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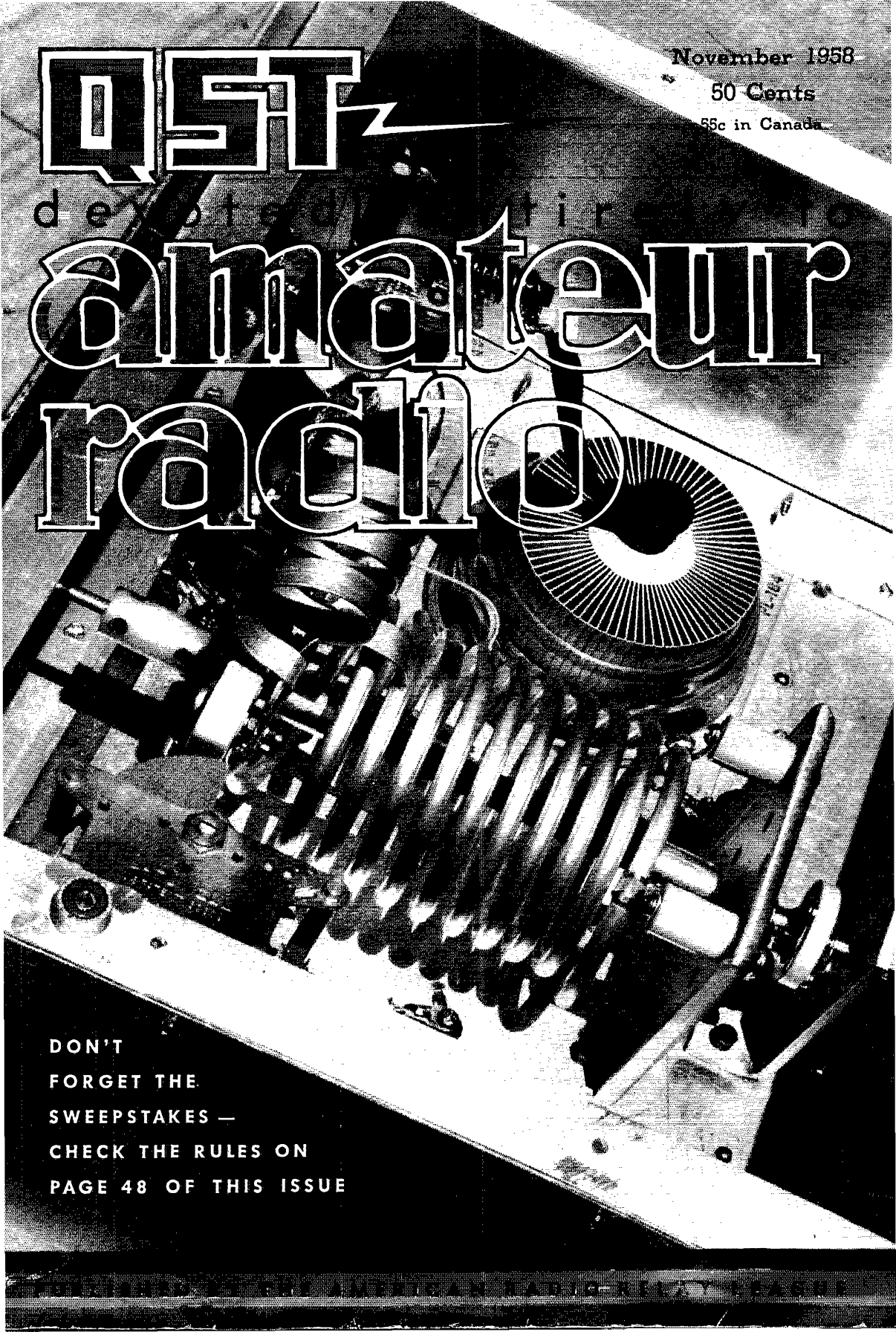

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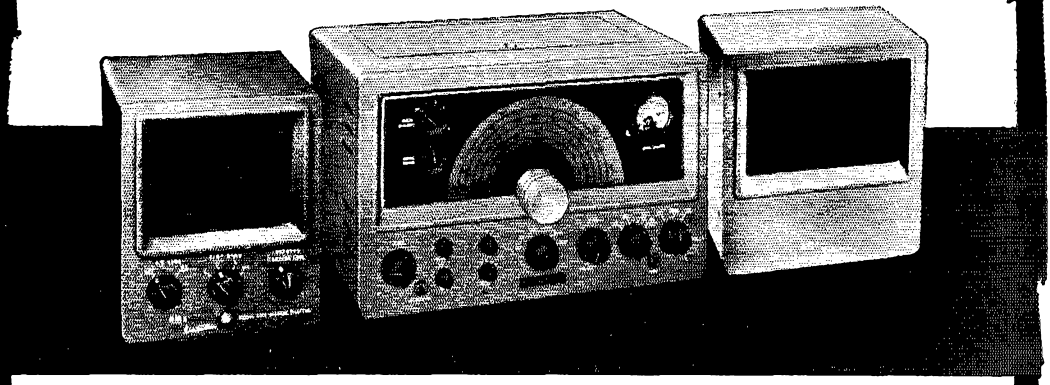

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QST

NOVEMBER 1958

VOLUME XLII • NUMBER 11

PUBLISHED, MONTHLY, AS ITS OFFICIAL ORGAN, BY THE AMERICAN RADIO RELAY LEAGUE, INC., WEST HARTFORD, CONN., U. S. A.; OFFICIAL ORGAN OF THE INTERNATIONAL AMATEUR RADIO UNION

OFFICES

38 La Salle Road
West Hartford 7, Connecticut
TEL.: ADams 6-2535 TWX:HF 88

Subscription rate in United States and Possessions, $4.00 per year, postpaid; $4.25 in the Dominion of Canada, $5.00 in all other countries. Single copies, 50 cents. Foreign remittances should be by International postal or express money order or bank draft negotiable in the U. S. and for an equivalent amount in U. S. funds.

Entered as second-class matter May 29, 1919, at the post office at Hartford, Connecticut, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1102 Act of October 3, 1917, authorized September 9, 1922. Additional entry at Concord, N. H., authorized February 21, 1929, under the Act of February 28, 1925.

INDEXED BY
Applied Science and Technology Index
Library of Congress Catalog Card No.: 21-9421

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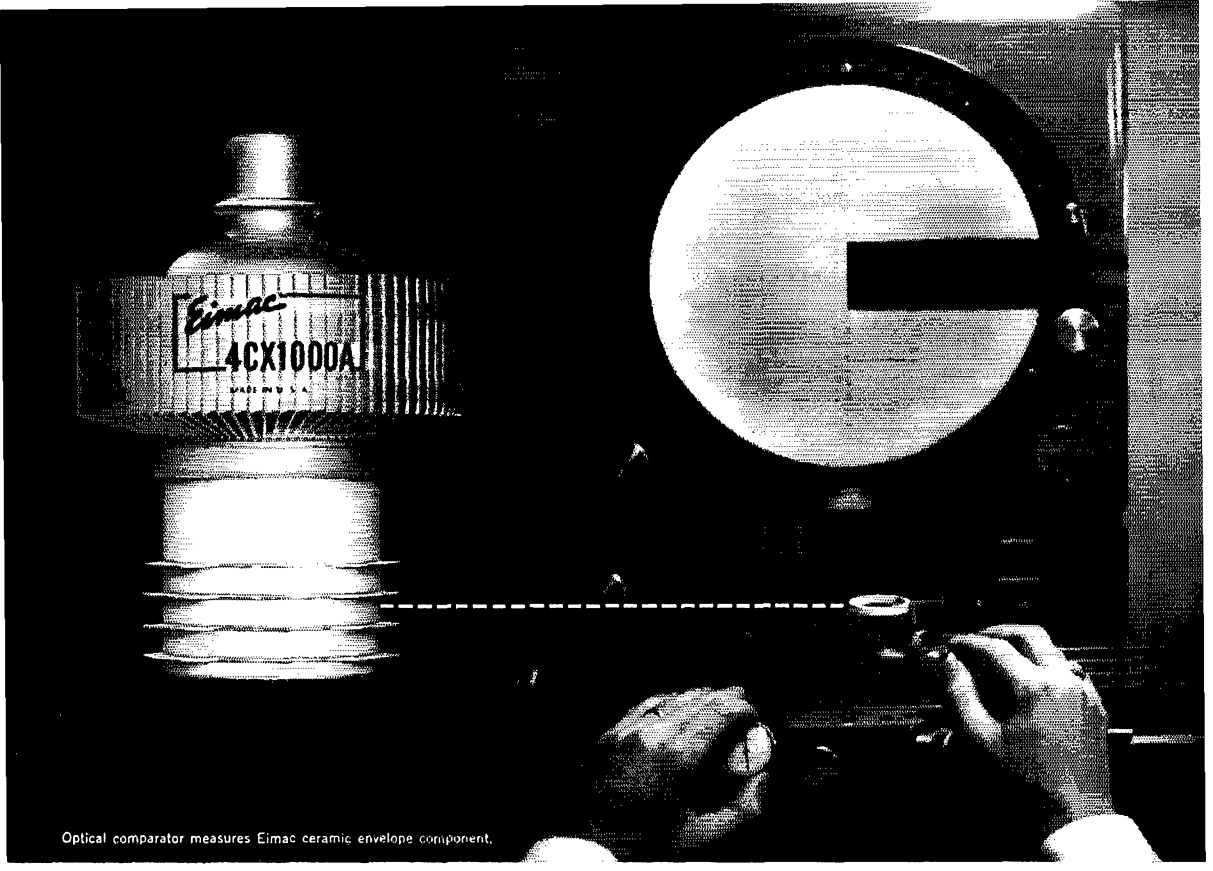

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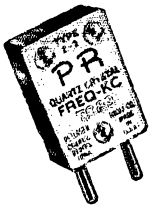

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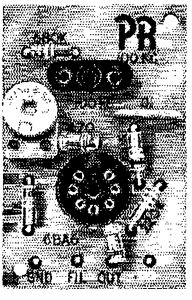

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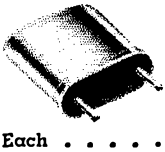

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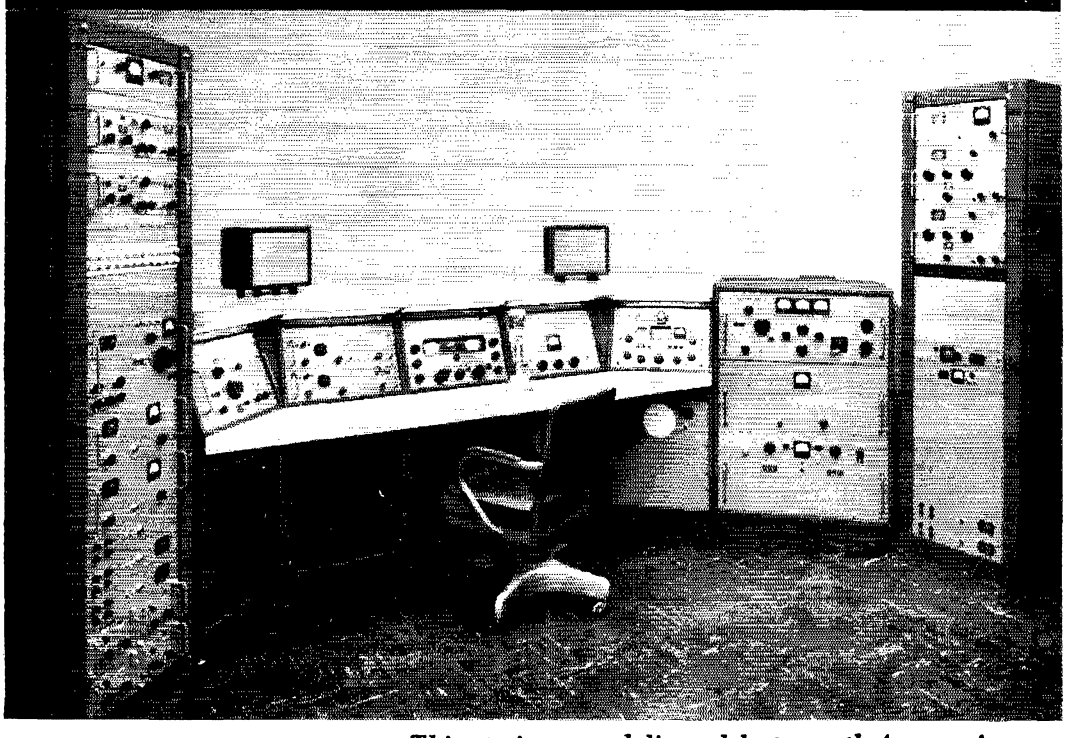

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. 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.

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837 Park Hill Drive, Billings, Mont.

Vice-Director: Howard S. Pyle W7OE
3434 74th Ave., S.E., Mercer Island, Wash.

Pacific Division

HARRY M. ENGWICHT W6HC
770 Chapman, San Jose 26, Calif.

Vice-Director: Ronald G. Martin W6ZF
4212 Berrendo Drive, Sacramento 25, Calif.

Roanoke Division

P. LANIER ANDERSON, JR. W4MWH
428 Maple Lane, Danville, Va.

Vice-Director: Thomas H. Wood W4ANK
1702 N. Rhett Ave., North Charleston, S. C.

Rocky Mountain Division

CLAUDE M. MAER, JR. . . . . WØIC
740 Lafayette St., Denver, Colo.

Vice-Director: Carl L. Smith . . . . . WØBWJ
1070 Locust St., Denver 20, Colo.

Southeastern Division

JAMES P. BORN, JR. W4ZD
25 First Ave., N.E., Atlanta, Ga.

Vice-Director: Thomas M. Moss W4HYW
P.O. Box 644, Municipal Airport Branch,
Atlanta, Ga.

Southwestern Division

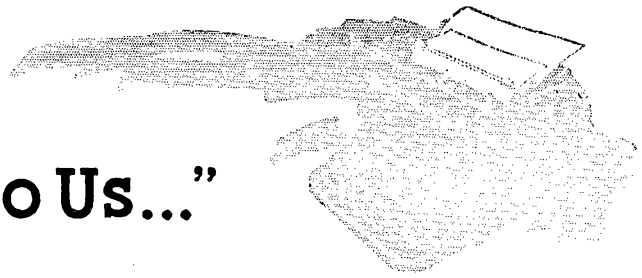
WALTER R. JOOS W6EKM
1315 N. Overhill Drive, Inglewood 3, Calif.

Vice-Director: Virgil Talbott W6GTE
9226 Alexander Ave., South Gate, Calif.

West Gulf Division

GRADY A. PAYNE W5ETA
5103 Linden St., Bellaire, Texas

Vice-Director: Carl C. Drumeller W5EHC
5824 N.W. 58th St., Oklahoma City 12, Okla.



"It Seems to Us..."

BALANCE

What a fascinating hobby ours is! There are activities associated with amateur radio to interest practically everyone; there are ragchewing, traffic-handling, DX-chasing; equipment to be built, wallpaper to be earned, contests to be won; emergency work, experimentation, mobile operation. Most of these come in several "delicious flavors" — a.m., s.s.b., n.f.m., c.w., RTTY; and on h.f., v.h.f., or even on u.h.f.

Hamming attracts all sorts and conditions of men. One out of every thousand Americans is a ham. Hams range in age from 6 to 96, including both sexes. Among our ranks are preachers and teachers, doctors, lawyers, and business men, school kids, housewives, engineers, truck drivers, and "professional loafers."

Hamming stays interesting, too. We might rework a well-known commercial by saying, "We *are* talking while the flavor lasts." There are thousands of hams who have been on the air for twenty years, several hundred who have been at it for forty years!

Is it any wonder, then, that occasionally a few of us go overboard, and lose our perspective toward amateur radio? Such a one is the man whose wife wrote Abigail Van Buren's syndicated advice column: "He would rather talk to a stranger in Syracuse than to me. He spends all his time on this ham radio and I am getting fed up with being ignored. . . ."

More than thirty years ago, Paul M. Segal, ex-9EEA, penned words of wisdom called *The Amateur's Code*, still in use as the frontispiece of *The Radio Amateur's Handbook*, and we hope, in most ham-shacks. Point Five, especially: "The Amateur is Balanced -- Radio is his hobby. He never allows it to interfere with any of the duties he owes to his home, his job, his school, or his community."

The ham who hears the XYL's call to supper, but has to solder one more resistor on the new v.f.o., or waits for one more turn in the round-table, or makes one more try at hooking HV1CN before answering, may inspire another "Dear Abby . . . signed, Ham Radio Widow!"

Even if she isn't inspired to take pen in hand, she undoubtedly has strong feelings on the subject, hardly calculated to improve relations at home. The school-boy who neglects his studies to take more time out than he should to boost his countries list isn't helping his future. And so on. We like to see hams active and enthusiastic about our hobby. But keep that balance, OMs!

"WHAT DO I SAY?"

Perhaps the most widely enjoyed aspect of ham radio is the good, old-fashioned ragchew. Most of us have made RCC a hundred times over. We have no trouble at all finding things to talk about, and at great length, too. But can you remember back to the early days when you were first licensed? Were you somewhat tongue-tied — or should we say "finger-tied?" Can you remember your first real ragchew? It seems the most natural thing in the world to experienced hams, but wasn't it tough at first?

Maybe you're in that stage now. Maybe you're asking: "What do I say?" Or perhaps you're in the next stage: "I like to ragchew, but how can I draw out these '579 — 73' hams?"

Well, in the average QSO, most fellows start off with the standard stuff — signal report, location, name, rig and weather, usually in that order. This dope can be a handle for the development of the conversation. If the other guy is using the same kind of rig, receiver or antenna, then you have a "natural" — you spend the next five or ten minutes comparing notes. But this doesn't happen too often. So what next? The other guy reports that it is raining. You can then chat for a little while about your own soggy weather, or envy him because the drought has wrecked your pansies, as the case may be. Somewhere along the line, drop a hint as to your age, directly if you're under 20, indirectly perhaps if you're older — "I just brought the junior ops back from a picnic." You may well find common ground there. If it turns out you're both teenagers, here's your chance to gripe about your tough English teacher and be assured of a sympathetic audience! If it turns out you're both fathers of bewildering offspring, you're in orbit for the rest of the night! Have you been through the other ham's home town? Tell him so. Do you know someone there? Perhaps you'll discover a mutual friend — and there's a chance for your first crack at amateur message handling! Do you have other

(*Continued on next page*)

hobbies? Most hams do, and have a grand time discussing them on the air. Sports cars, photography, stamps, bird-watching, gardening, spectator sports or active sports all are fine topics. Sing in a choir or chorus? Play a musical instrument? Just come back from a trip, or going on one? Built a home, or bought a car? Going fishing or hunting? Like camping? Boating? Riding? Maybe the other fellow does, too.

Try it out — have a real good rag-chew, and you'll discover just why there are 182,000 of us, and more coming aboard all the time!

Hamfest Calendar

New Jersey — The Jersey City Amateur Radio Club will sponsor a hamfest on Saturday evening, Nov. 22 at 8 P.M., at Greenville Gardens, 128 Danforth Ave., Jersey City. Donation $2.00 per person. For tickets and further info, contact W2ZAL, Dan Umholtz, 392 Armstrong Ave., Jersey City. Phone Henderson 4-2186.

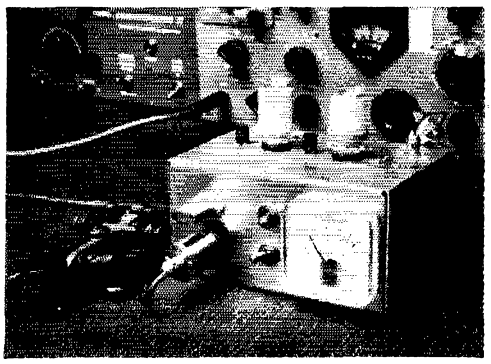
Strays

When K6LMW recently had a few QSOs with a solar-battery-powered rig running 75 milliwatts input, some of the newspaper accounts reported the transmitter power as 75 kilowatts. Someone must have called them on this, however, for they soon corrected the story to read 75 milowatts.

—···—

The Puerto Rico Amateur Radio Club tells us that effective immediately the certificate WPR-50 is discontinued and that the WPR-25 will be the only certificate issued, with stickers thereafter for each additional 25 confirmations submitted.

This is the neat little rig used by W6TNS to Work All Continents. Described in *Popular Electronics* for August, it runs 90 milliwatts input. Transistors, of course. OM Stoner would like skeds with other fellows running very QRP. His greatest DX so far has been with ZS6KD the long way, which figures out to be something like 16,000 miles.



Strays

W3LHG, communications officer of the CAP squadron in York, Pa., reports that a Gonsett II two-meter 12-volt Communicator, serial No. 4511, was stolen from their emergency mobile headquarters unit during the early part of September. He would appreciate hearing from anyone who knows anything about this gear.

—···—

Join-a-radio-club Month is being sponsored by the Chicago Area Amateur Radio Club Council during November. A directory of local radio clubs may be picked up at any of the amateur-radio supply houses in the Chicago area, or a copy may be obtained by sending a self-addressed stamped envelope to Ray Birren, W9MSG, 702 Spring Road, Elmhurst, Ill. The directory lists the clubs, meeting places, dates, officers, and activities of the clubs. There are v.h.f. clubs, mobile clubs, social clubs, and two for YLs (or XYLs) only.

—···—

Game for another coincidence? K2PQS caught an American Airlines flight from Chicago to Buffalo and soon discovered that his seat partner was WØJVB. After they had passed the time of day about ham matters for a few minutes, a fellow across the aisle leaned over and introduced himself as 9G1CT. Perhaps if more of us wore call sign lapel pins or the League emblem we'd have more of these impromptu personal QSOs.

—···—

Our training aids man, W1FGF, says that he has come across the club with what he believes to be the longest name of any on our lists — the Amateur Radio Club of Westmont-Upper Yoder High School. Any challengers?

—···—

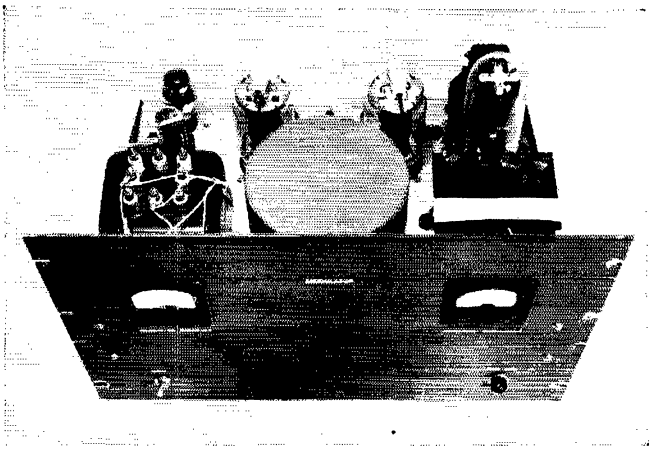
Grand confusion on 75 phone (more than usual, that is!). W1BSS and W1TSS called CQ at the same time on the same frequency.

FEEDBACK

Last month's Bonus Converter for 21 Mc. — under the caption for Fig. 2 on page 34, the line for L_1, L_2, L_3, and L_4 should be changed to read "Made of No. 20 bare, $\frac{5}{8}$-inch diameter, 16 turns per inch. (B&W Miniductor No. 3007).

OUR COVER

Coming up in an early issue is this rig designed, built and operated by W9MC. No professional engineer (he's in the pill business) he nevertheless has built a linear amplifier which is a thing of mechanical beauty and which works real good. It is a one-kw. job using a PL-172 in AB_1, which he drives with an HT-32. It has many interesting features which you will find of interest (in a month or so). Makes a pretty cover too, eh?



Capable of an audio output of 250-300 watts, this 813 modulator contains everything except the high-voltage plate supply. The large iron-cored unit just behind the panel at the left is the splatter choke. The multimatch modulation transformer is in the center, and filament transformers are at the right, along with the 211 regulator tube for the screen supply. The audio input transformer is not visible in this view, but is on the chassis between the two 813s.

Medium- to High-Power Audio From 813s

Modulator Assembly with Screen Regulation and Negative-Peak Clipping

BY C. E. "JOHN" SIMMONS,* W6MDI

813s can supply all the audio power needed for modulating a kilowatt — or they can be operated in a variety of ways at lower power for transmitters in the several-hundred-watts-input class. The modulator described in this article has a number of interesting features, including a simple but effective regulator system for stabilizing the screen voltage.

WHILE pentode modulators are common in transmitters with power input capabilities up to around 200 watts, they are seldom found in amateur transmitters with power inputs much in excess of this. The reasons for this boycott include the difficulty of obtaining the regulated high voltage required for the screen grids, and the possibility of instability because of the high power sensitivity of pentodes and tetrodes. Other objections include possible poor fidelity and the fact that greater care must be exercised in adjustment of load impedance than with triodes.

The prime advantage offered by pentodes and tetrodes in Class AB service is, of course, that the required driving power is low. For example, if a comparison is made of available tubes for a modulator to deliver from 300 to 600 watts of audio power, it will be found that triodes will require from 5 to 10 watts of driving power while pentodes will require 1 watt at most. This results in a considerable saving in speech amplifier output power requirements, and consequently the speech amplifier can be reduced from something in the class of push-pull pentodes or tetrodes (6V6s or 6L6s), and associated power supplies, to something like a single 6AQ5.

Since only a relatively narrow portion of the audio frequency spectrum is required for effective oral communication, wide-band high fidelity is hardly a requirement in the amateur modulator. And with the multimatch modulation transformers commercially available the plate-load matching requirements of pentodes do not appear to be forbidding.

Stable operation of pentode and tetrode amplifiers employed in Class AB audio service may readily be obtained through the incorporation of a few precautionary measures. For example, there is a maximum safe value of control grid-to-grid impedance which should not be exceeded. It is also advisable to incorporate parasitic, or "de-Qing," resistors in series with all grids (except the suppressor grid in the case of pentodes). Of course, it is necessary to keep the plates loaded. Suitable techniques for satisfying these requirements will be presented in detail later.

The matter of regulating the screen voltage, which is usually quite high, is always a problem. The possible solutions include (1) a separate screen supply regulated with VR tubes or an electronic regulator;[1] or (2) a series dropping resistor, with VR tubes;[2] or (3) a series type electronic regulator from the modulator high voltage supply.[3] The first is expensive and

* 15420 Domart Ave., Norwalk, Cal.

[1] Snyder, "1200 Volts Regulated," *CQ*, Nov. 1957, p. 58.
[2] Lee, "Modulated . . . A Pair of 813s," *CQ*, Dec., 1955, p. 40.
[3] For detailed discussion on electronic regulators see *The Radio Amateur's Handbook*, ARRL, power-supply chapter.

would require a considerable amount of space. The second is satisfactory but requires 10 VR-150s, which are costly and require chassis space. The third requires, by comparison, a minimum number of components and will provide the necessary degree of regulation.

One desirable feature to have in an amateur modulator would be a method for extending the positive audio voltage peaks while holding the negative peaks to an absolute maximum.[4,5] These systems permit obtaining more than 100 per cent modulation in the positive direction while not exceeding 100 per cent in the negative direction. The theory of operation and the circuit requirements are fully explained in the references.

Circuit Details

The modulator shown in the photographs was designed to furnish sufficient audio power to modulate a 500-watt input final. The 813s may be operated either Class AB_1 or Class AB_2 simply by adjusting the plate-to-plate load impedance to the proper value and satisfying the drive voltage requirements.[6] In Class AB_1 the tubes will deliver about 260 watts of audio with 1500 volts on their plates, or 335 watts with 2000 volts. The grid-to-grid driving voltage required is 160 volts peak, and the driving power is zero. In Class AB_2 the tubes will deliver 455 watts with 2000 volts applied, or 650 watts with 2500 volts. The driving requirements for 455 watts out are 230 peak grid-to-grid volts at 0.1 watt, and for 650 watts out are 235 peak grid-to-grid volts at 0.35 watt. More detailed information may be obtained from the tube manufacturers.

In Fig. 1 the input circuit, consisting of T_1, R_1, R_2, R_3, and R_4, satisfies the requirements of impedance matching and stabilizing. The grid-to-grid impedance is established at 100,000 ohms by resistors R_1 and R_2; this is a safe value for avoiding oscillation. Input transformer T_1 matches this to the 500-ohm line. If the driving source is coupled through a 500-ohm line there will be no d.c. in the primary winding; however, if the input transformer is connected directly to the driver the d.c. plate current must be considered in the selection of T_1. Resistors R_3 and R_4 are "de-*Qing*" resistors and will aid in preventing parasitic oscillations.

Control-grid bias is obtained from a simple half-wave power supply.[7] The rectifier may be a semiconductor, as shown, or a vacuum tube may be employed with the disadvantages of having to light the filament and find space for the socket on the chassis.

The screen-grid voltage, 750 volts, is obtained from the modulator high-voltage supply and is held constant by a 211 series regulator.[3] The 211 control-grid "reference voltage" is taken from a bleeder network formed by R_{10}-R_{23}, inclusive, with V_6-V_{17}, inclusive. If the modulator high-voltage supply is 2000 volts, about 0.5 ma. will flow through this bleeder and the drop across each NE-2 will be about 54 volts. The total drop, all NE-2s plus the drop across R_{23}, which is provided for minor screen voltage adjustments, will be about 640 volts. This voltage minus the voltage across R_9, which will be about 750 volts, is equal to the bias on the 211. Under these conditions the 211 is operating near its maximum plate voltage. Resistors R_{11} to R_{22} are safety devices. In the event any or all of the NE-2s fail to fire, the bleeder is not opened and the screens of the 813s will still be near the required voltage, although the voltage will no longer be regulated.

Resistors R_5 and R_6 are, like R_3 and R_4, "de-*Qing*" resistors and will help to stabilize the amplifier. Capacitors C_1 and C_2 are further precautions against oscillations, while capacitor C_3 is an audio bypass common to both screens.

The multimatch modulation transformer, a UTC CVM-4, is able to satisfy any combination of impedances likely to be encountered.

Positive peak extension is accomplished through incorporating the system formed by V_5, R_{24}, and M_1, suggested by John Reinartz.[4] The diode V_5 must be capable of withstanding a peak inverse voltage equal to the final plate voltage for 100 per cent positive modulation, and proportionately greater inverse voltages if greater than 100 per cent positive modulation is desired. Also, V_5 must be capable of handling a peak forward current equal to the resistance of R_{24} divided into the difference between the positive peak audio voltage and the final plate voltage. For this modulator a 6AU4 (TV damper) was chosen because it satisfies all the requirements and is available at a reasonable cost. One drawback, which would be eliminated by using high voltage semiconductor diodes, is the problem of lighting the filament. However, using a filament transformer with suitable insulation between its windings seems to be satisfactory.

The value of R_{24} should be equal to one half of the modulating impedance, as explained in the literature,[4] and its power rating should be equal to at least

$$\frac{I^2R}{4}$$

where I is the final plate current (in amperes) and R is the modulating impedance.

Meter M_1 may be calibrated to indicate positive modulation percentage if desired, or it may simply serve as a monitor to show that V_5 is functioning. This modulator uses a Simpson 1-ma. meter shunted as shown, but a meter having a full-scale range somewhat greater than the maximum forward current of V_5 may be used.

A rather important point, which may not be immediately apparent, concerning the positive peak extension circuit, is that the final plate current causes an IR drop in the secondary of T_6, and if the plate of V_5 is tied to the power supply end of the secondary V_5 will be biased in the forward direction. Thus V_5 will conduct whenever the final supply is turned on, placing

[4] Reinartz, "Increased Audio without Splatter," Eitel-McCullough, Inc., San Bruno, Calif.

[5] Allen, "The Ultra Modulation System," *QST*, Oct., 1956, p. 27.

[6] 813 Tube Data Sheet (GE EXT-153B), General Electric Co.

[7] Bias Supplies, *The Radio Amateur's Handbook*, ARRL, power-supply chapter.

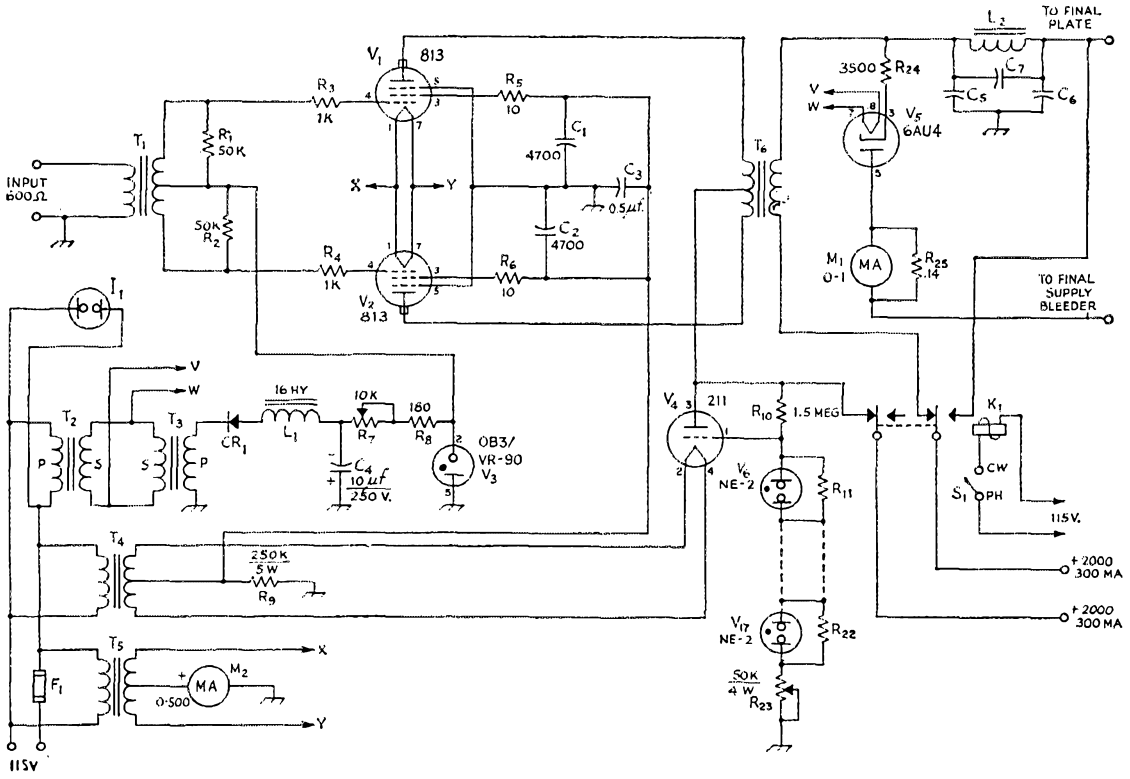


Fig. 1—Circuit diagram of the 813 modulator. Dotted lines between V_6 and V_{17}, and between R_{11} and R_{22}, indicate consecutively numbered components are to be similarly connected.

C_1, C_2—4700 $\mu\mu$f. (or 0.005 μf.), 1000 volts.
C_3—0.5 μf., 1000 volts.
C_4—10-μf., 250-volt electrolytic.
C_5, C_6, C_7—See text.
CR_1—Selenium rectifier, 130 volts, 65 ma. (Federal 1002A).
F_1—3-amp. fuse.
I_1—115-volt pilot lamp.
K_1—D.p.d.t. relay, 115-volt coil (Surplus BC-610 antenna change-over relay or Advance Type AT, 2C/115-VA).
L_1—Filter choke, 16 henrys, 50 ma. (Stancor C-1003).
L_2—Splatter choke, adjustable 0.02 to 1.5 henrys, 300 ma. (Chicago Transformer Co. SR 300).
M_1—0-1 ma. d.c. (see text).
M_2—0-500 ma. d.c.
R_1, R_2—50,000 ohms, ½ watt, 5 per cent tolerance.
R_3, R_4—1000 ohms, ½ watt.
R_5, R_6—10 ohms, ½ watt.
R_7—10,000-ohm 4-watt potentiometer.
R_8—180 ohms, ½ watt.
R_9—0.25 megohm, 5 watts (may be made up of lower-resistance units in series.)
R_{10}—1.5 megohms, 1500 volts; see text (Continental Carbon "Nobleloy" X5, 5 watts).
R_{11} to R_{22}—0.12 megohms, ½ watt.
R_{23}—50,000-ohm 4-watt potentiometer.
R_{24}—3500 ohms, 100–250 watts (see text).
R_{25}—0.14 ohm (meter shunt, see text).
S_1—S.p.s.t. toggle.
T_1—Input transformer, line to p.p. grids, 600 ohms to 100,000 ohms c.t. (Chicago Transformer Company CIS-1).
T_2—Filament transformer, 6.3 volts, 4 amp., 5000-volt insulation (Triad F-53X).
T_3—Filament transformer, 6.3 volts, 1.2 amp., 5000-volt insulation (Stancor P-8190).
T_4—Filament transformer, 10 volts, 4 amp., c.t. (Stancor P-5016).
T_5—Filament transformer, 10 volts, 12 amp., c.t. (Stancor P-5002).
T_6—Modulation transformer, 300 watts, multimatch (UTC CVM-4).

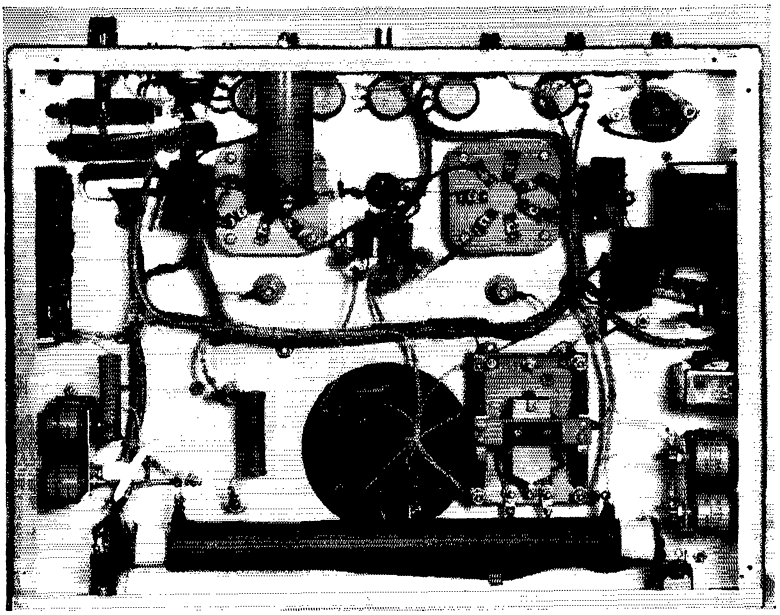
an undesired load on the secondary. The resulting audio power loss may be avoided if the plate of V_5 is returned through the final supply bleeder (which must be equipped with a slider and the slider bypassed for audio) to buck out the IR drop.

The low-pass filter formed by L_2, C_5, C_6 and C_7 is incorporated as a precautionary measure. The values of the components for this circuit depend on the value of the modulating impedance.[8] The manufacturers of commercial splatter chokes usually furnish complete data on the proper values of these components.

