54–54 Ave., Douglaston 62, L. I., N. Y.

SELL Or trade: Tape recorder, Revere T-100, mike, spool, pedal control, $50; three transceivers, Citizen's band, 465 Mc., Vocaline, JRC-400; each with mike, plug-in antenna, line cords for 115V or 6V battery, ground plane antenna, $140; Six-meter beam, Telrex 4-el., never unerated, $15; Edison Voicewriter, cylinder type, stand; transcriber, stand, earphones, typewriter control; shaver; cylinder carrier, 6 cylinders. Under factory maintenance. Exc. condx, $150; shipping charges, collect. Want: mobile transmitter, as Gonset 77, impedance bridge, sinewave generator, oscilloscope, Q-meter, antennascope, field strength meter, pocket tape recorder. V. M. Victoroff, M.D., W8GAS, 2241 Taylor Road, Cleveland 12, Ohio.

SX-71 receiver with speaker and 15 meter band. $110; Knight 50 watt transmitter, $30; Heath VFO, $15. All equipment is in excellent condition. Walter Froehlich, 182 West Saveland Ave., Milwaukee 7, Wis.

FOR Sale: Globe Chief and plate modulator first $50 takes them. Will ship per your instructions. W3HNK, 26 Ashland Ave., Glenolden, Penna.

RANGER, factory-wired, sequence keying, push-to-talk, $160; also Hammarlund HQ-110C, $160. Both excellent. Both, $300. Will demonstrate. W2RQA, Sweet Hollow Rd., Huntington, L. I., N. Y. Tel. HAmilton 3–7739.

MAGNETIC Tape at bargain-basement prices: Acetate base: 600 ft -5" reel, 3 for $2.85; 900 ft., 5" reel, 3 for $3.40; 1200 ft., 7" reel, 3 for $3.95, 1800 ft., 7" reel, 3 for $5.25; Mylar base: 900 ft., 5" reel, 3 for $4.20; 1800 ft., 7" reel, 3 for $6.85; 2400 ft., 7" reel, 3 for $10.60. Guaranteed top quality, 30-15000 CPS. Satisfaction or money refunded. Add 15 cents per reel PP handling. Florman & Babb, Inc., 68Q West 45th St., New York 36, N. Y.

WANTED: One 800 cycle and one 6 Kc mechanical filters for Collins 75A-4 receiver. W9BAG, Frank Smolek, 1023 N. Marion St., Oak Park, Ill.

AR-3 good condition, $20. Joe Fogarty, K2MDQ, 85–50 Forest Parkway, Woodhaven, N. Y.

FOR Sale: Transmitter DX-100 pre-wired with mike and balun coils; C.D.R. rotor indicator for antenna cubical quad antenna complete with bamboo; Harvey-Wells Bandmaster deluxe T3S-50D with xtal control, VFO, $375; Instructograph machine with 12 tapes on code; Signatone and key for practicing code, $40. S. Bedell, 260 Autumn Ave., Brooklyn 8, N. Y.

LARGE run of *QST* in Thirties for sale. G. M. Todd, Box 2211, Atlanta 1, Ga.

GLOBE King 500A. Best offer over $425; WRL VFO Mod. 755, $45 with above. John V. Smith, 5 Pelham Ave., Port Washington, N. Y.

SELL DX-40 FB condx, $55 F.o.b. W. Willey, 95 N. Main St., Penacook, N. H. PL 3-4222.

FOR Sale: Heathkit, FM-3, BC-1 and AE-7 hi-fi 7 watt amplifier. Exc. condx and appearance, with manuals: $45. W2EPZ, 80–44 259 St., Floral Park, L. I., N. Y.

FOR Sale: Collins 75S1, $410; 2 Kw P.E.P. final (Adams Electronic), two 4–400A pwr supply, 4000 volts over 500 mils, all in 6 ft. rack, Variac, all necessary relays, overload, etc. Sry, can't ship. $350 F.o.b.; Elenco "Power Gainer" compression amplifier (new), $30; Bud 66 in. rack, like new; WRL speech booster, $15; Kreco 2 meter ground plane, $15: E-V 600D dynamic mike, Mosley Minibeams, 15M and 20M, both can be mounted on one book. WRL Rotobrake with AR-22 rotator, $60; Mobile power supply, 6 volt input, 425 v. at 375 Ma., $20; E-V Aristocrat enclosure (speaker free), $50; field phones (pair), $25; Regency line voltage booster for TV, $5; pair used Vocatron wireless intercoms, $10; Bandmaster Z-match, Magnasonderfte stereo recorder and playback, new, $350; Triplett 0–1 Ma., meter, new. W3VDE, 1219 Yardley Rd., Morrisville, Penna.

SALE: Viking II, mobile VFO, and LP filter, $150. W2RPM, 24 Parkside Dr., Lake Placid, N. Y.

WANTED: Grebe receivers, amplifiers, catalogues, state price and condx. W8JDV, 500 Church St., Mason, Ohio.

SALE: Pickett 803-ES slide rule, $16; Heath "A" battery eliminator BE-3, $14; Heath signal tracer T-3, $15; Heath transistor pwr. supp. PC-1 (unwired), $20; Bud 30 in. table rack, $4; 80 meter ARC-5 transmitter, $6; 144 and 220 Mc. freq. meter, 1-222A, $10; E-V T.V. distrib. amplf 3100, $16; McElroy ink recorder head (RRD-900–42), $15; Johnson Matchbox 250 watt, $30; ARC-5 maintenance manual $3.50; brand new Mallory inductuner (3-circuit) $3.00; Television xmtr (T-61/AXT-2), $15; brand new radar jammer transmitter (T-9/APQ-2), $10. J. Christy, W6EHZ, 14553 Dickens St., Sherman Oaks, Calif.

WANTED: AF-67, PMR-7, and C-1050 or will buy complete mobile installation. K4REU, 1135 Tamarack Trail, Chattanooga, Tenn.

ACT Now: 20A-HT32 owners new VFO matic Mod. 8020, new 4–400A tube, unused HT-30 control relay; 10D microphone; Johnson TR switch, 829B tubes. V. Howerdel, 223 Terrace Ave., Jersey City, N. J.

WANTED: HRO coil for 10 through 20 meters for use in HRO-5 revr. WA2CBW, 311 N. Clinton Ave., Wenonah, N. J.

PACKAGE Sale: S-85 receiver, DX-40 transmitter, Heath VF-1, Heath SWR Bridge, Shure xtal mike in Astatic stand, Speed-X key, currently active. First $180 gets it express collect, with original directions. W. G. Lawson, M. D. Shattuck, Okla. (W5KDG).

DX QSL Co-op, Box 5938 K.C. 11, Mo. Save time and $$$. DX QSL'ing. Only 2¢ per card after membership, $2.00 for 5 years.

SWAP .22 calibre Hi-standard target pistol and accessories for all-band receiver in good condition or other ham equipment. WV2BME, Harold Rattner, 251–44 61 Ave., Little Neck 62, N. Y.

SALE: Viking Valiant factory-wired; Viking 250 watt low-pass filter and Matchbox; NC300 receiver and speaker; Electro-Voice 664 dynamic cardioid mike. All in A-1 condx. Joel L. Crandall, 472 Winspear Ave., Buffalo 15, N. Y.

TRADE KWS-1 for Volkswagen or foreign car, or KWS-1 and 75A4 for KWM-1 installed in your car, give or take. Write Tom Hopkins, 6223 McCommas, Dallas 14, Texas.

JOHNSON KW. No desk. Gud condx, $895. W9TVE, Fenton, Iowa.

PACEMAKER, $349.00. Have new 100-V 32VI, $295; new 70E-8B, $35 (32V PTO); Mims deluxe rotator with new gears, 100 ft. cable, $129; Telrex 20M 3-el. beam, $89. 75AI 3 kc. filter, $35. W9ERU, Box 273, RR 4, Rockford, Ill.

JOHNSON Matchbox, FB, only $34.50. F.o.b. Hemet, Calif. Gil Severns, W6QR.

UNMODIFIED equipment: DX-35 with VF-1, $70; SX-99, $99; balun coils, $5.00; Heath AR-3 with cabinet, $30. K6ULH, 1844 Roosevelt, Altadena, Calif.

DX-100B! Only $199.50 for this practically new unit. Not a scratch on it. Also for sale, one Heath AC-1 antenna coupler with coax connector on input, $8.00, and one Dow-Key DKC-GE antenna changeover relay, $8.00. Bill Morrow, K8GMS, 5731 Bromley Ave., Worthington, Ohio.