Relay K_1 serves the dual purpose of (1) removing high voltage from the 813s and disconnecting the secondary of the modulation transformer for c.w. operation, and (2) providing a spark gap[9] to protect T_6 from excessive secondary voltages. The one chosen for this job is an antenna change-over relay used in some military trans-

[8] High-Level Clipping and Filtering, *The Radio Amateur's Handbook*, ARRL, chapter on speech equipment.

[9] *Reference Data for Radio Engineers*, Fourth Edition, I. T. & T. Corp., spark-gap breakdown voltages, p. 921.



Sockets for the 813s are near the top in this view below the chassis. The phone-c.w. relay is to the right of the cut-out for the modulation transformer at bottom center. The bias supply is on the right-hand chassis wall, and the mounting for the NE-2 string is along the left-hand wall. If proper precautions with respect to voltage and insulation are observed, the layout may be varied to suit the builder's convenience.

mitters such as the BC-610.

Construction

As is evident from the photographs, the parts layout is not critical. The modulator pictured was constructed on a 17 × 13 × 3-inch aluminum chassis. The panel is 19 × 12¼ × ⅛-inch aluminum. The two are assembled together with 10-32 screws and steel mounting brackets. Since this modulator is intended to be suspended in a standard rack, these brackets are very important.

Modulation talk-back caused by mechanical vibration of the chassis may be minimized by using a steel chassis or adding a steel reinforcing plate to the aluminum chassis. Although neither of these precautions was taken with the original modulator, it may be rewarding to consider steps to minimize talk-back caused by mechanical instability.

The parts layout shown is suitable for audio power outputs up to 300 watts. If it is desired to run the 813s to their limits it will be necessary to use higher power level components, and a double chassis arrangement may be required.[10]

A few other precautions may result in a considerable saving in time. First, resistor R_{24} must be well insulated from the chassis. In this unit, cone stand-off insulators of suitable diameter (one inch at the large end) were inserted into each end of the resistor. L-shaped brackets were constructed and the insulators mounted on one arm and the other was then mounted on the chassis. This assembly holds the resistor a safe distance (one inch or so[9]) away from the chassis. The same consideration should be observed in mounting the socket for V_5. In this case a TV high-voltage stand-off type socket assembly was used.

The NE-2s may be mounted in a block of insulation material. The dimensions of this block should be about 3 × 1 × 1½ inches. If ¼-inch holes are drilled in the block so that one NE-2 may be inserted into each hole, the arrangement will serve satisfactorily as a mounting fixture. The NE-2 leads can be attached to terminal strips or a string of stand-off terminals.

Care must be taken in the selection of the wire for the high-voltage circuits. The wire used in this modulator is 19-strand copper with extruded Teflon insulation. This wire is good for well over 10 kv., provided sharp bends are avoided and the wire is not dressed near any sharp metallic (grounded) edges.

Testing

After completion of the wiring and complete continuity testing with the old reliable ohmmeter, the first phase of smoke testing begins. With all tubes except the VR-90 removed from their sockets, it should be safe to apply power to the primaries of transformers T_2, T_3, T_4 and T_5 (a blown line fuse indicates the need for further continuity testing). It is advisable at this point to check all filament voltages and the bias voltage for the 813s.

The next step is to check out the screen voltage regulator. During this test it would be well to have the primary center tap of the modulation transformer disconnected for protection, and the 813s removed from their sockets. Plug in the 211 and apply the modulator high voltage. The NE-2s should glow and the voltage at the center tap of transformer T_4 should be around 750 volts. If it is off by 20 volts or less it should be possible to adjust it to exactly 750 volts with R_{23}. However, if it is off by more than 20 volts it will be necessary to add NE-2s if it is low, or short out NE-2s if it is high. The amount of alteration which will be required will depend on (1) the value of the high voltage, (2) the value of R_{10}, (3) the condi-

[10] 400-watt 813 modulator, *The Radio Handbook*, Editors and Engineers, 13th Edition, p. 531.

tion of the 211, and (4) the condition of the NE-28.

Once the correct voltage has been obtained under no-load conditions, a check at maximum-signal screen current as given by the manufacturer's typical operating conditions should be made. For example, if the rated maximum screen current is 55 ma., a 13,600-ohm resistor (having 50-watt power dissipation ability) connected between ground and the center tap of T_4 will provide the correct load. The regulated output, measured from the center tap of T_4, should be 750 volts plus or minus a few per cent.

With the screen supply functioning satisfactorily, the audio input circuit may be next tested. In all probability it will be this circuit and its associated driver which will cause the most trouble. First, it is advisable that a good audio signal generator and oscilloscope be available for testing these input circuits. Actually, it is only necessary to make certain that the peak grid-to-grid audio voltage is sufficient and not distorted.

Only the secondary circuit of T_6 remains to be tested. The procedure here is first to connect a resistive load, equal to the modulating impedance of the r.f. amplifier, between the "hot" end of the secondary of T_6 and ground. This resistor should be capable of dissipating the expected d.c. power input to the final plus the expected audio output power of the modulator. With the 6AU4 removed from its socket and the lead to the final plate disconnected, the modulator and final high-voltage supplies may be turned on. The total 813 plate and screen current, with no signal input, should be about 50 ma. This current may be adjusted slightly with R_{23}.

By providing a tap near ground on the load resistor for T_6, the wave shape of the output signal may be examined with the aid of an oscilloscope. At this point it may be well to measure the audio output voltage as well as the audio-frequency band pass.

The only remaining circuit to check is the positive peak extender. With the 6AU4 in its socket, and the tap on the final supply bleeder all the way at the high end, meter M_1 should read zero current with no signal input to the amplifier. If the meter shows some current, increase the bias on the 6AU4 by moving the tap toward the ground end on the bleeder resistor. (Shut off power before making any adjustments to this bleeder!)

When a signal is applied to the amplifier, meter M_1 will show some forward current and the wave shape of the output signal will become unsymmetrical, extending further positive than negative. The final adjustment of this circuit must be made on the air.

The only difficulty that was experienced with this modulator was getting the necessary peak grid-to-grid audio driving voltage for AB_2 operation. The original speech amplifier ended up with a 12AU7 section in a cathode-follower circuit, driving a 500-ohm line. However, it was impossible to get the required voltage swing out of this cathode follower without peak limiting. So a 6AQ5 was installed in the speech-amplifier output stage, transformer coupled to the 500-ohm line. Once the speech amplifier was ironed out and conditions at the 813 grids were as recommended by the tube manufacturers, no further difficulties were experienced.

The first few months of operation were without the positive peak extension system because of the driving difficulties outlined previously. The peak extender was installed when the necessary driving voltage was obtained. The resulting increase in the contacts-per-call ratio was rewarding. The modulator has now been on the air on 20 meters for over a year, always receiving above-average quantity and quality reports.

If you plan to go a.m. on medium to high power, give a thought to taking advantage of the high power sensitivity and low cost of the 813!

Strays

If you are looking for great circle maps, here's the information that we have available. From the U. S. Department of Commerce, Coast and Geodetic Survey, you can get:

a) No. 3042, an azimuthal equidistant projection centered on New York City. It is printed in four colors on heavy chart paper. Concentric circles overprinted in red show the 1000-mile distances. The over-all size is 36 × 43 inches, and it is priced at 40¢.

b) Chart ZD-10 is much the same, except that it is centered on 40° north latitude and 100° west longitude (approximately the center of the U. S.). It is 35 × 39 inches and priced at 25¢.

c) A series of world charts 31 × 41 inches in size, priced at 25¢ each, and centered on Thule, Greenland; Fairbanks, Alaska; Point Barrow, Alaska; Kings Bay, Spitzbergen; Tokyo, Japan; Fridtjof, Nansen Land; Southampton Island, Canada; and Aklavik, Northwest Territory.

The following world charts are available from the U. S. Navy Hydrographic Office through the Government Printing Office. These are all approximately 25 × 28 inches, priced as noted:

a) No. 5199, centered on Washington, D. C., 30¢.
b) No. 5199a, centered on San Francisco, 30¢.
c) No. 6700, centered on Fairbanks, Alaska, 40¢.
d) No. 6701, centered on Seattle, 40¢.
e) No. 6702, centered on Honolulu, 40¢.
f) No. 6703, centered on Guam, 40¢.
g) No. 6706, centered on Moscow, 40¢.
h) No. 6707, centered on Adak, Alaska, 40¢.
i) No. 6708, centered on Kodiak, 70¢.
j) No. 6709, centered on Eniwetok, 70¢.

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Field Day results will be in the December issue of *QST*.

Cheap and Simple R.F. Indicators

Some Uses for Flashlight Lamps

BY LEWIS G. McCOY,* W1ICP

Until some genius invents a woofle dust that makes r.f. visible to the naked eye, the next best thing is the common garden variety of dial lamp. This article describes a pair of uses that still find application after several-score years.

If you are just getting started in ham radio and plan to build your own transmitter, from kit or scratch, you'll probably need some auxiliary gear before you're through. These will be instruments or indicators of one kind or another that tell you how the transmitter, or a portion of it, is working. You can of course spend a lot of money for such things, but the intent in this article is to let you off with an outlay of only a few pennies and minutes. However, despite the low cost, the devices can be of invaluable assistance in getting your rig working and in putting a signal on the air.

Your transmitter is designed to generate and amplify a radio frequency (r.f.) signal. The purpose of the various devices described in this article is to show you when r.f. is present in the rig and when it is actually traveling up the feed line to the antenna.

Tune-Up Indicator

The use of flashlight or dial lamps as r.f. indicating devices is almost as old as amateur radio itself. Probably the first such device was a "tune-up loop." This consists of a single loop of wire with a flashlight lamp connected in series with the wire. Such a unit is shown in Fig. 1. When the loop of wire is brought near a transmitter coil through which r.f. is flowing, some of the r.f. is induced into the loop. If the r.f. is sufficient, the filament in the lamp will light up. Thus, we have a simple r.f. indicator.

* Technical Assistant, *QST*.

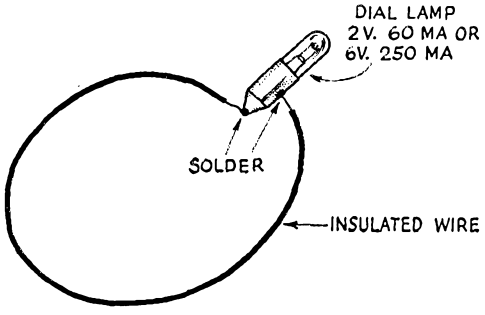


Fig. 1—The Tune-Up Loop. Wire of any variety can be used as long as it is insulated and rigid enough to hold the loop shape. Loop diameter is not critical and can be that of the coils to be checked.

As you know, or will find out when you build your first transmitter, there are coil-capacitor combinations, or "tuned circuits," in the rig. If the tune-up loop is coupled to such a circuit the lamp will light only when the circuit is in resonance. One can quickly see that such a device will be a very handy tool to have when building or testing a transmitter. This should not be confused with a wavemeter that shows the frequency of the r.f. in a circuit. A wavemeter is a more complicated device.[1] However, the tune-up loop is a valuable aid to show you when a circuit is "in tune."

If a continuous check of a circuit is desired, such as monitoring the grid drive to an amplifier, the tune-up loop can be mounted permanently near the coil to be checked. The dial lamp can be mounted in a half-inch diameter rubber grommet which can be installed on the chassis or panel front. Two leads of wire connect the lamp to the coil.

When checking *any* stage one should be careful not to couple too tightly or the bulb may burn out. For very low-powered stages, such as multiplier circuits at v.h.f., a 2-volt 60-milliampere type (pink bead) bulb may be used. This size of lamp is ideal for checking circuits containing small amounts of r.f. For higher power, use a 6-volt 250-ma. bulb (white bead).

Notice in Fig. 1 that the wire ends are soldered directly to the side and base of the lamp. If the user desires, the wires can be connected to a dial lamp socket, but this is only frosting on the cake. Use a stiff wire for the loop, one that will hold its shape. The wire should be insulated. For checking circuits in a transmitter where dangerous voltages are present (which means practically all transmitters!), it is a good idea to mount the loop on an insulated rod. A short length of wooden dowel rod will do. This will help you to keep your hand away from "hot" circuits.

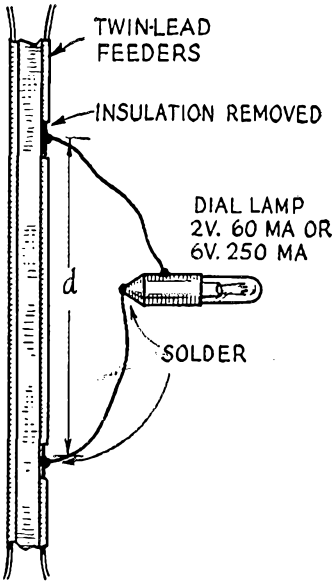
Output Indicators

Another excellent use for dial lamps is as output indicators. One of the problems that beginners have trouble with is that of getting power from the rig to the antenna. And, what is just as important for peace of mind, knowing that r.f. is flowing up the feedline to the antenna.

The drawing at Fig. 2 shows one method of coupling a dial lamp to the feedline. When r.f. flows up the feedline a certain amount of the power is shunted through the dial lamp, causing

[1] McCoy, "A Novice Band Checker," *QST*, July, 1958.

Fig. 2—The Output Indicator. The distance *d* will depend upon the available power and the amateur band. Low power and low-frequency operation will require a greater length *d* than will high power and a high frequency. Where a tuned line is used (high s.w.r.), the position on the line (high-voltage or high-current point) will also influence the proper *d*. A greater length is required at a high-voltage point than at a high-current point. By using a distance *d* of 1 foot for the first attempt, and slowly loading the transmitter (to avoid burning out the bulb), you can tell if *d* should be increased or decreased.



it to light. If you think about it for a moment you'll realize that the brighter the light becomes, the more power you're putting into the antenna.

As we mentioned with the tune-up loop, you must be careful not to burn out the lamp. In other words, "creep up" on your adjustments of the transmitter and antenna coupler. If you find that the lamp is getting too bright, tap across less of the feedline. A little experimentation will show you the optimum setting for the available power. The indicator consumes such a small amount of energy that it can remain connected to the feeders, providing a continuous output indicator.

This method of coupling the indicator can be used on nearly all types of feedlines. For coax, the writer described a simple indicator in a previous issue of *QST*.[2]

As mentioned earlier, these gadgets cost only pennies and take only minutes to build, but they are valuable tools to the user.

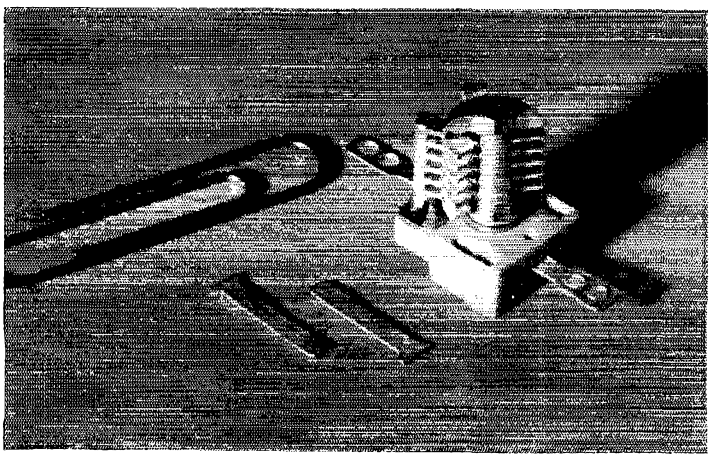
[2] McCoy, "A Very Simple Output Indicator," *QST*, Aug., 1956.

• New Apparatus

Johnson Type U Variable Capacitors

A NEW subminiature variable capacitor recently introduced by the E. F. Johnson Company requires less than two-tenths of an inch for chassis or panel mounting space, making it the smallest variable capacitor for its range yet produced in quantity. It is available in two plate spacings, with breakdown voltages of 850 and 1300 volts.

Six models are supplied in the 0.01-inch air gap, with maximum capacitances from 3.5 to 13 $\mu\mu$f. The 0.016-inch air-gap type has maximum capacitances of 4.1, 6.7 and 8.9 $\mu\mu$f. Structurally they are of interest, in that the rotor and stator assemblies are precision machined from individual blocks of brass, rather than assembled from small parts in a complicated soldering operation. The end plate of the rotor is left about three times the thickness of the inner plates, thus giving the completed capacitor a considerable resistance to plate misalignment through handling.



Mounting of the capacitor is done with "loctabs," small fingers of silver-plated brass. These are run through the mounting surface (No. 44 drill), bent over flat, and then soldered together. Adjustment of the capacitor is done by means of a machined slot in the end rotor plate. Exceptional uniformity, mechanical stability and low cost are claimed for the new capacitor. — *E. P. T.*

Some Notes on Power-Supply Construction

If you've been in ham radio long enough you've probably learned, the hard way, to appreciate some of the points brought out in this article. (At that, there may be a few you've missed.) Beginners, though, needn't make the same mistakes — provided they absorb the ideas presented here.

BY DAVID T. GEISER,* WA2ANU

BUILDING power supplies is perhaps the simplest construction in the field of radio. However, while components are few in number, the considerations that go into the best design of a power supply often can be complicated. Such complexities are the subjects of other articles; this paper only deals with some simple steps that make the layout and construction of power supplies more understandable and less troublesome.

The Chassis

Power supplies are ordinarily made up of heavy chokes, transformers, and capacitors. This requires, as a first consideration, that the chassis be strong. Strength in a chassis can be achieved either through use of strong material or careful bracing, or by both in combination. The amateur usually must rely on the chassis and other cabinet hardware available through the radio distributor, for most amateurs do not have sheet metal shops of their own nor are they close to shops that can do an economical job of radio metal work.

The strongest chassis material commonly available is sheet steel, although this material is hard to work unless a fair supply of punches and special tools is available. However, the purchase of a heavy-gauge steel chassis is no guarantee that power-supply components will be adequately supported, because rectangular chassis in themselves have relatively little strength even if welded. A base plate should always be purchased with the chassis, since a tightly-screwed-on base plate always strengthens a chassis.

Chassis have an electrical effect on the operation of a power supply. Steel is magnetic and all metals will conduct electricity; both features may affect the life of the power supply or its ripple output. These factors are considered later in the section on layout.

No really good protective finishes are available for purchased common chassis. Electro-zinc on steel, and various surface finishes for aluminum,

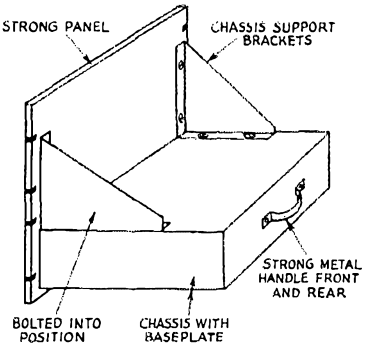


Fig. 1—Two features not often given much thought are the use of a base-plate for strengthening the chassis and the installation of handles, front and rear, for carrying heavy units. The triangular brackets shown can be replaced by types that bolt to the sides of the chassis if desired.

are not very good protection because the finishes that offer the best protection are very poor electrical conductors. For example, an enameled finish has to be pierced before a chassis ground can be made, and there is then no protection against rust or corrosion at that point. Similarly, any finish that may be soldered is to some extent dissolved by the solder or flux. Hence, only careful handling with clean hands at all stages of construction will result in a virginal finished chassis.[1] Light waxing or wiping with a rag, damp with clean oil, is used occasionally for protection of the top of the chassis (*not* the wiring). Care must be taken to use a lintless rag, because lint will tend to attract moisture later.

Chassis Support

Power supplies are frequently mounted in racks or cabinets by being hung from front panels. The technique of securing the chassis to the panel only by bolts through the front edge of the chassis is rather common, but with a heavy chassis this procedure will twist the panel out of shape if the weight of the chassis is not otherwise supported. The weight at the rear of the chassis acts like a powerful lever with all of its force concentrated on the mounting screws. Chassis support brackets are often required. These attach to the sides or top of the chassis and transfer some of the rear weight to the upper portions of the front panel. Being located, usually, at the panel sides where the panel is supported by the cabinet, brackets greatly reduce the force tending to distort the panel.

Both on initial installation and on later servicing it becomes necessary to handle heavy chassis.

* 202 Genesee, New Hartford, N. Y.

[1] Some finishes, cadmium in particular, are affected by perspiration or natural oil on the fingers. The resulting disfigurement of the finish can be avoided by spraying the chassis with clear lacquer immediately on removing it from its paper wrapping. Screws and nuts will "bite" through the lacquer, particularly if star washers are used, to make electrical contact. Some care must be used to avoid scratching or peeling the lacquer during subsequent handling, but so long as the lacquer covering remains intact the chassis will retain its original finish. — *Ed.*

Accidents and strain are much less likely if handles are installed on both the front panel and on the rear edge of the chassis at the time of building. While plastic handles are decorative and screen door handles are cheap, only wide comfortable metal handles should be used, secured with bolts and nuts. These precautions prevent badly cut hands and scraped knuckles.

First installation of a chassis in a cabinet is important, for the greatest danger to the appearance of the finished product occurs at that time. The best procedure is to work slowly and have help. The first step with any new rack or cabinet should always be to run the panel bolts into their holes, all of them. This locates any faulty threading in the holes in advance of holding the chassis in the air, and makes the proper installation of the bolts easier.

The first panel-mounting bolts should be installed in the two bottom corners of the panel. The weight of the chassis will then tend to swing the panel toward its mounting rather than away from it. If the two top bolts are secured first, it is not only more difficult to install the other mounting bolts but there is also considerable danger that a permanent bend will develop in the panel or rack.

Fastenings

Self-tapping sheet-metal screws should never be used where mechanical strength is important. The holding strength of any screw or bolt is determined by the number of threads engaged and by the diameter of the bolt. Sheet-metal screws rarely have more than two threads, and their holding strength is small. As they must tear the shape of their threads out of the metal to which they are attached, the strength of the metal in which the screw rests is also minimum. It is much better to use machine screws (bolts) with nuts and washers to mount heavy items. Washers distribute the load evenly across the flange of the mounted part and the chassis metal.

Screws of the right diameter for the mounting holes in the components should always be used. This sometimes seems to be an inconvenience, but if the chassis holes (of corresponding size) are accurately drilled the parts will always mount more firmly and there will be less tendency for the mounting bolts to loosen. Screws of the right length are also important for personal safety. Bolts and machine screws are precision parts and do have sharp edges. A bolt just barely long enough to protrude from the tightened nut is best, as cut hands and possible interference with other mounting are avoided.

Use of lock washers or lock nuts is desirable on any power supply. Medium- and high-wattage power transformers frequently vibrate in service. This vibration not only tends to loosen the transformer's own mounting but also has a loosening effect on every other nut on the chassis.

Drilled holes and cutouts in the chassis should always be deburred, not only for safety but also to prevent cutting through the insulation on any wiring that may go through. Even so, while a smoothly deburred hole is no mechanical hazard to wires that pass through it, the possibility that eventual insulation wear will cause breakdown makes use of insulating grommets desirable. If voltages higher than a few hundred volts are being passed through a chassis hole, a feed-through insulator should be used. These insulators keep plenty of air or other insulation between the conductor and the chassis. The usual ceramic types, however, must be handled carefully during installation. As ordinarily purchased, the feed-through comes with two small cork or lead washers whose function is to make an evenly-loaded surface for the mating parts of the insulator. Cardboard or paper washers may be used in a pinch, but in any event soft washers are necessary to prevent cracking the insulators.

Chassis Layout

Physical layout of parts on a chassis depends on the final uses, both mechanical and electrical, of the power supply. If the supply is to be frequently carried, for example, the parts should be placed to give good chassis balance. Conversely, equipment intended for stationary rack use should have the weight crowded as near the front panel as possible.

Electrically, placement of the parts will affect both the hum output or ripple of the power supply and the electrical life of the components. Specifically, the high-temperature components such as tubes and bleeder resistors should be as far as possible from the other parts of the supply to prevent heat from affecting the insulation of the transformers, chokes, and capacitors. The resistance of insulation drops sharply with temperature, and destructive leakage currents may cause shorted insulation.

It is sometimes good to plan initially to shield

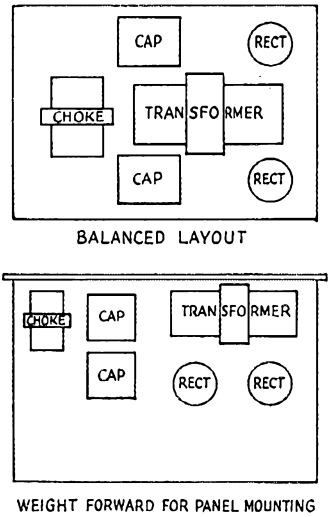


Fig. 2—Layout of components is important in ease of handling the finished product. The balanced layout makes for easier carrying, but the arrangement placing the heavy components near the panel and toward the panel edges is best for a rack- or cabinet-mounted unit.

mercury vapor rectifiers, because this type of rectifier is capable of producing severe radio interference. Even though the shielding may not actually be installed initially, planning for it first will make its installation possible and convenient later.

In the higher-power supplies, often the most practical approach is to locate the power transformer and rectifiers (with their filament transformer) on a separate chassis to give more room and to provide physical separation between the output portions of the circuit and the intense magnetic and electric fields of the input. Steel chassis carry magnetic flux, and sometimes there just isn't enough layout flexibility in a single chassis to prevent magnetic coupling between the transformers and chokes. If separate chassis are used, it is often advisable to hold them together with nonmagnetic brackets. Incidentally, there is no reason particularly to make separate chassis the same size, and considerable cost savings may result from the use of minimum-size chassis.

If all the power supply components are to be on a single chassis, it is often desirable to position the chokes, either in location or in orientation, for minimum magnetic coupling to the transformers. This may be done with the transformers alone bolted down and energized (with no other part of the circuit connected, and transformer high-voltage terminals covered with heavy insulation) while moving the filter chokes around on the chassis to find the position of minimum hum pickup. This pickup can be checked by connecting the chokes to headphones.

Power-Supply Circuits and Components

Conventional amateur supplies use either full-wave center-tap or full-wave bridge rectification. It is not safe to use just any power transformer for full-wave bridge operation, for many center-tapped power transformers were designed to be operated with the center tap grounded. Since the bridge rectifier connection does not ground the center tap, high voltage not anticipated in the transformer design appears at this point. Corona may start and the winding may short to the frame. (This has happened to the writer.) For the same reason, the filter choke should not be in the center-tap return of a full-wave center-tap rectifier unless it is known that the transformer is insulated to stand such service.

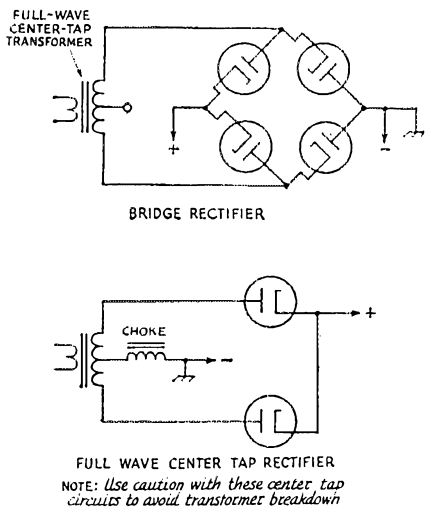


Fig. 3—Sometimes the transformer center tap may not be properly insulated for these commonly-used circuit arrangements.

Use of a filter choke in the center tap of the high voltage transformer also gives slightly less filtering than when placed in the common connection to the rectifiers.

Chokes are often considered to have only inductance and direct current ratings. Before construction of a power supply it is often well to take a good look at the insulation rating. A figure three times the desired output voltage is a good sign, but the question is really more fundamental. An a.c. voltage almost equal to the ripple voltage in the output of the rectifier develops across the terminals of the first choke in a choke-input filter. In the case of high-voltage supplies this may be a few thousand volts, and a rating that includes only current and inductance does not necessarily specify a good high-voltage filter choke. In many cases a physically larger choke than anticipated will be required.

This a.c. voltage is in addition to the d.c. voltage on the winding. The sum of both voltages will be applied between the winding and core if the frame of the choke is bolted to the chassis. Mounting the choke on insulators of suitable length and material will eliminate the d.c. voltage requirement, but this procedure is not recommended if there is the least chance that the choke frame can be touched while voltage is present on the supply. Choke insulation is usually rated for the sum of the maximum allowable d.c. and a.c. voltages, plus a safety margin of 500 to 1000 volts.

Resistors also have voltage ratings. Power resistors are usually specified by their maximum wattage, and Ohm's Law tells what maximum voltage may be applied. This rating cannot be used where less than a cubic foot of air surrounds the resistor, for under such conditions the resistor may become hot enough to melt the solder off its terminals. It is therefore advisable to run a power resistor at less than half its power rating (or 70 per cent of its nominal Ohm's Law voltage) if reasonably cool operation is desired. This again requires more space than expected.

Other parts also generate heat, and there should be clear air space around each part, the amount depending on the power that is being handled by that part. Although in chokes and capacitors this power is stored, these components lose some of the energy stored in them as heat also. To get the greatest possible cooling, as well as mounting flexibility, it often helps to use a few smaller chokes or capacitors rather than a single unit where a single unit is called for.

On the other hand, use of several small transformers instead of a single unit is not recommended. With a bridge rectifier it may be done

without any penalty except possible insulation breakdown, but the use of two series transformers rather than a single center-tapped transformer in the full-wave center-tap rectifier connection can heavily overload the transformers because each then sees a half-wave load.

Insulation Problems

Power supplies are plagued by problems of insulation within the parts, between wiring, and of safety of operation. The hundreds of wraps of insulated foil in paper capacitors and the thousands of turns of wire in chokes and transformers are each natural moisture traps, as are the turns of wire in a bleeder resistor. Frequent use (with accompanying heat generation) is probably the best protection for transformers, chokes, and resistors. Fortunately, all modern filter capacitors are sealed.

Wiring flashovers in low-voltage power supplies are quite infrequent because of a phenomenon in physics known as Paschen's Law. This law basically states that below about 300 volts there is no possibility of voltage flashover in air. Above this voltage, however, some combination of air pressure and spacing between conductors will always permit flashover. For this reason, high-voltage conductors should be well spaced from all other conductors and the chassis. Half an inch is a reasonable minimum distance.

While this comforting law takes care of the problem of flashover in air, another kind of breakdown can and does occur. This is surface flashover. The accumulation of dust plus moisture will form a conducting path across any insulating surface, no matter how long the path is. The design of ribbed insulators is only the result of effort to create the longest practical path in the smallest space. Terminal strips and military connectors have similar barriers to lengthen "creepage" paths to minimize chance of flashover. Blowing the dust out of a power supply is a reasonable way to lengthen power-supply life.

Automobile ignition wire is often considered for the high-voltage wiring of power supplies. While it does have good high-voltage characteristics, it is often made of iron or other high-resistance material and should never be used in the filament circuits of the rectifier tubes because it will usually cut filament voltage to the danger point. Wire used for filament connections should be copper of ample cross section for very low voltage drop.[2] If its insulation does not appear to be adequate in itself either insulate it by means of stand-offs or run it through high-voltage flexible tubing.

Insulation for safety of operation is terribly difficult, for no one can completely eliminate danger in a design. The best rule is to put all wiring behind locked doors which, on unlocking, automatically short out every power-supply input and output. Other procedures sometimes help, such as thorough water-pipe grounding of all chassis, finger-guards over each section (particularly to keep little fingers out), plugs for interconnections (no terminal strips), and "hot" plugs with only female connections. Remote switching should be done only with low-voltage one-sided grounded relay circuits. Most important, *no circuit should be trusted*

[2] Transformers without wire leads may deliver slightly more than normal filament voltage to allow a small drop in the connections to the socket and in the socket itself. Filament transformers with wire leads usually deliver rated voltage and current at the ends of the leads, and shortening the leads possibly may raise the filament voltage excessively.

Strays

KN1HWG reports that death can result from inhaling flourine compounds which can be released from even small pieces of Teflon if they are heated about 400 degrees Fahrenheit. He suggests that if you smoke be sure to remove all Teflon scraps from your hands and clothing and that you dispose of Teflon scraps very carefully. Finally, do not overheat Teflon.

Here's another operating position, this one having been put together by W7FSR and W7FJR. From top to bottom: fluorescent lighting panel, 24-hour digital clock, hi-fi audio mixer and preamp, VU meter, SX-100, DX-100, table top, tape deck, and loudspeaker at the very bottom. The whole structure may be broken in two at the middle for easier shipment. The framework is 2 X 4, with birch paneling. It is mounted on casters, weighs 400 lbs, but occupies only a 30-inch square floor space.

Recommended Tube Types for Amateur Short-Wave Receivers

BY LEE AURICK,* W2QEX, AND PAUL BOIVIN,* W1ZXA-K2SKK

Every so often a bewildered ham comes up with the plaint, "Please have your authors explain why a certain type of tube was picked for a particular job when a half dozen other types have almost the same characteristics — and have actually been used by someone else to perform the identical function. Why *is a particular type chosen over others? Why wouldn't another choice have been equally as good for the purpose?"*

Digging for answers unearths some interesting ones: The type used happened to be on the stockroom shelf. It was the only type available, out of several alternatives, at the local radio store. It was a few cents cheaper than a similar type. It was a newer type than some of the others. The socket connections happened to be a bit more convenient for wiring in the chosen layout. The author had been using that type for the past twenty years and had grown fond of it. And so on.

In the thought that there might be some good reasons for concentrating on a few types — or rather, a lack of really compelling reasons for not *sticking to a comparatively small number of types — we asked a leading tube manufacturer what would be gained or lost by such "standardization." Here is the answer. The intention is not to straight-jacket experimentation or development, but to orient design along lines that will demand a good reason for using a tube not included in the high-volume types that, in the long run, mean greater reliability, availability, and economy.*

HAVE YOU ever wondered why there are so many tube types from which to choose when you're looking for a tube to fill a particular job? If you have, then you also may have reasoned that the number of types available suggests duplication of purpose and application. Without attempting to apologize for this situation, the writers believe that the long-suffering amateur at least deserves an explanation.

Although many of the tubes that have found their way into general use in amateur equipment are nearly identical in design, there are significant differences between them which require that each be identified by a distinguishing type number. When a "conventional" tube is altered to meet special requirements, it ceases to be "conventional" and must be distinguished by a new type number, despite the minor extent, from the ham viewpoint, to which the electrical characteristics may have been changed. The reason for this procedure is obvious. It affords each of us the protection and assurance that a replacement tube will function, within narrow design limitations, exactly like its predecessor.

The need to satisfy many different though related design problems has resulted in the development of entire families of tubes, each type differing from its prototype in one or more significant but not always obvious aspects. At last count (who's counting?), nearly 2000 receiving-type tubes were generally available to amateurs, and the number is increasing.

As a result, it must be admitted that this situation leaves the "do-it-yourself" amateur wondering which tube will perform best in any given application and, incidentally, remain relatively immune to obsolescence.

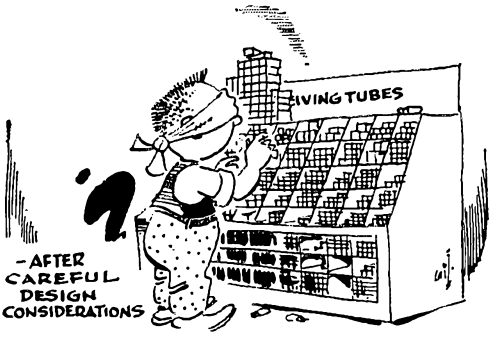
Since 1940, RCA has published a chart for radio and television receiver manufacturers indicating *RCA Preferred Tube Types*.[1] This preferred list indicates those types that are in volume production and high demand because of their technical merit and which, therefore, are readily available and have a much better than average chance of being available for an extended period of time.

It is our thought that a similar chart prepared for amateurs would be of help to those hardy souls who "roll their own" in receiver or, for that matter, in any amateur application in which receiving-type tubes might be used. Accordingly, we have prepared a list of "recommended types" for amateur short-wave receivers.

The types contained in this list benefit by the economies that result from mass production and concentration on those tests which apply to the particular applications for which the tube is intended. For example, the 6AV6 is similar to the 6AT6 and may be used to replace it in some applications. The difference between the two types is that the control grid of the 6AV6 provides a higher amplification factor ($\mu = 100$)

* Electron Tube Division, Radio Corporation of America, Harrison, N. J.

[1] Ref. inside back cover, *RCA Receiving Tube Manual RC-18.*



than that of the 6AT6 (μ = 70). This difference in gain will not be noticeable in many practical circuits. The 6AV6 is the "recommended" type because it is in greater demand than the 6AT6, is produced in higher volume, and also costs less.

Before the composition of the list is discussed, something should be said about the fact that no glass or metal octal types other than rectifiers are included. This omission may come as a shock to some of the old-timers in ham radio. Well, none of us is getting any younger either, and these worthy veterans have been replaced by space-saving 7- and 9-pin miniatures, often with improved electrical performance. As a result, the demand for octal types is diminishing each year except for applications requiring unusually high plate dissipation. However, some caution must be exercised in replacing metal and octal types directly with miniature tubes having a similar design. They can be directly interchanged only when plate and transfer characteristics are identical. In most instances where differences in tube characteristics do exist, they are slight and require only minor changes of value in the associated circuit (i.e., grid resistor, by-pass capacitor, and plate resistor).

Composition of Chart

Four receiving types are suggested for use in i.f. and r.f. amplifier and a.v.c. amplifier applications. The three pentodes provide a choice of sharp, semi-remote, or remote cutoff control-grid characteristics. The choice between these three depends on the designer's provisions for a.v.c. and gain requirements. The 6BZ7 twin-triode is included for v.h.f. and u.h.f. (6 meters and down) receiver applications.

For receiver local oscillators and mixers at frequencies up to 30 megacycles, the 6BE6, high-volume pentagrid converter, is recommended for all amateur receivers. It can be used by itself, or in conjunction with a separate oscillator which utilizes the 6C4 triode. At frequencies above 30 megacycles, the 6U8-A triode-pentode is recommended. The triode section is used as the oscillator and the pentode section as the mixer. When separate tubes for the oscillator and mixer are desired, the 6C4 in conjunction with the 6AU6 may be used.

The 6AL5 twin-diode or the two diodes of the 6AV6 are recommended for detector applications. In amplifier, detector, and oscillator applications in which the older types 6J5 and 6SN7GT were used, the 6CG7 twin-triode is recommended. Uses for the 6CG7 include the product detector for single-sideband reception, the new synchronous detector developed just a short time ago, and the more conventional triode detector. The 6CG7 is also highly recommended for use in b.f.o. applications. It can handle a high amount of power and, therefore, has a high degree of reliability.

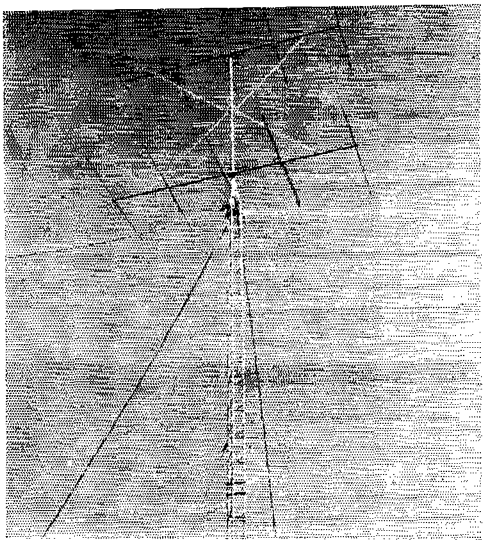
Audio stages usually require triode voltage amplifiers and at least one power pentode to drive a speaker. For the voltage amplifier, the 12AX7 will perform the task, as well as the triode section of the 6AV6. For the driver stage, the 6AQ5-A beam-power tube can be used as a replacement for the 6V6 and, within its ratings, will perform equally as well with regard to power output and distortion.

The remainder of the chart is self-explanatory. In most cases, a choice of tubes has been provided to fulfill a particular receiver function, but the writers fully realize that arguments will arise as to the choice of one tube over another. Each individual has his own idea as to what characteristics he considers best for his receiver design.

(Continued on page 160)

List of Recommended Receiving-Tube Types for Amateur Short-Wave Receivers

Application		*Tube Type*	
Intermediate-frequency amplifiers Radio-frequency amplifiers Automatic volume-control amplifiers		6BZ6 6CB6 6BZ7 6BA6	Semi-remote-cutoff pentode Sharp-cutoff pentode Medium-μ twin triode Remote-cutoff pentode
High-frequency oscillators Mixers Converters		6BE6 6U8-A 6AU6 6C4	Pentagrid converter Medium-μ triode sharp-cutoff pentode Sharp-cutoff pentode Power triode
Detectors (including product and synchronous) Automatic volume controls Noise limiters		6AL5 6CG7	Twin diode Medium-μ twin triode
Audio amplifiers	Voltage	12AX7 6AV6	High-μ twin triode Twin diode high-μ triode
	Power	6AQ5A	Beam power tube
Rectifiers		6X4 5Y3-GT 5U4-GB	Full-wave vacuum rectifiers
Beat-frequency oscillators (262 kc., 455 kc., 50 kc.)		6U8-A 6AU6 6CG7	Medium-μ triode sharp-cutoff pentode Sharp-cutoff pentode Medium-μ twin triode
Voltage regulators		OB2 OA2	(105 volts) (150 volts)
S-meter amplifiers		6CG7	Medium-μ twin triode
Q-multipliers (i.f. stage)		12AX7	High-μ twin triode



A 5-over-5 array for 50 Mc. using the concentric-feed system described by W5LFM. Note that phasing system adds nothing to the wind loading of the array.

Novel Matching System for Single or Stacked Arrays

BY CALVIN R. GRAF,* W5LFM

A Concentric-Feed Yagi

THIS article describes a novel method of feeding the driven element of a Yagi antenna. When used in the manner to be described, it offers advantages not found in the more conventional methods of feed such as the ratio folded dipole, gamma match, delta match, trombone T-quarter-wave coax stub, and half-wave balun. The feed system offers a perfect untuned impedance match, with balanced-to-unbalanced line transformation. It prevents r.f. currents from flowing on the outside of the feed line, and it adds no wind loading. These aims are achieved by inserting a coaxial stub within and concentric with one side of the folded dipole driven element.

The manner of feeding the driven element is shown in Fig. 1. A hole is cut in the center (r.f. ground) point of the folded dipole, and a three-quarter-wave coaxial line is inserted in one half of the element. The center conductor of the coax continues through what would normally be the feed point and connects to the other half of the dipole. The outer insulation of the coax is removed from each end of the stub, so that the outer conductor or braid makes contact with the inside of the tubing at each end of the stub. This system is used by several commercial manufacturers [1,2] in feeding their antennas.

The characteristic impedance of the three-quarter wave stub required to properly match the balanced dipole to 50-ohm coax was determined by measuring the radiation resistance of a 5-element Yagi. The impedance at the balanced terminals of the driven element was found to be 175 ohms. The spacing was 0.25 wavelength from driven element to reflector and 0.2 wavelength between directors. Using the formula for a quarter-wave stub, $Z_0 = \sqrt{Z_1 Z_2}$, where Z_1 is 175 ohms and Z_2 is 50 ohms, the stub should be made of 93-ohm coax. RG-133/U, which is 95-ohm coax, is presently the only line which has all the characteristics required for the concentric feed. This cable is available from only one known manufacturer in the U. S.[3] The requirements are explained below.

At this time a particular problem must be considered. The distance around half a folded dipole is one-half wavelength; i.e., one fourth out to the end and one fourth back to the feed point. We thus have the problem of inserting a three-quarter wave stub inside a half-wave piece of tubing. However, when we consider the velocity of propagation (66 per cent for the coax we are using), we see that a physical half wave length of the coax is really three quarters of a wavelength long electrically: $\frac{0.5}{0.66} = 0.75$. One quarter wave is the stub and the remaining half wave is a repeating transformer with 1 to 1 transformation. The coax line used must satisfy two conditions: it has to have the proper characteristic impedance (in this case 95 ohms) and it must have a propagation factor of .66. If the propagation factor is greater than this, the stub will have to be longer and it will not fit inside the driven element.

There can be no r.f. current flowing on the outside of the feed line because it enters the element at r.f. ground. Any current flowing on the outside of the stub is inside the driven element where it cannot cause any unbalance to ground on the feed line. The Yagi is fed with any 50-ohm coax and the resulting s.w.r. is less than 1.1 to 1 at the

[1] Technical Appliance Corp., Sherburne, N. Y.
[2] All Products Co., Mineral Wells, Texas.

* 207 Addax Drive, San Antonio 1, Texas.
[3] Progress Electronics Co., 296 Broadway, New York 7, N. Y.

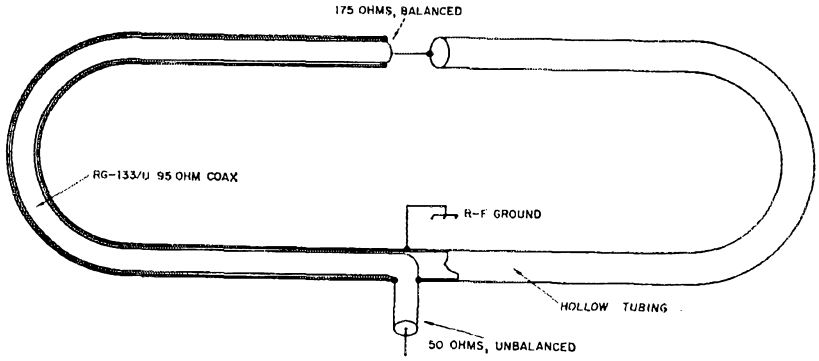


Fig. 1—Concentric feed for the folded dipole in a Yagi array.

design frequency. A standing-wave ratio plot is shown in Fig. 2.

When it is desired to stack two of the Yagis and still maintain 50-ohm feed, the propagation "fudge factor" can be used again to produce a three-quarter-wave stub. When bays are stacked 0.6 wavelength apart, the feed point will be 0.3 wavelength from each antenna plus the 0.2 wavelength from the stacking mast to the driven element. This half-wave physical dimension again becomes three quarters of a wavelength electrically. The 50-ohm feed of each antenna then runs through a three-quarter-wave stub and is transformed up to 100 ohms, if coax of about 75 ohms impedance is used for the phasing line. Two such stubs are then paralleled by the use of a "T" connector and a 50-ohm feed system results. This scheme allows both the single and stacked antennas to be fed with 50-ohm line. If an array of 2 high and 2 wide is desired, it would only be necessary to transform the 50 ohms of each pair of Yagis up to 100 ohms and again parallel the two with a tee down to 50 ohms. The length of line required to do this would depend upon the horizontal spacing between the two vertical stacks.

The coax line required for the stubs (any odd quarter wave) is $\sqrt{50 \times 100}$ or 71 ohms. Both RG-11/U (75 ohms) and RG-59/U (72 ohms) can be used. RG-11/U is to be preferred because of its higher power capability. The s.w.r. of the stacked array is shown in Fig. 2 as a dotted line.

Gain of the single 5-element Yagi is 10 db. and of the stacked array about 13 db. above an isotropic radiator. The array of four would provide a gain of almost 16 db. (That 100 watts would sound like 4 kw.!) Frequency response of the antenna is quite broad. It can be used over 1.5 Mc. with an s.w.r. under 1.5. For an s.w.r. of 2 (mismatch loss will never exceed 0.5 db.) the band width is over 2.5 Mc. for the single Yagi.

This type of feed, since it requires a folded driven element, is practical only at the higher frequencies. A folded dipole at 21 or 14 Mc. would be rather bulky, but for 50 Mc. and higher it really comes into its glory. A word of caution must be given regarding stacking antennas in any manner. For vertical stacking the sides of the dipoles with the concentric coax must be placed on the same side of the stacking mast. Which side of the stacking mast does not matter, so long as they are both on the same side. For horizontal spacing, the same sides of the driven elements must all point in the same direction. Failure to observe this will result in the antenna pattern null in the forward direction. For those interested in direction finding, the above technique could be used with horizontal spacing to provide a sharp null in the azimuth plane.

The neat, clean lines of a commercial five-over-five antenna system using concentric feed are obvious in the photograph.

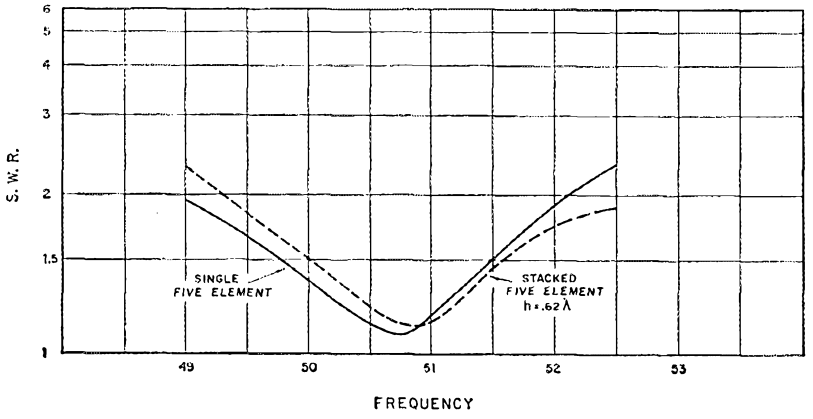
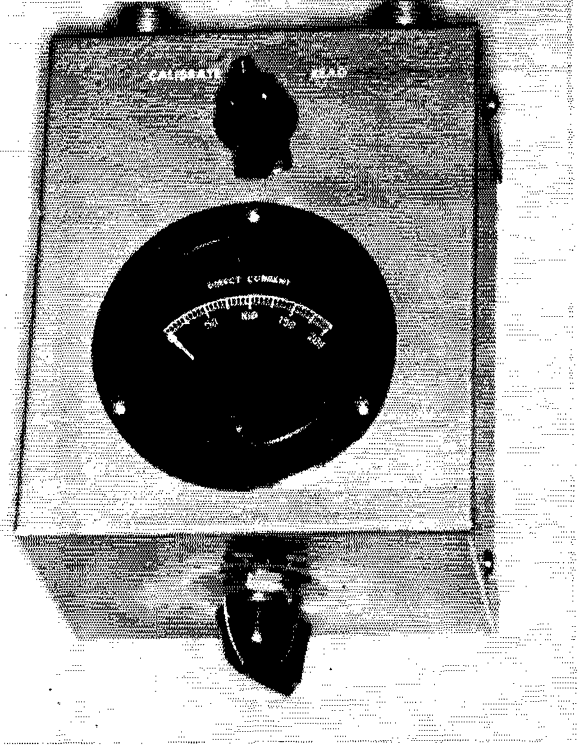


Fig. 2—Standing-wave-ratio plot for single and stacked 5-element Yagi arrays described in the text.



This s.w.r. indicator features simple construction using ordinary coax cable. The forward-reflected switch—labeled "Calibrate" and "Read"—is at the top. The control below the meter is the sensitivity control.

The "Mickey-Match"

A Simplified S.W.R. Indicator and Output Monitor

BY ROBERT C. BUNCE,* K6QHZ

Here is an ingenious version of the Monimatch, using a form of construction that eliminates a few components and, in doing so, simplifies the electrical problems. The key is the use of flexible coax cable (reminiscent of the coax Twin Lamp) for the line section, making it possible to have the input and output connections close together.

IN VIEW of the current popularity of s.w.r. indicators of all varieties, we thought we might as well throw this little piece of gear into the ring. Because the instrument lends itself to a compact mounting box we were about to name it "Minimatch," but that seemed rather common so we took the next name that came to mind — Mickey.

Enough of that. Little Mickey is just an offspring of the Monimatch. We started out to make the Monimatch originally, but couldn't find a piece of sheet metal of the proper dimensions around the shack. Discouraged, we sat down and cogitated. Suddenly the light dawned. The pick-up trough of the original Monimatch is really nothing but a piece of coax with one side missing to let some r.f. out. Now, if you could just take a plain ordinary piece of coax and slide an insulated wire *under* the shield, it would pick up r.f. just like the old Monimatch line. . . .

It worked. In fact, as the final design took shape this one modification led to several other design short cuts that add up to an extremely simple, and surprisingly accurate, s.w.r. indicator. To enumerate: since coax is flexible, and the field entirely confined inside the shield, the pick-up section can be *rolled up* and put in a small box of common dimensions. When rolled up, the input and output connectors can be placed close to each other, and the two end leads from the pick-up line can be brought out near each other. In the final version these leads are brought directly to a switch, kept short, and the *r.f.* is switched. Exit one crystal diode, and with it the problem of matching diodes — a single diode detects both forward and reflected power.

One other modification was the clincher. A later version of the "daddy" Monimatch uses a fixed line-terminating resistor, and the impedance of the pick-up line is adjusted by varying its proximity to the main conductor until the impedance equals the value of the resistor. With the Mickey-Match, it is obviously impossible to vary the spacing in this manner, but the *resistance* is varied instead; i.e., the pick-up line is terminated in a potentiometer which is adjusted to equal the impedance of the pick-up line.

Construction

The unit pictured and described here is designed for power levels between 10 and 200 watts and uses 73-ohm RG-59/U, although a 53-ohm version, using RG-58/U, could be built in exactly the same manner. Parts required are listed under the schematic diagram, Fig. 1. The components are mounted in a 3 × 4 × 5-inch aluminum Minibox, with the meter and selector switch on top, the sensitivity potentiometer on one end, and the two coaxial connectors on the other end, near the switch. The terminating potentiometer is mounted inside on a bracket, since it only has to be adjusted once, during calibration.

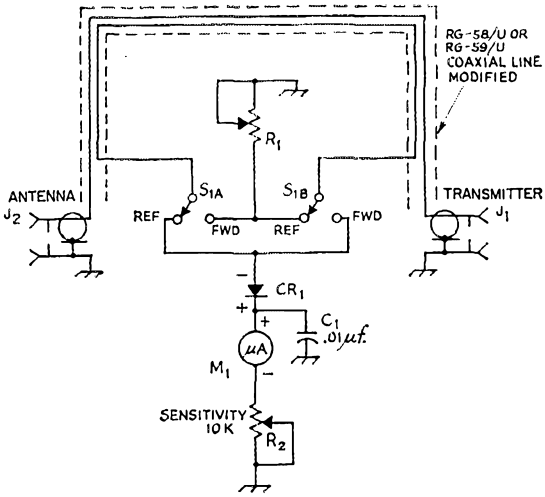
Construction of the pick-up section is shown in Fig. 2. To make it, use a piece of RG-59/U

*c/o Gonset Division, 801 S. Main St., Burbank, Calif.

Fig. 1—Circuit of the coaxial-line s.w.r. indicator.

C_1—Disk ceramic.
CR_1—1N34 or equivalent.
J_1, J_2—Coax chassis receptacles (SO-239 with CG-177 U hood)
M_1—0–200 microammeter, or other range depending on sensitivity desired.
R_1—200- or 250-ohm carbon variable (Centralab AB-2, IRC Q11-201, or Ohmite CU2511).
R_2—Potentiometer, linear or log taper.
S_1—D.p.d.t. "tone-control" switch (Centralab 1462).

(Note: Values as high as 500 ohms may be used for R_1 if lower values are not readily available, but the higher the value the more critical the adjustment.)



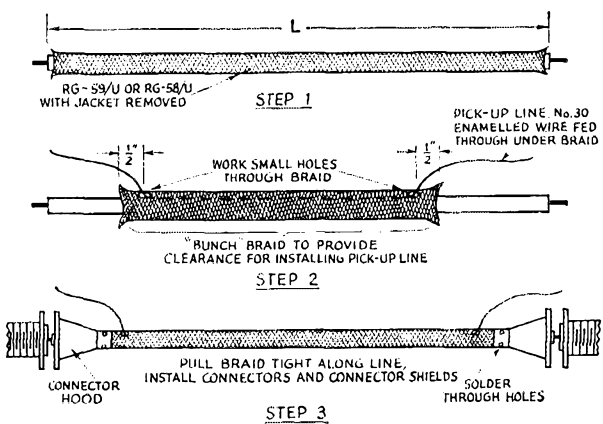


Fig. 2—Construction of the line section. If enameled wire is used, be careful not to scrape off the insulation when the wire is drawn through the braid. Length "L" can be varied to suit power level; sensitivity increases with frequency and with increased length of line section. The instrument shown in the photographs uses a 16-inch length for reasonable sensitivity over the 3.5–30 Mc. range with power levels of 10 to 200 watts.

(or 58/U) about 16 inches long. The length isn't critical. Strip the outer jacket from the entire piece. Bunch the shield together into the middle of the line, and work a hole through the bunched braid about ½ inch from each end. Thread a piece of thin insulated wire (the thinner the wire the better; we used No. 30 enameled in this version) through one hole, under the braid, and out through the other hole. It's easy if you feed through a stiff wire first, and use it to pull the thin wire through. Stretch the braid back over the coax center conductor, with the insulated wire inside, and the section is made. Install coax connectors and connector hoods (those funnel-shaped things) on the ends on the line.

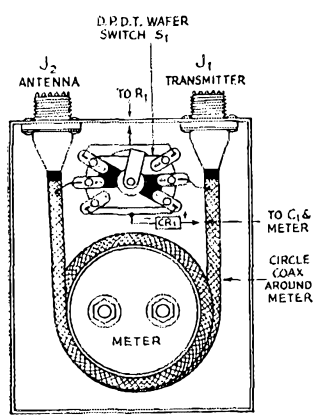
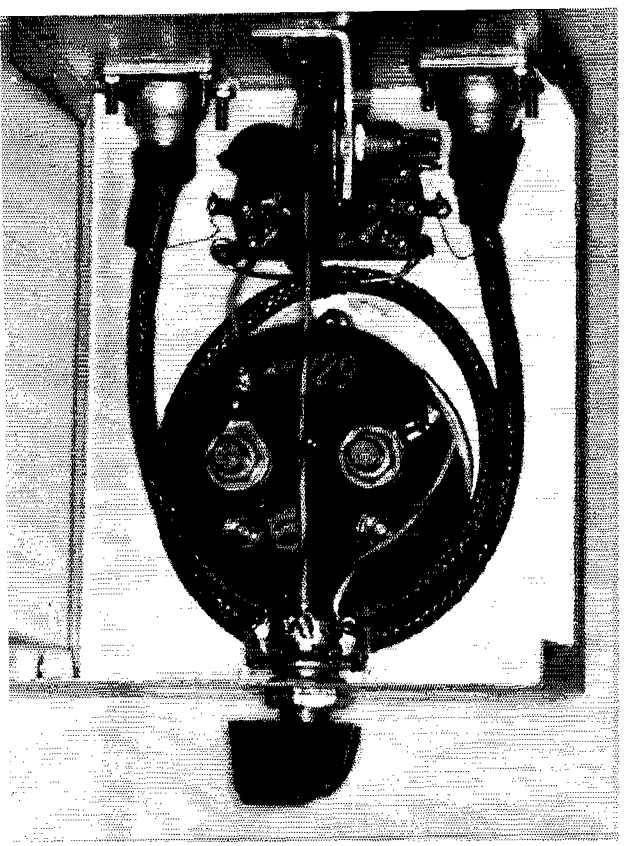


Fig. 3—Installation of the line section. R.f. leads should be kept as short as possible, but d.c. leads can be as long as desired. Longer line sections can be installed by wrapping more turns around the meter.

Fig. 3 shows how the coax is looped and installed around the meter in the box, with the pick-up line ends connected directly to the switch. Keep these leads as short as possible to prevent unnecessary reactance from creeping into the act.

The inside-view photo shows the general wiring details. Remember that crystal diodes don't like heat; hold the leads in a pair of long-nose pliers while soldering, solder quickly, and keep hold of the leads until the solder joints cool. Keep the r.f. leads as short as possible, with one lead from the crystal connected directly to the jumper across the switch and the other to a tie point,



This inside view shows the coax line section looped around the body of the microammeter. The forward-reflected switch, terminating potentiometer, and crystal diode are between the two coax fittings at the top. The variable resistor at the bottom is the sensitivity control.

with the by-pass capacitor connected straight to the ground lug. We removed the back cover from the terminating potentiometer to reduce internal capacitance and it helped reduce residual reactance, particularly on ten meters.

Before the completed unit can be checked out, you'll need a dummy load. We made a 70-ohm load by soldering a tremendous quantity (80, to be exact) of 330-ohm, 2-watt resistors in a series-parallel arrangement that came out to 70 ohms. We happened to have a basket full of the things and they worked well, but any combination of *carbon* resistors that adds up to 50 or 70 ohms, as the case may be, and that, in toto, will handle the power output of your transmitter, will do the trick. Noninductive loads also are available commercially. Don't try to calibrate with a light bulb — it "just don't work." Light-bulb filaments vary all over the lot in resistance, and they have a ten-to-one or better ratio of hot resistance to cold resistance.

Adjusting R_1

The forward-power switch position is labeled "Calibrate" and the reflected-power switch position "Read" (meaning, "Read s.w.r. in this position"). To adjust R_1, leave the cover off the instrument. Attach the dummy load to the antenna connector, and the transmitter output to the transmitter connector. Set the selector switch to the "Calibrate" position. Energize the transmitter on 10 meters, or the highest band used, and load the transmitter into the dummy. If the meter goes off scale, and it probably will, turn the sensitivity control R_2 until it comes back on scale.

Now switch to the "Read" position, and adjust the sensitivity control for as high a reading as possible, keeping the needle on scale. Turn the terminating potentiometer R_1 for a null in the meter reading. If your dummy load is reasonably good the null will be extremely deep — the meter reading should drop almost to zero. The unit pictured nulled out to less than 5 μa. on 10 meters with the sensitivity potentiometer full out, and with 50 watts of r.f. in the load. The setting where the null occurs will vary all the way from 20 ohms to 150 ohms, depending on the size of the pick-up wire and dielectric constant of its insulation. The setting of this resistor (at the null) is the characteristic impedance of the pick-up line. The higher this final impedance, the more sensitive the instrument. The version pictured, using No. 30 enameled wire, nulled out at about 90 ohms, and the sensitivity is about the same as earlier versions of the Monimatch.

To check out the over-all balance of the instrument, turn the switch back to the "Calibrate" position and adjust the sensitivity control for a full-scale reading. Switch back to the "Read" position and recheck to make sure the null is still complete. Then connect the transmitter to the antenna jack and the dummy load to the transmitter jack. The null reading should now occur with the switch in the "Calibrate" position, and the full-scale reading should occur with the switch in the "Read" position; i.e., the functions reverse. If the reversed readings exactly (or almost exactly) equal the original readings, the instrument is in good shape. There was no detectable difference in these readings with the unit pictured.

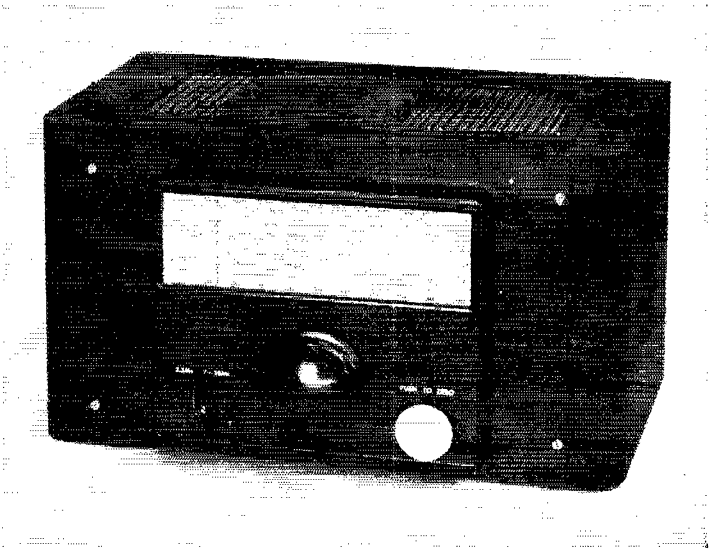
With this adjustment, replace the cover, and you can use the thing to adjust antennas with no further ado.

Operation

In actual use, it is only necessary to set the switch to the "Calibrate" position, rotate the sensitivity control for a full-scale deflection, and switch to the "Read" position. To use the instrument while adjusting or pruning antennas, or for adjusting link-coupled antenna tuners, you don't need any graphs (although it is possible to calibrate for s.w.r. and power). Just set the switch to the "Read" position and, with power in the antenna, adjust the antenna or the tuner for minimum meter reading.

If you want to make a kilowatt version, use a bigger box and RG-8/U or RG-11/U. The meter can be less sensitive (a 0–1 ma. meter will work well), or the pick-up section shorter, but the

(*Continued on page 160*)



A Variable Frequency Oscillator

Above: Front view of the v.f.o. There's not much to show here, except the padder switch at the left, and the "zeroing" switch at the right. This latter is simply an s.p.s.t. switch which turns on the oscillator only. The poker chip is used merely to give a large "push" surface so that the little finger doesn't have to be aimed too carefully. The cabinet is a Bud C-1747, while the dial is a Millen 10035.

Combining Operating Convenience and Good Keying Characteristics

BY RICHARD L. BALDWIN,* W1IKE

If you are looking for a v.f.o. and are in the mood to build your own, this one has a couple of features that warrant your consideration. First of all, the keying system permits a smooth clean signal on the air (assuming, of course, that the succeeding stages in your transmitter won't mess up the signal). Secondly, the method of turning on the oscillator only while zeroing the v.f.o. with another signal is very convenient for both DX operating and contests.

CARE to build your own v.f.o.? Well, here you'll find an idea or two that you may want to incorporate in your next project. Of course, your requirements may not match mine, and so you may not want to include everything here suggested.

For example, my previous v.f.o. had a very smooth-acting vernier dial, but the dial pointer was exposed. This was an irresistible attraction to one of my junior ops, and so for many months I had been operating a v.f.o. without a pointer on the dial. Thus, the change to the type of dial shown in the accompanying photographs.

For ease in zeroing the v.f.o. when chasing DX, or during contests, I have put a push-button switch on the front panel, slightly modified, so that while thumb and two fingers are rotating the tuning knob, the little finger can, with great grace and facility, hit the "zero" switch. This allows the v.f.o. signal to be heard in the receiver, but does not key the rest of the transmitter. In other words, no swishes across the band.

Good keying is a must, and is accomplished in the now-customary manner of turning the oscillator on slightly before and turning it off slightly after the rest of the transmitter. The particular circuit, described in *QST* a couple of years ago by Puckett,[1] was adopted without change. The clamping-tube action of the 6BX7 is applied to the screen of a 6AK6 in an exciter,[2] and with proper adjustment of the make and break ca-

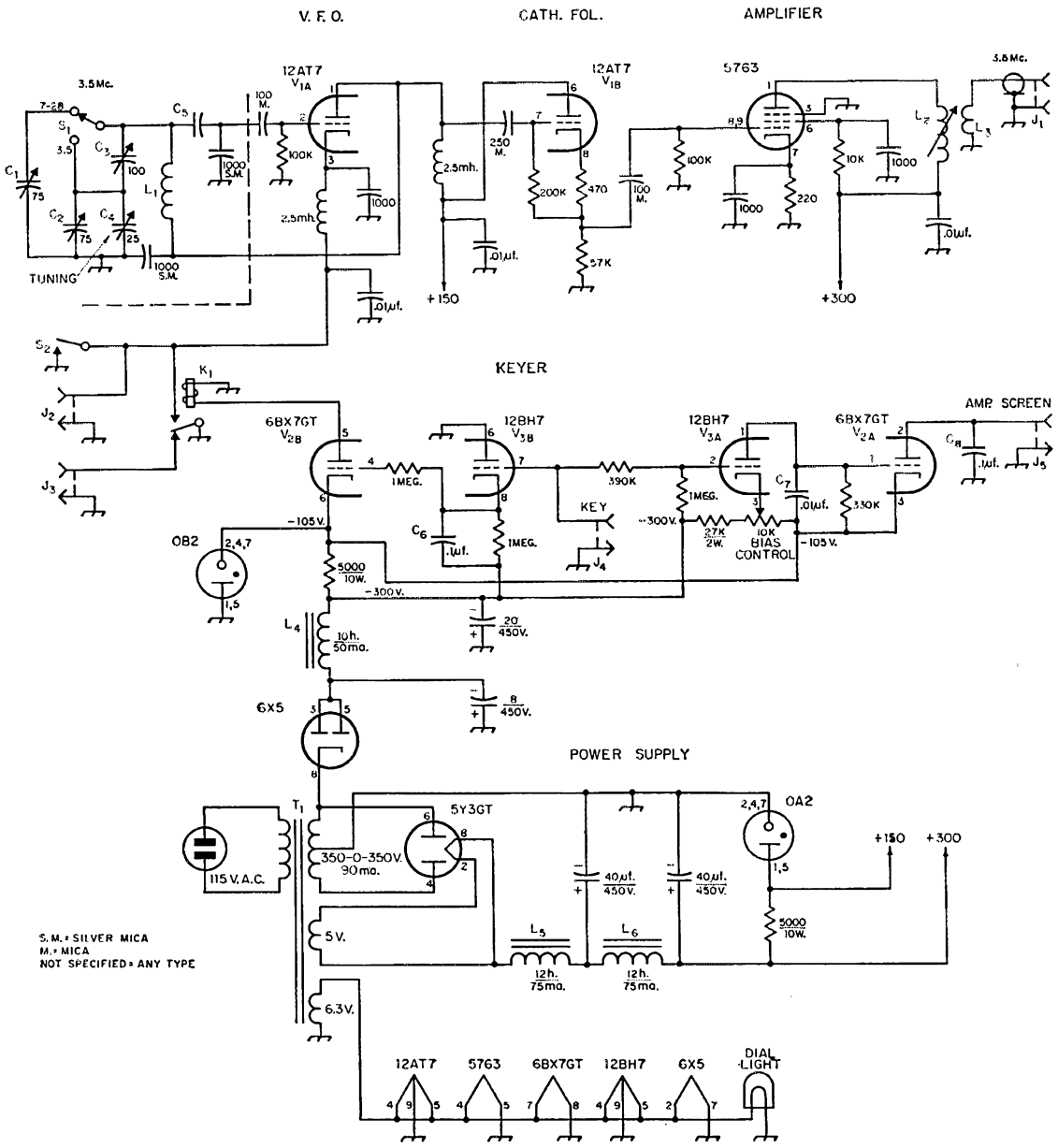
* Managing Editor, *QST*.

[1] Puckett, "A C.W. Man's Control Unit," *QST*, Feb., 1955.

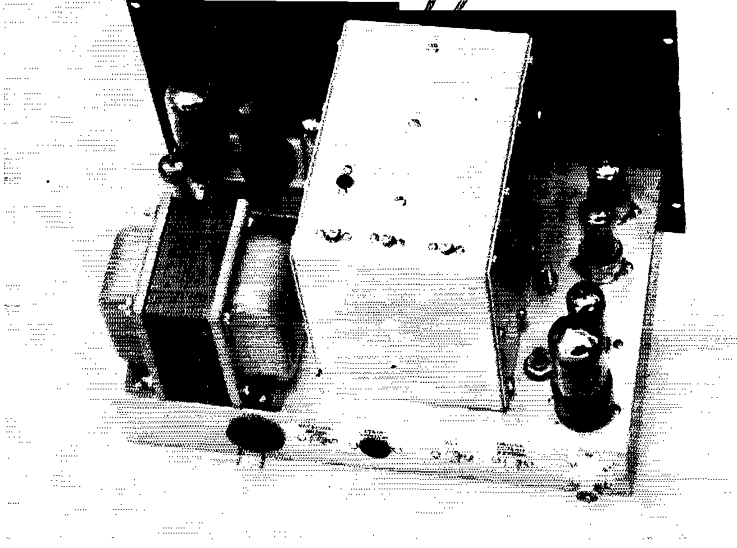
[2] Baldwin, "Easy Shielding for Ninety Watts," *QST*, May, 1955.

Fig. 1 —Circuit diagram of the v.f.o., with its power supply and the keying system. Except as otherwise indicated, fixed resistors are ½ watt, capacitances are in $\mu\mu$f., resistances are in ohms. Capacitors marked with polarity are electrolytic.

C_1, C_2 —75-$\mu\mu$f. variable (Hammarlund APC-75).
C_3—100-$\mu\mu$f. variable (Hammarlund APC-100).
C_4—25-$\mu\mu$f. variable (Millen 20025).
C_5—50-$\mu\mu$f. (Hammarlund APC-50); see oscillator compartment photo caption.
C_6—0.015 μf.
C_7—0.01 μf.
C_8—0.1 μf.
J_1—Coax connectors, chassis mounting.
J_2–J_5, inc.—Phono-type connector.
K_1—S.p.d.t. relay, 200-ohm coil (Advance MK1C12VD).
L_1—30 turns No. 16, 1¾ inch diameter, 10 turns/inch (airdux 1410T).
L_2—72 turns No. 22 enam., close-wound on ⅜" diameter slug-tuned form (Waters CSA-1012-1-WH).
L_3—10 turns, wound on cold end of, but insulated from, L_2.
L_4—10 hy., 50 ma. (Triad C-3X).
L_5, L_6—12 hy., 75 ma. (Triad C-5X).
S_1—Miniature rotary, 2-position (Centralab PA-2001).
S_2—Push-button switch (Switchcraft 1001 modified with a longer shaft so as to extend through the main dial housing).
T_1—700 v. c.t., 90 ma.; 5 v., 3 amp.; 6.3 v., 3.5 amp. (Triad R-11A).



S. M. = SILVER MICA
M. = MICA
NOT SPECIFIED = ANY TYPE



In this top view the aluminum box holding the frequency-determining components is at the center, with power-supply components at the left and r.f. and keying components at the right. Along the back edge of the chassis are the a.c. power connector (the on-off switch is incorporated in a separate control panel), a phono connector for the relay contacts which mute the receiver, a connector for a "zero" switch which is a foot-operated duplicate of the push-to-zero switch on the front panel, the phono connector for the key leads, the phono connector for supplying the clamping voltage which is applied to the screen of an exciter stage, and the r.f. output coax terminal. The 12AT7 v.f.o. and cathode follower is directly behind the panel at the right, followed by the 5763 amplifier and the 12BH7 and 6BX7 keyer tubes. Over on the power supply side, the 0A2 regulator is the one to the left of the 6X5 and next to the panel. The filter choke L_5 is mounted above the chassis, directly in front of the power transformer. The other choke, L_6, is mounted below the chassis, using the same mounting holes and hardware.

pacitors the keying is chirpless and clickless.

The back contact on K_1, Fig. 1, is taken out through J_3 and is used with an additional potentiometer in the receiver to reduce its gain and monitor the transmitted signal.

The v.f.o. circuit itself is the Vackar,[3] and has been entirely satisfactory. The reason for the conglomeration of capacitors in the grid circuit is that I wanted to have as much bandspread as possible on the higher frequency bands, while still covering all of the 3.5–4.0 Mc. band. A two-position switch changes padder combinations on the two ranges to satisfy the above requirements. In the 3.5-Mc. position C_3 is shorted out, leaving C_2 in parallel with the tuning capacitor C_4. This allows coverage of the entire 3.5-Mc. band with a fairly respectable tuning rate. In the second (7–28) switch position, C_3 is in series with C_2 and C_4 in parallel, and C_1 is in parallel with this combination. With proper adjustment of C_1 and C_3, this permits the v.f.o. to tune 3500–3650, giving scale calibrations of 7000–7300 kc. and corresponding multiples of 3500–3650 on the higher bands. The bottom view of the v.f.o. shows the mechanical expedients that were necessary in order to bring the switch control out to a panel position that was symmetrical with the other knobs.

Heat and Drift

Once the v.f.o. had been fired up, it became obvious that this was an apt expression — plenty of heat was being radiated from (especially) the tubes and the transformer. The configuration of the cabinet was such that there was no easy path for the heat to flow *away* from the shield can in which the frequency-determining capacitors and inductor reposed, and so the whole works just heated up and drifted.

A satisfactory solution was reached by ventilating the lid of the cabinet, which was done by cutting some rectangular holes, as large as possible, right over the heat-generating units. These holes were then decorated with some of the Reynolds perforated stock that is readily available. Also, a few ¼-inch holes were drilled in the chassis around the power transformer and filter chokes. This allowed a nice column of air to rise past the tubes and out the holes in the cabinet lid. The results of this maneuver are shown in the accompanying graph, Fig. 2, with drift plotted as a function of time. This graph also shows the advantage of having the equipment stay warmed up. From a cold start, under the worst conditions, the drift for an hour was at an average rate of 40 cycles per minute, while under the best conditions, with v.f.o. warm, the average rate of drift was 3⅓ cycles per minute over the same period.

Even greater heat insulation of the coil-capacitor box could be achieved by installing an aluminum baffle between each side of the box

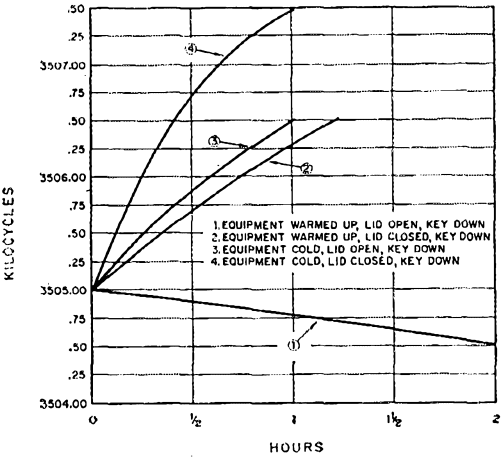
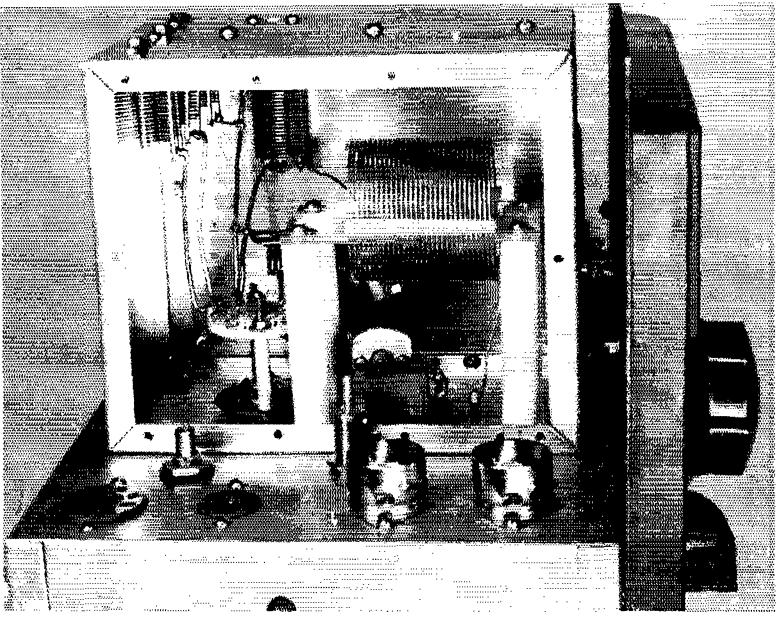


Fig. 2—Warm-up drift under various conditions.