SPECIAL! W2EWL SSB transformers. New, 95¢ (3 for $2.50, 10 for $7.50); T-17 mike, brand new, sealed package. Only $4.95; Glas-Line, $2.89 per hundred feet; Geloso tape recorder, $179.95. Brochure available. Ling Closed-Circuit TV camera, brochure available. Complete tube inventory, best quality and sensible prices. 2C51 $1.50; 3B28 $3.25; 4X150A, $7.00; 805, $3.50; 807, $1.15; 807W, $1.50; 813, $8.00; 829B, $8.00; 837, $1.00; 866A, $1.50; 872A, $2.00. Write for free tube price lists. Green sheet catalog on equipment and parts, 25¢. Wanted: Unused transmitting and receiving tubes. Send list for cash offer. Distributors for B&W, Eimac, Hammarlund, Johnson, Westinghouse and others. Barry Electronics Corp., 512 Broadway, New York City 12, N. Y. Tel. WAlker 5-7000.

FILL Those peaks: capacitors 120 μfd, 3000 V, G-E Pyronol, used, top condition, $35.00. Packing, $3.00. Chimner, W8LTF, 831 Antoine, Wyandotte, Mich.

CONSET G-66B, 3-way power supply, G-77 xmtr with matching power supply and modulator, push-to-talk mike, Webster band-spanner, Master Mobile bumper mount, all cables and connectors, complete mobile station, in perf. condx, $400. W6LPN, 1217 K St., Sacramento, Calif.

OSCILLOSCOPE: Bargain! Precise 7" color TV 'scope, almost new, needs alignment. $100 or best offer. (W/T cost $200). K5GFM, 1102 W. 12th St., Mt. Pleasant, Texas

TRANSMITTER for sale: Valenco 140 RF unit with 125 watt Multi-tape modulator and Harvey-Wells VFO. RF and modulator units have separate pwr. supplies and are enclosed in a gray tabletop rack, includes sequential keying and side tone monitor, push-to-talk, blocking bias for receiver and TR switch. Three meters on RF unit and one on modulator. Priced low to sell quick, $150. Walter Fichter, 33 Myrtle Ave., Cedar Grove, N. J. Phone Center 9-6412 (K2KFZ).

NEW Ranger, $175; like new HQ-140X, $175; BC-221, $70; misc. components. List available. I. Seidman, Park Towne West, Phila. 30, Penna.

DX-100B, perf. condx. Used not more than 15 hours. $180 or best offer. Will send P.P. K9QOW, 605 Wayland, Kenilworth, Ill.

WANTED: SX-62A in excellent condx. Buyer to pay all charges. Watson, 23 Edward St., Dartmouth, Nova Scotia, Can.

FOR Sale: *QST*s, 1922 to 1936. Gepapa, North Grosvenordale, Conn.

SELL: Viking II with VFO, 3 xtals, xtal microphone, balun coil and manuals, vy gud condx, $195. You pay shppg. David Barlin, 135 East Indiana St., Rapid City, So. Dakota.

SELL: DX-100, $179; RME 4300, $149; SX-71, $125. All in exc. condx. Will ship. Cash only. Lad Jelen, Rte. 4, Medina, Ohio.

SELL: BC-1335 A (transceiver with pwr supply) perfect for Citizens Band mobile, $18; Eldico 2 meter xmtr, unused, $25; mobile pwr supp., 300 volt 100 mil outp., 6 volt inp., new, $10. Will ship collect. W2SWA.

SELL: Hallicrafters SX-100, Mark II, late model, exc. condx, best offer over $225; Morrow CM-1 Conotrad revr, exc. condx, $25; Beede B-A-12, 12V DC dynamotor, 540V DC 450 Ma., $20; General Electric 5DP50VC2A 6V DC dynamotor, 640V DC 265 Ma., $15; Hi-Par 6 mtr. mobile halo antenna, $10. Terms, cash. Prefer local sales, but no reasonable offer turned down, local or out of town. Bart B. Bonney, 2310 Baynard Blvd., Wilmington 2, Del

FOR Sale: Factory-wired Globe LA-1 linear amplifier under one year old, $99.95. TBS-50D transmitter with VFO and APS-50 power supply, $140 or best offer. Fred Ouellette, 616 Highland Ave., Kenmore, N. Y.

FOR Sale: Johnson Ranger, $150. Harry Stark, W3CGS, 7761 Parkview Rd., Upper Darby, Penna

GLOBE-KING 400-B for sale. Perfect condition. Coils 10–20–40–80 meters. Going mobile. Best offer takes it! W3FQK, 195 Greenbrook Drive, Levittown, Penna.

SACRIFICE HQ-110 Rec w/spkr, clock, Johnson 6N2 xmtr, w/pwr supp. and modulator, relay, 4 el. beam, cable. No reasonable offer refused. Culpepper, K4PWH, 1013 22nd Street S.W., Birmingham 11, Ala.

FOR Sale: BC342N with 115V AC RA-20 pwr supp, gud condx, $50.00. Unconverted, Harvey-Wells R9A in original carton, w/spkr, $65. K1AJE, 46 Melrose St., Norwich, Conn.

SELL: Garrard RC-80 3-speed record changr, G-E cartridge, $25; Acrosound Ultra-Linear amplifier, $50; G-E 250 portable radio, $25; RCA 45-rpm record-changer, $10; "Anchor" TV booster, $5; Radio Electronics books, ask for list. V. R. Hein, 418 Gregory, Rockford, Ill.

BC-348Q, converted to AC, gud shape, $55.00. Richard McEvoy, 822 Williams St., Henry, Ill. K9LRM.

SELL Heath OM3 'scope with probes, $30; excellent RCA WR678 signal generator, $25; UTC, S37, $11; S38, $11.00, pr. for $20.00; UTC S33, $7.00; Thordarson kw splatter choke #T15C32, $8.00; BC453 with pwr supply and spkr, $12; pr. of new 701As with sockets and filament xfrmrs, $15; 304TL filament xfrmrs, $10 ea. Paul Powell, W5RPF, 500 W. 3rd, Borger, Texas.

SELL: Gonset 6M Communicator III, like new, 6 months old. With crystals and halo, best offer over $220. Tecraft 6M transmitter, $35.00; BC653 xmtr 2–4.5 Mc., 80 watts, less tubes, only $15. Send stamp for list of surplus transmitters, meters, transformers, chokes, condensers, resistors, coils, etc. Jim Ariana, Box 285, Kincaid, Ill.

WANTED: Hallicrafters S-27B 36–165 Mc. Sell: Ham gear. Write for list. Robert Schramm, 5212 Madison St., Skokie, Ill.

TRADE Or sell: B&H 16 mm magazine load camera w/case, $90; Holmes 16 mm sound projector, $135.00; SX16 w/NL VR on oscillator, aligned in vy gud condx, $65; Instructograph w/12 tapes, Bud monitor-oscillator, $25; Vibroplex Champion, new, $10. Need SSB transmitter, Millen GDO, Lampkin Freq. meter. W8NJT, J. Day, 4660 Lakeview, Detroit 15, Mich. VA 1-6336.

KWS1 with commercial grade power supplies, $1200; without supplies, $1000. In perfect condx. New ceramic 4X250B tubes. W1GR.

SALE: Globe Chief 90, xmtr, $45; sM-90 modulator, $10; Knight kit VFO, $22; will not sell VFO with xmtr. Donald Turner, Box 35' Florence, Miss.

SELL: SX-101 Mark III with R-46B spkr, $275; Heathkit O-12 oscilloscope, $50; AM-2, $10; and Hy-Gain 14-AV with roof mount and coax, $35. All equipment above is brand new. Fred Salzman, 1128 Boynton Ave., New York 72, N. Y. Phone TI 2-7073.

BARGAINS: Reconditioned and guaranteed. Shipped on approval. Easy terms available financed by us. Hallicrafters S38 $29.00, S85 $89.00, SX99 $119.00, SX96 $159.00, S40B, SX71, SX100, SX101, H132; HF-10-20 $49.00; VHF152A $49.00, RME 4350 $159.00; National SW54 $29.00, NC98 $99.00, NC183D $249.00, NC300 $279.00, HRO's; GPR-90 $349.00; Johnson Pacemaker $295.00, Viking II, Ranger, Valiant, Thunderbolt; Heath DX35, DX100; Hammarlund HQ100, HQ110, HQ129, HQ140, HQ150, HQ160, HQ170; Collins 75A1, 75A2, 75A3, 75A4, 32V1, 32V2, 32V3, KWS1, KWM1; Central 10B, 20A; Globe; Gonset; much other equipment. Write for list. Henry Radio, Butler, Mo.

SALE: HV pwr supply, 1850 volts and 2100 volt taps, 300 mills, 19" panel, like new, $60; W2IZY, Phil Spillane, 255 Manaiapan Road, Spotswood, N. J. Tel. CI. 4-2104.