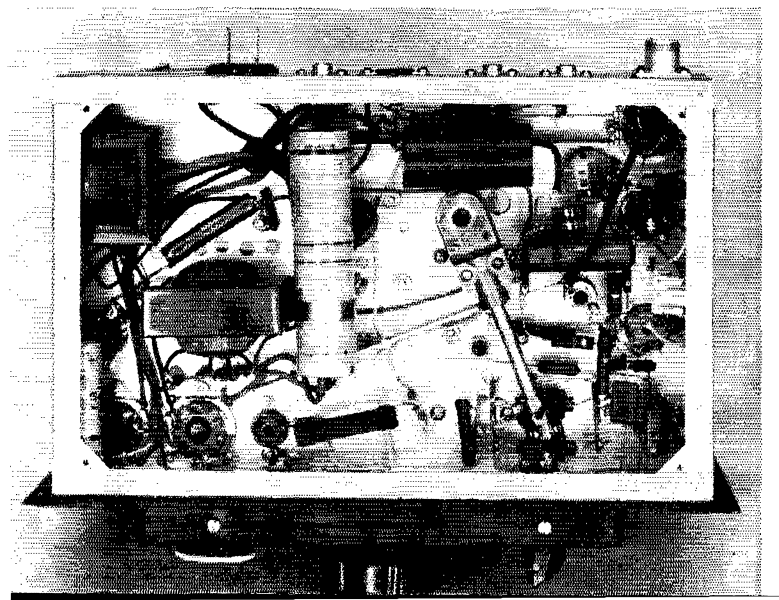
[3] "Technical Correspondence," *QST*, November, 1955.



This close-up of L_1 and its asscciated capacitors shows everything that is to the left of the dotted line in Fig. 1. The small variable (C_5) just to the rear of the silver-mica fixed capacitors is an air capacitor in the interests of stability. (See the Vackar reference in the text.) The enclosure can be considerably improved by strengthening each side with lengths of ½ × ½ × 1/16-inch aluminum angle. Additional firmness can be achieved by increasing the number of screws used to fasten the cover plates. In the left foreground, protruding through the large chassis, is the shaft of the 10K variable resistor in the cathode circuit of V_{3A}, and in the center, partially hidden by the socket for the 5763, is the tuning slug shaft of L_2.

At the upper left is the filter choke L_4, while below it and to the right is the choke L_5 that was mentioned in the caption for the top view. Switch S_1 is controlled by means of a flexible shaft coupling and a right-angle drive. This is not the best arrangement mechanically, but works well enough for this application. Relay K_1 is mounted at the edge of the chassis at the right, suspended by its own leads so that noise and vibration are minimized.

Note the stiffeners made of aluminum angle. These were installed after the wiring had been completed. If you build this, do it first—the chassis definitely needs to have additional strength in order to keep it from vibrating.



and the adjoining tubes and transformer, leaving perhaps a half-inch air space between baffle and box.

Mechanical Stability

With such a low-C circuit as this, mechanical stability is a problem. A greater measure of such stability was achieved in this unit by reinforcing both the chassis itself and the coil-capacitor box with some lengths of ½ × ½ × 1/16-inch aluminum angle. Before this reinforcing was done, pounding the table on which the unit reposed would set up a shimmy in the v.f.o. that would last for some appreciable length of time (a couple of seconds or so) and would, of course, cause the frequency to shimmy accordingly. Using a couple of lengths of aluminum angle along the underneath side of the chassis, and along the top and the cover plates of the coil-capacitor box, the shimmy was reduced to where a sharp blow on the table produced a barely-noticeable momentary wiggle. The inductor is mounted on a piece of Lucite to give it mechanical stability and to keep it away from the walls of the box.

Construction

This unit is built on a 7 × 12 × 2-inch chassis, with the parts laid out as shown in the photographs. The frequency-determining components are mounted in a 4 × 5 × 6-inch aluminum box which is positioned as shown. With the dial centered on the front panel, the locations of the various components are readily determined, and no detailed instructions are necessary. The switch for changing padders, S_1, is located so that direct fairly short leads may be run to the various capacitors. A National RAD right-angle drive and a flexible shaft coupling permit the front-panel knob controlling the switch to be brought out to the panel in a symmetrical arrangement. One point to remember is that after the major components are mounted, aluminum angles should be used to stiffen the chassis.

Tie points were used freely to support components, and National type TPB poly feedthroughs were used to bring the leads down from the shield box.

The band-set capacitor C_3 was submounted below the cover of the shield box because its rotor is above ground. If not submounted, the rotor shaft sticks out into unshielded territory and the capacitance then is affected by movement of any metal such as the cabinet lid.

(*Continued on page 160*)

Sporadic-*E* Skip on 200 Mc.?

A Study of Extra-Density E-*Layer Formations Through TV DX Loggings*

BY ROBERT B. COOPER, JR.,* K6EDX

Much effort is being spent during the International Geophysical Year in the collection of data on the propagation of v.h.f. signals by reflection from the ionosphere. One segment of this work concerns the sporadic ionization of the *E* region; when and where it occurs, and how intense it is. Results of this study will be of great interest to amateur v.h.f. enthusiasts, and much of the information being gathered may, in fact, come from their observations. The information presented here comes from amateurs of a different sort — those interested in long-distance reception of television signals.

Through the writer's Television DX column appearing in *Radio Electronics*, information on many thousands of DX loggings is available. These show that sporadic-*E* DX on TV channels 2 through 6, 54 to 88 Mc., is much more common and widespread than most people outside of amateur radio realize. Occurring most often in the early summer months, this form of propagation makes possible low-band reception over distances from 400 to 2500 miles or more.

Use of sporadic-*E* was first made by v.h.f. amateurs in the spring of 1934, when stations in New England worked others in the western Great Lakes states. The band was then 56 to 60 Mc. In the more than twenty years since, sporadic-*E* propagation has intrigued amateurs and scientists alike. Much time and thought have been expended in its study, and many theories have been formulated to pin down the exact cause of this unusually high concentration of ionized material in the *E* region of the ionosphere.

Through study of amateur-band and TV DX reports, researchers at the National Bureau of Standards and elsewhere have been able to piece together many patterns of occurrence that the *E*-layer formations seem to follow. For instance, it is known that the *E* layer ionizes in cloud-like formations at heights from roughly 55 to 125 miles. When very high densities develop, ionospheric sounders record vertical returns on frequencies as high as 25 Mc., the upper frequency limit of most present sounding equipment. Such returns are very rare, however, and a 15-Mc. maximum frequency for vertical sounding returns is much more the ordinary. Of the total number of extra-density formations (extra density denoting formations capable of oblique reflections at frequencies above 50 Mc.) perhaps only 3 per cent exceed 15 Mc. An estimated 0.1 per cent may reach 25 Mc.

A vertical return at 25 Mc. is considered to indicate a capability of reflecting signals at 150 Mc. over a path of 1200 miles in length. With v.h.f. TV currently operating between 54 and 88 Mc. and 174 to 216 Mc., it can be seen that only the low band is likely to be affected by extra-density *E*-layer formations. On occasions when the critical frequency exceeds 15 Mc., f.m. broadcast signals (88 to 108 Mc.) find their way to distant points via skip paths. All this is fairly common knowledge. While we do not know the cause of this extra-density ionization, further discussion of this phase of the phenomenon is not necessary at this time. What we are interested in is the 0.1 per cent of the extra-density formations that reach an f_0E_s of 25 Mc. or higher.[1]

Ionospheric DX in the High Band?

It is a fairly widespread opinion that any reception of high-band v.h.f. TV signals (174 to 216 Mc.) at distances beyond a few hundred miles is the result of a rare form of ducting, involving only the layer of the atmosphere closest to the earth's surface, called the troposphere. Such propagation occurs most commonly in the warm months, June through October. It is relatively simple to recognize in mass reports, for it develops in connection with stable weather patterns over large areas, and may last for days on end. Surface conditions associated with it are plainly seen on daily weather maps.[2]

Out of more than 100 examples of high-band reception over distances beyond 700 miles now on hand, I have attempted to eliminate tropospheric reports from the loggings to be studied. This was done by study of other reports for the same period and the weather conditions known to have prevailed during the periods under consideration. After careful sifting of reports in this way, we still have about 25 high-band DX reports for the period 1954 through 1957 which are deserving of further study. As a further precaution, we will use reports only from thoroughly reliable observers, and only those which can be substantiated through verifications from the stations concerned. We thus narrow the list down to 9 reports, but these may be of first importance to propagation-minded amateurs who use the 144- and 220-Mc. bands.

An *E*-layer formation capable of reflecting a Channel 7 TV signal back to earth at a point 1200 to 1400 miles from the transmitter should have an f_0E_s of at least 30.5 Mc., according to present theories. To the best knowledge of the author, such a frequency has never been recorded

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[1] F_0E_s is the term used to represent the top vertical incidence reading obtained from the *E*-layer on an ionospheric sounder. According to present theories this reading should be multiplied by 6 to give the *E*-layer m.u.f., for a 1200-mile path, with the sounding station at the midpoint.

[2] Hoisington, "Painless Prediction of Two-Meter Band Openings," *QST*, Oct., 1949, p. 22.

by an ionospheric sounding station, but this does not preclude the possibility of such an occurrence. Ionization density this high would develop only in a very small area at any one time, if at all, and the chances of its happening directly over an ionospheric-sounding station are not great. Furthermore, all ionospheric records prior to the IGY, at least, were made with equipment having an upper frequency limit of 25 Mc.

Of the nine reports under study, eight occurred south of latitude 34; this despite a concentration of observers almost 4 to 1 in favor of latitudes north of 34. Four reports involve a basic north-south path, while the remaining five were over east-west paths. Eight loggings occurred in the summer months, and one in January. Due to space limitations, only one group can be presented in detail. These involve the greatest number of observations made in a single day, June 9, 1955.

One Big Day

To television DXers along the Gulf Coast, reception of low-band Cuban stations during the morning hours is very commonplace. *E*-layer formations appear over this area often around 1000 EST, and TV signals skip from Cuba to Texas with little effort. But the morning of June 9, 1955, seemed just a bit strange to the more alert observers. Abrupt fading and sudden changes in the areas being received via E_s were not in keeping with the normal skip patterns. In the chronological list of observations to follow, times are all given in EST. The frequencies given are the upper limits of the channels reported. This may or may not be the actual m.u.f. for the path, due to uneven spacing of TV stations as to geographical location and frequency assignment.

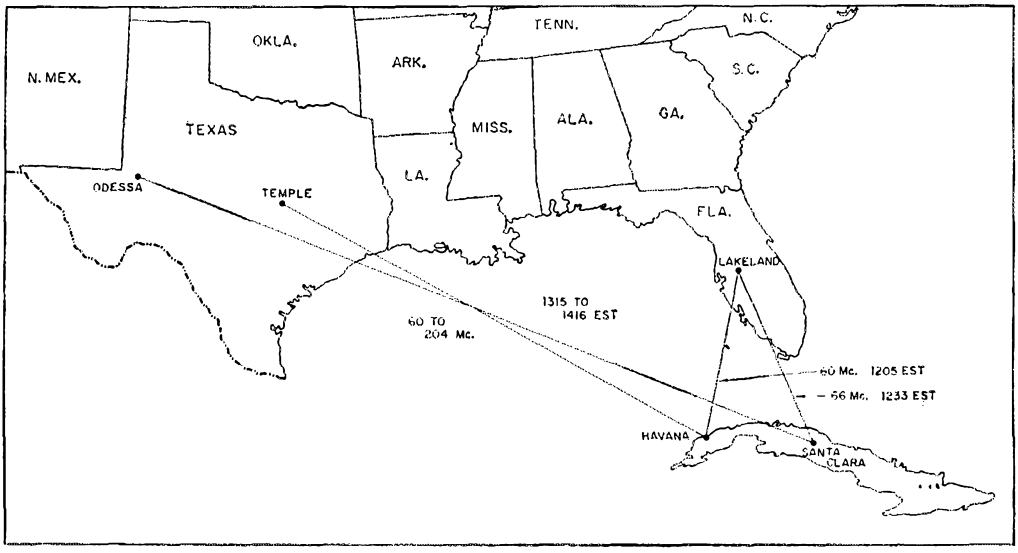
Skip was first observed at 0730, when Buffalo, N. Y. (60 Mc.) was received in Temple, Texas. At 0740 the skip was spreading and the m.u.f. rising, as Syracuse (66 Mc.) and New York City (72 Mc.) were seen in Temple. By 0750 Detroit (72 Mc.) was seen in Temple and Pittsburgh (60 Mc.) was logged in Hamlin, Texas. At 0800 the cloud appeared to be moving northwest; Buffalo was logged in Hamlin, Minneapolis (72 Mc.) and Green Bay, Wis. (60 Mc.) were seen in State College, Miss. At 0820 Chicago (60 Mc.) was in at Temple. Signals disappeared at all reporting stations around 0830, with nothing more noted until 1030.

At 1030 Eastern Cuba (70 Mc.) was logged in Boston, Ga., 930 miles. Detroit (60 Mc.) and Cedar Rapids (60 Mc.) were logged in Odessa, Texas, at 1100. Skip shortened at 1116, bringing Havana (72 Mc.) into Boston, Ga., 650 miles. The skip widened at the southern end at 1120, bringing Santa Clara, Cuba (66 Mc.) into Boston, Ga. A rise in m.u.f. over the same path occurred at 1125, bringing an 82-Mc. station in Santa Clara in at Boston. An 88-Mc. signal from Havana was logged at Boston at 1130. The skip opened from Western Cuba (72 Mc.) to Temple at this time.

The m.u.f. rose slowly over this path and around noon Eastern Cuba (82 Mc.) was seen in Temple. That the ionization density was rising was shown by a 1205 logging of Havana (60 Mc.) in Lakeland, Fla., a distance of only 335 miles. Signals were strong, but with violent fading. At 1220 conditions across the Gulf had improved markedly with Havana coming through in Temple on Channel 6. At 1233 Santa Clara (66 Mc.) was coming into Lakeland, 350 miles.

The first reception from the west developed in

Reception of Channels 2 and 3 over the short paths between Cuba and Lakeland, Florida, 335 and 375 miles, preceded the high-band reception over the much longer paths to Temple and Odessa, Texas. Ionization density required for both types of propagation is about the same, indicating a westerly movement of a high-density cloud.



Temple at 1300, with the appearance of Los Angeles (60 Mc.). At 1315 came the first high-band break, with Central Cuba (204 Mc.) received at Odessa. All Cuban channels through 11 were received at this time in Odessa, with strong signals on 2, 3, 4, 5, 6, 7, 9 and 11, at distances of 1400 to 1700 miles! Los Angeles (72 Mc.) was also received. The high-band Cubans lasted until 1330.

At 1320 Temple received Los Angeles (72 Mc.). Baltimore (60 Mc.) and Tulsa (60 Mc.) were seen in Lakeland at 1330. Santa Clara (82 Mc.) was logged in State College, Miss., and Oklahoma City (72 Mc.) was seen in Boston, Ga. State College, Miss., saw Eastern Cuba (60 Mc.) at 1345. Syracuse (66 Mc.), St. Joseph, Mo. (60 Mc.), and Great Bend, Kan. (60 Mc.) were seen in Lakeland at 1355. Great Bend was also logged in Boston at 1400.

High-band DX was reported again at 1413, Havana (182 Mc.), being received in Temple for three minutes. Reception was weak with fast fading.

At 1420 Greensboro (60 Mc.) and Charlotte, N. C. (66 Mc.) were received in Temple. Columbus, Ga. (72 Mc.) was logged in Odessa. Miami (72 Mc.) was seen in Bradford, R. I.; Buffalo (72 Mc.) in Lakeland; Phoenix, Ariz. (66 Mc.) in Independence, Kan.; Detroit (60 Mc.) in Boston, Ga., all at 1430. Boston, Mass. (60 Mc.), Philadelphia (66 Mc.), and Springfield, Mo. (66 Mc.) were seen in Lakeland. Boston, Mass. (60 Mc.) and Enid, Okla. (82 Mc.) were seen in Boston, Ga. at 1425.

Temple reported Salt Lake City (72 Mc.) and Cedar Rapids (60 Mc.) at 1500. Houston, Texas (60 Mc.) and New York City (60 Mc.) were seen in Lakeland, and Chicago (60 Mc.) was logged in Boston, Ga. at 1525. 1530 brought Green Bay (60 Mc.) to Boston. Spotty loggings continued throughout the day, with two short ones at 1630 between southern Kansas and southern Texas (82 Mc.) the only notable events.

From this one-day summary of E_s, it is possible to see the effects of rapidly changing conditions, with the absence of any substantial or stable opening. It appears that small spotty *E*-layer patches ionized for short periods of time, rapidly oscillating from one area to another during the 8-hour period covered. Other than the high-band loggings between Cuba and central and western Texas, the principal unusual feature of the day was the extremely short skip that developed between eastern Cuba and southern Georgia and central Florida. Channel 2 skip over a distance of 350 miles would indicate an ionization density every bit as high as would be needed to produce Channel 7 skip over a 1200-to 1400-mile path.

It appears that this high-density cloud also extended somewhat westward at the same time that the skip moved in as short as Lakeland, Fla. However, the western edge of the cloud appears to have cut off very sharply, as the path midpoint between Temple and western Cuba did not reach 88 Mc. until 1220, or 15 minutes after the Lakeland-Havana path of 335 miles opened on Channel 2. It is also interesting to see that the first high-band reception noted between Odessa and western and central Cuba developed very suddenly, the m.u.f. moving from below Channel 2 to Channel 11 in just a few minutes time.

Some interested observers will argue that such a path over salt water, particularly the mild-mannered Gulf of Mexico, indicates tropospheric propagation. It is admitted that tropospheric reception across the Gulf is possible; in fact, it has been recorded many times, both in TV DX and amateur v.h.f. communication. But in this instance all the factors: violent fading, short-term reception with quick fades in and out, and the general widespread reception of Cuban stations on all the low channels, certainly point to *E*-layer propagation. The time of day is also one at which tropospheric propagation would be most unlikely.

It should be noted that the Temple observer was not aware of the Channel 7 DX until it appeared to be fading out. A local station on the same channel, and other locals on the other high-band channels, prevented positive checking on the high band earlier. The possibility exists that Channel 7 reception might have been possible earlier than 1413. (This DXer, having read the usual information about *E* skip being exclusively a low-band phenomenon, was switching only across Channels 2 to 6!)

Amateur Possibilities

When such a form of propagation is brought up in conversation among v.h.f. amateurs, the reaction is likely to be "Sure wish someone had been on 220 Mc. during that opening!" The chances that 144-Mc. amateur signals might have made the grade over a similar path are probably very good and the possibility of 220 Mc. making it may be at least fair, but I think that we might approach such extra-density ionization opportunities with a different viewpoint. This involves 220-Mc. work by meteor scatter. Two-meter operators have just about mastered meteor-scatter techniques. The chance for similar work on 220 during normal meteor showers is slight, due to the logarithmic loss factor with increasing frequency, but another possibility seems open.

Suppose the path is one over which extra-density formations are fairly frequent during the summer months. With an m.u.f. of 90 to 100 Mc. due to sporadic-*E*, the remaining difference in frequency *might* be made up by meteor-scatter action. This would require coordination of a high order at both ends of the path, to make the most of times when favorable *E*-layer conditions coincide with meteor showers in the summer months.[3] Such coincidence just might help two enterprising amateurs to make 220-Mc. history. There may be other ways to break the 220-Mc. record than waiting for the right tropospheric conditions over long paths!

(*Continued on page 162*)

[3] Bain, "V.H.F. Meteor Scatter Propagation," *QST*, April, 1957, p. 20.

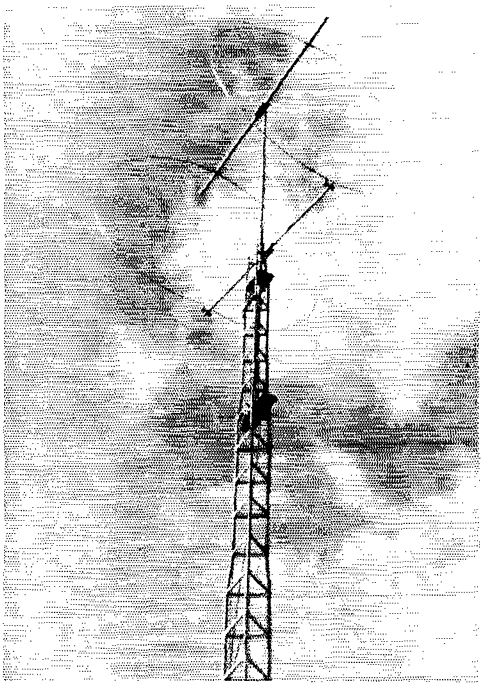


Fig. 1—Two-element circular antenna. Using the dimensions given in Fig. 2, this antenna can be fed directly with 75-ohm line.

Circular Antennas for 10 Meters

Full-Wave Loops in Two- and Three-Element Beams

BY ARCHIBALD C. DOTY, JR.,* K8CFU

We suppose these antennas could be called circular quads (if one can accept the contradiction in terms), since the general structure appears to be related to the quad family. They have given such a good account of themselves in actual operation that the author is currently engaged in extensive investigation of other antenna combinations using circular elements.

Although very few amateurs are apparently aware of the fact, loop or circular antennas having a circumference of one wavelength are neither new nor novel. They have been described in one form or another by Kraus, Rider, Noll and Mandl, and others. In addition, the *ARRL Antenna Book* has, for many years, included a summary of the properties of single-turn loops.

Since 1947 the writer has been building circular antennas for one purpose or another, and they have consistently proved to combine excellent performance with simplicity of construction.

In 1956 work was started on the design of multielement circular arrays for use on the higher amateur bands.

Experience with the antennas which have resulted has shown that they have considerably higher gain than conventional beam antennas; they provide low-angle radiation that is advantageous for DX contacts; and they produce elliptically-polarized waves, which makes them excellent for contacting mobiles or other stations using vertical polarization.

Two interesting 10-meter circulars which have been thoroughly tested are shown in Figs. 1 and 4. The first of these is a two-element circular using a 9-foot boom. It may be directly fed with coax. The s.w.r. of this antenna with 73-ohm cable is low across the entire 10-meter band. The total cost of materials was under $20.

The higher-gain three-element circular shown in Fig. 4 has a boom length of 12 feet, and is omega-matched to coax feed. The s.w.r. curve for this antenna is shown in Fig. 6. Total cost of materials was just over $30.

Element Length

If the dimensions specified are followed rather closely, excellent operating results should be obtained without making any changes from the lengths shown. These dimensions, which are those giving maximum forward gain, are derived from the following formulas:

$$\text{Driven element } L = \frac{1007}{f}$$

$$\text{Reflector } L = \frac{1078}{f}$$

$$\text{Director } L = \frac{948}{f}$$

Where L is the circumference or length of element, in feet;
f is the desired operating frequency in megacycles.

If antennas are desired which will give maximum front-to-back ratio rather than maximum forward gain, a change will have to be made in the lengths of the reflector and director. Although it is not ideal from a theoretical standpoint, the test setup shown in Fig. 8 has been used very successfully to tune the elements of circular antennas. This arrangement is convenient as it

* Box 573, Franklin, Mich.

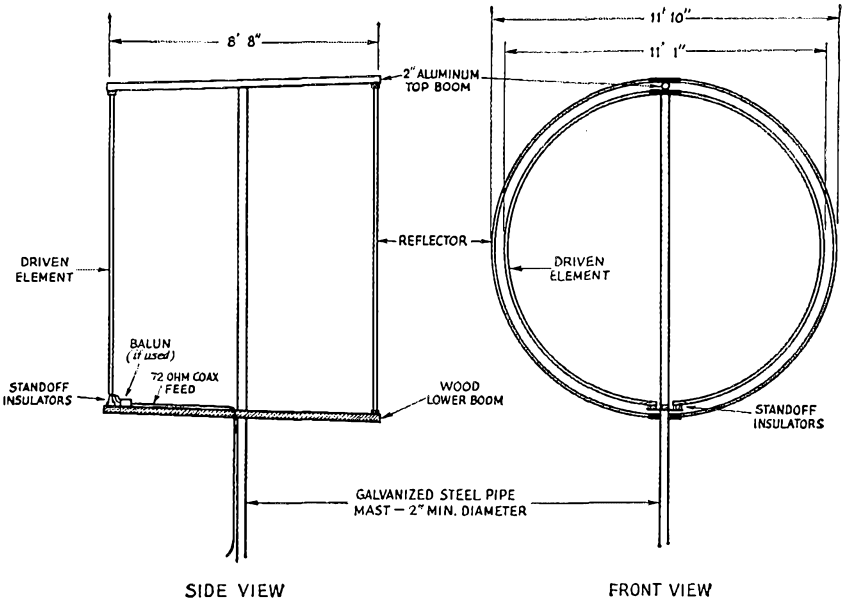


Fig. 2—Principal details and dimensions of the two-element circular. Note that the two booms are slightly off parallel to compensate for the different diameters of the driven element and reflector.

allows element length or spacing changes to be made on the antenna under test without having to turn off the transmitter. Also, the effect of changes made can be immediately observed on the field-strength meter.

Element Diameter

In order to give both structural rigidity and broad-band characteristics to the antenna, a length-to-diameter (L/D) ratio of approximately 650 has been used.

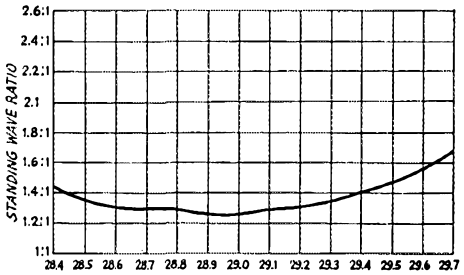


Fig. 3—Standing-wave ratio vs. frequency; two-element antenna fed directly with RG-59/U coax line.

Element Spacing

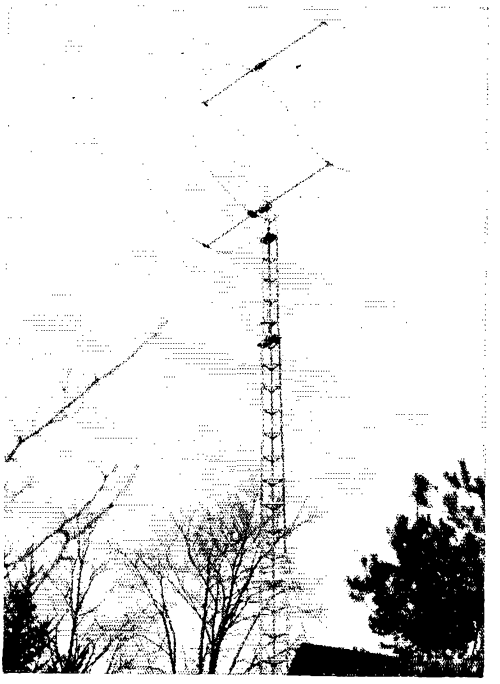
Spacing of one-quarter wavelength, or 8 feet 8 inches, between elements is used for the two-element circular. This provides wide band width as well as a convenient impedance match to 73-ohm coaxial cable or transmitting type Twin-Lead.

On the three-element circular the spacing is that which will give maximum forward gain with a boom length of 12 feet. The dimensions are given in Fig. 5.

Impedance Matching

If desired, the two-element circular may be directly fed with RG-11/U or RG-59/U coaxial cable. However, when such an arrangement is used (feeding a balanced antenna with unbal-

Fig. 4—The three-element circular is also coax fed, but uses an omega matching section to transform the low antenna input impedance up to the coax line impedance. The antenna dimensions are given in Fig. 5.



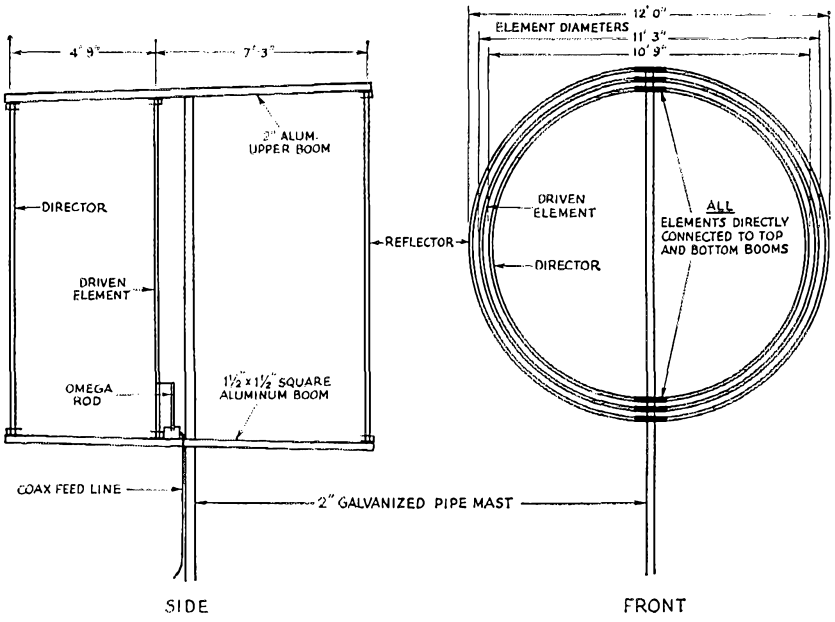


Fig. 5—Principal dimensions of three-element antenna.

anced feed) "antenna currents" are induced on the outside braid of the coax, and a 1:1 standing-wave ratio can not be achieved at any frequency.[1]

If this feed arrangement is used it is important that the effective feed-line length be a multiple of one-half wavelength at the operating frequency. The correct length of line for minimum s.w.r. can be determined most conveniently through the use of an s.w.r. bridge inserted in the line at the transmitter. With this arrangement the original feed-line length should be made at least 6 feet longer than required, and then "pruned" approximately 6 inches at a time until minimum s.w.r. is achieved.

If the two-element circular is fed through a balun located at the antenna, or by a balanced line, no feed-line "trimming" will be necessary, of course.

[1] Lest there be any misunderstanding of this point, as well as the line pruning mentioned in the subsequent paragraph, it should be emphasized that what the author is discussing does not in any way contradict the fact that the s.w.r. on a transmission line is determined only by conditions existing at the load end and (except for the effects of normal line losses) is *not* affected by the line length. When terminated in a balanced antenna, the cable sees a load consisting of the actual antenna plus the *outside* of the coax. The component of the load impedance contributed by the latter depends on the length of the coax, in terms of wavelength, and the relationship of the cable to nearby objects. To minimize this "antenna effect" it is necessary to detune the outside of the line at the operating frequency, and one method of detuning is to adjust the line length by pruning. Decoupling through a balun at the antenna is also effective. — *Ed.*

Fig. 6—Standing-wave ratio vs. frequency; three-element antenna with matching section.

The three-element circular has relatively low impedance, which makes it necessary to use some type of impedance-matching device between the

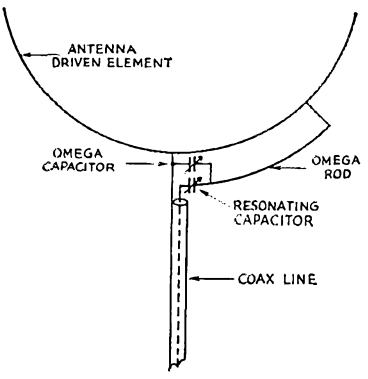
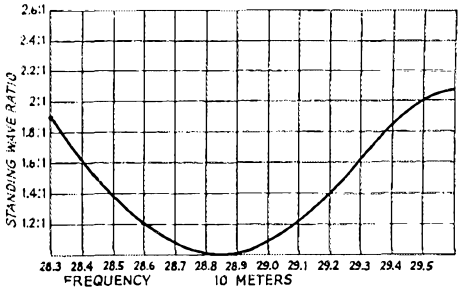


Fig. 7—Omega matching section for driven element of three-element antenna.



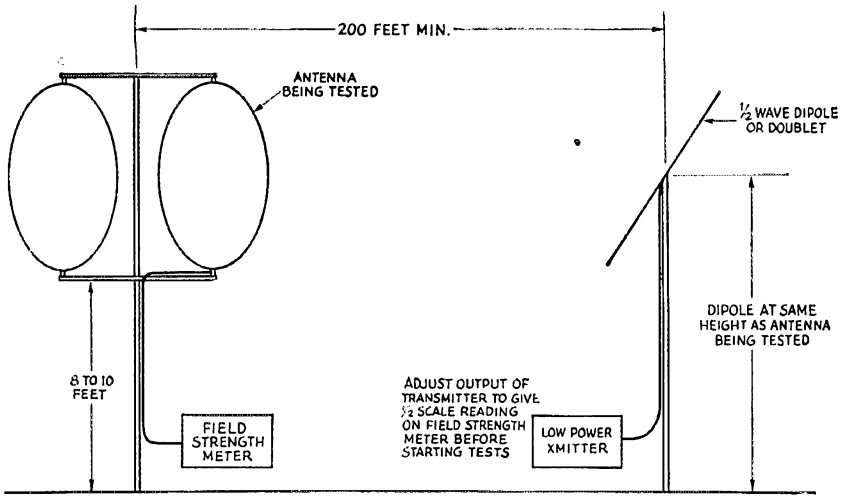


Fig. 8—Setup for antenna adjustment.

driven element and the feed line. The antenna shown uses an omega match,[2] which is simple to construct and easy to tune. Specifications of this omega match, which is built in a 4 × 5 × 6-inch aluminum box, are:

Omega capacitor — 15 $\mu\mu$f. max.
Resonating capacitor — 45 $\mu\mu$f. max.
Omega rod length — 23 inches
Omega rod diameter — ¼ inch
Spacing from omega rod to driven element — 4 inches.

Once the antenna has been constructed, tuning of the omega match will take only a few minutes. With an s.w.r. bridge in the feed line at the transmitter, the omega and resonating capacitors are successively tuned for minimum s.w.r.

Experience has shown that circular antennas can be tuned with the lower boom 8 to 10 feet from the ground and will remain substantially in tune when raised to operating height.

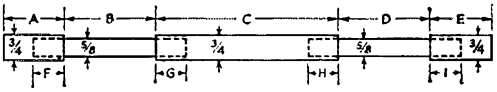
Construction Details

Soft aluminum tubing has been found ideal for use in the construction of the circular elements, as it is light in weight and easy to form into shape.

If you are lazy, and don't mind spending a few extra dollars on materials, the elements can be made of one-piece construction from continuous lengths of tubing of the type stocked by aluminum warehouses. Tubing of this type (Alcoa "Utilitube", for example) is available in 50- and 100-foot lengths in ⅝- or ¾-inch outside diameters.

The industrious but thrifty can make their elements from standard 12-foot lengths of soft-temper tubing available from any surplus metal supplier. Five-eighths-inch tubing telescoped into ¾-inch tubing results in excellent light but rigid elements. One circular antenna using ½-inch and ⅝-inch tubing stood up in winds in excess of 60 miles per hour, but the larger diameters are much easier to handle during construction.

Table I gives the sizes and lengths of tubing needed for the two- and three-element circulars. To assemble the elements, the individual pieces of tubing are first laid out in a straight line as shown in Fig. 9. The sections of tubing are then



ANTENNA ELEMENT	DIMENSIONS				OVERALL LENGTH
	A, E	B, D	C	F, G, H, I	
DRIVEN ELEMENT	4'	9' 5"	8'	1' 3½"	34' 10"
REFLECTOR	4'	10' 7"	8'	8½"	37' 2"

Fig. 9—Element construction detail for two-element antenna.

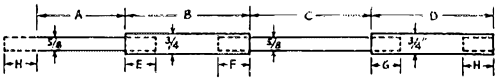
[2] Orr, *Beam Antenna Handbook*, Radio Publications, Wilton, Conn.

Table I

Antenna Model	Tubing Required			
	Quantity	Length	O.D.	Wall Thickness
2-element	4	12'	⅝"	.049 or thicker
	3	12'	¾"	.049 or .058
3-element	6	12'	⅝"	.049 or thicker
	4	12'	¾"	.049 or .058

telescoped together to the dimensions indicated, and fastened at each joint with a sheet-metal screw. *Note:* Make sure that the elements are of the correct length at this point, as it is very difficult to change the length once they have been formed into circles.

After assembly the elements are formed into their circular shape. This can be done in a few minutes by first preparing a circle of stakes or nails around which the tubing can be formed. Wooden stakes driven into the ground work well,



ANTENNA ELEMENT	DIMENSIONS A, C	B	D	E, F, G	OVERALL* LENGTH
DRIVEN ELEMENT	9' 8"	12' 0"	4' 0"	1' 2"	36' 6"
REFLECTOR	10' 8"	8' 0"	8' 0"	8"	38' 0"
DIRECTOR	9' 0"	12' 0"	4' 0"	1' 6	35' 6"

*NOTE: *Overall length is not the same as final element length, as it includes "H" which is telescoped into "D" after the element has been formed into circular shape.*

Fig. 10—Element construction detail for three-element antenna.

as do nails hammered into an asphalt driveway surface. The diameter of the circle should be approximately 10 feet 6 inches. To form an element, simply fasten one end in a fixed position (get your wife to stand on it) and bend the tubing around the stakes until the two ends meet.

If the element being made is the driven element for the two-element antenna, the two free ends should be temporarily taped together until the element has been attached to the top boom.

The reflector of the two-element, and all of the elements of the three-element antenna, are complete, unbroken circles. Thus the two free ends can be slipped together after forming, and the joint fastened with a sheet-metal screw.

Booms

Two-inch diameter hard-temper aluminum is used for the top boom, which actually supports virtually the entire weight of the elements. The lower boom acts mainly as a sway brace, and to carry the feed line.

All elements are connected directly to the top boom with automobile muffler clamps or pipe clamps. Fig. 11 shows two simple methods of attachment which have proved satisfactory.

The lower boom may be of wood (for the two-element circular only) or of metal. However, as the driven element of the two-element circular is split to accept coax or balun feed, it is necessary to insulate the two ends from the lower boom if it is metal.

The two-element circular shown in Fig. 2 used a 2 × 2-inch wooden lower boom, while that of the three-element antenna is 1½ × 1½-inch square aluminum.

Note that all elements of the three-element model are directly connected to the lower boom as well as to the upper boom.

Performance

No gain figures are included in this article, because accurate data of this type can only be obtained through elaborate tests conducted on model antennas operating in the microwave spectrum. However, the following *operating* results will give a pretty good idea as to what can be expected from a circular antenna operating in a fairly good location:

When operated with its lower boom only 7 feet above ground level the two-element circular outperformed a well-tuned three-element close-spaced conventional beam immediately adjacent, but at a height of 50 feet.

All continents were easily worked using the three-element circular operating with its lower boom 7 feet above ground level.

The gain of the three-element circular is of a sufficiently high order to allow solid contacts from the Detroit area with many stations throughout the eastern half of the country using back scatter. One interesting 11-meter evening roundtable (before operating privileges in this band were withdrawn — *Ed.*), in which both back scatter and normal forward propagation were used at K8CFU, included stations in Australia, Ohio, Marshall Islands, California and Pennsylvania.

Operating in less than one third of the 1958 ARRL DX Competition resulted in contacts with 55 countries on 10 meters, and 15 countries on 11 meters. Only one country called (Estonia) was not worked.

The transmitter used for all operations was a DX-100 operating with an input of 130 watts.

In spite of the excellent results from the circular antennas built to date, there are undoubtedly many ways in which the performance and versatility of this type antenna may be increased.

Want to be a pioneer?

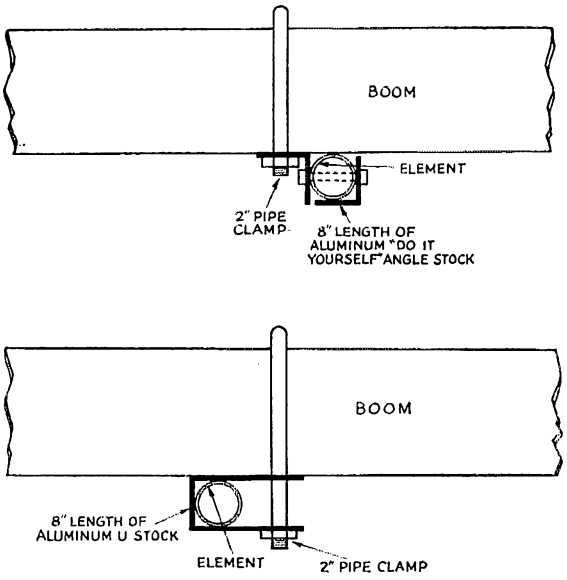
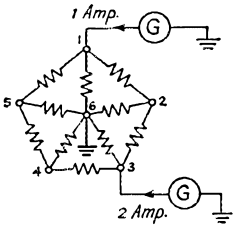


Fig. 11—Alternative methods for attaching elements to booms.

Quist Quiz

Once in a while we throw in one to separate the men from the boys. This one by Burton Dobratz of Berkeley, Calif, is in that class.

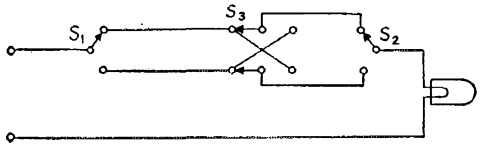
The network shown below is made up of 1-ohm resistors. The generators provide constant currents of 1 and 2 amperes as shown. The problem:



Find the current in each resistor. (Resistors can be identified by their terminals, as R_{12}, R_{15}, R_{16}, etc.)

—···—

The answer to last month's Quiz is shown below. Anyone have a solution with single-pole switches throughout?



—···—

Richard Chambers, W3WZL, points out that the solution given for the 10-terminal problem (August, 1958) is not unique. Recalling the 3-terminal problem (April, 1958) and the wye or delta possibility, W3WZL conjures up an "*n*-order delta" involving *n* terminals and a resistor from each terminal to every other terminal. To show 2 ohms between any two terminals, the 10th-order delta would use ten 10-ohm resistors.

Strays

Some amateurs are sending QSL cards, destined for Canadian amateurs, to Alex Reid, VE2BE, for further distribution. Canadian Director Reid handles the administrative affairs of the League in Canada; he is not a QSL manager. The QSL manager for the VE2 district is George C. Goode, VE2YA. A complete listing of VE and W/K QSL managers may be found on page 190 of this issue.

Silent Keys

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

W1BDJ, Fred T. Baker, Scarboro, Me.
K1GVG, Gerard T. Perrone, Quincy, Mass.
W1NO, Charles E. Howell, West Newton, Mass.
K2HH, Frederick C. Meacham, Garden City, N. Y.
W3GGN, Margaret I. Bittner, Salisbury, Pa.
W3JCG, John H. McGaughy, jr., Hyattsville, Md.
W4FY, John C. Buchanan, Knoxville, Tenn.
K4QPW, James D. Tomlinson, St. Petersburg, Fla.
K4RKK, Thomas M. Jenkins, Raleigh, N. C.
W5CDH/DL4TA, David M. Shumaker, San Marcos, Texas
K5EAX, Nolan J. Toups, Crowley, La.
W5HCA, Johnnie Andrews, Fort Worth, Texas
W5WY, Clyde V. Hussey, Pine Bluff, Ark.
K6GSA, Vernon L. Swanson, Needles, Calif.
K6HBK, Don L. McCulloch, Fortuna, Calif.
W6LLW, Frank H. McCann, Salinas, Calif.
W6PHO, Roger H. McCone, Bell, Calif.
W7ASX, Floyd L. Aspley, Portland, Oreg.
W7VLS, Wayne M. Swart, Clatskanie, Oreg.
W8ANH, Leland B. Terry, Ewington, Ohio
W8GW, Golmar W. Irwin, Bay Village, Ohio
W8NCE, Donald H. McGeorge, Shaker Heights, Ohio
W9MEP, Robert L. Pense, Milledgeville, Ill.
WØEBE, Leslie G. Call, Springfield, Mo.
KL7GP, Leon S. Vincent, Juneau, Alaska
VE3AWH, Albert Shlakat, Ottawa, Ont.

25 Years Ago this month

November 1933

. . . The cover twenty-five years ago was practically timeless — a fellow with a copy of *QST* sitting before his junk box trying to figure out how he could build the latest circuit.

. . . Grammer had another go at a five-band exciter using a tri-tet oscillator.

. . . W1AFC had some dope on a new regenerative detector circuit for ultra-short waves.

. . . James Lamb discussed new developments in crystal filters for single signal receivers and automatic gain control.

. . . John Reinartz told how to put the type 800 transmitting tube to work.

. . . Warner reported on the American Regional Conference and also on amateur licensing procedures in this country.

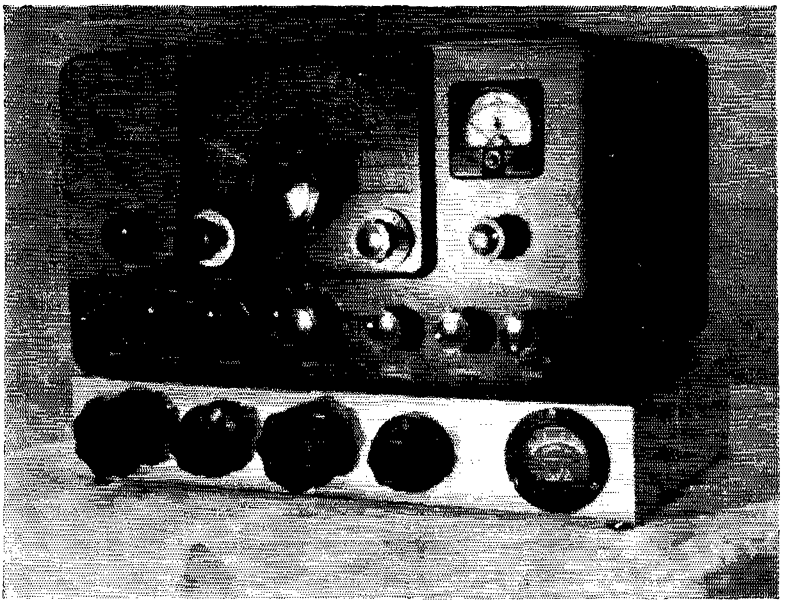
. . . Communications Manager Handy announced the new field appointment of Official Phone Station.

. . . Three pages plus of ideas for the experimenter. Two pages of station descriptions. Strays. IARU News. Calls Heard. Operating news. Station activities. Correspondence from the readers. All the familiar standbys that could be counted on in each issue of *QST*.

. . . A sad note — the demise of the William B. Duck Co. was reported. The Duck catalog was almost indispensable to the early amateur.

MEMBERSHIP CHANGES OF ADDRESS

Four week's notice is required to effect change of address. When notifying, please give old as well as new address. Advise promptly so that you will receive every issue of *QST* without interruption.



A Five-Way Antenna Coupler

Versatile Unit for Coupling to Any and All Skywires

BY ALBERT M. BROGDON,* W4UWA/DL4

You may be frightfully clever and never have any trouble loading your transmitter with any old piece of wire, but most of us have had trouble at one time or another and so are interested in this antenna coupler. But even old Mr. Clever himself will be interested in an account of some of the experiments of the author and the DX he worked.

Above, and facing page: Two views of the 5-way antenna coupler, mounted in a chassis that serves as a support for the transmitter. The antenna ammeter is connected to the input side of the coupler, but it would have been better to have it in the output line.

MANY hams, at one time or another, are faced with the problem of not being able to put up a good antenna. When this situation arises, most of these hams will hang a random length wire between two convenient supports. The tuner described in the following pages was designed for the specific purpose of coupling a Viking Ranger to any haywire antenna that might be used, but the basic circuit can be tailored to fit any transmitter.

Lewis McCoy, W1ICP, has written two articles[1] during the past few years about antenna tuners built especially to couple low-power transmitters to random length (or short) antennas. The circuit shown in Fig. 1 provides, by means of S_1, a choice of either of McCoy's tuning circuits, or a pi network, or one other circuit. Fig. 2B may look like an unusual circuit, but it is used with either C_1 set at maximum, and L_1 varied, or with L_1 shorted out and C_1 varied. With all these different circuits available, it is possible to match almost any antenna.[2]

Although Fig. 1 shows specific values for C_1, C_2, and L_1, they are not critical. C_1 and C_2 should be at least 150 $\mu\mu$f. each, but the more the merrier. The spacing of C_1 and C_2 should be .025 inch for transmitter inputs of 100 watts or less. L_1 may be a convenient length of any of the two- to three-inch diameter air inductors, or a home-wound coil on a ceramic form. It should be tapped every two or three turns. The tuner may be built breadboard style, or it may be built inside a small cabinet or chassis. If it is built breadboard, it

* Lieut., HQ & Svc Co., 319th US ASA Bn., APO 171, New York, N. Y.

[1] McCoy, "The EZ-Couple," *QST*, Dec., 1955, and "A Window-Sill Antenna," *QST*, Oct., 1957.

[2] I have yet to find the antenna that, with the coupler, won't load the transmitter. — *W4UWA*.

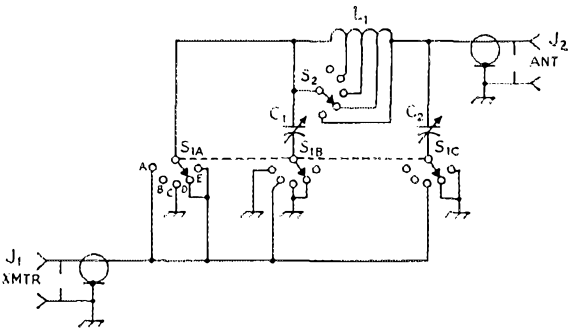


Fig. 1—Circuit diagram of the 5-way antenna coupler. All contacts of S_2 are not shown.
C_1, C_2—150-$\mu\mu$f. variable. See text.
J_1, J_2—Coax receptacles, SO-239.
L_1—20 turns No. 12 bare, 2½-inch diam., 6 t.p.i. (B & W 3905-1). Tapped every other turn.
S_1—Three-gang five-position ceramic rotary switch.
S_2—One circuit 11-position ceramic rotary switch.

may be more convenient to use a movable clip instead of S_2 to vary the inductance of L_1. Of course, the basic tuner may be jazzed up with the addition of such things as a low-pass filter, s.w.r. indicator, t.r. switch, and output indicator. Or it may be built from your junk box at very little cost. Let your budget be your guide.

When first using this tuner with an antenna, try various positions of C_1, C_2, S_1 and S_2 in order to find the point at which maximum output is reached (maintaining a constant transmitter input). When the correct settings have been found for each frequency band, and these settings noted for future reference, it is an easy matter to hop from band to band. You should keep in mind that with certain settings of the tuner controls, it is possible to dissipate a large part of the transmitter output in the tuner itself. Therefore, an output indicator should be used for initial tune up.

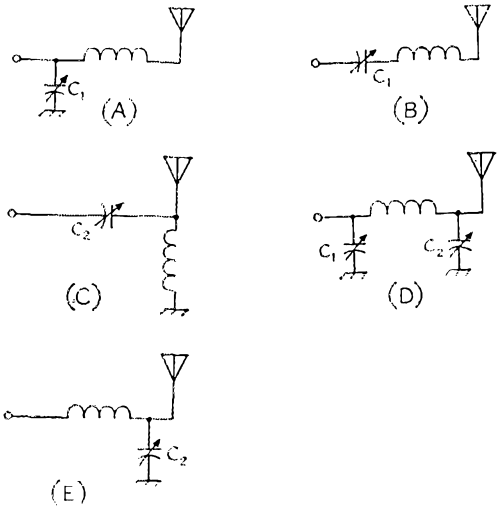


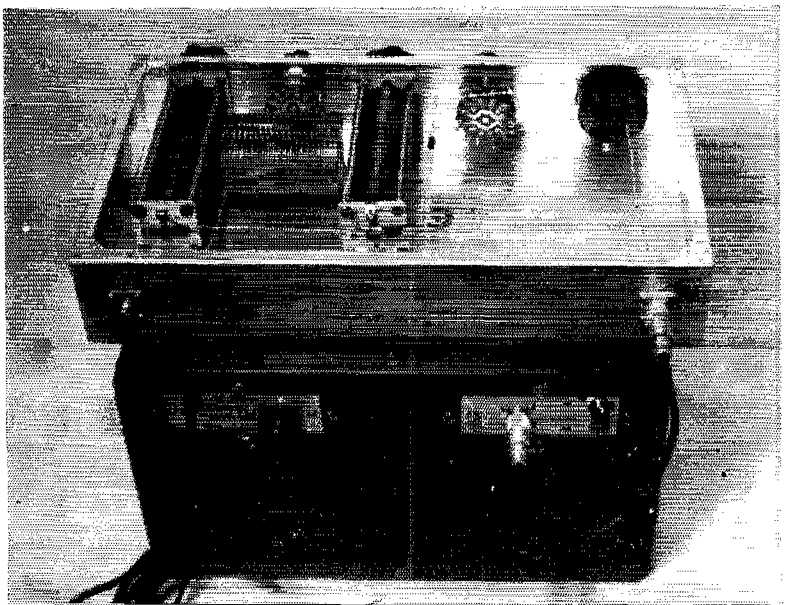
Fig. 2—Various configurations obtained with the circuit of Fig. 1. Letters correspond to those on switch S_{1A} (Fig. 1).

The photographs show the author's antenna tuner, which is built inside a 10 × 17 × 3-inch chassis mounted on the bottom of the Ranger. A bottom plate is used on the chassis to provide r.f. shielding. The large vacant space on the right side of the chassis was left so that a low-pass filter, such as the one in the *Handbook*, could be added at a later date.

Results

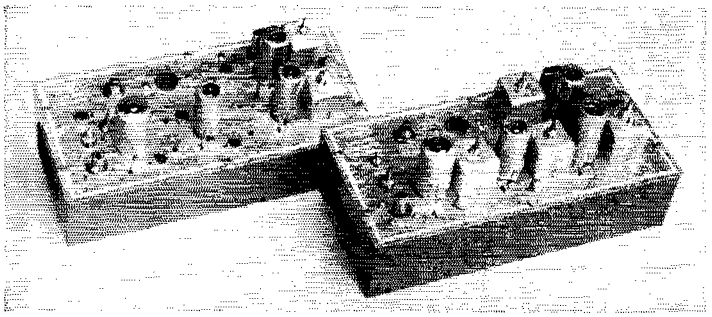
Every time McCoy builds an antenna tuner, he modestly mentions all the FB reports he has received from DX stations while using such antennas as a brass doorknob, a base-loaded cuff link, or a double extended coat hanger. I thought it might be a good idea for W4UWA/2 to try to outdo McCoy at his own game. While running 50 watts input to the Ranger, I checked into the Kentucky and Tennessee c.w. nets on 80 meters,

(*Continued on page 164*)



• Recent Equipment —

The Tecraft V.H.F. Converters



Tecraft crystal-controlled converters for 220 (left) and 50 Mc. 144-Mc. model is similar in appearance to that for 220-Mc.

BASIC features of the Tecraft 2-meter converter, one of the first high-quality crystal-controlled converters for v.h.f. use to appear on the market, were discussed by its designers in a *QST* technical article some years ago.[1] The circuit and layout features that made for uniform response across the band, with good attenuation of signals outside the desired tuning range, are still featured in current Tecraft designs for 50, 144 and 220 Mc.

The 50- and 220-Mc. models are shown in the accompanying photograph. The 144-Mc. model is similar in appearance to the 220-Mc. unit. The principal difference between the two in the photograph is in the position of the r.f. coils. The 50-Mc. unit has its coils mounted in individual shield cans, the greater permissible lead length at the lower frequency making this a practical matter.

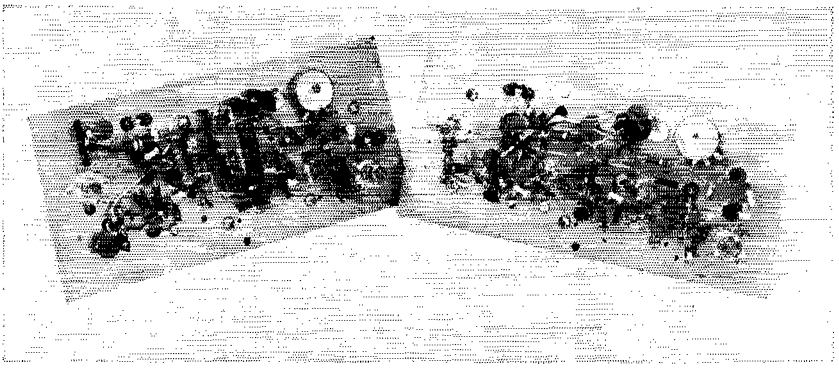
All three converters use a dual-triode r.f. amplifier stage (6BZ7) followed by 6CB6 pentode amplifier and a 6CB6 mixer. The injection is furnished in each by a 6J6, though the circuit lineup is different for the various frequency ranges. Each converter in the new line has a series trap connected at the input circuit, to prevent strong signals at the intermediate frequency from riding through. This is no problem unless you happen to be close to a station operating in your i.f. range, a not-uncommon condition in densely populated areas, especially with converters tuning the 14-Mc. i.f. range.

Another new feature in the Tecraft converter line is an r.f. gain control. This is connected in the cathode circuit of the 6CB6 amplifier stage. Normally it is left in the maximum position, for the noise figure is lowest at this setting. A considerable reduction in cross-modulation trouble from a strong local station can be effected by turning the gain control back a bit, usually with only slight degradation of the converter noise figure. Gain, as such, is relatively unimportant, for there will be more than adequate gain with almost any modern communications receiver.

Tecraft converters are supplied for 14-Mc. i.f. tuning range, unless otherwise specified. Other frequencies, to suit various communications receivers where suitable tuning is not available at 14 Mc., can be obtained upon request. — *E.P.T.*

[1] "Notes on V.h.f. Converter Design" — Van Duyne and Treptau, *QST*, February, 1953, p. 52.

Bottom view of the Tecraft v.h.f. converters. The 50-Mc. model, right, has all r.f. coils in individual shield cans mounted above the chassis. Converter for 144 Mc., not shown, follows 220-Mc. layout.



Johnson Directional Coupler and Indicator

ALTHOUGH the economy-minded ham can buy the E. F. Johnson 250–37 Directional Coupler and put together an indicator from the instructions furnished with the coupler, most customers will also probably buy the 250–38 Directional Coupler Indicator. It would be rather difficult to duplicate at home the attractiveness of the 250–38, with its gray sloping cabinet and large plastic-housing meter.

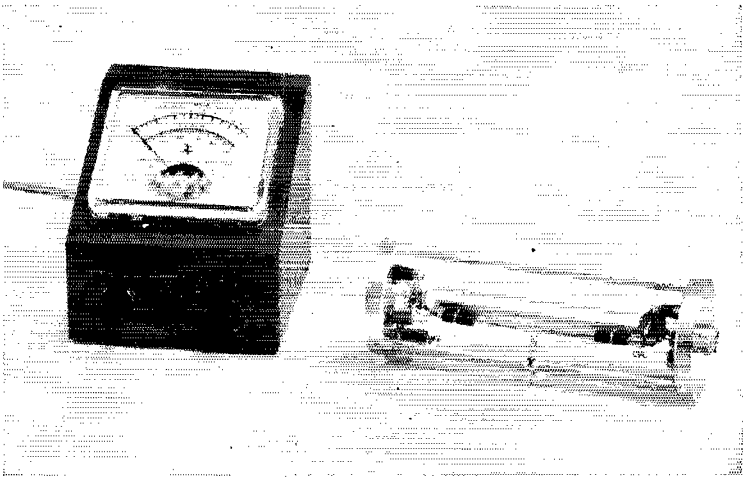
The coupler bears a resemblance to the Monimatch and other reflectometer-type couplers, but it differs in several interesting ways. Designed to work in 52-ohm line up to 150 Mc., and to handle levels of signals from peanut whistles to full kilowatt transmitters, the coupler is itself a section of 52-ohm line. Housed in a 2¼-inch diameter tube, an inner conductor tapers out from the connectors to a diameter that minimizes any impedance "bump." Since the associated resistors, diode rectifiers and by-pass capacitors are *inside* the coaxial line and could be exposed to the field, considerable care has been exercised to dress the leads so that undeserable couplings are avoided.

Leads for metering are brought to color-coded nylon tip jacks at the ends of the coupler, and to put the coupler to use the owner connects his coaxial cable to the SO-239 coax receptacles at each end and the meter to the tip jacks. Instructions provided with the coupler suggest a number of ways the coupler can be used, such as s.w.r. measurement, antenna coupler adjustment, determination of antenna radiation resistance and the measurement of amplifier input impedance.

The indicator has two scales, one labeled "Standing Wave Ratio" and the other marked "Power." Actually, the power scale is only a relative one, very useful for detecting a change in output (trouble in the rig) but not to be expected to deliver absolute readings. The s.w.r. scale has been carefully calibrated, however, and its readings are accurate within the limitations of s.w.r. measurements at the generator (transmitter) end of a line.[1]

—*B. G.*

[1] Goodman, "The Versatile S.W.R. Indicator," *QST*, June, 1958.



At the left the indicator and at the right the coupler with cover removed so that the internal construction can be seen.

The Knight Receiver

STRICTLY speaking, the title should read "The Allied Knight-Kit De Luxe All-Band Amateur Receiver 83YZ2726," since that is what the manufacturer (Allied Radio of Chicago) calls it in the catalog and on the cover of the instruction book. Somehow it is a little hard to visualize a ham telling another over the air that he's using an "83YZ2726"; he is much more likely to use the simple title above. And we suspect there will be a lot of these receivers used: the price of the kit is well below that of any completed receiver of comparable quality, and the design is such that no more than 22 to 25 hours construction time will be required by most assemblers.

The story of the Knight receiver is in the mechanical end of things, not the electrical. After all, it is asking a little too much to expect radical circuit engineering in a receiver designed to sell at such a low price. The Knight uses a sound straightforward circuit; one stage of r.f. amplification, two 455-kc. i.f. stages, and a *Q* multiplier for selectivity. The block diagram in Fig. 1 pretty well tells the story; nine tube envelopes conceal a 15-tube circuit. Following the

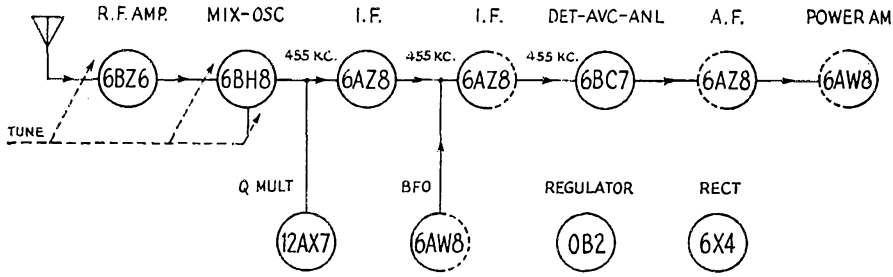


Fig. 1 — Block diagram of the Knight receiver.

6BZ6 r.f. stage is the triode-pentode 6BH8 oscillator-mixer stage; the oscillator is the triode section in a grid-tickler grounded-cathode circuit, and the pentode mixer has grid-circuit injection. The pentode portions of the 6AZ8s are used in the i.f. amplifier, and the triode section of the second 6AZ8 is used in the audio-amplifier stage following the 6BC7 triple-diode detector-a.v.c.-automatic noise limiter circuit. The triode in the first 6AZ8 isn't used at all; we thought at first it might be used in the (optional) 100-kc. crystal calibrator, but investigation showed that this addition carries its own tube.

The *Q* multiplier circuit provides for either null or peak operation; in the peak condition the selectivity is quite sufficient for good single-signal c.w. reception with little or no trace of "the other side of zero beat."

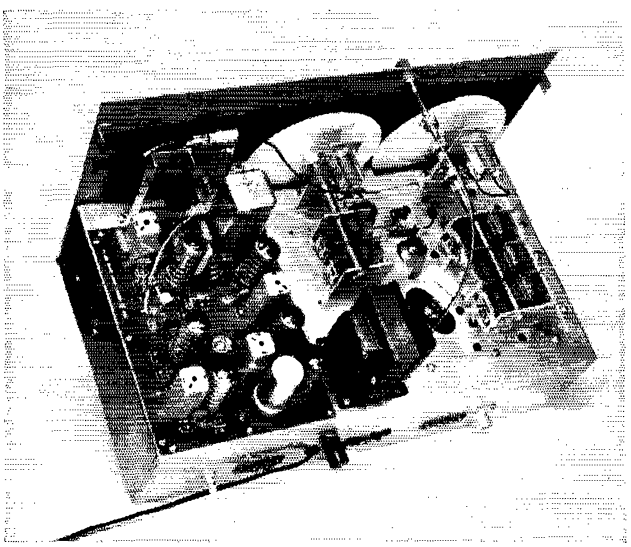
Although the b.f.o. is quite loosely coupled to the grid of the second i.f. stage (as it should be to avoid overloading the stage), the amplified b.f.o. reaching the diode detector is sufficient for good s.s.b. demodulation without pampering of the r.f. gain. The diode noise limiter uses the well-known series circuit to provide automatic noise limiting during a.m. reception. The (optional) S meter reads the variation in cathode bias voltage on the second i.f. stage as the a.v.c. voltage applied to the grid reduces the cathode current; a.v.c. is applied to both i.f. stages and the r.f. stage, while manual gain varies the cathode voltage of the r.f. and first i.f. stages.

In the power-supply department, the operating plate voltage runs around 180 volts, apparently in keeping with the philosophy of "lower voltages mean less heating and drift." The regulated voltage provided by the 0B2 is applied to the high-frequency oscillator.

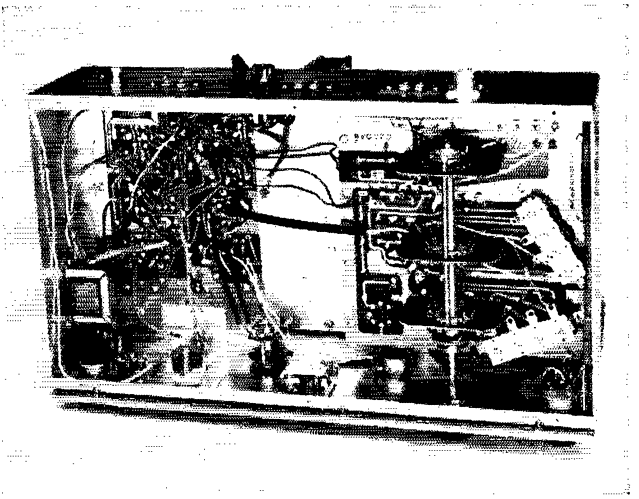
Both of the dials use planetary reductions to slow down the tuning. The band-set drive takes $2\frac{1}{2}$ turns of the knob to cover any of the four ranges: 0.54 to 1.65 Mc., 1.6–4.6, 4.4–12.4 and 12–30 Mc. Bandspread requires $2\frac{1}{2}$ turns for 80 meters, $1\frac{3}{4}$ for 40 and 20, 1 for 15 and $1\frac{1}{4}$ for 10 meters.

Mechanical

A glance at the photographs shows that two printed-circuit boards are used in the construction of the receiver. The band-switch sections also utilize printed circuits; this single feature practically eliminates the possibility for wiring error around the (usually) tricky band-switch circuits. Assembling the parts on the printed-circuit boards has been made truly easy; the components are identified on the boards and in the instruction book. As a further convenience, the resistors are packed on sheets of cardboard



A feature of the Knight receiver is the use of printed circuits. The one shown in this top view carries the i.f. and audio section of the receiver. Note the use of a 3-gang capacitor for band-set tuning and a 2-gang capacitor for band spread. Logical, since the antenna trimmer (driven by the arching flexible shaft) can take care of the minor trim in the input circuit required over a ham band.



Looking at the underside of the chassis, one can see the two main printed-circuit assemblies. That on the right (r.f. section) also includes printed-circuit switch assemblies. Terminals at the rear of the receiver provide for antenna (plain wire or coax), speaker connections and remote switching standby-receive of the receiver.

An optional 100-kc. crystal calibrator unit can be bolted to the bare chassis at the center.

in numerical order, making it an easy job to locate R_{23}, R_{43} or any other. As a double check, the instruction book gives the proper color coding for the resistor to be used.

Anyone who has much to do with wiring kits, or correcting wiring errors of newborn hams, knows that the No. 1 problem is soldering. The Knight receiver kit includes a folder on "How to Solder" *and* enough solder to wire the receiver and then some. The solder is included because one common mistake in radio soldering is to use acid-core solder or solder with too high a melting point. Obviously, this printed-circuit work will require attention to soldering details, but it isn't at all difficult once you get the "feel" of it. Just don't be in such a hurry that you don't study the soldering instructions first; if you are a beginner, read the folder and practice your soldering before starting the receiver.

With the wiring errors fairly well eliminated through the use of printed circuits, the inexperienced constructor of a Knight receiver can only come a cropper during the alignment procedure. If he doesn't have or can't borrow a signal generator for the initial alignment, he can follow the "Alignment on the Air" instructions. We had someone else align this receiver after assembly, using the on-the-air method. Checking later with a signal generator, we were able to effect only minor improvement in the i.f. The front-end alignment depends to a large extent on one's ability to furnish signals of known frequency for checking, and here it is rather hard to hit the right spots without a signal generator or a good knowledge of marker signals. However, this is a problem with any receiver built at home. Since most kits are finished on Sundays or during evenings when the radio stores are closed, the two alignment tools furnished with the kit are a very welcome touch.

A 46-page instruction book gives all of the information necessary to assemble, wire, align, install and use the receiver. It even tells hams and s.w.l.'s when to listen on the various frequencies. All in all, it's hard to see how the constructor who takes the time to learn to solder before carefully following the instruction book step-by-step procedure can go wrong. — *B. G.*

Strays

Needing a neat operating desk but one which wouldn't permit touching of the equipment by unauthorized personnel, the radio club members at Freehold Regional High School in New Jersey put together this knotty pine and plywood cabinet. Measuring 22 inches deep, 48 inches wide and 54 inches high, it is mounted on small casters so that it may be moved from one spot to another in the electronics shop of the Industrial Arts Department. The operating shelf folds up to form a lid which is fastened with a padlock. Although not done on this model, individual drawer locks could also be installed. The fellow in the photo is K2SLJ. *(K2SLI photo)*

25th ARRL Sweepstakes: November 8-10 and 15-17

Certificates to C.W. and Phone Leaders in Each Section and to Club Winners; Special Novice Awards

CONTEST PERIODS

Time	*Start*	*End*
	Nov. 8 & 15	Nov. 10 & 17
EST	6:00 P.M.	3:01 A.M.
CST	5:00 P.M.	2:01 A.M.
MST	4:00 P.M.	1:01 A.M.
PST	3:00 P.M.	12:01 A.M.

NEED a few cards for WAS, WAVE, WACAN, WANE and the many other awards? Will your station hold together for 30 or 40 hours of concentrated operating? Can you amass 100 or 1000 contacts in two week ends? Do you think you can beat the local competition in your club or ARRL Section and cop an award, and perhaps lead your licensing area too? Can you work 73 sections or all states in 40 hours? If your answer is "yes," you'd better get set for the 1958 SS!

The rules are the same as those of last year. The contest runs over two week-end periods, with a maximum allowable total operating time of 40 hours for each entry. Take part on both phone and c.w. if you wish, but please submit separate logs for each mode because these are considered separate contests.

All amateurs in the ARRL field organization, as shown on page six of this *QST*, are invited to get in the SS. Certificates will be awarded to the c.w. and phone winner in each of the 73 ARRL Sections. Within a club, single-operator stations may compete for certificates given to the club's top scorer on both phone and c.w. A cocobolo gavel, engraved with the name of the winning club, will be offered to the group whose members run up the highest aggregate score. A certificate also goes to the leading Novice in sections in which there are three or more such entries.

To get in on the fun, just call CQ SS or answer such a call, exchange preambles in the form shown on the facing page and keep a neat, accurate log. ARRL will be happy to send along contest forms free on request, or you can draft your entry in accordance with the sample. To expedite handling and hold down postage expense, those who ask for SS log sheets without specifying quantity will receive three forms with room for 210 contacts in all. Should you expect to hit the contest hard, however, and get several hundred QSOs, please furnish a rough estimate of your contact total. This will help us minimize repeat orders and serve you better.

For purposes of this contest, all VE8s may be considered attached to Yukon. Similarly, VOs count as Maritime and Cuba as West Indies.

Read over previous Sweepstakes results for an idea of your sectional competition and operating hints. Then scan the rules below and stand by for two week ends packed with wonderful operating enjoyment.

Rules

1) *Eligibility:* The contest is open to all radio amateurs in (or officially attached to) sections listed on page 6 of this issue of *QST*.

2) *Time:* All contacts must be made during the contest periods indicated elsewhere in this announcement and between amateurs in (or officially attached to) the 73 sections. Time may be divided between week ends as desired, but a total of 40 hours must not be exceeded for each entry. Time spent in listening counts as operating time.

3) *QSO:* Contacts must include certain information sent in the form of a standard message preamble, as shown in the example. C.w. stations work only c.w. stations and phone stations only other phones. Valid points can be scored by contacting stations not working in the contest, upon acceptance of your preamble and/or receipt of a preamble.

4) *Scoring:* Each preamble sent and acknowledged counts one point. Each preamble received counts one point. Only two points can be earned by contacting any one station, regardless of the frequency band. The total number of ARRL sections (see p. 6) worked during the contest is the "sections multiplier." It is not necessary for preambles to be sent both ways before a contact may count, but one must be received, or sent and acknowledged, before credit is claimed for either point(s) or multiplier. Apply a "power multiplier" of 1.25 to c.w. entries and 1.5 to phone entries if the input power to the transmitter output stage is 150 watts or less at all times during contest operation.

The final score equals the total "points" × the "sections multiplier" × the "power multiplier."

5) *Reporting:* Contest work must be reported as shown in the sample form. Printed contest forms will be sent free on request. Indicate starting and ending times for each period on the air. All Sweepstakes reports become the property of ARRL and none can be returned.

There are no objections to one's obtaining assistance from logging, "spotting" or relief operators, but their use places the entrant in the multiple-operator class, and it must be so reported.

A single-operator station is one manned by an individual amateur who receives no assistance from other persons during the contest periods. He may not have assistance in any manner in keeping the station log and records, or in spotting stations during a contest period. The operation of two or more transmitters simultaneously is not allowed. Contest reports must be postmarked no later than December 3, 1958, to insure eligibility for *QST* listing and awards.

6) *Awards:* Certificates will be awarded to the highest

HOW TO SCORE

Each preamble sent and acknowledged counts one point.

Each preamble received counts one point.

Only two points can be earned by contacting any one station, regardless of the frequency band used.

For final score: Multiply totaled points by the number of *different* ARRL sections worked; that is, the number in which at least one bona fide SS point has been made. Multiply c.w. scores by 1.25 and phone scores by 1.5 if you used 150-watts-or-less transmitter input *at all times* during the contest.

EXPLANATION OF "SS" CONTEST EXCHANGES

Send Like a Standard Msg. Preamble, the.....	*NR*	*Call*	*CK*	*Place*	*Time*	*Date*
Exchanges	Contest serial numbers, 1, 2, 3, etc., for each station worked	Send your own call	CK (RST report of station worked)	Your ARRL section	Send time of transmitting this NR	Send date of QSO
Sample	NR 1	W1AW	589	CONN	1812	NOV 8

c.w. scorer and to the highest phone scorer in each ARRL section. A c.w. certificate will also be awarded to the highest scoring Novice or Technician in each section where at least three such licensees submit c.w. logs; similarly, a phone certificate will be earned by a Novice or Technician in each section where a total of three such licensees submit phone logs. Only single-operator stations are eligible for certificate awards. Multiple-operator scores will receive separate *QST* listing in the final results.

A gavel will be awarded to the highest club entry. The aggregate scores of phone and c.w. reported by club secretaries and confirmed by the receipt at ARRL of contest logs constitute a club entry. Segregate club entries into phone and c.w. totals. Both single- and multiple-operator scores may be counted, but only the score of a bona fide club member, operating a station in local club territory, may be included in club entries.

The highest single-operator c.w. score and the highest single-operator phone score in any club entry will be rewarded with a "club" certificate where at least three single-operator phone and/or three single-operator c.w. scores are submitted.

7) *Disqualification:* Failure to comply with the contest rules or FCC regulations or the necessity for avoiding interference with channels handling amateur emergency communication shall constitute grounds for disqualification. In all cases of question, the decisions of the ARRL Contest Committee are final.

Sample of report form that must be used by contestants

LOG, 25th A.R.R.L. SWEEPSTAKES

Station..... *C.W. or Phone*..... *Section*.....