FOR Sale: Heath "Apache", $200; NC-98 with spkr and Preselector, $108; D-104 mike and push-to-talk stand, $15; 56 ft. 3-section Tri-Ex crank-up tower, $110; Hy-Gain 3-el. Triband beam, $85; AR-22, $18; low pass filter, $12; 60 ft. RG-8U, $12; Globe Chief, $35; coax relay, $10. Dan Duffin, K6KCV, 11722 Martha Ann, Los Alamitos, Calif.

COLLEGE Ham sacrificing Heath V-7A VTVM with 3 probes; AR-3 with QF-1, all for $85. W7NLR, 2433 East Cameron Vista, Tucson, Ariz.

FOR Sale: Deluxe 20A, Series E, DeLuxe VFO, Delux 400 watt amp., like the L 400. 5 months old, perfect, $300. SX-71, perf. condx, $125. Nelson Miller, W3GKS, 150 S. Whitfield St., Nazareth, Penna. Tel. PL 9-1421.

SELL: National NC-183D with spkr, $250; Heath signal tracer, $10.00; Q multiplier, $7. All in A-1 condx, hardly used. K2TZB, Pieklo, 400 Brook St., Linden, N. J.

FOR Sale: 10B and 458 VFO, $135; MM-1 RF analyzer, $75; BC453, $5; 803 tubes, $1; 4D32 tubes, $15; 100TH, $7; Heath XO-1 electronic crossover, $15; 6V Vibrapack, $5; UTC S-28, $3; transformer 6V-15A, dual windings, $5; Stancor PT 8313, $20; Kenyon transf. 115V/4520 C.T. at 700 Ma., $35; meter 50 μa, $4; Chicago transformer, 220V/9000VCT at 1.0A, $100; 6159 tube (25V 6146), $3.00. James W. Craig, 62 N. Huntington, Peru, Ind.

KIT, 4 ft. ham operating desk. Assembles easily in minutes using screwdriver alone. Well designed to fit any decor. Constructed with ¾" Particle Board for strength and appearance. Attractive is as or takes any kind of finish. Two levels for equipment with special tilt on rear of desk level for easy meter and dial readings. Special storage shelf below and pre-assembled desk pull-out slide. Ample room for any station with plenty of desk space. Complete with step-by-step instructions and hardware. Amateur net, $39.95 F.o.b. Orange, N. J. Write for free literature. Delta Products Co., 49 South Day St., Orange, N. J.

TRADE for HRO-7. Lionel 027 gauge locomotive and tender, track, cars, and accessories. K2ZLD, K2ZLX, 38 Pashley Rd., Scotia, N.Y.

ESTATE of W2ICV: New SX-100 trans. B&W 5100, brand new, many other parts, mostly in excellent condx. Please write to F. Rolleri, 342 Woodside Ave., Newark 4, N. J.

SELL: DX-35, built-in relay, complete set of spare tubes, $45. Ray Edwards, 51 Beverly Road, Wethersfield, Conn.

WANTED: NC-109 or NC-188 with matching speaker. Write condition and price. All answers will be acknowledged. Best offer will be considered. Theodore W. Cook, Box 671, Montauk, N. Y.

20A, factory wired, QT-1, 458 VFO, gray panels, $200; Gates limiting audio amplifier, $10; 20 meter Precision ground-plane antenna with 35 ft. RG8U, $10; 35 ft. vertical antenna in 3 ft. sections, $7. Stu Cowan, W1RST, 45 Park Ave., Old Greenwich, Conn.

NAVY LM-14 freq. meter, modulation, connector, schematic and ham-band calibration data, excellent, $35; new PE-103 dynamotor without base, $8; also new BC-221 coil and trimmer assembly, $5. F.o.b. W2WSZ, 869 Whalen Road, Penfield, N. Y.

RECONDITIONED Equipment; new guarantee; tons of fixed station equipment! 75A1 $265.00; S40 $65.00; S53A $69.95; S76 $109.00; SX-88 $429.00; SX100 $219.00; SX101 $319.00; HQ129X $149.00; HQ140X $179.95; HRO6OT $385.00; NC98 $114.00; NC125 $139.50; NC300 $269.00; many speakers, slicers, calibrators etc., inquire. Also have HUNDREDS of transmitters. MOBILE the inexpensive WRL way: Super 6 $39.50; Super 12 $54.95; G-66 $149.00; T3S50's (specify low or high impedance microphone) $59.95; MBR-5 $129.00; MB560 $125.00; A54H $85.00; AF67 $139.00; PMR6A $79.00; PMR7 $119.00; G77 $99.00, ATC-1 $59.50; MC-55 $38.50; SRT-120 $89.00; power supplies $5.00 up. Terms, trials, trades. Leo-W6GFQ, WRL Box 811, Council Bluffs, Iowa.

BACK issues *QST*, other radio magazines, 1931 to date, some complete volumes. List sent on request. Charles T. Grigg, W2RUY, 415 E. Union St., Lockport, N. Y.

SELL: Viking Valiant, factory wired, new condx, $325; SX-71, $125; complete station including above, beam and rotator, push-to-talk, TR switching, extras. Cash F.o.b. 500 bucks takes all. J. Bamberg, W4DWD, 2515 Rosehill Drive, Alexandria, Va.

HARVEY-WELLS T-90 all-band fone/c w. VFO transmitter, complete with APS90 110V AC, power supply and instruction book for sale. First class condition. Going to VHF. Jim Collins, W5QDO, Box 581, Sour Lake, Texas

WANTED: RA-20 rectifier unit for BC-342 receiver. W4MVZ, 3478 Hillcrest Ave., Macon, Ga.

SALE: SX-101 Mark III, new condx, $275; F/W Ranger PTT relay, extra gud condx, $175; R-46B loudspeaker, $10; might accept receiver or xmtr in trade. Signal Sentry, new, $12.00; 24-hour ham clock, new, $8; two new G-E Pyranol capacitors, 2μfd, 4000V DC both for $8; CRT tester rejuvenator, $12; antennascope, $10; pair small selsyns, $8; two I-82A radio compass, $4 each. Two VHF TV boosters, $5 each. Reasonable offers considered. Prices F.O.B K5STO, 2806 Little John Drive, San Antonio 9, Texas.

SACRIFICE NC-300 with matching speaker, 2 and 6 meter converters, converter cabinet, crystal calibrator, immaculate condx, best offer over $325. Also brand new Hallicrafters SR-34 6, 12 and 115 volt model, best offer over $425. Dick Bales, K9DAX, 524 West North St., Muncie, Ind.

WANTED: Cabinet Hallicrafters SX-42 or SX-62. Please state your price prepaid to W7CX

UNUSED Heath DF1, $55 and fuel vapor detector, $35; used James C-1050 500/250 volt 200 Ma 12 volt Vibrator supply $25; Carter 600 volt 170 Ma. 5.5 volt dynamotor, $8; Carter 500 volt 200 Ma 6 volt dynamotor, $8; several used with slight defects, 5820 Image-orthicon deflection yokes, $5.00 apiece. W2RLG, 325 Morgan Ave., Old Bridge, N. J.

SELL: SX-28 with speaker, good condx, $100. W3BQS, 709 Main, Kingston, Penna.

SELL! P. L. 172, unused, factory-new, $105; Hallicrafters SP44 Panadaptor, $45; W2EWL SSB exciter/transmitter built by Tony himself, $65; P. E. 55 dynamotor, 12 volts, $15; Wallman grounded grid 2-meter converter, $50. Paul Haus, 25 Upland Dr., Chappaqua, N. Y.

SELL: Transcon 6 meter mobile xmtr and converter, gud condx, $65. Dan Munro, W4CHW, 2835 Forest Ave., Ashland, Ky.

SELL: DX-40, gud condx, $65; VF 1, fair condx, $10 or both for $70. Write: James Stafford, K3DOT.

GRID Dip meter and Hi-Fi AM tuner for sale. Heath GD-1B with coils, never used, $19, and BC-1A, hardly ever used, $25. Both for $40. In perfect operating condx, superior construx, like new. Dick Smith, W1ZVG/1, 173 Wethersfield Dr., Warwick, R. I.

FOR Sale: Stancor ST203A 25 watt mobile transmitter, $25; Morrow 5BR2 mobile converter, $30; Carter 500V 200 mill; output 6 or 12V input dynamotor $35; DM35 dynamotor $12.50; VP553 6v Mallory Vibrapack, $7.50; VP554 6V Mallory Vibrapack, $10; Bud FCC90B 100 Kc calibr., $10; Ameco CD-1 Conelrad monitor, $10; Millen R9'er $12 or make offer on any or all. PS: I need a dial for BC-453 and BC-455 revr. Bill Thompson, WA2AAZ, 192-50B 71st Crescent, Fresh Meadows, 65, N. Y. Phone JAmaica 3-5808.