Freq. Band (Mc.)	*Time On or Off Air*	*Sent (1 point)*				*Time*	*Date (Nov.)*	*Received (1 point)*				*Time*	*Date (Nov.)*	*Number of Each Different New Section as Worked*	*Points*
		NR	*Stn.*	*CK-RST*	*Section*			*NR*	*Stn.*	*CK-RST*	*Section*				
3.5	On 1810	1	W1AW	589	Conn.	1812	8	7	W3JNQ	589	E. Pa.	1814	8	1	2
"	"	2	"	589	"	1815	"	6	W4KFC	599	Va.	1817	"	2	2
"	"	3	"	579	"	1820	"	6	W1BIH	579	Conn.	1821	"	3	2
7	"							24	K5HYB	479	Ark.	2005	"	4	1
"	"	4	"	479	"	2115	"	38	KN6ZBV	579	Sac. V.	1815	"	5	2
"	"	5	"	579	"	2128	"	45	W6EYY	479	S. F.	1820	"	6	2
"	"	6	"	589	"	2133	"	9	W3ALB	589	E. Pa.	2134	"	..	2
"	Off 2135 Time: 3 hrs. 25 min. On 1845														
14	"	7	"	569	"	1915	9	94	KH6IJ	569	Hawaii	1418	9	7	2
"	"	8	"	569	"	1925	"	127	W7HAH	569	Mont.	1728	"	8	2
"	"	9	"	469	"	1935	"	114	W7TML	569	Ore.	1630	"	9	2
3.5	"	10	"	579	"	2110	"	130	KØCNC	579	N. D.	2005	"	10	2
"	"	11	"	589	"	2112	"		K5HYB		Ark.				1
"	Off 2115 Time: 2 hrs. 30 min.														

Total Operating Time: 5 hrs. 55 min. 3.5, 7 and 14 Mc. used. 10 Sec., 22 Pts. 145 Watts Maximum Power Input

Assisting person(s), name(s) and call(s).....

Claimed score: 22 points × 10 sections = 220 × 1.25 (145 watts input) = 275

Type transmitter (tube line-up if home-built).....

Receiver..... Antennas.....

Participation for Club Award in the.....
(Name of Club)

I have observed all competition rules as well as all regulations established for amateur radio in my country. My report is correct and true to the best of my knowledge.

Signature.....

Number different stations worked..... Address.....

Moon-Bounce Transmissions Resumed

AMATEUR radio operators are invited to tune in on moon-bounce signals being transmitted on a frequency of 151.11 megacycles at the U. S. Army Signal Research and Development Laboratory, Fort Monmouth, N. J.

Lunar transmission on that frequency was resumed after the Army Signal Laboratory successfully completed a project of reflecting 108 megacycles off the moon to establish the feasibility of such a method for checking out equipment at satellite tracking stations. The unique method of calibrating the satellite tracking receivers to the frequency of U. S. space-vehicle transmitters was carried out primarily for the benefit of the widespread Minitrack stations prior to satellite launchings.

However, at the same time, the Army Signal Laboratory, in cooperation with the American Radio Relay League, sent out schedules and asked amateurs receiving the moon-bounce signals to report their reception as additional and valuable data for the project. Hundreds of operators reported and were sent QSL cards acknowledging their accomplishment. Signal Corps scientists taking part in the work express their appreciation for the volunteer support the amateurs gave.

Transmission on the 151.11-megacycle frequency is for further study of factors affecting behavior of radio waves. Fields of interest take in ionospheric influences, including the Faraday effect — that is, rotation of the plane of polarization of radio transmission in the ionosphere due to the presence of the earth's magnetic field.

Alan Gross, chief of the Research Instrumentation Branch of the Laboratory, who is in direct charge of the propagation work, points out that the Laboratory would be appreciative of reports from amateurs picking up the 151.11-Mc. signal. All reports will be acknowledged.

Present schedules call for transmissions during the period November 1–8, inclusive, and December 1–10, inclusive, at times when the moon is in proper phase — i.e., above the horizon at Fort Monmouth. The time that operators in different parts of the country might pick up signals obviously varies because of differences in moonrise and moonset.

The transmitter in use is being operated alternately on c.w. and on two-second pulse on a cycle of four or eight seconds. Output is 50,000 watts c.w. The antenna, with 25-db. gain, boosts output to 20 megawatts of radiated power. The 50-foot parabola is widely identified with Radar Diana, which with an earlier antenna transmitted and received the world's first radio echo from the moon in 1946.

Strays

The lunar probes which, as we write, have had one failure and one postponement, will have two transmitters sending back information. On 108.06 Mc., with 300 milliwatts, there will be five Microlock phase-modulated sub-carriers transmitting continuously from launch. Information received at the ground stations will include micrometeorite impingement, lunar magnetic field strength, and the payload compartment temperature. On 108.09 Mc., with a power of 1 to 50 watts, the carrier will be amplitude modulated when the moon is in the field of a photo-cell telescope.

—•••—

During a recent and enjoyable c.w. QSO with a KNØ, we exchanged the information that I was a Roman Catholic priest and he was a mechanic. A little later on I suggested that perhaps he would like to join the RCC. He hesitated a bit and then replied, "No, thanks, I'm a Baptist." This caught me off guard for a moment until I realized that RCC could stand for both the Rag Chewers' Club and the Roman Catholic Church! — *K5IVT*

—•••—

K6VXI helped W6PQI put up a new beam, but then found himself stranded on the roof. An aerial ladder from the fire department came to the rescue. — *W6TQF*

KP4AND visits W2ZXM aboard the *Flying Enterprise II.* Skipper Kurt Carlsen has recently installed a Model 26 printer aboard the ship and says that he has worked K2AAA over a distance greater than 10,000 miles. The gear includes a 75A-4 receiver, an Eldico 100F sideband exciter, and a homebrew kw. final using a pair of 4-400As in grounded grid. (Some of *QST*'s newer readers would be interested in reading about the 1952 exploits of Captain Carlsen as reported in *QST* for February, 1952).

ELECTION RESULTS

FCC Rules Proposal

In the Northwestern Division, the incumbent director, R. Rex Roberts, W7CPY, has been returned to office without opposition, and will start his sixth consecutive term on January 1.

Five vice-director candidates were similarly unopposed and were declared elected. Lloyd H. Manamon, W2VQR, was returned to office as Hudson vice-director, and Virgil Talbott, W6GTE, remains as vice-director of the Southwestern Division.

Carmine A. Polo, W1SJO, plant engineer of the Connecticut Refining Company, becomes the New England vice-director. A past-president of the New Haven Amateur Radio Association, Tony is very active in phone traffic nets.

The new Rocky Mountain vice-director will be John H. Sampson, Jr., W7OCX, a retired Army Colonel. He is president of the Ogden Amateur Radio Club, Inc., and has served as acting SCM and assistant SCM of the Utah Section. He holds appointments as ORS and OBS, is a member of AREC, and is MARS Director for Utah.

Assuming office as vice-director of the West Gulf Division the first of next year is Robert D. Reed, W5KY, who has been serving as an assistant director since 1953. He has been the public relations director of the Tulsa Amateur Radio Club, and is presently its vice-president. He is a member of 4th Army MARS and of the AREC, and holds appointments as ORS, OPS, and OO. He is chief engineer of the John Zink Burner Company.

All other offices are contested, and ballots have been sent to Full Members of the divisions concerned.

FCC PROPOSES REMOTE CONTROL ON 220 MC.; AFSK ON 50 MC.

FCC recently issued a Notice of Proposed Rule-Making, based on a petition of the United States Civil Defense Amateur Radio Alliance, filed in the spring of 1957. Docket 12607, if adopted in its present form, would permit remote control by radio in the 220-Mc. band (now permitted only in bands above 420 Mc.) and will permit 6F2 emission in the whole of the six-meter band.

The position of the League will be determined by the Board of Directors. Comment date, it will be noted, is November 20, 1958.

FEDERAL COMMUNICATIONS COMMISSION

In the Matter of Amendment of Sections 12.64, 12.111, and 12.231(a) of the Commission's Rules so as to permit remote control of stations in the Amateur and Radio Amateur Civil Emergency Services when operating in the 220-225 Mc. band and to permit use of 6F2 emission by stations in these services when operating between 50.35 and 50.75 Mc.	Docket No. 12607

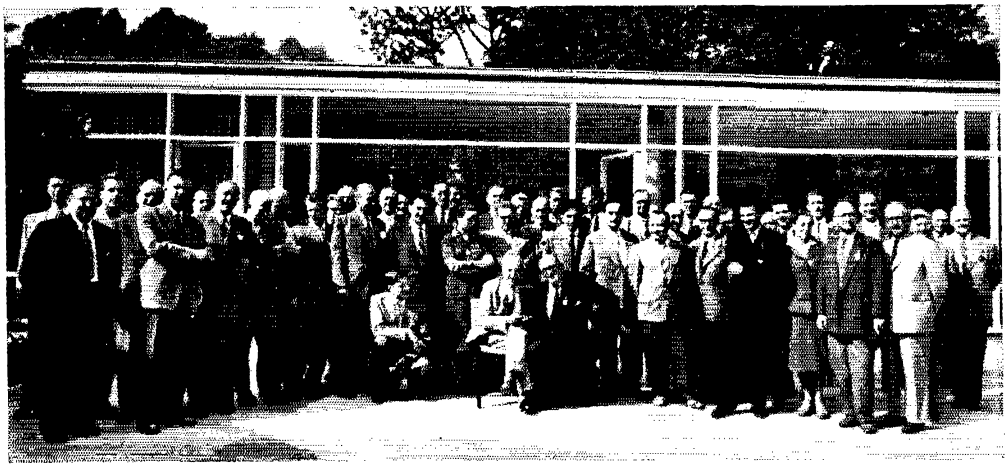
NOTICE OF PROPOSED RULE MAKING

1. Notice is hereby given of proposed rule making in the above entitled matter.

2. Petitions filed by the United States Civil Defense Amateur Radio Alliance seek amendment of Sections 12.64 (b) and 12.231 (a) (2) of the Commission's Rules so as to

(*Continued on page 176*)

Fifty-one delegates and observers from amateur radio societies in seventeen countries attended the Fourth Region One Congress of the International Amateur Radio Union held at Bad Godesberg, Germany, July 21 through 26. The delegates and most of the observers were from Europe, but W1BUD, ARRL General Manager, was present as an observer, in his capacity as Secretary of IARU.



Rare prefix and beautiful scenery!

Taking Single Sideband to the Seychelles

BY JAMES CHAPMAN,* VQ4GU

EAST of Mombasa, 1000 miles off the African coast, about one third of the way to India and some 4 degrees south of the Equator, lies the Seychelles archipelago consisting of some 92 islands ranging from small rocks with barely a single palm tree to quite fair-sized islands of several square miles with small towns, roads and a good population. The complete territory of Seychelles occupies several hundreds of miles of the Indian Ocean, all known as "VQ9-land."

For some time now hams of the neighboring continent of Africa, both in the east and the south, have looked on these islands for purposes of a DXpedition especially since there has been no active ham operation there because of a lack of a.c. and because distance from the outside world has added to the difficulties. Ships only call there about once every six weeks. VQ9HAY has lived on the islands for quite a while but being restricted to an auto battery for power (which he has to take miles to recharge) has curtailed his activities to c.w. contact with Nairobi.

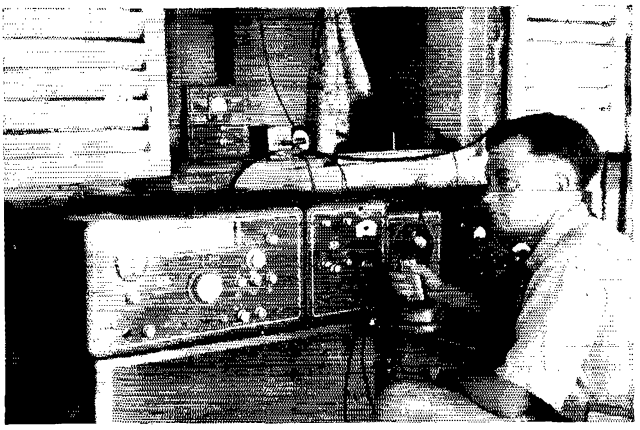
Having to make a trip with an associate (who incidentally once was active as 11BK in pre-war days) to make a TV documentary film, we decided to take our B & W 5100-B with sideband just in case we could find power, and started the journey in the overnight train from Nairobi to Mombasa with about half a ton of luggage — cameras, recording gear and the ham station occupying some eighteen large packages which were stowed with difficulty on deck aboard the *State of Bombay*. Four days sailing eastward to the sun seeing neither land nor other ships brought us one fair dawn to Mahe, the major island, where we were *conveyed ashore in small launches to* the port of Victoria. Customs, immigration, information and postal departments were all most helpful and the gear was quickly cleared and the operating permission obtained. A very charming French lady who owned a local hotel said she had electricity but alas it was found to be d.c. It was decided to try the hospital which had an X-ray plant or the local Cable & Wireless which we heard had small alternators when suddenly up popped another hotel owner (actually an old friend from Johannesburg) who said he had a diesel giving 6 kw. of 230 volts a.c. Although his establishment fully loaded the plant he very kindly consented to give us half an hour before lighting up time and another similar period when all had gone to bed — so little time was wasted in getting our bulky luggage over the hill to the lido of Beau Vallon beach, two miles from town. A local youth climbed coconut trees like a monkey at half a rupee an antenna (which was very useful later when we wanted to change the direction of our dipole). The first afternoon we worked, just by chance, ZS6UR in Johannesburg. From then on things were pretty hectic — the too-short half-hour periods being crammed with replies, and our deepest sorrow and apologies to anyone who was overlooked in the scramble. It is hoped that in the very near future a return visit will be made. VQ4ERR is already organizing, and power plant and operators will make it a full-time ham affair and twenty-four-hour and multiband operation may be possible.

Some of the keener types sent cables asking for QSOs and more than one ham in the States had organized a special antenna. Australians and New Zealanders sat up into the early hours for a QSO to fit in with our time restrictions and one Canadian, not satisfied with his first QSO, rushed out and got himself a KWS and was rewarded next night with a good two-way s.s.b. contact.

QSL cards were printed locally, and made out and stamped daily, awaiting the first ship (which was to bring the station back also and from which this is being written on the seas).

The extreme humidity and also close proximity to the sea was feared but no trouble was experi-

* East African Film Services, Box 2818, Nairobi, Africa.



American gear, British op, exotic QTH. Or, in the usual order: B&W and Collins VQ4GU, and VQ9.

enced. A resistance in the t.r. switch was damaged (possibly in transportation) and luckily a small general store was found to stock radio spares. A very useful feature was the "low mains" switch on the B&W. As we were transforming down from already low 200 volts via a normal 220/110 transformer the rig was not getting enough mains voltage but the "hi-lo" mains switch soon rectified that. A ground plane was used for 20 but the 15 dipole pointing to the States brought in the best W contacts. Regular skeds were kept with "base" in Nairobi. A strange feature was the number of other islands worked, islands not known to exist and others where hams were not expected to be found. Is there perhaps some strange island-to-island polarization or is it just the keeness of desert-island hams to contact other islands?

Real history was made the evening VQ9HAY returned from a visit to some distant island and got his portable c.w. rig out of storage and the battery charged and gave us a local contact. This was the first time VQ9 has ever worked VQ9 and incidentally the only c.w. contact (it was much regretted that time restrictions kept us to phone especially favoring s.s.b., but this limitation will be overcome in the fully "ham" expedition).

Not much time could be given to rag chewing and describing the location. Mahe was the fixed operating base although visits were made to nearby St. Annes where a kind Australian managing a fisheries business offered use of his a.c. plant, as also did a British visitor from Rangoon on another neighboring isle (both would have made better antenna spots as they were not mountainous like Mahe). It would have been interesting to operate on Praslin, the second largest island, which was not visited but is a scene of one supposed location of the Garden of Eden and the only place in the world where the fabulous Coco de Mer double coconuts grow.

Mahe itself is a very pleasant place. Fine safe beaches offer good swimming and goggling. The whole area is a fisherman's paradise and palm trees abound everywhere. From the house recently occupied by Archbishop Makarios (the Governor's country residence) and the neighboring hills there is a magnificent view of some of the nearby islands. Life is simple and there is little gaiety — a weekly cinema and the occasional parties and dances in the holiday resorts. As there is little meat available in Mahe diet consists mainly of sea food, turtles making excellent tender steaks.

Operations started on the afternoon of Saturday, July 19 (day of arrival) and ended on the night of Wednesday, August 13 (strangely enough with QSO with ZS6KD whose was the first station I ever operated on s.s.b., when I was ZS6HG). Sixty-nine countries were worked.

The main purpose of the trip, the TV film (a documentary with story on the scenic splendor and life of the Seychelles), is intended for Italian TV but may reach the American TV networks.

Strays

The MARS First Army Sideband Technical Net (Wednesdays at 2100 EST, 4030 kc.) will offer the following during November:

Nov. 5 — Application of Transistors in SSB Equipment.
Nov. 12 — Ionospheric Storms and Their Effect on Radio Communications.
Nov. 19 — The Engine Scope.
Nov. 26 — Compatible Sideband.

Another all-ham family — K3EXQ, W3MME, K3EXR and W3IWJ. Father, mother, daughter and son.

—···—

W4JXF, well-known Louisville amateur, has recently received a patent on a clamp for holding military insignia in place. It is designed to keep the insignia no higher than flush with the cloth of the uniform.

Four States, One QTH — The Easy(?) Way

The Saga of W7RUX/5, 7, ∅

BY CHARLES A. FENWICK,* W7VMO/9

LET us discuss, OMs, the following philosophical problem: Is an amateur radio expedition a failure by definition if no contacts are made despite extensive preparations and the expenditure of a great amount of effort? If the answer is an unequivocal "yes," then let it be known that the writer and three associates have recently returned from one of the most miserable failures in many a year. Ready despair may not, however, be warranted — if we can justify a "no" answer. A circuitous proof for the latter proposition follows.

The idea of our taking a 144-Mc. expedition to Four Corners, where Colorado, New Mexico, Arizona and Utah come together at one point, was first conceived in the mind of wily Willie Rose, W9KLR, the country's leader in states worked on two meters. Such ideas frequently come to men who want to remain leaders, and the nice part of it all is, as they realize so well, that they get to sit at home while others brave new frontiers on their behalf! Well, perhaps we should be more generous in motive evaluations. At any rate, he "needed" Utah and Arizona, and the Corners is just inside what is thought to be his range — by meteor scatter communication.

The thought of such a venture did not scare us, though we are hardly rugged outdoor types. The author is a psychologist by profession and has considered Ping-Pong to be strenous enough. Don W7RUX, Bob W7VLN, and Dick Wellman (newcomer to the radio ranks) the eventual personnel component, aren't known for exceptional physical prowess either. But no matter; just last year a similar expedition was taken to Mesa Verde National Monument in Colorado, and all went well. Only a few differences were anticipated — Four Corners is many miles over rugged terrain from any town. The best maps show a "primitive road" to the spot. Others show none. Several old timers of the desert pointed out that the area was apt to have flash floods and be infested with rabid dog packs. While we managed to find a number of fellows who were proud to say that they had been "all over" Arizona, we couldn't find any who had ever been to the geographically unique Corners.

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The Four Corners at last! W7VLN, left, is in Utah. W7VMO, right, holds down the tip of New Mexico. W7RUX, atop marker, is in both these states, plus Arizona and Colorado.

The only reasonable time to go would be August 10–13. This is the period of the annual Perseids meteor shower, when more stuff is entering the *E* layer than most other times; a lot of contacts up to 1300 miles have been made on two meters during the resulting bursts which may be as long as a minute or so.

Planning was begun several months in advance. Don was to supply most of the equipment, since the writer's setup at W7VMP was to be used during the shower by brother Bob, W7VMQ. Besides, a rig 7 feet high isn't very portable. Several interested members of the Phoenix VHF Club made valuable donations, most notably W7s AGG and QNO.

Don had about four weeks to get a transmitter built, and his diligent work produced a jewel in record time. That is, a jewel in appearance. With three days to go, 48 hours of schedules made with twenty 2-meter stations located in about as many states, and almost all preparations for the four-day outing completed, the transmitter wouldn't work. To be more specific, it oscillated at 1 kw., right on the fundamental frequency with the key up! In view of the modern tetrodes being used and the apparently modern construction, this was horrifying. Brilliant engineers passed it off as "impossible," which was a great help. On the day before we left, juggling of grid tuning, neutralizing wires, and the loading capacitor stopped the oscillation at one time, prompting us to leave it there and pray. There was no more time for R and D. Little did we suspect that the oscillations would be among the least of our worries.

Everything went smoothly until our caravan of three vehicles was 25 miles west of Gallup, N. M., on famous U. S. 66. It was then that the nut jiggled off the bolt of Dick's hitch ball and W7NYN's 3.5-kw. generator on its trailer went reeling off the road. We had passed a thousand places where it would have gone off a cliff but,

luckily, we were going through a cut and it stopped, suffering only a leak at the top water outlet of the radiator. Oddly enough, the safety chain which had been clipped to itself through a hole in the truck bumper was still intact. The trailer was chained onto the truck and we limped into Gallup.

A radiator shop wanted $14 and several hours to solder up the radiator outlet tube. In a word, we couldn't see it. So Don and the writer proceeded to spend three precious hours locating a small torch in a store. Seems the streets were all torn up with rebuilding in progress, necessitating one-lane slowed traffic, while thousands of tourists and Indians were arriving for a big annual Indian ceremonial. The torch was found at the seventh store. We also picked up a new nut and lock washer for the hitch.

The arrival at Four Corners came about seven hours later than originally planned on. We had to drive very slowly most of the 100 miles from Gallup — the last 15 miles taking two hours. The "primitive road" was that, indeed. At times, the generator bounced a full two feet off the "road." After taking the official arrival pictures we set to repairing the radiator and setting up the tent. We only had five hours until schedule time and the high voltage power supply and control circuits had yet to be designed and built! Besides, we hadn't eaten for about 18 hours nor slept for 36!

Nevertheless, we did get to the point that we thought we were set up for the first meteor scatter schedule at 11 P.M., having omitted transmitting during a ground-wave sked with W7IJV in Arizona — though we listened and heard nothing. The first night we were set up in Colorado. For that night the high-voltage power supply never got put together, but we did have 120 watts perking to the 6N2. The 13-element long Yagi was at 30 feet and the converter with 417A front end was working nicely into the GPR90. An HQ-100 monitored WWV and the TS323/UR was indispensable as a frequency standard, and, of all things, a keying monitor. The skeds had us transmitting the first and third 15-second periods of each minute, so accurate time and frequency spotting facilities were essential. In m.s. work you just leave the receiver set on the prearranged frequency of the station scheduled — there's no time for tuning.

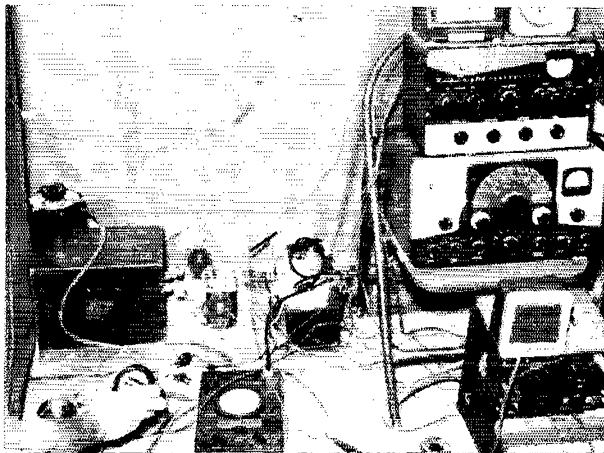
All skeds lasted an hour. The object was to exchange sets of calls, S reports, and Rs to S reports. This constitutes a contact, and it's hard enough. High-speed c.w. is the mode.

Immediately upon getting the 120 watts on we found that its frequency was 144.073 Mc. Knowing that many of those we were skedding hate to tune, and that they have bandwidths as narrow as 800 cycles, there was reason for concern — we'd told them we'd be on 144.058. The crystal *had* produced the latter frequency. But postmortems weren't practical and we knew that in our desert workshop a crystal putting us on .058 had to be produced pronto. This didn't happen; invariably touching it with solder would take us down to .048, then a swipe with paper toweling would take it back up to .073. Somehow, though, it did settle down on .058 after working on it more than 12 hours. A total of about two hours of transmitting was done that first night, about evenly distributed among the 12 schedules — on .073. The rest of the time was spent in listening.

A whole transmission of W6NLZ was heard at one time, but he didn't hear us. Let it not be said that the c.w. men are all down at 14.000 or the like because that was the fastest Morse we'd ever heard. The real heartbreaker came after 7 A.M. when we heard two successive S9 transmissions from W9GAB in Beloit, Wisconsin, while Don had the crystal (yes, the *quartz*) between his fingers! It should have been an easy contact. That was all for Colorado; we didn't feel too bad because we knew that anyone who could have worked us can just as profitably schedule WØIC in the future. In fact, W6NLZ worked WØIC during this shower.

As of the ending of the first night of schedules, we hadn't seen a living soul anywhere near the camp. However, at 3:40 A.M., the writer was surprised to hear a motor start up just outside the tent. All the other fellows were asleep. Stepping outside, the faint outline of a truck could be seen going down the road only 30 feet away. It must have been no more than 10 feet from the

Left: Emergency repairs to the damaged radiator of the generator's engine are made by W7RUX, left, and W7VLN. Three hours of shopping were needed to locate the small torch, foreground, that was used to solder the leaky water tube. Right: High-voltage power supply and the control circuits were designed and assembled on the spot.



The author, with four-day beard, gives a brief summary of results.

tent when it started up. We never knew who he he was, how he could have come up so close without being heard, nor what he was doing out in the wilds at 3:50 in the morning.

During the day we hooked up the high-power supply. The rig seemed to be working. After dinner we moved the setup to New Mexico, an operation which was efficiently executed to Arizona and Utah the following two days, respectively, according to prearrangement.

In New Mexico everything but an "R" was exchanged with W5JWL in Arkansas. Part of "W4ZXI" was heard, claimed the operator. That was interesting because he is in North Carolina, supposedly beyond "range." The call, and many pings, were heard from WØIFS in Minneapolis. Occasionally, our rig would oscillate and we'd be off for a while, but fiddling with controls and straightening out the 300-ohm open-wire feed line ultimately fixed it — so long as we held input down to 300 watts.

At times, the generator would have a coughing spell, and we'd have to wait it out. WWV faded out at 9:00 A.M. and we had to keep correcting the electric clock reading according to a rough predetermined formula. Keeping the frequency of the line at 60½ cycles on stand-by and transmitting every other 15 seconds, the clock would gain 5 seconds in every 15 minutes. The only wrist watch in the crowd quit just as Don started using it. It had been running faithfully for six years. Don says he can never keep a wrist watch running.

The wiring was something to behold. There were eleven things to be plugged in, and everyone thought someone else had brought the cube taps. Since there were only three outlets, the only thing to do was to connect plugs together with hook-up wire through the handy prong holes. The result looked like a model of an atom. Someone had omitted electrical tape (though all these things were on an exhaustive check list), so a roll of masking tape served as the multipurpose insulation material.

Following the New Mexico schedules it was agreed upon that we needed to replenish our ice supply (everything originally iced being hot). The critical incident was the warming up of a dozen eggs Bob's well-meaning mother had included in his rations, though the warm beer was not inoffensive. We took off down the road and doubled the speed made on the way in, which still isn't saying much. Dick had volunteered to stay at camp, .45 revolver in holster and 30.06 rifle nearby. (With the noonday sun shining and his being an Englishman, he undoubtedly feared an attack of mad dogs.)

When we inquired in Shiprock about getting ice, you'd have thought we were asking for an atomic submarine. Clearly, Shiprock has no more of the former than of the latter kind of merchandise. We were advised to go to Farmington, N. M., some 30 miles farther east. As we arrived at the ice plant, a sign informed us that they were "sold out for the day." With our fingers crossed we went across town — to the only other ice plant. They had plenty. When we got back to the Corners with the 100 lbs., we had taken five hours and gone 150 miles in our quest.

In Arizona, a five-second burst from W9GAB was all that was heard in 12 hours of schedules. For a number of stations this turned out to be one of the best days, but not for us. Half of the first hour was spent calming down the final. From 8:30 A.M. until the skeds ended at 11, we had to stop for repairs five times.

First the final quit, then the 6N2. We noticed a flickering of pilot lights and the voltmeter told us that the power was coming from the generator in intermittent form. Just then the GPR90 blew a fuse, a plume of smoke arose from the HQ (though it continued to run), and the electric clock stopped. A commutator ring on the generator was found to be badly pitted and burned. We polished it up as best we could and put the heavier load on the other two rings. Everything worked all right — even the clock. Some tremendous peak voltages must have been generated, though. A 5-amp. slo-blo fuse was all we

had for the receiver, so it was installed with misgivings.

At other times the feedline would start arcing to something and the final would oscillate. One time the coax balun simply burned off the feed line to which it was attached!

After dinner that evening and moving to Utah there was a terrific windstorm, but everything weathered it all right. We then had a decision to make. Everyone was badly in need of sleep. It was four hours to schedule time, and the gas supply was coming out so close that we couldn't run the generator, hence the electric clock, through that time. The wrist watch was running again, but unreliably. It was decided that everyone would sleep and trust the watch, which the writer was to consult (by moonlight) between napping periods.

When the watch had said "9:30" four different times he awoke, the sentry grew suspicious and aroused the other fellows. With the power plant revived, WWV informed us that it was 1:00 A.M.: we'd slept through two skeds (apologies to W7LHL and W5KTD).

"W5" was heard from W5RCI in Marks, Miss., and a short burst came through from W4TLV in Demopolis, Ala. Everything was working beautifully until, in the process of turning the beam around on W6NLZ at 5:00 A.M., some lateral pressure was put on the feedline near the rotator and left one section between insulator spaced at about ¼ inch. This sent the final into violent oscillation that took several hours to stop, and then only by running 100 watts. We found that spacing one feedline section near the transmitter at ¼ inch would change the final loading 200 ma.! Unfortunately, we hadn't included any provisions for putting the feedline under tension — the obvious answer.

Operations were continued until the last schedule was over at 11:00 A.M., mostly listening. Unfortunately enough, there is now good evidence that several of those scheduled may have just been listening at the same times we were. The twin-lamp output indicator suggested that a very high s.w.r. existed, and the ultramodern ceramic tubes in ultramodern sockets were very unstable. Since the 6N2 ran all right and at just as much power as the final would run, the last hour was run with it, while everything not absolutely essential was readied for a speedy departure from a place rapidly becoming uninteresting.

By noon we were gone. About 20 miles out a trailer tire threw off a foot of tread and we crept into Shiprock to look for a replacement. None of six stations had a used 6.00 × 16, so we had to buy a new one. The trip by this time had become more expensive than we'd ever figured on. The return to Phoenix took until 6 A.M. Being up through another night was all we needed!

Of course, it was a nice change to be home. It may be hard to understand how we could not consider the expedition a failure in view of all the trouble and no contacts. But there are some strong positive values! As a camping trip, it was wonderful. The weather was simply beautiful, the nights being cool and clear, hence quite nice for sleeping out under the stars. Furthermore, we have been able to make a list of 37 "lessons" we learned on the trip — things we'll do differently next time. The adventure certainly presented many situations demanding the solution of problems with limited facilities, and this seems to be desirable experience.

For another thing, we demonstrated what *couldn't* be done in the shower, to a certain extent. Also, we did prove that several fellows can be heard at the Corners, so if they'd like to send another expedition there and schedule it longer, they would stand a good chance of working it.

Also, none of us had ever shot a high-powered gun before. The stories about the tremendous recoil had built up mental blocks against doing so. However, the lack of anything else to do during the day and the availability of the .45 revolver and the 30.06 broke the barrier once and for all. Unfortunately for W7AGG, owner of the arsenal, we shot up all his ammunition. The guns were supposed to be for emergency use.

The situations encountered also produced many laughs. While several tourists came to the Corners during our encampment as the result of a lifelong ambition to see the place, one fellow drove in to ask us if there were any fish in a river about a mile away. Seems he was looking for untapped fishing grounds. Spying the monument, he stared and said, "Is this that Four Corners thing?" After all our tribulations it was hard to believe that anyone could reach the spot by accident! As for us, we've had enough of the place to last a long, long time.

Strays

The MARS Air Force Eastern Technical Net schedule (Sundays 1400–1600 EST, simultaneously on 3295, 7540 and 15,715 kc.) is as follows:

Nov. 2 — Highway Traffic Control by Radio.

Nov. 9 — Detection and Correction of Radio Interference.

Nov. 16 — Facts About Quartz Crystals.

Nov. 23 — Double Sideband with the DSB-100.

Nov. 30 — More on Double Sideband and Synchronous Detection.

Dec. 7 — Let's Review Our Physics.

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Sometimes it seems as though some of the local club awards would be rather difficult for an out-of-towner, yet one afternoon W3HWU worked twenty-five of the Denver gang for the Mile-Hi award. He doesn't say if he broke into a net to accomplish the feat.

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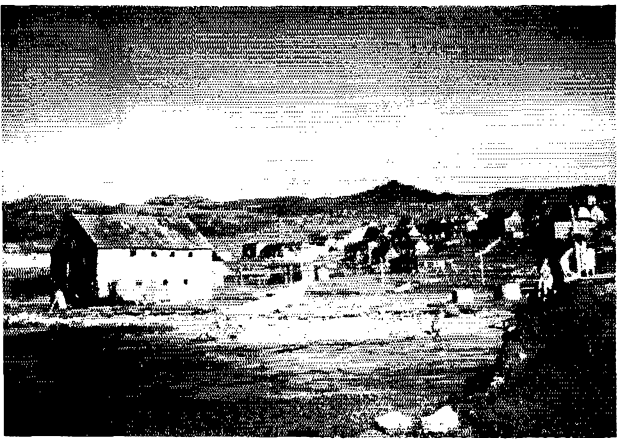
W2EWZ suggests another source of distilled water for battery use. He collects his from the dehumidifier which he has in his basement. Good not only for batteries but for steam irons.



This is one view of the St. Pierre landscape. Plenty of rocks, and rugged.

DXpedition or Vacation?

BY TOM HUGHES,* K2JGG/FP8AB

SPARING the reader the usual opening comments on the months of planning and preparation and dreams-come-true of DXpeditions, I'll start right in at the beginning of our trip.

My cousin Bill Shepherd, two XYLs, two jr. ops and I started forth from Parsippany, N. J., on June 27 about 4:00 P.M. in the hope that we might possibly by some quirk of fate, since planning is impossible, reach St. Pierre et Miquelon Isles.

Now the desire for a ham to go to St. Pierre is not an unusual one, but as has been pointed out in the past, it is not the easiest place to reach — especially for the American ham who has been soundly indoctrinated from birth with the process of planning, timing and precise schedules.

After driving straight through (yes, with two XYLs and two kids) we arrived in Sydney, Nova Scotia, very late Saturday night and after enlisting the aid of the local police, who probably were curious about our rowning around town for two hours, found a suitable tourist home that could handle us all.

The following morning at 7:00 A.M. with the alarm sounding and raising the wrath of all, this OM trotted out to the mobile rig to see what was what in VE1-land as it was ARRL field day. Things had evidently been pretty slow, for I immediately hooked up with VE2AEP, the Sydney club station, and was promptly invited up to the location. On arrival I found a fine installation for multiband operation and was promptly offered, as per typical ham hospitality, a bottle of beer. After all, what's field day for? A short stay here brought many new friends, both on and off the air, but alas, the situation being what it was, it was time to raise my crew and look for a place for the XYLs to stay and try to arrange transportation for Bill and myself to the islands.

VE1MK, Marshall Killen, who works at the cable office linked with St. Pierre, had been contacted about two weeks previous to our arrival and had offered to keep us posted on the movements of the two boats traveling back and forth from the islands. It was, however, three days since we had received the sailing time from Marshall via telegram and having been previously warned of the boat's split-second departure timing (this is accomplished by discreetly changing the sailing time or date about five minutes before the previously posted time; thus no matter when she leaves, it's always on time and in plenty of time) we thought it best to consult Marshall immediately and announce our presence. Sure enough a boat, the *Langlade*, the smaller of the two and a converted mine sweeper, was leaving the following evening, Monday, at 7:00 P.M., two days before we had thought one was leaving, and we were not at all disappointed.

Now I won't go into the trials and tribulations of locating lodging satisfactory to the XYLs and children in time, since I consider this an expedition in its own and one which I don't care to discuss or go through again. It was by far the most nerve-wracking experience of the trip. Such is life!

At 7:30 P.M. promptly (+ 30 minutes) on Monday, the *Langlade* sailed out into a pea-soup bay in which the visibility was all of one hundred feet. Many times on this trip we devoted tender thoughts to the radar!

At this point I would like to return to that Monday afternoon when we were trying to find a place to store the equipment on board. Bill and I approached the Chief Engineer since he was standing nearby, but found he spoke only French and we only English. After a few minutes of looking at each other stupidly, the Chief (Louis) motioned us to follow below to his quarters. At this point we were offered what appeared to be a large glass of red port wine and this green landlubber proceeded to "down the hatch," being somewhat parched. Now Bill and the Chief, both being old sea dogs, just stared and waited . . . all of one second, at which time a mad dash for a glass of water was in order, much to the glee of the others. Needless to say, it was good old-fashioned navy rum, not port.

Getting back to the trip across, that evening Louis stopped by for a friendly visit and though we didn't understand each other directly, we managed for better than an hour when Serge, a deck and galley hand, dropped in and acted as master of ceremonies and interpreter for at least

* P. O. Box 1, Morris Plains, New Jersey.

another hour before we hit the sack.

The following day about twelve noon, after a night of rough sea, St. Pierre was in sight, but unfortunately only the radar could see it. Entering the harbor was a harrowing experience for me since the water could be heard breaking over the reefs and we were at times no more than fifty to one hundred feet off the shore. The fog was so thick that we didn't realize that we were tying up until we were practically along the pier.

Gus Roblot, the only resident ham, was away fishing for the week and we were somewhat confused as to what to do first. But it was all straightened out soon enough after passing through customs.[1] Bill has his Polaroid Land camera along and whenever we couldn't communicate directly he took a picture, presented it to the official concerned and things just naturally cleared up. This was an especially fortunate gimmick with Monsieur Hourtane, the Chief of the Service Radioelectrique, who issues the licenses and speaks no English. He does have an avid interest in cameras though, and we did manage with Bill's 60-second camera as go-between. Mr. Hourtane was gracious and understanding in granting permission to start operation immediately with the call FP8AB[2] while he in the meantime processed the license papers, which takes about one to two days since the governor must sign them also.

The Hotel Robert, scene of many "DXpeditions" to St. Pierre. We're not sure which window leads to room eight, but that's Bill in the roadway.

Issuing a license beforehand is no longer practiced by the St. Pierre government since several were issued and the recipients never arrived. Obtaining a license is relatively simple after arrival. The most important requirement is to bring along your FCC license. It took only about two hours to receive a verbal O.K. to begin operation with FP8AB and this time was used primarily in interpeting and filling out the required forms. The only advance procedure was a letter to Gus Roblot, FP8AP, requesting information and assistance if necessary. Gus replied assuring me that licensing would be no problem and suggested that I write to Monsieur Hourtane and let him know my plans while Gus in the meantime spoke to him personally. Although I received no reply from Monsieur Hourtane he did have the letter on file and used it as a reference when we arrived. I would recommend that any one intending to go to St. Pierre be willing to commit himself definitely before writing Monsieur Hourtane since he is quite busy and I think receives a considerable number of inquiries.

We arrived at the Hotel Robert, where Monsieur Robert was expecting us and had assigned us the ham shack, the traditional room eight. At this time I feel sure we took two years off his life, for he was preparing for a large wedding party that evening and we were running all over the place climbing out windows stringing the antenna. But at last we both finished in time, he for the wedding and we in as little time as possible. Not that we were anxious!!

On the Air!

Now then I fear I shall be the first in history to say that on the very first short CQ I was not deluged with calls. As a matter of fact I got none! Twenty minutes checking all equipment, and I let fly with another confident CQ proudly signing that coveted FP8AB. Still nothing. Feeling a

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[1] No health certificate or vaccination is required. There are some regulations, however, that should be kept in mind. You must declare on arrival the amount of money you are carrying although you need not convert any specified amount to francs. You must also declare how much you have spent on leaving the islands and I think this is primarily to keep track of the tourist trade. American and Canadian money is readily accepted in all places of business. St. Pierre is a free port and you may purchase and leave with all you like. Entering Canada and the U. S. with your purchase is a different matter. What you may bring into or through Canada whether you are Canadian or U. S. citizen is governed by Canadian regulations. Often where import laws differ between the U. S. and Canada a U. S. citizen may ship his purchase direct to the U. S. A. An example of this is in the case of alcoholic beverages. Canada allows the import of 40 ozs. per person whereas the U. S. allows a full gallon. I mistakenly assumed that as an American citizen I would be allowed to pass through but being over the 40 oz. limit for entering Canada I was challenged at customs. It was for this reason that I lost the bottle of champagne. By some legal means on which I'm not clear the confiscated bottle was turned over, at my request, to the captain of the *Miquelon* to become part of the ship's ration.

Radio equipment, of course, is valuable and looked upon as dollars and as such can land you in a real mess of red tape and possible expense if not treated properly. The following procedure should be followed by U. S. hams traveling through Canada with radio gear.

1. Obtain a permit to operate in Canada from the Department of Transport in Ottawa. This will get you in and out of Canada at will with a minimum of red tape.

2. Normally you wouldn't stop in U. S. customs when leaving the U. S. but in this case you must or you may not get your gear back in on returning.

3. It will expedite matters at each customs point, i.e., leaving U. S., entering Canada, leaving Canada, entering St. Pierre, and vice versa, if you have on hand several copies of a sheet listing the equipment which you are taking.

The equipment *may* be checked thoroughly at any or all points and you must leave with everything that you took in.

[2] Since arriving home I have received a letter from Jack duBois, K2CPR, informing me that he had held FP8AB along with FP8AA until its reassignment to me. This has led to some confusion, since the call was once listed in the *Callbook* under Jack's name. He has, however, been forwarding the cards to me so there is no cause for alarm to those who sent to the wrong address.

K2JGG himself, complete with local uniform, on the air.

little weak I meekly called another CQ and sure enough the first contact came through at 2023 GMT, July 1, with G3IX. What happened to all those W's? Well, the pileups did come soon after and mostly on c.w. The band conditions were poor and it was hard work to make headway on any band but 20, and 20 phone was not easy going, although there were usually a goodly number of stations on at all times. First to be worked in the various call areas were W1LQG, W2UUN, W3ECR, W4UAE, W5JKF, W6BIL, W7PHO, W8QJR, K9COS, KØDMY. All in all, the W's and K's were courteous and patient even though there are always, I suppose, those few in there that don't care at all about the QSO you're having with the other fellow. Perhaps I'm being unfair in the opinion of others but I did work them anyway and made a note to QSL them last. I do recall one instance where breaking-in reached such proportions I had to announce on c.w., "QRT for ten minutes due to breakers," and I will say this helped for the next hour. Although it is slower I tried consistently to send my home call for QSL and even knowing it to be boring for those trying forty or fifty times to work FP8AB I still received requests for repeats. K2JGG has been primarily a phone station and I take this opportunity to apologize for my c.w. It was standard practice to send QST and announce when going QRT or standing by for foreign stations and I must say I was delighted with the results. On several occasions when it was necessary to QRT for chow in the middle of a pileup (chow is served on schedule — get there *then* or else no chow) after the usual announcement it was found that 99 per cent of the stations immediately stopped calling. But they were there when we got back! Let me at this point give due credit to Bill Shepherd, my cousin, who is not a ham and did all logging and, incidentally, the slave driving. When I wanted to party or see the sights, it was always "Let's get back at the rig for a while and see if we can't make that thousand." There would have been a lot less contacts were it not for him.

This is FP8AP, Gus, a long-time resident of St. Pierre and the only resident ham. He is heard on the bands quite often.

For the record, approximately forty states and twenty-nine countries for a total of 1000+ contacts were worked. About ninety per cent were on 20 meters. QSLs will be 100 per cent, and to date about 5 per cent have been received and they are still coming in. Only one station was worked on 75 from the states. This was W2HTI (FP8AR) on schedule on c.w. Ed, who has been a close friend, sparked the idea of my making the trip myself. A few contacts were made on 15 and 40 but a little heckling was needed to stir up the three lonely phone contacts on 10 although many stateside stations were heard.

While we were still on the island, Gus returned and we had the pleasure of meeting his wonderful wife and family as well as having many good times with the OM himself and his friends as guests on his cabin cruiser, the *Atta Boy*.

To get on with the story, the *M. V. Miquelon* which was to take us back on about Saturday, July 5, came into port on July 4. The process of unloading coal was moving along nicely up until Monday afternoon, July 7, and the boat had been posted to leave that evening at 8:00 P.M. Bill and I proceeded to disassemble all the equipment and start packing. Sure enough just as I cut the antenna down and it lay sprawled gracefully across the roof and yard, Monsieur Robert came dashing out of the hotel shouting "Stop! Stop! The boat's not leaving 'til tomorrow at 2:00 P.M." No need to explain how we felt, but it was too late now. It seems that a French warship had arrived in the harbor that morning and the crew on landing had challenged the island's soccer team to a match. Sure enough, some of the crew of the *Miquelon* belonged to the team and they just refused to work, so we waited another day while the St. Pierres whipped the navy and started back to work. This is typical of the island folk and the people take pride in saying, "That's St. Pierre; anything can happen here." Not at all unpleasant once you get used to doing tomorrow what you could have done today had you felt like it.

At any rate, up to this point we had worked some 985 contacts and were suffering with the thought "almost 1000." The gear was packed and all we heard everywhere we went was, "Too bad, almost 1000." Well, you guessed it. We went back, dropped thirty-foot piece of coax out the window as a vertical and loaded the outer braid. With the transmitter on the table, the receiver on the bed, we worked twenty-five more that night to break one kilo, packed up again and spent the following morning seeing some of the island and doing some last minute shopping before leaving that afternoon.

(*Continued on page 164*)

Amateur Radio, Russian Style

BY THEODORE M. HANNAH*, K3CUI

That last "U"-call amateur you worked, what sort of guy was he? Did he have to be a Party member to get a license? How much power can Russian hams use? What kind of radio magazines do they read? What is DOSAAF? For the answers to these and other interesting questions, read on.

We customarily have a few photographs or drawings to illustrate each QST article, but found nothing suitable for this one. We think, however, that you'll find the article interesting even though there is no art work.

I HAVE wanted to learn something about Russian amateur radio ever since I worked my first Russian (in 1950, under my old call, W7LFL), but it wasn't until I moved to the Washington, D. C., area that I was able to do much about it. The excellent library facilities here together with an ability to read Russian (it was my major in college) enabled me to investigate the Russian amateur radio literature with the aim of finding out just what Russian ham radio is like.

In reading Russian amateur-radio magazines you soon realize that ham radio in the Soviet Union is a highly organized, serious thing. Like almost everything else in the USSR, amateur radio serves the state. The agency charged with administering amateur radio is known as DOSAAF (The Voluntary Society for Assistance to the Army, Aviation and Navy), a para-military civil defense and military training organization headed by a General-Colonel Belov. The Russian ham cannot escape DOSAAF. He must have its approval to build or buy a station: the type of license he receives is determined by DOSAAF; DOSAAF permission is necessary to put his station on the air.

Amateur radio is only one of DOSAAF's interests. As part of its responsibilities for civil defense training, pre-military training, and technical training of reserves, DOSAAF promotes rifle clubs, automobile and motorcycle clubs, and glider flying, all in addition to amateur radio. It publishes magazines on some of these activities, just as it publishes *Radio* on the amateur radio field.

An official definition of DOSAAF is found in the *Large Soviet Encyclopedia*. It says:

> DOSAAF, USSR. A mass, voluntary organization of workers of the USSR. Its purpose is to assist in strengthening the power of the Soviet army, aviation and navy. It was established in 1951 through the merging of three independent societies: DOSARM, DOSAV and DOSFLOT (Voluntary Societies for Assistance to the Army, Aviation and Navy). DOSAAF activities are based on the independent action and initiative of its members.

(Before the creation of DOSAAF, amateur radio was administered by DOSARM.)

Under the heading "Amateur Radio," the *Encyclopedia* has this to say about DOSAAF:

> Today amateur radio activities in the USSR are consolidated under DOSAAF, which maintains a network of radio clubs and radio circles. DOSAAF directs the short-wave amateur radio movement, plays a prominent role in consolidating the activities of radio amateurs and constructors and in diffusing technical radio knowledge. It also organizes contests among short-wave enthusiasts, competitions among radio operators, exhibitions of equipment built by radio amateurs, technical meetings and lectures.

The DOSAAF hierarchy closely parallels the governmental and Party organizations, and is found on all administrative levels. There are all-union, krai, republic, oblast, city and district DOSAAF committees and primary organizations.

DOSAAF's main function is to interest the greatest possible number of young people in radio operating and repair, in pre-flight training, in rifle clubs, and in automotive repair. The object, of course, is to train young people in skills needed by the armed forces.

The amateur radio part of DOSAAF does not exist primarily for the benefit of the radio amateur. It would be unthinkable, for example, for DOSAAF to petition the government for more frequency allocations for amateur radio. This would be tantamount to the government petitioning itself, and is obviously absurd.

DOSAAF is constantly urging the establishment of "radio circles" (basic radio courses) in every school and institute in the Soviet Union. It even prescribes what should go on the walls of a "radio circle" room — schematic symbols and diagrams, and a picture of Aleksandr Popov, "the inventor of radio." DOSAAF claims that more than 230,000 people were enrolled in these courses in 1957, and that more than a million persons completed the courses during the past four years.

Today the greatest emphasis is on "mastering the ultra-short waves" (the v.h.f. and u.h.f. bands). The goal is to close the rather wide gap which separates Western from Russian achievements in amateur v.h.f./u.h.f. knowledge and technique. When you realize that as recently as 1953 there were in the entire Moscow region only eight or nine private and collective stations active on the v.h.f./u.h.f. bands, you can understand why DOSAAF stresses the "mastering" of these bands.

In essence, then, DOSAAF's role is that of a "pusher." It pushes the Russian radio amateur to greater operating achievements, to the attaining of more and more technical skills, to assisting in "radiofying" the country, and to enrolling more young people in radio clubs and circles.

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DOSAAF uses both the "carrot" and the "stick" techniques in carrying out its tasks. It is quick to publicly praise individual hams or clubs for their achievements. It is equally quick to admonish those hams or clubs that fall short of meeing DOSAAF standards.

The Russians have extended the DOSAAF idea to the satellites. All Soviet bloc countries now have organizations similar to DOSAAF (the Bulgarian amateur radio organization, for example, is called "The Voluntary Society for Assisting in the Defense of the People's Republic of Bulgaria"). They also have magazines patterned after the Russian magazine *Radio* (more about this later), and many of them identify their club stations by a "K" after the digit in the call sign.

Licensing and Operating

In the Soviet Union a distinction is made between amateurs who operate on the high frequencies (1.7 through 29 Mc.) and those who operate on the v.h.f. and u.h.f. bands.[1] The former are known as "short-wave amateurs," the latter as "ultra-short-wave amateurs."

There is also a distinction made between those who operate a station and those who merely lis ten, for, unlike his American counterpart, the Russian s.w.l. is licensed in the same way as those who transmit. The s.w.l. is assigned a call and sends out QSLs — these are the "UA9-9610," "UB5-5014" — kind of cards you may have received.

Suppose you're a Soviet citizen, you're interested in radio, and you want to get a license. How do you go about it?

First you enroll in a radio course conducted by the local radio club station. Because these club (collective) stations play such an important role in Russian amateur radio, a brief description of them is necessary.

Club stations (identified by a "K" after the digit in the call) are administered by DOSAAF and are often sponsored by a technical institute. (Station UA1KAC, for example, is the station of the Leningrad Electrotechnical Institute of Communications.)

There is nothing casual about these stations. They are highly organized, and usually contain a high-frequency section, a u.h.f./v.h.f. section, classrooms, a library, and workshops. Each club station is headed by a chief (who is paid for his work in the station); the chief is allowed three assistants. Admittance to the station is rigidly controlled, and when the station is closed down for the day the premises must be locked and sealed.

It is not accidental that the club station is the focal point of all amateur activity in a given locality. DOSAAF intends that the operations of all ham stations, both private and collective, revolve around the local DOSAAF club station.

Back to you and your efforts to get on the air. In the radio course in which you are enrolled you will learn the code and some basic radio theory. When you can copy code at a speed of 60 characters per minute (that's about 12 w.p.m.) you are ready to begin monitoring work in the club's receiving center. This promotion is not automatic, however: you have to meet certain requirements to become a s.w.l. First, you must be a DOSAAF member and be at least 14 years old (assuming you are interested in becoming a "short-wave amateur"; if v.h.f./u.h.f. is your interest, you need be only 12). Then you submit to the radio club several application forms and two photographs of yourself. The club will forward these papers to the DOSAAF Central Committee, in Moscow. It will take two or three weeks for your application to be processed. In the meantime, you can begin building your receiver (this, too, is part of the procedure).

If your application is approved you will be assigned a call sign and you may begin your short-wave listening. In your monitoring work you will be expected to copy not only the calls of the stations you hear, but also their complete transmissions. The sending of QSL cards is not optional; you are *required* to send them.

When you have become more experienced in receiving code, and are familiar with amateur jargon and Q-signals, and know the characteristics of the various amateur bands, you are ready to apply for permission to build a transmitter.

Hold on there, don't reach for the chassis punch yet; you need permission here, too. You will apply to the State Inspectorate of Electrocommunications of the regional Directorate of the Ministry of Communications. You will be notified if your application is approved. If it is, you have six months to assemble your station; after that the approval automatically expires.

Assuming that your application was approved and that your transmitter was completed in time, you will be assigned to a certain class of short-wave operation. The responsibility for deciding which class you belong in rests with a special qualifying commission of your local DOSAAF Committee.

If you have met only the minimum standards you'll probably be assigned to Class 3. This permits a power input of 10 watts, c.w. operation on 160 and 80 meters, and phone and c.w. on all v.h.f. and u.h.f. bands.

Should you be more experienced and be able to copy code at 80 to 90 characters per minute (16 to 18 w.p.m.) you may be assigned to Class 2. This permits a power input of from 11 to 40 watts, c.w. operation on 160, 80, 40 and 20 meters, and phone and c.w. on all v.h.f. and u.h.f. bands.

Class 1 is reserved for exceptionally well-qualified amateurs who have three to five years' experience in operating their own transmitters. Class 1 stations are permitted up to 200 watts input, phone and c.w. on all amateur bands.[2]

[1] The Russian high-frequency amateur bands are approximately the same as ours, although some bands are smaller. Their v.h.f. and u.h.f. bands are 38–40, 144–146, 420–425, 1470–1520 and 5650–5950 Mc.

[2] On v.h.f. and u.h.f. the maximum power permitted any station regardless of class is 10 watts. Until recently, the three classes of high-frequency work permitted powers of 5, 20 and 100 watts, respectively.

The final step is to obtain permission to put your station on the air. You will have to submit a "special form" application, a personal history statement, a work record from your employer or school, petitions from the DOSAAF Central Committee and the local committee, and a schematic diagram of your station. Two copies of these papers are sent to the local Inspectorate of Electrocommunications.[3] It is not necessary to be a member of the Communist Party, although most young amateurs are probably members of the Komsomol (Communist Youth League).

If your application is approved, you will be granted permission to operate for one year. Renewal of licenses is handled through the State Inspectorate of Electrocommunications.

The Russian amateur radio books and magazines which I read contained nothing specific about how a Russian ham obtains permission to operate a station at his home. It appears, however, that he must first go through the club station routine, then, after gaining enough experience, he can apply for an individual (two-letter) call.

The literature is, however, specific on two points regarding privately operated stations. First, there are minimum age requirements. For high-frequency work, you have to be 18; for v.h.f./u.h.f. work, 16 is the minimum age. Second, you must notify the State Inspectorate of any changes in the station which result in increasing its power, or of any change in address. If your station is inactive for three months you must so notify the Inspectorate. If you close it down permanently you must either dismantle the transmitter or turn it over to the nearest DOSAAF radio club.

Regulations

These are some of the rules which the Russian ham must live by:

> All amateur stations, whether individual or collective, are subordinate to the Central Committee of DOSAAF, which exercises control over the operations of these stations.
>
> It should be especially noted that amateur radio stations may communicate only with other amateur stations. There is one exception. In the event that an amateur hears a distress signal (SOS) from a ship or plane he must immediately establish communication with the station sending the distress call. He must also immediately report all details to the local State Inspectorate of Electrocommunications.
>
> Before going on the air either on phone or c.w. it should be thoroughly understood that all conversations must be limited to questions concerning the contact itself or to a discussion of amateur radio equipment.
>
> The transmission of cipher, the use of an unauthorized call sign, out-of-band working, and increasing power beyond that authorized are all categorically prohibited. Unauthorized phone operation is also prohibited.
>
> For violating regulations the owner of a station (or the chief of a collective station) is subject to a warning, to exclusion from working on certain bands, to a fine, or, finally, to suspension of operations.

[3] Only one copy is necessary if you are applying for permission to work on the v.h.f./u.h.f. bands.

Radio, the Russian *QST*

The magazine *Radio* is the closest Russian counterpart to *QST*. Published since 1924, *Radio* is now printed in 300,000 copies. Its cost is three rubles (75 cents by official exchange rate).

Radio is the voice of the Soviet government speaking through its agencies, the Ministry of Communications and DOSAAF. Its masthead says: "The Organ of the Ministry of Communications, USSR, and the All-Union Red Banner Order of the Voluntary Society for Assistance to the Army, Aviation and Navy." Compare this with *QST*'s masthead and you will have an idea of the difference in philosophies of the two magazines.

There are other differences. *Radio* includes articles not only on amateur radio but also on broadcast and television receivers, on the industrial applications of electronics, etc. There is, of course, no advertising. There is always a lead editorial, usually exhorting the radio fan in general, and the DOSAAF member in particular, to greater efforts in "mastering the radio sport" (radio fans are called "sportsmen"), to more participation in DOSAAF activities, and to greater efforts in "radiofying" the country.

A recent issue of *Radio* carried an editorial entitled "Let's Put Into Practice the Resolutions of the Fourth DOSAAF Congress." It said, in part:

> DOSAAF organizations must educate their members in the spirit of Soviet patriotism and proletarian internationalism, in complete loyalty to the Communist Party and the Soviet state, in the spirit of love for our army and navy, and in constant readiness for the defense of our socialist motherland.

The resolutions of the Fourth DOSAAF Congress (held in February, 1958, in Moscow and published in *Radio*) included this:

> One of the most important tasks of all DOSAAF organizations is the further development of the skill of Society sportsmen, the re-attaining of existing records in all forms of military-applied sport and the raising of these records in the next two to three years to the level of the best world achievements, especially in those aspects of the sport in which there is international competition.

The same issue contained this appeal in large block letters: "Radio Amateurs! Increase Your Sporting and Technical Achievements! The Decisions of the Fourth DOSAAF Congress Call You To Do This!"

What else does *Radio* contain? Some recent issues have included these representative articles:

> The All-Union Spartakiada — A military-type sports competition was held this summer among Komsomol and other youth groups. Radio hams competed in sending and receiving contests.
>
> Let's Not Rest On Our Laurels — Officials of various youth groups urge greater efforts in this year's v.h.f.-u.h.f. Field Day.
>
> When Will There Be Radio Parts? — *Radio* and its readers complain about the lack of radio parts. Except in the largest cities, radio components are simply not available.
>
> The United States Program for the Launching of Earth Satellites — A digest of an article which appeared in the January, 1958, issue of *QST*. *Radio*

adds that signals from American satellites are not easily received in the USSR, although signals from Explorer I were received in Kharkov and Lvov.

Miniature-Tube Radio Receivers — Descriptions of one- and two-tube receivers.

A Radar Speedometer — How to build your own radar speed trap.

From the Pages of Foreign Journals — A regular feature containing excerpts from foreign (mostly American) electronics magazines.

It appears from reading *Radio* that single sideband is just beginning to catch on with the Russian amateurs. As of May, 1958, there were only two amateur sideband stations on the air, UA1DZ and UA3CR. The latter reports working DL1JV in February for his first s.s.b. QSO. Among his more interesting sideband contacts, UA3CR lists ET2NS, KA2MA, VU2RX ("the only sideband station in India"), VQ4EO/OQ5, YV5FL and ZC4DA. He also reports that the first QSL he received for a s.s.b. QSO was from W6NOU.

Sideband adherents, take heart; your problems are international in scope. As UA3CR puts it:

> Unfortunately, our short-wave amateurs still pay insufficient attention to this interesting aspect of amateur radio. The conventional a.m. station often does not answer at all, and if it does, it reports S9, M (modulation) 2. It is necessary to explain patiently that the b.f.o. must be turned on and that you must tune carefully.

Amplifying his complaint, UA3CR said that another ham, UA3BF, was of the opinion that "only Americans work on s.s.b., and that only on 75 meters."

For you s.s.b. DX men, UA3CR reports that OD5BZ (Beirut) is — or was — active almost daily from 0500 to 0600 GMT, on 14300–14320 kc. Also that YU1AD, using an electro-mechanical filter and a pair of grounded-grid EL34s at 200 watts, is active on 20, 15 and 10 meters.

The editor of *Radio* promises that there will be more articles on s.s.b. in future issues.

The part of *Radio* which corresponds to the "How's DX?" section in *QST* is a short (usually a half-page), irregularly appearing section called "Chronicle."

Russian hams are encouraged to make more QSOs with foreign amateurs. General-Lieutenant Melnik, Deputy Chairman of the DOSAAF Central Committee, said recently:

> During the past 18 months Soviet short-wave amateurs have made more than 500,000 two-way radio contacts with amateurs in 250 countries. Although this is a not inconsiderable figure, to us it is clearly unsatisfactory. It seems to us that doubling the number of contacts with foreign radio amateurs is a completely achievable task for our short-wave amateurs.

Russian Equipment

Because commercial equipment is quite scarce, and because there are no do-it-yourself radio kits in the USSR, most Russian ham gear is either home-built (even to the winding of transformers) or is military surplus provided to club stations by the government. The circuits of transmitters and receivers which are published in *Radio* are not very advanced; a receiver with more than three or four tubes is rather uncommon. On the other hand, you often find "12-tube super" written on Russian QSL cards. These are probably military receivers, or are the ones home-built by the more advanced hams.

Judging by the pictures of ham stations printed in *Radio*, it appears that the most common receiver (at least at club stations) is one resembling the Super-Pro. (This is probably a military receiver.) Another common one is the American BC-348-type receiver, probably obtained during the war under Lend-Lease. Less common, but still seen occasionally, are RCA AR-88s and old-model HROs.

There are very few beam antennas in use. The most common antennas are long-wires and doublets. A recent issue of *Radio* (June, 1958) contained the first description I have seen of the vertical ground-plane antenna. *Radio* treated it as a relatively new development, and referred to it as a "Ground Plane" antenna (in English).

TVI does not seem to be a serious problem to the Russian ham. One reason, of course, is that there are fewer television receivers in the Soviet Union. Another reason is that the Russian television stations are normally on the air only during evening hours and not at all on Thursdays.

Awards

In order to encourage greater amateur activity, DOSAAF has created some awards and rewards. DX awards include "Worked 150 Countries," "Worked Six Continents," "Worked the 15 Republics of the USSR," and "Worked 100 Districts of the USSR." For the last three there are also awards for s.w.l.s who *hear* six continents, 15 republics or 100 districts.

I know for certain of only one award which is available to foreign amateurs; this is the "Worked Six Continents" (R-6-K) award. This has been won by DL1JB, G3GSZ, G3LFT and SM4BPY, as well as by Russian and satellite hams.

This award is divided into several divisions. There is the "R-6-K-I (CW)" division (work all continents on 80 or 40 meters, c.w.); the "R-6-K-II (CW)" division (work all continents on 20 meters, c.w.); the "R-6-K-III (CW)" division (work all continents on 15 or 10 meters, c.w.); the "R-6-K-IV (CW)" division (work all continents on all bands, c.w.); the "R-6-K-II (Phone)" division (work all continents on 20 meters, phone); and the "R-6-K-IV (Phone)" division (work all continents on all bands, phone).

Most, if not all, of the other awards may also be available to foreign amateurs. Further information on this could probably be obtained by writing to one or both of the following:

1. The Chief Judging Board of the DOSAAF Central Committee, P.O. Box 101, Main Post Office, Moscow, USSR.

2. *Radio* Magazine, Novo-Ryazanskaya Street, 26, Moscow B-66, USSR.

Rewards include "Master of Amateur Radio Sport," Master Radio Constructer," and others. Winners of these awards receive medals.

To qualify for "Master of Amateur Radio Sport," an amateur must meet one of these sets

(*Continued on page 182*)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W0BRD

Where:

Shades of one Richard Tracy and OM Whitehall! As we declared last month, the scope of content in your monthly "How's" mailbag is scarcely predictable. That contention is further supported by lines from a nonham which arrived a hair too late to be included in October's sampling:

Signal Mountain, Tenn.

Editor, "How's DX?":

Four Marine and Navy pilots recently were discharged from service in Japan, built themselves a boat and started a trip through the China Sea islands. They left Keelung, Formosa, on the 7th of July and headed for Hong Kong. They have not been heard from since.

A Collins radio installation was aboard and they were known to be operating in the 20-meter band. I do not know their call — if they had one — but their yacht was the *Tora*. In one of their letters it was mentioned that they had radio schedules with some amateur in the area. I am trying to run down any contacts they might have had in order to ascertain their present whereabouts.

The men are Bohning of Belmond, Iowa; Van Doehren of Elkhart, Indiana; Martin of Seattle, Washington; and my own son, Farmer. Can you help in any way?

— *G. Everett Farmer*

This inquiry is complimentary to the renowned ubiquity of DXdom's grapevine. Who knows? Perhaps someone in the arbor's outskirts has the key to Mr. F.'s quandary. Should anything develop we'll pass the word along.

—···—

As the accompanying cut and caption proclaim, we've got that Novice DXCC, a first among firsts. What next, Pegasus? What other bright brass ring dangles just out of reach on the dizzying DX merry-go-round? Well, until something else suggests itself, how about WEC — Worked Every Country? Some are close but yet so far. It's something that may never happen or may happen tomorrow. True, countries are added and the List is revised, but only a handful of inert items — Wrangel Island and the Aldabras, mainly — really bar the door. *When*, men?

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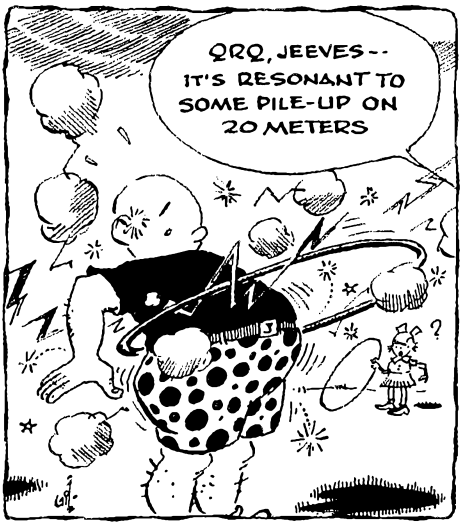
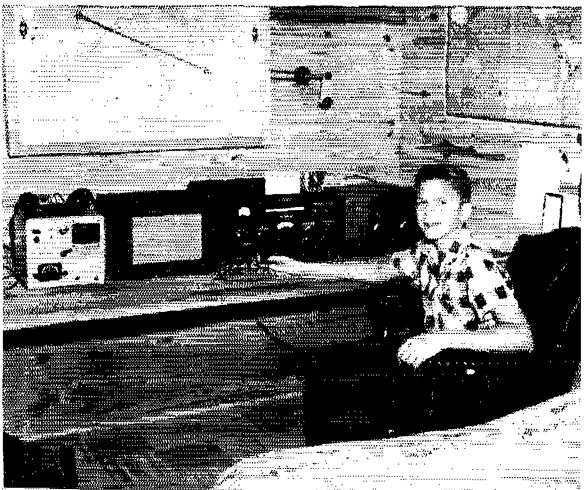


What:

Hail, hail, the gang's all here! Our DX bands, we mean. Through each year's summer and much of autumn our monthly DX yarn is spun essentially by indefatigable Twenty. But now the plot palpably thickens. We permit an old and honored spectral friend to lead your "How's" Bandwagon caravan this month, a veteran of DX wars who shows considerably promise for the months ahead. . . .

160 c.w.'s preseason pep talks are delivered by W1BB and W6KIP. The latter writes: "ZL3RB-W6KIP skeds occur at 0800 GMT each Monday, ZL3RB on 14,120-kc. phone and W6KIP on 14,005-kc. c.w., with shift to 1995 kc. ZL3RB uses 1899 kc. for western U. S. A., 1880 kc. for the East. Other North American and DX stations are more than welcome. On August 25th VK2AGH reported my 160-meter signals RST 349 through a high noise level, my first low-band report from Australia." Last May W6KIP and ZL3RB attempted a three-way with ZL5AC of Antarctica but ZL3RB's weak reception of ZL5AC was the only result. This moved W1BB to recall the successful W4EPP-KC4USB 1.8-Mc. phone QSO of 1939 . . . . . Preliminary to the annual 160-Meter Transatlantic Tests commencing next month W1BB will use 1810 kc. between 0500 and 0730 GMT each Sunday, alert for DX. Stew urges all 1.8-Mc. DX devotees to polish up their percolators for the 1958–'59 season and reminds us that the 1875–1900-kc. 160-meter segment is no longer amateur (W/K).

10 **phone** began an excellent series of openings in early September and K1CBR, K3AMH/4, W5KLB, K5s HWY IHD, W6ZZ (s.s.b.), W8s BMX IBX, K9s ISP JIN



One year ago this month we speculated editorially on the possibility of a Novice ever joining ARRL's DX Century Club. It did seem remote at the time; there were many who deemed the odds too great. But KN4RID (now K4-RID) put an end to such conjecture by turning the trick with his Ranger, 75A-4 and three-element 21-Mc. rotary. ARRL staffman W1ICP, who obtained this picture, is told by Billy's dad that the young OM's school grades improve *in direct* proportion to his interest in amateur radio. Truly, *labor omnia vincit*—we are assured that KN4RID's achievement comes strictly solo.

KEV and KØHJV found early birds **CN8s** ES FV JI, **CR6**AJ, **CT1**IW, **CX1s** BY CA FM VD, **HP2**ON, **KA2**EB, **KH6**CI (s.s.b.), **KM6**BI, **KX6**CC, **KZ5s** AD LU, **OA4**IGY, OQ5CK, TG9CD, **TI2**OE, **UB5**FG (28,295 kc.), **VPs** 3HAG 9EK, **VQ2**DC, XQ8AG of Chile, YN1s EW JR, YV1CA, **ZB2**A, **ZEs** LJE IJV 6JL and **ZS3**B on tap. _ _ _ _ _. The happy 28-Mc. departure from summertime north-south paths is strikingly evident in the c.w. slot where K1CBR, K5HID, W8s CSK IBX and K9KEV grabbed an easy logful of DL/DJ G GI GW GM HB OH OK ON4 OZ PAØ 8M, etc., colleagues plus more desirable LX2GH (62) 15 GMT and OQ5RU. Yep, looks like another solid season for ten!

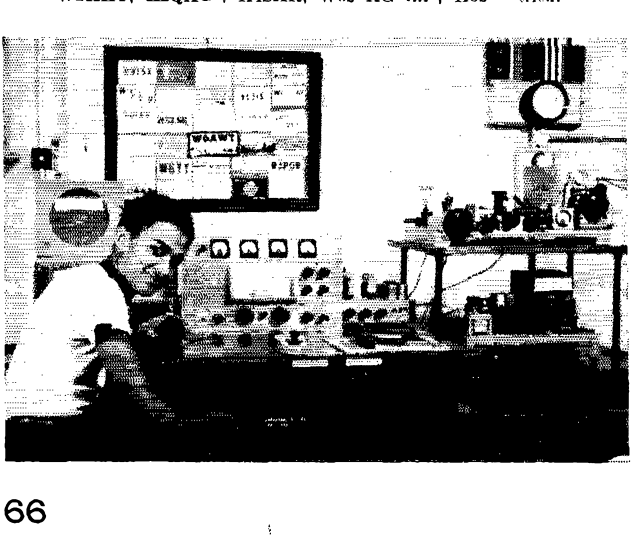
20 c.w. accepts the collective challenge of increased activity on other bands and comes off top banana as usual. "Conditions showing swing toward erratic winter status. I'll take the spring and summer anytime — at least from this location!" Thus spake W2HMJ and like a true 20-meter man. W1s AZW (133 worked), ELR, K1CBR, W2s GVZ IVS JBL, K2s AYC (50/18), QXG (160), UYG, W3s CMN DKT (239), GYP KA, W4TVQ, K4s IGD RJM SXR 104/64, W5QMJ, W6s JQB KG ZZ, K6s ALH (71/48), CQF (114/56), ICS QHC (120/63), SIJ THZ, W7s DJU QNI, K7AWH, W8s BMX (112/86), CSK (113/89), IBX (135/106), TDD YGR, W9s JJN MAK PCQ UBI ZTK, K9KEV, KØHGB, KP4AOO, VE3EIL, PAØLOU and ST2AR discuss the activities of **AP**5B, **BV1**US, **CE9**AR, **CN8s** BF FM (35) 4, LC LG, **CR6** 6AI 6CK (31) 21, **9A**II, **CT2** AI (3), BO (19) 22, **DMs** 2ACA (75), 2AMG 3KUN (50), **DUs** ICE 1OR 3DD 7SV, **EAs** 8CP 9BM, **EL1s** K X (77) 18, **ET2s** KY US (40) 1, **FB8**BA (60) 3, one FC8AX (56) 5, **FF8s** AC (79) 8, AF BZ (38) 8, CC (13) 6, CI (70), **FG7**XC, **FK8**AS (27) 10, **FM7**WT, **FO8s** AB AC AE (35) 1, AO (320) 6, **FQ8s** AJ (40) 0, AP 5, **FU8**AE (35) 1, **HA5s** AM DH DU, **HCs** 1HL 4IM (25), **HE9**LAC (42) 3, **HKs** 3TH (20) 21, 4JC, **HP1**LO, **HL8**KEF, **HS1s** C (20) 23, VR 14, **HV1**CN (W1TYQ officiating), **IT1s** AGA AQ, **JAs** 1AB 2BJ 2DO 3CV 3UI 4JQ 5AI 6OK 7LA 8FO 9AA (38) 12, **JT1**YL, **JZØ**DA (18) 11, K5BSF/**KG6** (52), **KAs** 2FEC 2KS 2LN 2RS 8KW 9AF (65) 23, **KB6**BJ (13) 11, **KCs** 4USK (20) 2, 4USV (60) 12, 6JC (16) 11, 6JK (31) 1, 6KR (16) 11, **KG1**DL (65) 1, KH6MG/**ZK1** (50) 6, **KM6s** BL (8) 11, BM EVK, **KR6s** JF 19, QW RY (9) 11, ZA, **KS6**AG (34) 11, **KV4**AA (80) 22-1, **KX6s** BT CW, curious LH1B/P, chilly **LUs** 2ZS 3ZQ, LX2GH (75), **LZs** 1KPC 2KAG 2KSL, **OA4**FA (50), **OQ5**EH, **OX3**UD (50), **OYs** 1R (53) 21, 2H 2Z (84) 23, 7ML, **PJ2s** AE (50) 5, ME of Dutch St. Martin, Moscow's RAEM (22), SPs galore, **ST2**AR (45) 5, **SU1**IM, **SVØ**WR (26) 4, **TI2s** LA PZ WD, **UA9s** CM (16), KJF (67) 2, OK (51), VB, **UAØs** CN FE KAR KCO KDA KFG KKB KQB KUV KZA LN LS/mm RK RW, UB5s en masse, **UC2s** AA (30) 23, KAB KAR, **UH8**KBA, **UI8**KBA (105) 1, **UL7**IB (27) 2, **UN1**AB (42) 4, **UO5**PK (56) 4, **UP2s** KBC (5) 3, KCB, NM (62) 22-23, **UQ2s** AB AH (45) 4, AJ (82) 6, **UR2s** AK BU KAE, **VE8s** MO NS (85) 1, **VKs** 9RR (51) 11, 9VM (28) 13, ØKT ØTC, **VPs** 2GL (45) 4, 2MR 2VP, 5BL 6RG 7NA 9AK 9DY 9EM 9HH 9Y, **VQs** 3CF 3MK 8AJC, **VRs** 2DA (20) 5-12, 2DG, 6TC (18) 6, **VSs** 1BB (31) 11, 1FZ (45) 11, 1GC, 1JN (40) 12, 2FK 16, 6AE (29) 11, 6DV 6DX 6EC, **VU2s** AJ (32) 12, CK RA, roving Ws 1RHO/**KG6** 2NCB/VE1 on P.E.I., 3ZA/**3W** (87) 11, ØBKL/**KG6** (92) 11, **XEs** IVF 2SA 3BL, **XW8**AI (23) 16-17, **XZ2**TH, YA2AC, **YJ1**DL, YN1AA, **YOs** 2KAM 6KAL, **ZBs** 1HPG 2R (17) 1, **ZC4**PN (1), **ZDs** 1FG (104) 2JM (35) 22, 9AF, **ZEs** 3JU 5JE (40) 15, **ZKs** 1AK 2AC (48) 5-6, Chatham's **ZL3**DA, **ZS3**G, **4X4**FU and **9G1**CR (25) 23-0.