SELL: HT30 SSB/CW/AM 35 watt, exc. condition, $275; 600 watt 813 linear in rack with 3 power supplies, meters. Variac, $150; like new Central AM/SSB slicer for any receiver, $35; Eldico 2 meter xmtr hardly used, $45; very stable, BC458 modified per Central Electronics kit, $20; W2HFZ, 465 Ft. Lee Rd., Leonia, N. J. WI 4-1974.

SELL: Super-Pro receiver BC-779 with RH-84 power supply, $60 and DX-20 xmttr, in exc. condx, $28. Ken Goodwin, USCG Air Det., Navy 103 FPO, New York, N. Y.

SX-71 and spkr, $130; DX-100, $165; both in perfect condx; SCR-522 xmtr & revr, partly modified, $25. George Farris, K2KNW, 894 Colvin, Buffalo 23, N. Y.

FOR Sale: NC-183D, used only 20 hrs; in carton. Will sacrifice; $250. Tom Jones, 55 Westbrook Rd., South Hadley, Mass.

FOR Sale or trade: 250 watt homebrew xmtr and modulator, plus 3 power packs; 809s in modulated 812, as final amp. $75 or trade in on a DX-100. L. M. McGee, 58 Campus Dr., No. Buffalo 26, N. Y.

GONSET Owners, Rack for mounting Communicator I, II, or III over transmission hump. Just the right position for convenient operation. No bolts or adjustment, in and out in seconds. $4.95 postpaid. Reconditioned SW-54, $30; Gonset 30-40 Mc. FM tuner, $30. F.o.b. Strid Electronics, 234 Washington St., North Easton, Mass.

MUST sell immediately: 2 KWM-1's, 2 Collins mobile mounting trays, 2 Collins AC supplies, 1 Collins 12V DC mobile supply, 1 KWM-1 spkr/1 2KW plus 304TL linear, professionally built from new parts, including power supply, rugged full sized and spaced 20 meter 3-element beam with 60 ft. windmill-type tower, CDR heavy-duty rotor with 15 meter 3-element Mosley beam, Morrow Conelrad monitor, and other miscellany. This equipment is extra clean, has had only moderate use. I can't give it away, but any reasonable offer for any or all will receive serious consideration. Contact W5NDF, Box 508, San Angelo, Texas.

FOR Sale: HQ-129X with xtal calibrator, $140; Heath grid dip, $18; Simpson VOM 260, $30; 100 watt linear with pwr supp., tubes and coils, $25; new chokes, 15 hy, 150 Ma., $2; three 20 hy, 40 Ma., $1.00 ea; UTC S60 $3.00; set of three EWL xfrmrs, $3; new BC458, $8; BC453 less I.F., $4; two BC455, $5. Charles Copp, W2ZSD, 3 West Drive, Port Washington, N. Y.

CASH or trade for used equipment. Treger, W91VJ, Tel. TUxedo 9-6429, 2023 N. Harlem Ave., Chicago 35, Ill.

FOR Sale: Viking I, flood damaged, $50; Millen 90810 2-mtr. trans, 829B final, $15; Tecraft 6 meter converter, $15; many other hot buys! Send for list. WSDRN, 4437 Silsby Rd., University Heights 18, Ohio.

FOR Sale: Two Model 26 teletype printers. Waivers required. Richard Whalen, Rt. 3, Box 304, Madison 5, Wisc.

FOR Sale: Donner crank-up tower, medium duty. Radiart Ham-M rotor, Gonset Tri-band beam 3-element. One year old. Best offer takes. Norman Title, 1601 W. 9th St., Los Angeles, Calif. DU 4-8503.

JOHNSON Thunderbolt, factory-wired, best offer over $450; Hy-Gain Triband vertical with radial kit, $15; Johnson power reducer, #250-29, $9.00; Universal KW-4M 52 ohm SWR indicator, $35. K7EPD, 3850 East Elm, Phoenix, Ariz. CR 9-2824.

SELL: 16 volumes Photo-Fact folders including binders. Folders 131 through 290, $160 prepaid. Charles Jones, 139 Wayside Dr., Winston-Salem, N. C.

CALL Letters engraved on laminate phenolic. Black, Walnut, Mahogany, with white letters. 1¼" x 8" x 3/32". For only $1.00 PP. Also, nameplates for doorbells, mail boxes, tool boxes and personalized items around the shack. 1" x 3". 75¢ for one; two for $1.25; five for $1.00. Jaeger Products, P.O. 3674, Phoenix, Ariz.

SELL: Hammarlund HQ-110C receiver and matching speaker; very excellent condition, $160. M. J. Stansell, P.O. Box 8347, Gunter AFB, Alabama.

HEATHKIT products wired and tested. I pay the postage one way. All inquiries will be answered. Attention, overseas service men! Have your rig ready when you return. Roy, K4SVR, 1908 16th Ave., South, Birmingham 5, Alabama.

FOR Sale: 2 Elmac 4X150As, brand new, $35. Samuel H. Burton, 1222 Ash St., South Boston, Virginia.

SALE! One Johnson Ranger kit, $177; one Johnson Ranger wired and tested, $252.00, both in new cartons, have never been opened. A. A. Abraham, W4ODK, 480 Skain Ave., Lexington, Ky.

JOB wanted in electronics, prefer Southern states. BS in EE, first class phone, second class CW, radar endorsement, amateur extra. Experience in Army in EW, finish tour and available 15 October. Albert Brogdon, Tompkinsville, Ky.

ALUMINUM for every ham need. Write to Dick's, 62 Cherry Ave., Tiffin, Ohio, for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits.

FOR Sale or trade: Hickok sweep generator Mod. 695, Hickok VHF-UHF marker Mod. 690, Hickok marker adder Mod. 691. All are in excellent condx including manuals. Cost over $800. Hickok laboratory scope, Mod. 770. Cost over $400. Tapesonic Mod. 70C, professional tape recorder, like new, 3 speeds, 10½ in. reels. Completely solenoid and relay operated. VU meter with case, cost $400. Will sell outright. Best offer or trade for late model SSB gear. Will not break up Hickok 695, 690 and 691. Must go as one unit. Arthur Riegelhaupt, K2UBN, 228 Stephen St., Levittown, N. Y.

WANTED: RX4D32. K1IIK.

SIX Meter hams, 6M Gonset Communicator III. Like new condx. In orig. carton with all cables, instruction book, etc. First $185 takes. Also 6 meter Tecraft xmtr w/FB home brew pwr supp., all in deluxe Par-Metal tabletop cabinet with necessary 5 millmeter, instruction book, etc. Works perfectly. First $55 takes. You pay shipping. E. L. Shuey, K9BDK, 1517 Fargo, Chicago 26, Ill.

COLLINS KWS1, $1095; Hammarlund HQ-129X, $125; Elmac AF-67, $125; Elmac AC pwr supp, PS-2V, $25; Lysco 600S, $85. All perfect. W1AHB, "Al" Turner, 15 Kinsman Place, Natick, Mass. Olympic 5-0817.

MOBILE Hams! Stop generator whine ignition noise regulator clicks. $5.25 postpaid. Specify frequency. Gerald Electronics, 19 Salem St., Cos Cob, Conn.

WANTED: Workable S27 Hallicrafters revr. Frank Van Saul, 15 Salem Ave., Spring Lake, N. J.

HALLICRAFTERS S-108, six meter revr, $40. K8HSF, Columbus Grove, Ohio.

HAMMARLUND HQ100, new, hamfest won, $160. 2 Deluxe model, International Crystal Co. Citizen transceivers, Channel 22, $105 each. F.o.b. Don Vaughan, W4MTY, 4607 Briarcliff Rd., Atlanta 6, Ga.

SELL: Complete 522 two meter station, $75; CA: HF xmtr, $25; Heath AT-1, $20; PE103, $15; old magazines. Want RME DB22A, 23A. Kingman, 146 Arlington St., Brighton, Mass.

SELL: NC-300 revr, $250; Central Electronics 20A, $175. Both are in excellent condx, hardly used. Accessories available, reasonable. Steve Orszag, K2OTR, 67-62 Groton St., Forest Hills 75, N. Y. Tel. LI 4-0971.

SELL: B&W 5100B xmtr, used ten hours, $299. Harold Schearer, 53 Crestmont St., Reading, Penna.

FOR Sale: SX-42 revr, with R-42 bass reflex spkr, .35 to 109 mcs. A.M./F.M. Like new, $135. Want 2 meter revr, or conv. Home brew OK if gud. Need R.F., osc. and mix. coils for 3-6 Mc. ARC-5 revr. Will trade, make offer. D. Frahm, 714 San Miguel, Sunnyvale, Calif.

COLLINS 516-1 12 volt mobile DC power supply brand new, $150, mounting rack and all cables uncut for mobile operation of KWM-1, also brand new, $50. K2VFR, 55 Rouge Road, Rochester 23, N. Y.

VIKING Ranger, used less than 100 hours, $175. W5ZVB, 6021 N.W. 58th Terrace, Oklahoma City, Okla.

WANTED: Lampkin MFM xtal calibrator and FM modulation meter. K1DVO, Glenbrook, Conn.

MOBILE Communication receiver, Gonset Super Six converter and Gonset Supereceiver Model 3041. Six amateur bands. Double conversion. Sensitive, stable, selective. Converter output on 1430 K.C. into xtal controlled 4 stage I.F. strip. Built-in speaker, 6 or 12 volt regulated power supply, noise clipper and B.F.O. Separate control head includes on-off, r.f. and a.f. gain controls and adjustable squelch. Excellent condx, value. Sell: $80, cost new, $177. Pic-100 dynamotor 6 or 12 volts, 550 volts, $12. Collect. K2CR, 12 Overbrook Rd., Upper Saddle River, N. J. Tel. DAvis 7-2208.

75A-4, late model, serial 4818, used two months, perfect. $575. W8WGA. Phone: CRestview 7-0409.

SELL: HQ-100C, $125; DX-20, $25; both in excellent condx; will ship in Florida. K4TTQ, 4435 SW 13th St., Miami, Fla.

SELL: HQ100, DX-35, VF-1, D-104, Vibroplex, Bud monitor, Alliance Tenna-rotor. WINHE, 39 South Quaker Lane, West Hartford, Conn.

75A4, number 5070, 3.1 and 1.5 Kc. filters, i.f. transformer in "C" position, matching speaker, $675. Eldico 100F, new in January, 1959, $575. Both in perfect condition, on the air, but KWM-1 habit has me and makes this splendid equipment surplus. Both for $1200. W2KOY, East Meadow, N. Y.

SELL: Transistorized 100 Kc xtal calibrator by Texas Crystals, $10 10-15-20-40 Preselector built from QST. It's hot! $12. Dr. C. R. Crosby, RFD Chatham, Mass. W1QP.

75A2/spkr, excellent, full AVC on SSB, works like 75A4, $315. HT32, new condx, $495. Have .08 Kc and 6 Kc mechanical filters for 75A3 at $24 each. WØBNF, Box 105, Kearney, Nebraska.

FOR Sale: Steel tower, Aermotor, 33 ft., new, value $147.50. Cash: $75.00, or your offer. W9PEN, 4851 Greenleaf St., N., Skokie, Ill. A. H. Binnquist.

SELL or swap: Mobile rig, Gonset G-77 and G-66 B/with pwr. supply and mike, Master Matcher (6) Z match. Charles Burdick, KØEWY, 522 So. 22nd Ave., East, Duluth, Minn.

WANTED: Collins R388-51J, need not be working. K7GNC, 3818 Waller Rd., Tacoma 4, Wash.

HEATHKITS wired, fifty per cent kit price plus postage. Send kit or money for kit. I'll bill assembly charge. Jim Kitzmiller, K8IDV, 715 Birchwood Dr., Willoughby, Ohio.

FOR Sale: Adventurer, in gud condx, with 2 xtals; $35.00. Bob Ensminger, Rt. 1, Box J, Linden, Calif.

VHF Roundup, Oct. 10 is the day you'll find the DX men and the boys you want to meet at the VHF Roundup. You'll have a full day of never-to-be-forgotten ham fun and take home prizes as well. Contact W2OQY, 106 Hyland Drive, North Syracuse, N. Y.

SELL: Johnson 6N2, $85; Johnson Adventurer, $35, like new. C. E. Gustafson, W9CAW, Chesterton, Ind.

CENTRAL Electronics SSB exciter 10B, $100; Central Electronics BC458 VFO, $25; Central Electronics SSB Slicer, $40; Full-size wide-spaced 20 meter beam with match, $25; 36 ft. A frame tower, $10; parts for kilowatt linear amplifier including two 813 tubes, $25; parts for kilowatt power supply, $25. W2WWS, 61 Laurel Road, Princeton, N. J.

IF You have a background in electronics, but are having trouble passing commercial FCC phone exams, my 12 years experience as chief instructor of electronics school can help you over the hump. Not a course. Write me personally for free literature. Wallace Cook, 1614Q Morson Rd., Jackson 9, Miss.

SELL: QST's 1950 through 1955. $3.25 per year. You pay shipping. K6VQK, 758 Bay View Ave., Pacific Grove, Calif.

DIL Awards. Official looking gag certificates, "Worked All Neighbors", "World's Biggest Lid", "Radio's Biggest Egotist", "Nothing Ever Works", only 50¢ each postpaid or complete set of four with envelopes for remailing, $2.00. Postpaid. Dil Novelty Co., P.O. Box 156, Ramsey, N. J.

FOR Sale: Johnson Matchbox, $30; 5 el. 10-M wide space Telrex, $100; plate transformer 3KVA pole pot, 110–220 Prl., 6000- 0- 6000 sec., $50. W7SUJ, 213½ E. 6th St., Tempe, Arizona.

SELL: HT-32, $550; DX-100B, $180. Excellent condition. W8KBT, Box 1486, Huntington, W. Va.

SX-100 $195, HT-32A $595, NC-300 $245, NC-183-D $249, HRO-50T1 $249, HRO-60 $385, NC-66 $89, SP-600 540KC-54 MC. $395, BC-794B $159, 75A-1 $249, 75A-4 $595, 51J-3 $575, SX-101 $255, HQ-160 $295. Teletype converters, printers, perforators, etc. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. (Richmond 2-0048) (Store: 60 Spring, Newport, R. I. Fred W1JFF.)

SOUND Camera: Will trade my 16mm 200 ft. Auricon "shoe-box" model *fitted with variable focus viewfinder, noise reduction 24 amplifier*, F 1.5 25mm, F4 75mm, tripod, RCA mike, 12V DC to 115V AC inverter, cost over $2000 current value $700. Want SSB or mobile rig. Will consider other ham gear. Dick, K4UVQ, 203 NE 1st Court, Eau Gallie, Fla.

CRYSTALS Airmailed: Mobile, net, SSB, commercial, etc. FT-243, custom finished, .01%, any kilocycle 3500 to 8600, $1.49, Novice 99¢. All Citizens, .005% overtone FT-243, $2.50, HC-6/U hermetices, $2.95. All marine, .005%, $2.95, specify holder. "SSB Package" June 1958 *QST*, SSB Handbook, mixer sets FT-243, $8.95; HC-6/U sets, $12.95, matched filter sets, $6.90. Airmailing 9¢ per crystal. Crystals? Ask us, we have them all. Crystals since 1933. C-W Crystals, Box 2065, El Monte, Calif.

NAMEPLATES! Hams, Citizens. Brass nameplates 2" x 11/16" x .025". Your call letters. Photoengraved, raised letters with black background, $1.00 each. Three of one call, $1.50; additional 35¢ each. Evert Laboratories, 235 E. Jackson, Lansing 6, Mich.

DELUXE Call letters: engraved polished black phenolic laminated 2½ inch white letters on 3½ x 14 x ¼ in. beveled blank, $1.95 P.P. J. Mudie, W8LWW, 3701 Germaine Ave., Cleveland 9, Ohio.

WANT KWM-1 *with power supplies. Will sacrifice commercial one* KW SSB rig, also other ham gear and guns to trade. W4IWA, 105 Lynnhaven Drive, Hampton, Va.

BE Modern. Use the new Safety-Mike by Mobiliers. Leaves hands free for operating, logging or driving. See ad on page 184. Mobiliers, Box 128, Coshocton, Ohio.

CHICAGOLAND Amateurs! Factory authorized service for Hallicrafters, Hammarlund, National, Globe. Service all amateur equipment to factory standards. Heights Electronics, Inc., 1145 Halsted St., Chicago Heights, Ill. Tel. SKyline 5-4056.

TECH Manuals. Thousands in stock. Send large self-addressed stamped envelope for free listing. Lee Industrial Surplus, 28180 Van Born Rd., Inkster, Michigan.

WANTED: Mechanical filter F455J-05 for 75A4; Collins gear reduction knob; HRO50; for sale: F455B-08, 800 cy. mechanical filter, D. A. Contini, W4YUU, 2086 Thomasville Rd., Tallahassee, Fla.

EXCELLENT Pacemaker for $400 or best offer. Selling because it will not cover MARS. W1HEZ, 7 Kirk, Springvale, Me.

FOR Sale: NQ129X with speaker, $125; 75-watt 80-10 meter 6146 transmitter with VFO, cathode modulator, bug, $50. Both for $160. Edward Westbrook, 226 Lawrence St., New Haven 11, Conn.

RECEIVED — Our last allocation. Two Collins 75A-4s in unopened cartons, serials 5786 and 5788. Will ship upon receipt of cashier's check or money order for $695 each. Moory's Wholesale Radio Co., Box 506, 12th & Jefferson, DeWitt, Arkansas. Phone WH 6-2820.

SELL: GF20A SSB exciter, 458 VFO with deluxe case, QT-1, $200; Drake 1-A SSB receiver, $230; PE-103 dynamotor $10; LM-7 freq. meter, $25; Dzula, W2OJC, 54 Charles St., Clifton, N. J. Tel. PR 9-0639.

FOR Sale: Viking II and VFO (factory-wired) National NC183D revr and spkr. Extra tubes for both, $525. Will deliver to Anchorage or Fairbanks. Tom Clark, KL7BXJ, FAA, Northway, Alaska.

PENTRON tape-recorder repeater. Only 6 months old. With 24 hour clock, remote control and 4 hour cartridges and three 20 minute cartridges. Ideal for sleep-learning or as ordinary tape recorder. $100. W9QXR, 1424 Noyes, Evanston, Ill.

COMPLETE Station, all late equipment, Collins 75A-4 serial 5970, Johnson Viking Kilowatt desk and factory-wired Ranger as driver with push-to-talk. Relays, filters, reflected SWR bridge and MM2 monitor 'scope included, $2000. Sorry, no shipping. Cash and carry deal only. Will accept small commercial low power rig 100-300 watts station as part payment. Madison L. Courtenay, Jr., 388 Howell Ave., Riverhead, L. I., N. Y.

P.P. 813s, all-band final with A.M. modulator, 2 pwr supplies, MB-40-SL grid tuner, coasts at 300W, $150; BC-348-P revr, 115 AC, 15 mtrs, double conversion, $85; Heath AT-1, $17; VF-1, $15; C-D-R TR-4 rotator, 120 ft. 4-conductor cable, $23; whole works plus 15/20 mtr. quad, $270. Will ship. W7VGZ, Bruce Sievers, 214 Hastings Ave., Missoula, Montana.

SELL: DX-100 in excellent condx, $175. NC-125 with speaker, $125. K6JAV, Box 275, Alamo, Calif.

SX-28 gud condx, $95; 200 watt power supply in cabinet, $15; 813 RF amplifier in cabinet, $40.00; B&W TR switch, $12. W3GNG, 104 Quaker Lane, Villanova, Va., Phone LA 5-0447.

FOR Sale: KWS-1, excellent condx, serial No. in 700's. H. T. Cervantes, Mount Kisco, N. Y.

SELLING out: Practically new 75S-1, $410, factory-wired 10A, *QT-1, 4 sets of coils, 458 VFO, $110; new Millen 90651 grid dipper*, $40; B&W TR switch, $8; practically new, $14.50 Dow co-ax relay, $8; unused 4-250A, $20; 20-600 mmfd., 10,000V AC, var. cond. and B&W 850 coil, both $50; many other bargains including new components at little better than half price. Send for list. Atwell, K5QVE, 24 Pine Rd., Maplewood, La.

FOR Sale: Collins 32V-3 transmitter, $425; Collins 75A-1 revr, complete with 1.4, 3.1 Kc mechanical filters and matching speaker, $250. Both units in perfect condx. Richard Roos, W2PNT, 141-48 78th Rd., Flushing 67, L. I., N. Y.

SELLING Mobile equipment: Moved. Now using home station. Elmac AF67, C1050 12 volt; G-66 receiver with 3-way power supply and speaker; relay, whip, cabling, connectors, manuals, $285. Convertible for home station at cost AC for Elmac. Demonstrate deliver 100 miles radius. W9MXI, H. Kennedy, 500 Peshtigo Court, Chicago, Ill.

SELL: 210 w. xmtr in original cartons, factory-wired Globe Scout 680A, LA-1 linear, 80 thru 6 meters, speech clipper and power divider. Knight VFO and Heath SWR meter. First $225.00 takes all. K4PTC, 930 Windsor Ave., S.W. Roanoke, Va.

SSB-A M-Central 10-A, coils for 80, 40, 20, 15; deluxe 458 VFO, complete, $130; bandswitching linear amplifier 1 KW P.E.P. with pair 4X150A's in 4 ft. matching rack, complete with power supply, $150. Also 807 125 watt modulator for rack mounting, $30. All in excellent condition. Robert Witten, Trenton, Missouri.

SELL Viking Valiant, factory-wired, excellent condition throughout, $315. Heathkits: GD-1B, $15; AM-1, $8; Gonset mobile noise-clipper, $5. Must raise school money. Dan Francomano, K4TMK, Madison College, Madison, Tenn.

SELL: Johnson 6N2 transmitter, factory-wired, like new, in perf. condx. Best offer over $100. You pay shipping. W. Carr, 505 South Main St., Geneva, N. Y.

FOR Sale or trade for mobile rig: NC-300 speaker, calibrator, Globe-Chief 90 with Drake filter, WRL VFO (755), Signal Sentry. All for $300 or trade. Thomas Dalton, K2QCP, Box 95, Hackettstown, N. J.

FOR Sale: 810 Class B modulator, $50; power supply, output 2000 volts–500 Ma. out, of filter, $70; 77 ft. rack with castors, like new, $35. Landfield, 821 Waveland Rd., Lake Forest, Ill.

SACRIFICE! Like-new Collins KWS-1 and supply; 75A-4 receiver, Serial 3547 and spkr, complete station, in original carton, money-back guarantee. Both for $1695. Will ship upon receipt of cashier's check or money order. Transmitter separate, $1150. Ed Moory, W5BDR, Box 506, DeWitt, Ark.

FOR Sale: Vy clean HQ129X for $140.00. Lysco 600 xmtr VFO controlled, 160 thru 10 meters, 40 watts input. $75; 200-watt homebrew final with buffer, self contained Class B modulator and power supply. 5514 triodes in buffer and final. (not TVI proof). $75. Photos available. Charles M. Arwood, W5VZM, 511 Langhum Drive, Forrest City, Ark.

FOR Sale: KWS1 and 75A4 with spkr, $2000; new condition; Johnson *Matchstick, $50.00. Prefer local deal, will consider KWM1 in trade.* Ed Schofield, 30 Lee St., Woodstown, N. J.

HRO60: Gonset 6 and 2 meter VFO; Gonset 6 meter lin. ampfl. Half price. W. J. Futch, RD #3, Wyoming, Penna.

WANTED: Factory-wired Courier linear, Eldico electronic keyer, both in gud condx. Edward Marra, 48 Tower Road, Hingham, Mass.

CLEANING House! HQ110 and spkr, $169.00; Heathkit CA-1, GD-1B and AM-1, $25; Bud LF 601, Reyco coils and B&W CC50, $18. Bob Neuman, K9INK, 233 Hayes, Northlake, Ill.

FOR Sale: Collins, new 75A-4, KWS-1, new hobby (boats). First $1,600 it's yours. W1CPI.

FOR Sale: 75A1, factory reconditioned, with 3.1 Kc mechanical filter, $295; HT32A, $600; model 8020 VFO-Matic, $85; excellent Elmac A54H with 6 volt/675 volt dynamotor, $95; 600-L linear, $350. Collins 310B3, excellent, $175. James W. Craig, 62 N. Huntington, Peru Ind. GRidley 3-9306.

SELL: Collins 75A3 with 3 Kc mechanical filter, 100 Kc calibrator, speaker and vernier dial, $350 complete, f.o.b. New York City. Ed Piller, W2KPQ, 157–32 20th Ave., Whitestone 57, L. I., N. Y.

HEATH AR3, cabinet, QF-1, with manuals, guaranteed. Al Fagenholz, K9JZU, 321 Woodland Ave., Winnetka, Ill.

WANTED: Bunnell sideswiper key. Murdock .001 Headphone stopping condenser. George Applegate, W2IA, RD #1, Oxford, N. J.

FOR Sale: SX-71 receiver with speaker. Condition: fair. $100. Will not ship. Call after 5 PM. Tel. ST 3-2264. J. Ressegiue, 209 Prospect Pl., Brooklyn 38, N. Y.

KWS-1, complete with spare tubes for final, $1200. W2AEV, R. Jones, 111 Hillside Rd., Farmingdale, L. I., N. Y.

YL, General License, seeks position, NYC or vicinity, where office skills can be applied. Write: YL, % P.O. Box 1602, Grand Central Station, New York 17, N. Y.

FIVE Inch oscilloscope and RF analyzer, $33; receiver with Q multiplier, speaker, FLSA, $25; assorted meters, tubes, magazines, send stamp for list. John R. Yurcik, K2EMF, 510 Conklin Place, Linden, N. J.

SHIPPED Free: JT-30, $7; AR-2, $19; BC-348, $21; Vibroplex Original deluxe bug, $15. W5KKB, 443 Centenary, Baton Rouge 8, La.

TWO Beams Workshop Ten, $5.00. Gonset Bantam Twenty, $25. R. H. Baker, K7CCN, 4102 N. 57th Ave., Glendale, Ariz.

NATIONAL NC-125 receiver with matching speaker, $100. Desmond G. Stanton, W0SPF, 1309 Dallas, Wichita 13, Kansas.

THE Directory of Certificates now lists 250 Awards. Still just $2.00. Electronic stencils for any mimeograph mastheads, schematics, logs, forms — anything you can write, draw, type or clip. Samples and details from Bill Clark, W3RPG, 8 Francis Drive, Harrisburg, Penna.

TELREX 20-meter beam. Full size, 4-element model 504. Brand new; $115. Shipped express F.o.b. La Motte, Iowa. W0YLS, Lester Entsinger, Rte #2.

SELL: Viking II with Viking VFO, both gud shape, $250 takes it. Gonna QRO. K0GPX, Gerry Parker, Elk River, Minnesota.

SELL: Complete sets late editions both Sig 5 and navy aviation supply catalogues. Make offer both or singly. W3KA, 10406 Insley St., Silver Spring, Md.

FOR Sale: B&W grid dipper, $30; Morrow MBR-5 receiver with home-made pwr. supply, $135; Elmac AF67 with pwr supply for AC, $155. M. C. Smith, W6GMC, 614 Bradbury Rd., Monrovia, Calif.

50 Ft. tower, 3-element Tri Bander, rotator and power brake. Cleveland area. What do you offer? W8DFQ, Steve Setar, 240 Murwood Dr., Chagrin Falls, Ohio.

SELL: S-85 with Heath Q-multiplier. Gud condx, $95. Lampo, KN3HQB, RD 3, Lititz, Penna.

SELL: 500 watt six ft. cabinet mounted 80-10 meter 813s, with 805 modulators. Companion control unit with BC-221 VFO. Scope modulation indicator and complete rotator mechanism. Variacs, fully metered, protected circuits. Blank chassis in RF deck for VHF section. 100 watt 10-2 meter rig using 829B in Millen RF section, SX-71, NC-125, BC-610 modulation xfrmr, etc. Byron Baird, W5VLR, 3900 Ryan Ave., Ft. Worth, Texas.

WANTED: Collins 1.5 Kc mechanical filter. Will trade or sell 800 cycle Collins mechanical filter. Ray Goodwater, W7JBF, Ritzville, Wash.

COLLINS 51J-4, Hallicrafters S-20R, S-40R, SX-43, S-47, SX-71, S-86, SX-99, SX-100, RMF 84, Elmac PMR6A, BC342N, Hallicrafters HT33, Elmac AF67, Harvey-Wells TBS50, TBS50A, Gonset 2 M Comm. II, Johnson 6N2, DX-100, S875, RTTY conv., Panoramic Radio PR1 Panadapter. All equipment sold as "used". Selectronics, 3185 Bellevue, Toledo, Ohio.

SX-71 and R-46 Speaker for sale, $120. Also Johnson Adventurer and crystals, $40. Will ship. Reynolds, K5JGF, 3529 East 23rd St., Tulsa 14, Okla.

SWAP: $400 scale railroad system, 4 complete trains, many accessories, for SX-100 or the equivalent. Write Mike Robinson, 495 Smoketree, El Centro, Calif.

RANGER: 1½ years old, in excellent condx, wired by engineer, $180. Prefer pick-up deal. Richard L. Walker, Adams Rush St., R3, Peekskill, N. Y.

COLLINS 51-J2 receiver in excellent condition. Rack mount. Will ship, $495. K2UDB, 161 Cresline Drive, Syracuse, N. Y. Tel. HE 7-3151.

SELL: Heath DX-20, only 7 months old, fine condx. Wanted: DX-40. Will trade equipment. James Fox, K9QOO, 2136 Robinerest, Glenview, Ill.

CASH for commercial or surplus transmitters, receivers, test equipment, particularly aviation type Collins, Bendix, ARC, etc. Riteo, Box 156, Annandale, Va.

BEST Offer: 2000 and 600 volt power supplies; General Radio variac; BC459AA VFO with power supply; Weston and Triplett meters; new 4-65A. Arthur Lukach, 35 East 84th St., New York City.

SALE: Complete amateur station consisting TX-1 and SX-101 Mark III, very little used. Observe in operation. No shipping, sry-come and get it. Best offer over $550. K2GCB, New York City, Carl Zimmerman, 2701 Webb Ave.

WRL Globe Chief 90-watt transmitter and modulator. All tubes and manuals included. $49. Will ship collect. James Valace, K1AWS, 18 Taylor Drive, Norwich, Conn.

FELLOW HAMS! Have you any equipment you don't need? Our club needs it. All donations will be greatly appreciated. Fenton Radio Relay League, 200 E. Rockwell, Fenton, Michigan.

THE 22nd Annual Stag Hamfest, sponsored by the Greater Cincinnati Amateur Radio Association, will be held Sunday, 27 September 1959, at Stricker's Grove, Mt. Healthy, Ohio. Admission will be $4.00, all you can eat and/or drink, lunch and supper — buffet style.

SELL Leeco 10 m. ground plane antenna complete with aluminum tubing radials and coax fitting. Pick up. $10. Also, British Short Wave Magazine (Amateur Radio). January 1950 to date. Offers? O'Brien, W2EQS, 48 Prospect, Westwood, N. J.

SELL: Complete operating mobile dream rig: Elmac AF-67, PMR-7, PSR-612, PE-103, mounting racks, S-meter, relay box, antenna, loading coils, auto-trimmer inductor, spring mount, headset and hand mikes, 12 volt battery, all units plug-connected by cables. The first $300.00 local pick-up gets it. W2PQG, 188 Concord Dr., Paramus, N. J.

FOR Sale: R28/ARC 5 revr, cont. tuning 100-156 Mc. New, unconverted, with manual, $50. W2DDB.

GOING Mobile? Good Elmac AF-67, almost new Gonset Super Six converter, Gonset noise limiter with spare tube, recently overhauled, 6 or 12 volt PE-103 dynamotor and solenoid, and push-to-talk carbon microphone. All for $225. W4YOK, Webb, 207 South Alves St., Henderson, Ky.

WANT: a few Giannini Micro-Torque pots, Linear, 2 to 5 K ohm, also Weston mod. 862 type 30 illuminated VU meter. Must be priced right. N. K. Thompson, W1LWV.

SELL: NC-109 for $150 or swap for Gonset Communicator. K2MEM.

FOR Sale: UTC S-40 xfrmr 400/310V DC UTC S-31 choke 6 hys 225 Ma., two oil filled cap 4μfd 600 WVDC, Weston 0-1 Ma. meter. All new. $35. KN4ERU, Box 314, Allendale, S. C.

GLOBE SCOUT 680, low pass filter, RF meter, antenna relay, NC600 Special, all A-1, $125. Wanted: Factory-built Valiant or professionally wired Apache. Must be A-1 and priced right for cash. Allan Murphey, W4JAG, Princeton, Ky.

NEW Gonset G-SB-100 transmitter, $390; Adams 4-411A kilowatt linear $375. Both $750. Collins KWS-1, $1150. Want 328-1. W2BBV.

SELL: Viking Ranger factory-wired, vy gud condx, the first $175 gets it shipped to you C.o.d. Also RME Preselector, $35. K5CVV, B. G. Johnson, 112 West "H" St., North Little Rock, Ark.

FUNDAMENTAL ten meter fone xtals. Guaranteed to oscillate, but cannot guarantee exact frequency. $1.50 each. KØIHH, Fullerton, Nebraska.

WANTED: Ranger. For sale: DX-100 and HQ140X. Dave Goggio, 2671 Barron Rd., Memphis, Tenn.

A REAL Bargain: 500 watt Globe King, model 500B final in 5¼ ft. Par-Metal cabinet on dolly. 300 watt 811As modulator. Final completely shielded and all circuits filtered for TVI suppression. Four power supplies running very conservatively. No TVI at this location. Complete instructions and wiring diagrams. Guaranteed excellent working condition. Will deliver and set up free within 100 miles, otherwise F.o.b. Worcester. My cost was over $600 but first check for $300 buys it. Arthur R. Terrien, 15 Gardner St., Worcester 10, Mass.

FOR Sale: Viking Navigator FW $120.00; complete 500-watt all-band (813) final with AM (811s), speech amplifier, 2000-volt pwr. supply, all auxiliary supplies, all in 42" enclosed cabinet on casters, $130.00, W2ZGB, 178 Colonial Rd., Summit, N. J.

SELL: HQ140X, $150, in exc. condx. W2ZWA, 231 Snowden Lane, Princeton, N. J.

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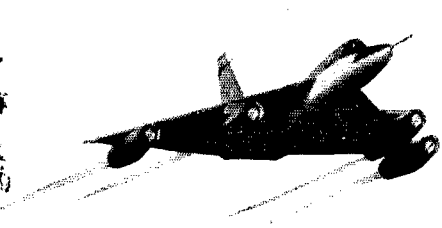

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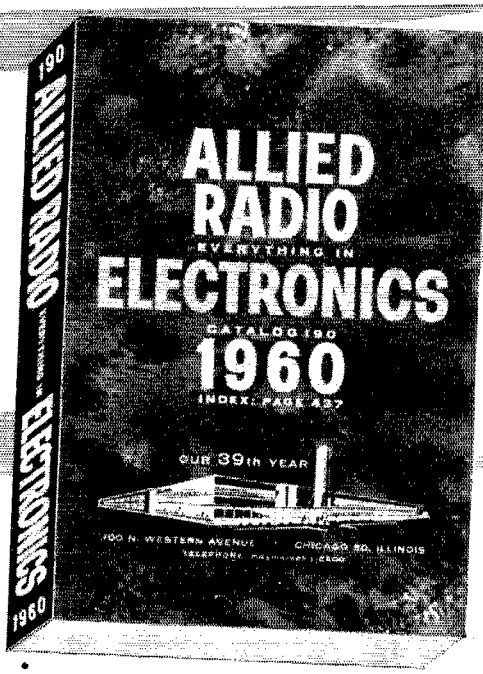

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SEND FOR our lists of top buys in reconditioned Ham gear. We trade BIG, so we always have on hand outstanding buys in fine reconditioned equipment. Ask for our lists.

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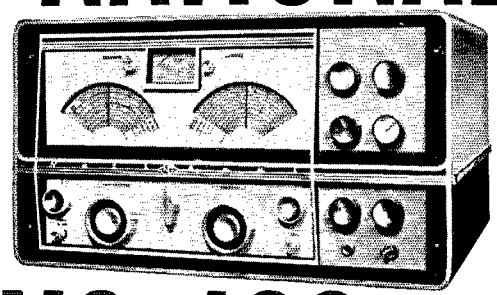

NC-400

The Most Versatile Communications Receiver Ever Designed

The NC-400 is a modern, multiple purpose, general coverage receiver. Tuning range is 540 kc to 31 mc in 7 bands, with dual conversion on all frequencies above 7 mc. Its unique design provides maximum flexibility of operation to satisfy a wide variety of communications requirements.

The NC-400 may be used as a self-contained unit, either manually tuned or crystal controlled on pre-selected frequencies. In addition, external master oscillator provisions make possible use of modern synthesizer techniques for applications where extreme frequency stability is required. It may be operated in space or frequency diversity applications. Provisions are made for interconnection of any required outputs or for feed to external loads or combiners. All frequency determining circuits may be internally or externally controlled. The NC-400 also provides optimum versatility of bandwidth, either through the use of internal IF circuits or the use of optional mechanical filters.

FREQUENCY RANGE:	GENERAL COVERAGE
Band 1	.54— 1.1 MC
Band 2	1.1 — 2.1 MC
Band 3	2.1 — 4.1 MC
Band 4	4.1 — 7.0 MC
Band 5	6.9 —12.2 MC
Band 6	11.8 —20.4 MC
Band 7	19.6 —31.0 MC

NOTE: Bandspread dial provided with 0-100 logging scale and calibrated for 80, 40, 20, 15 and 10 meter amateur bands.

FREQUENCY STABILITY: Long term stability after warm-up — .002%.

SENSITIVITY: 1 microvolt for 10 db signal/noise ratio.

SELECTIVITY: 4, 8 and 16 kc positions provided with 6 tuned circuits. 3.5 kc wide upper and lower sideband positions provided with 14 tuned circuits. 3.5 kc sharp position activates plug-in crystal filter providing 5 additional degrees of selectivity below 3 kc plus phasing notch. Plug-in accessory available which will provide front panel selection of three mechanical filters without modification of receiver. Proper choice of filters will enable selection of bandwidths from 500 cycles to 16 kc, or will enable filter type of sideband selection from front panel.

SSB PROVISIONS: Separate SSB heterodyne detector uses pentagrid converter and separate beat oscillator. Beat oscillator may be crystal controlled. Special "fast-attack-slow release" AGC circuit. Sideband selection accomplished by exclusive, new National passband switching techniques. In the event of commercial-type SSB reception, single sideband mechanical filters may be installed and switched from front panel.

FIXED CHANNEL OPERATION: HF oscillator has 5 crystal sockets for use in fixed channel operation. Channels may be selected by front panel switch. In addition, HF oscillator may be controlled from external master oscillator selected by front panel switch. "S" meter "Tune" position permits rapid tuning of receiver to crystal controlled channel.

DIVERSITY PROVISIONS: Basic receiver may be operated from master oscillator as noted above. An accessory Diversity Modification Kit (NC-400 DMK) allows choice of internal or external control of all oscillators. Rear panel selector provisions make possible use of any receiver either as master control, or slave fed from other oscillator sources. IF, detector and AGC outputs available for feed to external loads or combiners.

POWER REQUIREMENTS: 110-220 volts, 50-60 cycles AC.

MANUFACTURER'S SUGGESTED LIST PRICE: $895.*

OPTIONAL ACCESSORIES:

1. XCU-400 crystal calibrator. Output frequencies of 100 kc and 1 mc.
2. NTS-2 matching speaker.
3. NC-400 DMK diversity modification kit.
4. NC-400 FH mechanical filter housing.

*Manufacturer's suggested list price. Sold only by National Co. Franchised Distributors.

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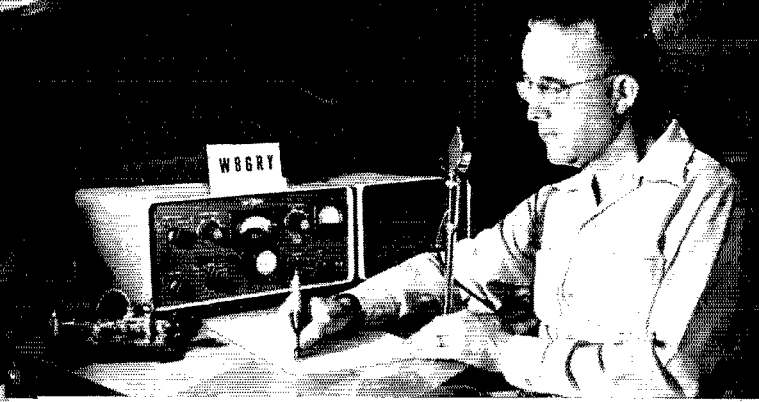

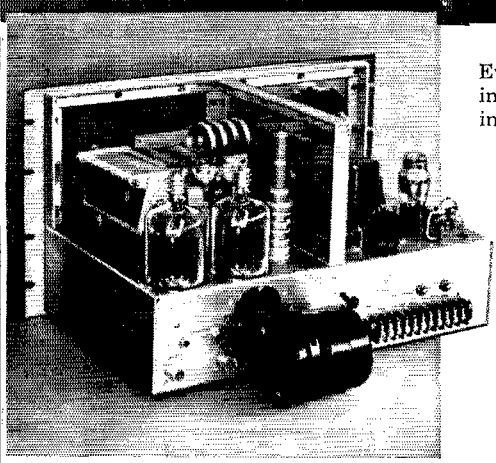

Everywhere you turn these days you see more and more RCA-7094's in high-power equipment. Says W8GRY about his 800-watt linear in QST, July 1959:

"*Here is an 800-watt linear amplifier that takes advantage of the new RCA-7094 beam power tubes. It is about as simple as a two-tube, high-power amplifier can be, since there is no tuned-input circuit, and no neutralization.*"

And QST adds this:

"*Because of its low driving-voltage requirements, the 7094 lends itself well to resistive broad-band circuits. As a result, good stability can be obtained with circuit simplicity.*"

Capable of putting more watts into the load for a given plate-supply voltage than any beam power tube of equivalent power rating, RCA-7094 will handle up to 500 watts on CW—*with a plate voltage of only 1500 volts.* An RCA-5763 drives it to full power output easily.

Your RCA Industrial Tube Distributor can fill your order quickly. For technical data on this high-power type, write RCA Commercial Engineering, Section I-37-M, Harrison, N. J.

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