20 phone's spot-check is supplied by reporters W1RST, W2KKT, K2QXG*, K4SXR, W6s KG ZZ*, K6s LAS LZI* SHJ, W8s IBX YIN* (106 via s.s.b.), W9UBI* and K9KEV who specify **BV1**USC (120) 8, CE1AGI*, EL3A (150) 5, **FO8**AC (125) 7, **FS7RT*** (W6ITH), **GC5ZC***, **HB9IE***, **HL9**s KR* KS (130) 7, KT (149) 8, **HP1**s ME VA* WM (256) 22, **HR3**HH (154) 2, K9JNS/VE8*, KA8GM*, **KB6**s BK* (273) 7, BL*, **KC4**s USH* USK*, **KM6**s BH* (278) 6, BI* (278) 6, BJ* (278) 6, **KR6CP***, **KV4AA***, **KX6**s BU* NA* of Majuro (275) 6, **KZ5CN***, **MP4BBW*** 12 and 0, **OA4**GB*, **OK1MB***, **PY1**s AQT* BIG*, TF2WCY*, **TG9AD***, **VK9AD***, **VS2**DW (135) 15, **VU2RM***, W3ZA/**3W*** (309) 11-12, **YS**s 1GA* 1MS* 3PL*, YV5s CE FH*, **ZD9AF**, **ZEs** IJX (170) 13, 5JU (130) 15, **ZK1BS***, **ZL3**s DA* (305) 8, IA and **5A3TH***. By golly, the s.s.b. (*) stuff appears to be taking over 14-Mc. voice DX work unless the a.m. gang is being bashful. Old c.w.-a.m. man W6ZZ was "certainly very satisfied with my first few weeks of side-band operation."

15 c.w. turns up **CNs** 2AQ 8DJ 8FV, **CR6s** AK (88) 15, CK (59) 22, **CT1s** ID (37), TT, **CXs** 2BT 3CS (80) 1, **DL5**BY, **EL1s** K X 19, **ET2**US (19) 19, **FA8**TT, **FF8**BF, **FM7**WU, **FQ8**AP, **HA5**FO, **HV1**CN (50), **JT1**AA, **KGs** 1DJ 4AL, KH6MG/**ZK1**, **KX6**BP, **LU2ZM**, **LZ1**AH (40) 16, **MP4**BCO, OEs and OKs in number, **PJ2**ME, **SLs** 5AB (70) 22 and 7BC of Sweden's military, a hatful of 8Ps, **ST2**AR (50) 5, **SVØ**WR, **UA9KSA**, **UB5s** FG (40) 22, KIA UW WW, **UC2**AA (40) 13, **UF6**FB (79) 20, **UL7**HB, **UQ2**AB, **UR2s** AN KAE (40) 17, **VK9XK**, **VPs** 2MR 8CR 8DK, **VQs** 2MB 18, 3HD 3HL 4EZ (75) 20, 4FM (57) 20, 5EK (60) 18, **VSs** 1GZ 6AE (24) 14, 9AS 9MA of the Maldives, W2SGL/FF8 doubtless on ship, **WP4**AMR (105) 21, **XW8**AH (20) 11, **YOs** 2CD 3CD 3RI (56), **YU1s** OE XC, YV5GO, **ZBs** 1LQ 2A (60) 22-23, **ZC4**RF and **ZE1**JV (55) 0 for informants K1CBR, W2HMJ, W3CMN (56/37), K3ARV, W4TVQ, K4s DRO (161/138), 1GD PHY (84/61), RJM (65), SXR, W5KLB (163/140), K5KGF, W6KG, W7DJU, W8s CSK IBX, W9ZTK, K9s GSG ISP JIN KEV, KØs HJV LFY (90/56), PAØLOU and ubiquitous KP4KD (228 bagged).

15 phone accommodated K1CBR, W2BZN, K2QXG, W3CMN, K3ARV, K4s DRO PHY SXR, W5KLB, K5HID, W6ZZ*, K6s ICS (76/58), LAS*, W8s BMX YIN*, K8CFU, W9WHM, K9s GSG JIN, WØQGI, KØs HJV and LFY — asterisks indicating s.s.b. users — to the tune of **CN8s** FV JS, **CP1**AM, **CR7**BB, **CTs** 2AC 3AN 3AU, DL4ACN*, DU1GF, **FB8BB***, **FS7RT***, GD3IYS (200) 17, **HCs** 1MR 5MT 7FD, **HE9**LAC, **HI8**GA, **HL9**KT, **HPs** 1FE 2ER (280) 1, **HS1s** C E, **HZ1**AB* (415) 20, **I5**FL, **JT1**AA (30) 13, **KCs** 4USK* 4USN* 6CD, **KG1BB***, **KR6**RB, **KX6s** BP* BQ* BT, **KW6CP***, **KZ5BU***, **OA4s** CS* IGY, **PJ3AE***, **ST2**AR, **TF2WDC***, **TG7**AB, **TI2**OE, **UAØs** KAA OE, **UB5WF** (305) 18, **UC2s** AA KAB, **UD6s** AL KAB, UO5AA, **UQ2**AN, **UR2s** AR (255) 12, BU, **VKØKT**, **VPs** 2AB 2DA (200) 23-0, 2DJ 2GL (220) 0, 2GV 2LB 2MR* 5AB 5FR 8DW (270) 23-0, 9EF, **VQ3**DQ (225) 17, **VSs** 2DQ 6DJ 9MA (120) 18 on Gan, **VU2EJ**, YA1AA of Kandahar, **YV5BS** and **9G1CF***.

15 Novice navigators nipped **LZ1**AH, **OE5**PV, **OKs** 2KGZ 3DG, **SPs** 5AA 9NH, **SVØWR**, **UC2**AA, **WL7s** CNP CRZ, **WP4s** AME ANH AOQ APR, **YUs** 1AG 3AZ 3EU 3HY, **ZB1**LQ and **ZP5**CF. KN2IHY (37 countries) and KNØPFF did the honors _ _ _ _. Forty's Novice habitués, namely KNs 5PYX 5QPG 6RGA and WN6YKS, pass the word on QSOs with JAs FD PS, W4HBY/**KS4** (197) and **WL7**CRL. KN6RGA nailed those JAs with a home-brew 6L6 rig, unmodified S-38E and lamp-cord-fed dipole, declaring: "One doesn't have to use elaborate equipment for 7-Mc. Novice DX. Hard work and plenty of listening, sans notorious long-winded Novice CQs, will do the trick."



ZD7SA's trim breadboard 807s 80-watter and associated materiel create pesky problems for the Saint Helena mailboat. Bob receives as many as 2500 QSLs per delivery, these soliciting confirmations for QSOs on 7, 14, 21 and 28 Mc. In the face of such a voracious postal and r.f. avalanche ZD7SA's calm and smiling mien is a wonder to behold. (Photo via W5GNG of WGDXC)

40 c.w. is coming along nicely. K5JVF, a keen 7-Mc. observer, reports: "Those JAs are beginning to creep past Six-land at last. JAs 1PS and 2UW were the first ever heard here." W2IVS, K2UZJ, W3s CMN GYP LAX, K4RJM, K5KGF, K6s DV QHC, W7DJU, W9JJN, KØHGB and KP4AOO collect QSLs from **FA8EC, HRØAA, JAs** 1APD 1BJH 2BL 2BP 2DX 2UW 2XM 3GY 6AK 8HO, **KB6BJ, KX6BT, LZ2KAG, OEs** 5GD 8KI, **OKs** 1DJ 1XX 2KAJ, **PYs** 6JD ØCB (21) 4, **UC2KAB, UO5PW, VE3DUA/VE8, VR2DA, WH6COK, ZDs** 2QQP (13) 8 **7SA** (18) 0-1 and assorted ZS OMs . . . . . Forty's **phone** fanciers are customarily reticent but K6ICS and KP4AOO mention **FS7RT, OA4EO, VPs** 2DJ 2GV and 6ZX, the latter three netting on 7245 kc. See "Whence" for the European slant on 40 phone.

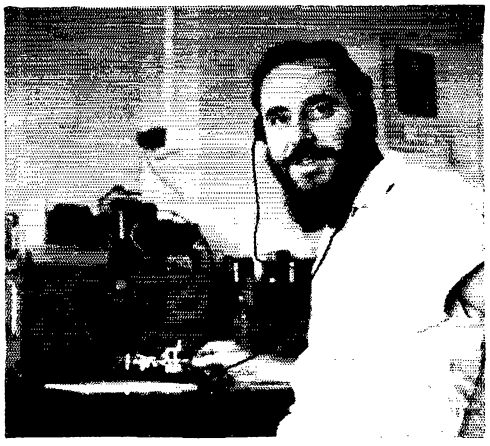
80 c.w. is represented this month thanks to17-year-old **PY4AXN**, welcome new blood to the lower-frequency scene. Luiz was licensed in July and has already captured **DJ3s** FD (15), WE (5), EI9J (20), **OA7I** (17), **OK3AL** (15), **UA1DZ** (5), VEs 1ZZ 3EK, Ws 1YNP 2APH 3BA 3KUN 3MQY 4RL 4VCA and other PY neighbors. "I am QRV each night around 3520 kc. but our summer is coming and the static level is rising." A 6146 final, HQ-129X and dipole do the job.

Where:

Africa — W9EJY, formerly W2MYY and lately CN8GU, informs, "I shall continue to handle QSL matters for ZD7SA after my return to the States [address follows]." . . . . . SU1IM and his distinctive note may be QSLd by W/Ks via W9DRS with the usual self-addressed stamped envelope courtesy . . . . . KØEVE reports fake FF8AD-FM7WD activity late in June on 21 Mc. . . . . ST2AR (G4AR), chief contemporary source of Sudan DXCC credits, describes the confirmation situation over Khartoum way: "Am right up to date with my QSLs. My system is to answer all cards received right away. I once tried to QSL all QSOs immediately but it didn't pay off. And I don't understand these fellows who say they have 99 confirmed and need only my card for DXCC but who don't even send single IRCs. Just two Coupons will get my card back in a couple of days by second-class airmail that is quite sufficient. Some of the boys send three or four IRCs and you can assure them that the balance goes into my ham stamp account." Eric began a U.K. holiday last month and will remain in England till mid-December. He has his log and QSLs along and can be reached at 119 Raeburn Ave., Surbiton, Surrey, in a hurry . . . . . ZS6IF ordered QSL stock for his August ZS6IF/7 doings around the first of September. "Tell the boys to be patient, for writing out hundreds of cards is no joke." . . . . . "I'm now QSL manager for the entire world-wide logs of VKs 2AYY/LH 2FR and VQ3CF," declares W2CTN. Jack has the VQ3CF log solid for the period from June 1 through August 23, 1958, and understandably insists on self-addressed envelopes.

Oceania — Chatham Islander ZL3DA may be QSLd via W6ZEN with one International Reply Coupon, says W6ZZ . . . . . KH6MG/ZK1 of the Dangers expected to begin clearing QSLs from his home QTH by the 15th of last month. K6SHJ finds that mail routes in the area are vague . . . . . SCDXC understands that ZM6AS — the current one, we presume — has cleared his QSL debit via bureaus . . . . . "I'm handling all QSLs for KX6BT, now operated by W3CHH. Cards should be accompanied by self-addressed stamped envelopes to merit direct reply. All others will be answered via the bureau route." So instructs W3LEZ whose KX6BT log begins with the 9th of August, this year . . . . . W8ZCQ helps us keep the Dutch New Guinea score straight by identifying these JZØs: DA (see roster to follow); PB, E. Ellis, Decca Survey, Merauke; HA, H. H. Hage, P. O. Box 420, Sorong; and PA, A. P. J. Mould, Decca Survey, Kimaan.

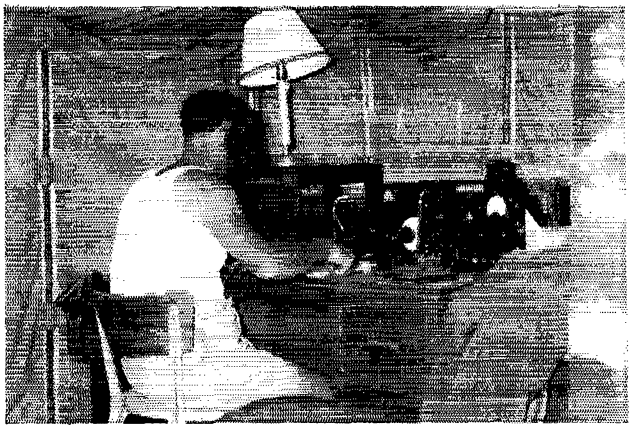
Europe — From PAØLOU, VERON'S traffic manager and DX editor: "VERON QSL Bureau, P.O. Box 400, Rotterdam, is the only official IARU QSL bureau for the Netherlands since 1928. All QSLs for Dutch hams are handled by this bureau and eighty-five per cent of all PAØs are members of VERON." . . . . . WIA's *Amateur Radio* confirms a decentralization trend in stating that QSLs for stations in Scotland and Wales now may go through GM6MD and GW3ANU rather than through RSGB's main bureau . . . . . W6NJU continues QSL labors on behalf of CT2BO and OY7ML, self-addressed stamped envelopes requisite . . . . . Reminder: HB1s bearing appendages "FL" are Swiss visitors to Liechtenstein. Other suffix attachments — AG, VS, etc. — indicate portable operation in Switzerland's twenty-two cantons. In almost every case such portables can be QSLd to home stations; *e.g.*, HB1TL/FL would be HB9TL a-roaming . . . . . HAIM/M1 QSL solicitations should be accompanied by appropriate IRCs, advises Alberto . . . . . W9MAK finds IT1AQ an eager recipient of U. S. postmarks. Thus it may pay for, say, New Yorkers to cross the river and drop IT1AQ-destined QSLs into Weehawken, West New York and Guttenberg mail boxes — hi! . . . . . Ws 2GVZ 8CSK and OVARA underline W1TYQ's plea for large-size s.a.s.e. in connection with HV1CN requests . . . . . LZ1KPC assures W8CSK he answers all IRC-bearing QSLs direct and LZ1AF tells W2GT he QSLs 100 per cent from the QTH to follow.



Lee Grant's rather untropical foliage evidently never cramps his DX style. This is the ZD3G layout that followed earlier activations as VS9AG and ST2NG. "I've had three receivers smashed in freight accidents in the last five years and my rig won't stand much more battering around. At the moment my AR-88D receiver is in a box almost big enough to house a concert grand piano, so I hope it arrives intact on the next move. 'Tis a bitter moment when you open a crate and hear the tinkle-tinkle of fractured fragments!" After concluding current Bahrein duties Lee envisions a juicy VQ6 stint. *(Photo via W2ZGB)*

Asia — W1VG forwards lines of interest from ex-9K2AQ (G3FJU): "If you could only have seen the pile of QSLs I had to clear with the XYL's help! I hope to take 9K2AQ cards with me to Libya and keep up to date on them there." To clear the record, Ron was first issued the call MP4KAS but local Kuwait authorities quickly switched this to 9K2AS; this suffix, however, was then appropriated by a local sheik and Ron finally became 9K2AQ . . . . . W1VG also is apprised by 9K2AN that the latter's QTH has appeared incorrectly in some publications. Use this version: Alhaj Nasir Hussain Khan, P. O. Box 736, Kuwait, Arabia.

Hereabouts — "QSLs for KS4AZ should go to this station with self-addressed stamped envelopes," directs W3KA . . . . . "OX3DL has returned to Denmark and I am sure he *really* has a *job to do* in clearing QSLs because he was the most active ham ever to be in Greenland," writes OZ2NU to W7VX and W1TUW. "The OX3 boys should not be classified as bad QSLers. Postal communication in most of Greenland is very poor, some areas having only one outgoing mail per year. It is therefore necessary to be very patient." . . . . . "Down on the low end of the 40-meter band was this HRØAA," relates K2UZJ, "He was working guys like mad, about two every three minutes. His signal wasn't very strong and when he gave his QTH he always seemed to fade into the background noise." Sequel from W3YZS: "All W/K/VE/KL7s who worked HRØAA of Ascension Island can QSL via this station." . . . . . "Cards for FO8AT are arriving in bundles and all my spare time is spent in getting them answered as soon as possible," writes harrassed W6KSM. Who's next for Clipperton? . . . . . W8CSK offers his services as U. S. QSL representative for a rarish overseas one in bona-fide need of assistance . . . . . W3GHS entreats us to reaffirm August's advice that KC4USB-bound cards cannot be answered until he receives the station's log, a development scheduled for January . . . . . "KP4AIO confirms that one VP2AH was a pirate," writes W8CSK. "Over 300 QSLs arrived for him." We'll bet that bird interviews flying-saucer jockeys, too . . . . . The addresses to follow are neither "official" nor necessarily accurate. They are offered by W1s ELR TUW WPO, K1CBR, W2s AZO BVS BZN GT HMJ JBL KKT, K2QXG, W3CMN, K3ARV, W4s GXB WFL, K4s DRO HRG RJM, W6s KG ZZ, K6s CJQ CQF ICS LZI SHJ TJK UFT, W7DJU, W8s CSK YIN ZCQ, K8CFU, W9s JJN LNQ MAK UBI, K9JIN, WØQGL, KØHGB, VE3EIL, Mr. Patrick Wright, DeRidder (La.) DX Club, Japan DX Radio Club, Newark News Radio Club, Ohio Valley Amateur Radio Association (W8JIN, DX ed.), Southern California DX Club, West Gulf DX Club and Willamette Valley DX Club in the hope that they *may* expedite a body's DXCC project. Should you en-



Engrossed is the word for G3FJU, shown here operating 9K2AQ in typical canvas desert quarters. In three Kuwait months Ron tallied some 2000 QSOs with 105 countries using fifty watts, a Marconi CR-100 receiver, ground-plane for 20 meters and a 135-foot wire for 40, 15 and 10. Next stop for G3FJU? Libya. (Photo via W1VG)

counter previously unpublished QTHs of potential value to the gang, ship 'em Jeevesward. And so:

AC4AX, D. S. Seal, c/o Consulate General of India, Lhasa, Tibet (or via India bureau)
AC5SQ, S. Saja (AC3SQ), c/o Bhutan Agent, Kalimpong, India
ex-CN8GU, R. Donovan, W9FJY, RFD 2, Maxcoutah, Ill.
CN9JC, P.O. Box 124, Tetuan, Morocco
CX2BT, Box 37, Montevideo, Uruguay
DL4UW, H. Lufkin (WØSII), O/L No. 6, 587th C&G Sqdn., APO 171, New York, N. Y.
FF8CI, Dakar Airport, Dakar, French West Africa
FG7XF (via REF)
FP8AR (to W2HTI)
FP8BB (to K2DQD)
FQ8AJ, J. Franco, Box 2023, Brazzaville, French Eq. Africa
HA5DH, O. L. Kalmar, XVI Metro utca. 18, Budapest, Hungary
HI8CM, P.O. Box 122, Ciudad Trujillo, D. R.
HR0AA (W/K/VE/KL7s via W3YZS)
HS1JN, J. Sowanna, 347 Sawankaloke Rd., Bangkok, Thailand
HZ1AB, 1602nd ATW, Det. 10, MATS, APO 616, New York, N. Y.
IIAIM/M1 (to IIAIM)
JZØDA, H. A. R. Diemont, Sentani Airstrip, Hollandia, N. N. G.
JZØPB (via WØGXP)
K5BSF/KG6, Box 1362, Agana, Guam
K7CDE/VO2, E. Adair, 1932nd AACS Sqdn., APO 677, New York, N. Y.
KC4USK (via W3ZYB)
KC6CD, J. Hudick, Team 103, APO 953, San Francisco, Calif.
ex-KG1DL (to K8CXD)
KH6MG/ZK1 (to KH6MG)
KS4AZ (to W3KA)
KX6BT (via W3LEZ)
KZ5CN, L. Boynton, Box 739, Ft. Kobbe, C. Z.
LA3SG (via NRRL)
LH1B/P (via NRRL)
LX1KA (to DL7AH)
LZ1KPC, Box 750, Sofia, Bulgaria
OD5CB, Najhani, P.O. Box 266, Tripoli, Lebanon
PJ3AE, Box 586, Seroe Colorado, Aruba, Netherlands Antilles
PY3APJ, Box 57, Cancas City, Rio G. do S., Brazil
PY4AXN, L. F. S. Gomes, Rua Aimores 2042, Belo Horizonte, Brazil
SU1IM (W/Ks via W9DRS)
UAØLS/mm, Gennadiy M. Mashonkin, *SS Gorlovka*, Crabotrest, Vladivostok, U. S. S. R.
VE3DUA/VE8 (to VE3DUA)
VK9CP, Rev. C. J. Patrick, c/o P.O., Kavieng, New Ireland, T. N. G.
VP2AY (via KV4AA)
VP2MR, Box 221, Plymouth, Montserrat (or to W6ITH)
VP2VG, W. Bailey, P. O. Box 509, St. Thomas, V. I.
VP7NA, Box 5197, Nassau, Bahamas
VP8BJ, G. N. Biggs, 5 Dean St., Port Stanley, Falkland Islands
VP8CI, H. E. Dyer, c/o Westminster Bank Ltd., 12 High St., Southampton, England (or via RSGB)
VP8s DG DS, via Dir. P &T, GPO, Port Stanley, Falkland Islands
VP8DW, T. Hardy, P. O. Box 185, Port Stanley, Falkland Islands
VQ8AJC (via VQ8AF)
VR2s DA DK (via W2CTN)
VS4JT (via K6GMA)
VS9MA, RAF Stn., Gan, Maldives, via BFPO 180, GPO, London, England (or via RSGB)
VU2BK (via W4ANE)
VU2JG, J. Ganguli, F-148 So. Vinay Nagar, New Delhi, India
W2EPS/KJ6, c/o USCG Loran Stn., APO 105, San Francisco, Calif.
ex-W0MCF/C1/C3 (to SVØWR)
XE2XK, Box 726, Guadalajara, Mexico
YN1FK, F. Kettel, Box 195, Managua, Nicaragua
YO2CD, M. Negrutzi, Box 80, Timisoara, Roumania
ZD7SA (via ex-CN8GU, W9FJY)
ZL1AMO, R. Wright, 773 Sandringham Rd., Mt. Roskill, Auckland, N. Z.
ZL3DA (via W6ZEN)
5A2CT, P. J. Brisbar (G3JHZ), Party 646, P. O. Box 193, Benghazi, Libya
9G1CU, ComCan, Gifford Camp, Accra, Ghana
9G1CV, ComCan, Gifford Camp, Accra, Ghana

Whence:

Europe — Amateurs the world over are invited to work G GC GD GI GM and GW brethren in the third annual *RSGB 21/28-Mc. Phone Contest* which runs from 0700 GMT November 22nd to 1900 on the 23rd. Prime stipulations are that one must be single-operator on 10- and 15-meter phone and exchange RS-plus-QSO-number serials (47001, 58002, etc.) with the G men. Each completed contact with a British Isles station scores five points. In addition, a bonus of 50 points can be claimed for the initial QSO with each numerical prefix — G2 G3 G4 G5 G6 G8 GC2 GC3, etc. — and a further 50-point bonus is earned for each additional ten G3s worked. [Poor chaps must be lower than W9s over there, Boss. — *Jeeves*] (Is it possible, Jeeves?) Entries must (a) be clearly written or typed on one side of each sheet; (b) show date, band, GMT, call of station, exchanges sent and received, QSO and bonus points for each contact; (c) be addressed to the Contests Committee, RSGB, New Ruskin House, Little Russell St., London W. C. 1, England; (d) be postmarked no later than December 8, 1958; and (e) be accompanied by the signed statement, "I declare that this station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council of the RSGB shall be final in all cases of dispute. I certify that the maximum input to the final stage of the transmitter was —— watts." Certifications of performance will be available to country leaders and top scorers in W/K/VE, VK, ZL and ZS call areas. Hoicks! and tallyho, lads . . . . . W2HMJ's ample archives reveal that "LA6-CF/mm took a v.f.o. to Jan Mayen and stayed three hours but found no antenna or power supply. Ten men are stationed at the bleak base for 12-month tours. LA6CF later visited OY7ML." . . . . . From 7-Mc. A3 specialist DL4UW: "Rebuilding in my new shack is nearly completed and operation will resume shortly. Military duties require much of my time but plans are being made to start regular schedules in late November or early December. I normally operate around 7100 kc. but have been known to break in on the boys on 7295 kc. I'm looking forward to working WAS and DXCC on 40 phone for, to the best of my knowledge, no European has done either. Made a few QSOs with the 40-meter s.s.b. gang this summer and will try some sideband work again next year. Forty phone is open Europe-U. S. A. about 340 days out of the year, the best propagation normally occurring between 0200 and 0330 GMT. Our main obstacle, of course, is the 29-over-9 QRM barrier that Europeans must crack to cross the pond." Warren figures that W3PHL's 90-plus 7-Mc. countries total must be top phone figure for the band . . . . . The 1958 VERON

(Netherlands) PACC DX test finds W8JIN the leading U. S. entrant with 51 contacts and 12 multipliers. Jim was pressed by the 44/12 tally of W1JYH while W6TMX topped the West Coast competition. Canada was led by VEs 3XK and 1EK in that order. PA0LOU's 415 QSOs and 116 multipliers won homeland honors while OH2YV and G31QE scored Europe's top non-PA0 totals. These statistics are all c.w.; no North American phone entries were received . . . . . VERON also calls attention to the ADXC certification, testimonials awarded to amateurs outside the Netherlands who can prove two-way communication with any ten members of the Radio Club of Amsterdam since January 1, 1957. Consult PA0OI for details . . . . . Guernsey gleanings via GC2RS: GC2ASO likes 20-meter phone of an evening around 1100 GMT with 120 watts; GC2FZC gets kicks on 144 Mc. when not DXing on lower-frequency c.w.; GC3HFE hits all c.w. bands with a will; GC3KAV prefers 7-Mc. mobile but rigs for rolling 21-Mc. stuff; and newcomer GC3LXK aims for multiband phone and c.w. DX honors. GC2RS, himself, reached 140 on the DXCC phone ladder employing modest means . . . . . W2GVZ and others report that W1TYQ's brief HV1CN September song went off like a multiband bomb. W3UOX, we hear, previously tried some HV1CN mike work and apparently became the first Yank to score a legitimate ham QSO from the place . . . . . W7HNT expects to be stationed with the USAF at Seville, Spain, for the next two years. Unable to secure hamming authorization as an EA, Frank mulls over DXpeditionary possibilities together with friend K5BGP who is billeted in near-by France. W7HNT dampened his DX feet last year by pushing K7FAE to a 132/92 DX status . . . . . Ils AIM and ZCT scheduled a San Marino voice vacation late last month, anticipating DX work on five phone bands . . . . . W3CMN worked OZs 3SN and 7SN same day, both Danes being Sven Nielsens. Further scrutiny of the *Call Book* reveals that OZs 2SN 4SN 5SN and 9SN are S. Nielsens, too . . . . . G3s KZR and MJK delighted W8EIB and fellow OVARAians with a transtea QSO in late August. The Gs attend Cambridge U. when not touring North America . . . . . SCDXC sources have DLs 7AH and 9PF primed for a Luxembourg incursion around this time or earlier, call possibly LX1KA. They'll concentrate on c.w. with a DX-100, a homespun spare rig and a miniaturized beam for several bands . . . . . G2AOL seeks word leading to QSLs from VP2LU and TA3FAS, the latter worked on 160 meters in 1951.

Asia — Thirty-two-year-old HS1JN, an electronics officer in the Royal Thai Navy's Bangkok research laboratory, now heads for his DXCC after nailing down a 14-Mc. WAC. Jamnong, licensed only a year ago, really is warming up on this DX thing . . . . . Candid Kuwait cullings courtesy W1VG: 9K2AN claims fifty countries and 26 states worked since firing up on 14-Mc. c.w. last December, minus a month for Mecca pilgrimage. Ex-9K2AQ, now heading for Libya and Fezzan territory, reports receipt of over 400 s.w.l. reports for his Middle East operations . . . . . K2UYG and French friends understand that Nepal activity is brewing . . . . . W8NYG, formerly SV0WX, KR6MN and SV0WD, acted in an advisory capacity at the Korea Ministry of Communications in Seoul this summer. At present Bill finds only HL9s KR KS and KT authorized to communicate with amateurs outside Korea. Certain experimental HL2 calls are issued to Korean nationals but they are not yet permitted to have foreign contacts. Third-party international traffic with HL9s is prohibited in conformance with international treaty regulations and the three HL9 tickets are issued to trustees of USAF, Army and MAG groups on a one-year extendable basis. The call HL2AM had previously been issued to USAF personnel but was withdrawn about a year ago. "I'm still hoping that a fourth license can be issued," hints W8NYG . . . . . DL4XC (W3B1N) was surprised to find himself among troops called down to Lebanon and took advantage of the jaunt to check up on Turkey's hamming possibilities. Not liking what he saw, Bob confirms, "As of today there is no amateur radio activity in Turkey." DL4XC expects to be back with the DL4USA MARS gang shortly where he specializes in 15- and 20-meter phone and c.w. . . . . UA0LS/mm tells W7DJU he sails with the Soviet crab fleet in Okhotsk Bay . . . . . KA2TP enjoyed a friendly visit with W7s BIQ DLF SSC and SUJ upon rotating Stateside this year. W7SUJ kad kept Pat in touch with the homeland via 10 phone during the three-year KA2TP hitch in the Orient . . . . . W0WXJ dropped us postals from such variant Asian points as Dhahran, New Delhi and Bangkok but apparently found no opportunity for hamming. A few of the hotels he patronized had juicy 220-volt a.c. mains going to waste . . . . . JA4LL, one of four radiops aboard *Argentina Maru*, keeps in touch with K6DV on the low edge of 40 c.w. while transpacificking. Bob also hears that JA1CV has sworn off bamboo beamwork after this year's typhoon season . . . . . W3DKT finds JA1AF seeking Ala., Miss., N. Dak. and Vt. on 14-Mc. c.w. from 1100 to 1200 GMT to close WAS endeavors . . . . . W7DJU is informed that a Shizuoka A-1 certification is available to all DXers who contact two Shizuoka Amateur Radio Club members. This is a liberalization of the award mentioned on p. 69, August, and p. 91, May, *QST*s.

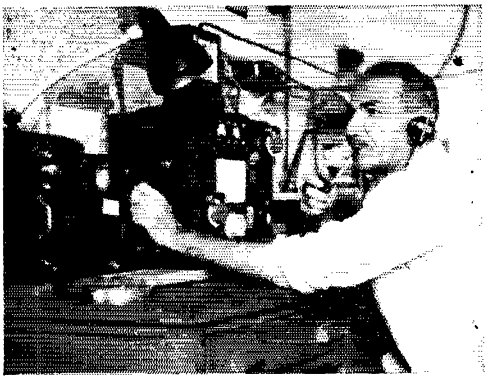
Africa — ZS6IF and ZS6APQ report over 800 contacts,

UH8KBA lately is reported worked far and wide on 14-Mc. c.w. This is operator Dima, one of several who staff the Turkoman S.S.R. club-collective station, and you'll recognize that receiver as the nigh-immortal BC-342.

some 700 with W/K/VEs, on their August Swaziland sortie. A 5763-807 exhaler, modified HRO receiver and 100-foot doublet performed well over a five-day period. ZS6IF comments, "After this I raise my hat to U. S. A. ops and their equipment. Their skill is terrific, head and shoulders over the rest of the world. I still want to go to ZS8 and ZS9 next year (ever heard of ZS9?)." . . . . . VQ1ERR suggests an intriguing though rather Utopian program for 20-meter suballocations which goes as follows: 14,000-14,100 kc., c.w. only; 14,100-14,200, "foreign" a.m., no c.w.; 14,200-14,250, U. S. A. a.m. only; 14,250-14,275, U. S. A. a.m. and s.s.b. "fraternization" department; 14,275-14,280, only U. S. Pacifics (KB6 KC6 KG6, *et al.*) a.m. and s.s.b.; 14,280-14,295, U. S. A. s.s.b ragchewing department; 14,295-14,300, U. S. A. DX-hunting s.s.b. and "invited" a.m.; 14,300-14,305, special DXpeditions, rare or new countries who will invite a.m. and s.s.b. in turn; 14,305-14,310, foreign s.s.b. DX-hunters and invited a.m.; 14,310-14,320, foreign ragchewing department; 14,320-14,330, foreign s.s.b. and a.m. fraternization department; and 14,330-14,350, free foreign band recommended for traffic to U. S. A., powerful DL4 stations, c.w., a.m., s.s.b. and the chap next door. Adds VQ4ERR, "No system ever will be 100 per cent perfect and there are possible inequalities in this one. But it could work, and in time all would learn the ropes and life would become easier on 20." What's *your* version of the New Order? . . . . . G3JHZ, once VO6AE, expects to sign 5A2CT till 1960 or so. Peter hungers for info on CP1CJ, a station he worked in October of 1957 from G3JHZ, and he

(*Continued on page 166*)

SU1IM does well on 20 c.w. with his BC-1154 (807s at 50 watts), BC-342 receiver and dipole. W9DRS, who contributes this photo, now assists Ibrahim in extending his DX activities to 21 and 28 Mc., phone as well as code.



Hints and Kinks For the Experimenter

SWITCH-TO-SAFETY IDEA

HAVING in mind the worthwhile purpose of increasing the longevity of ARRL members and other amateurs, I would like to add a suggestion to the several technical Switch-to-Safety items which have appeared in *QST*. Fig. 1 illustrates a simple power wiring arrangement which provides continuous safety checks on power and ground connections. With this arrangement, all switches and fuses are located in the "hot" side of the 117 volt a.c. line, carrying through the scheme used in standard house wiring. (When fuses are installed in both sides of the line, it is possible for the cold fuse to operate from overload and still leave equipment and wiring energized with 117 volts with respect to ground.)

One side of a neon panel light is connected to the "hot" side of the a.c. line after the fuse and main power switch. The other side is connected to station equipment cabinet ground through a 50,000 ohm resistor. A standard bayonet panel socket with a clear glass jewel is used for lamp (NE-51) installation. Before connecting the power plug to an outlet, the main power switch, S_1, is placed in the off position. Some resistive load normally connected after the main power switch should be present. This fixed load may be provided by a desk lamp and a receiver.

If the NE-51 illuminates when the power plug is inserted in an outlet, reversed polarity is indicated. The NE-51 will then go out if the main power switch, S_1, is placed to on. Reversing the power plug will result in opposite- and proper-operation of the panel light. It will illuminate only with the main switch on. Failure of the light to glow with either position of the power plug indicates an absence of the vital connection between chassis and actual ground (shown as heavy line in Fig. 1). With the power plug properly installed, all station equipment is completely de-energized by operation of the main switch or fuse. Improper installation of the plug is immediately apparent from the appearance of the neon lamp.

In addition to the main power switch, S_1, the circuit includes S_2 and S_3 for control of the filament and plate supplies, respectively. Of course, S_2 and S_3 may be used to control additional transformers provided these are properly connected in parallel with the primaries of T_1 and T_2. Ratings shown for fuses F_1, F_2 and F_3 are suited for use with the W8DDF equipment and these values may be varied to suit individual requirements.

Use of this power arrangement could result in increased safety for many low and medium power amateur installations where equipment is not permanently connected to a power source.

— *John W. Browning, W8DDF*

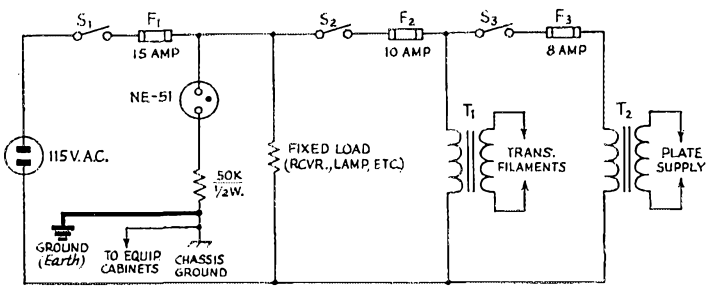


Fig. 1—Diagram of W8DDF's switch-to-safety power control circuit.
F_1, F_2, F_3—Line fuses; see text.
S_1, S_2, S_3—S.p.s.t. power switches.
T_1, T_2—Filament and plate transformers.

REMEDY FOR NOISY VOLUME CONTROLS

THE FOLLOWING scheme has been used for several years to advantage, for quieting noisy volume controls. First make up a cleaning solution using a small dab of plain unmedicated Vaseline and a small amount of lighter fluid, naptha, or any noncorrosive solvent that is quite volatile under normal conditions. Dissolve the Vaseline in the solvent in a warm place. Make up a batch of it and keep it in a stoppered bottle.

To cure the noisy volume control, remove the volume control knob, dip a pipe cleaner into the cleaning solution, and apply to the control shaft while turning the shaft back and forth with your fingers. A few applications for about one minute should be enough to return the control to normal again. Remember, if you use an inflammable solvent, keep fire and sparks away from it. If used on a plugged in receiver or other equipment connected to the a.c. line, pull the plug out first. The cleaning solution is both a cleaner and a lubricant and is not messy. It will penetrate small spaces, the solvent will evaporate and the lubricant will remain.

— *G. Roger Gladding, W1AOS*

PLASTIC STAND-OFF INSULATORS

THE COST of good stand-off insulators has been increasing and their availability declining for

some years, yet the need for a good stand-off continues.

Recently, several hardware manufacturers have unknowingly put on the market some excellent plastic stand-off insulators, having leakage resistances in the neighborhood of 20 megohms at 15,000 volts, and a net cost to user of about 25 cents each.

These insulators are sold in dime and hardware stores as door bumpers and have a circular base already drilled and countersunk to take 6-32 flathead mounting screws in the base. There is a center hole that will clear an 8-32 screw when the rubber bumper tip is pulled out.

Unlike ceramic stand-offs, these plastic devices can be sawed, filed, drilled, and threaded with ordinary metal-working tools. Those made of white, cream, and off-white plastic have good insulating properties. Those of colored plastic are not good insulators. The black plastic door bumpers, due apparently to carbon black coloring, are poor insulators even at low voltages.

A manufacturer of these plastic stand-offs is the Macklanburg-Duncan Company, of Oklahoma City, Oklahoma.

— *Ronald L. Ives*

ONE-HAND KEY MONITONE SWITCH

USERS of Monitones (*QST*, Sept., 1948) know the inconvenience of not being able to zero beat received signals due to muting of the receiver by the monitone.

The accompanying sketch illustrates how this trouble was eliminated by making use of a normally closed microswitch directly attached to the base of the bug or straight key. This switch is then connected in series with the r.f. or power supply of the Monitone.

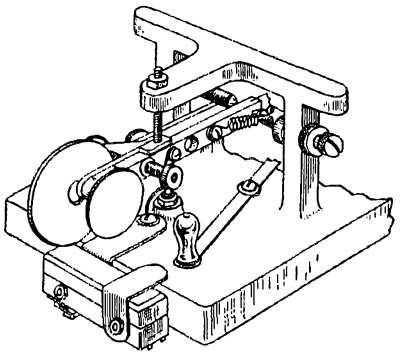


Fig. 2—Sketch showing the microswitch attachment to a standard "bug."

The transmitter can then be keyed and, with additional digital pressure on the actuator, the Monitone signal is cut off and the receiver operates normally. — *A. C. Coggon, VE3BOA*

A 2-BAND ANTENNA FOR 7 AND 14 MC.

HAVING used a ground plane for four years on 7 Mc. with good results, it was decided to try it as a half-wave vertical on 14 Mc. A $\frac{3}{8}$-inch diameter copper-tubing coil, L_1, was constructed, consisting of $3\frac{1}{4}$ turns wound on a $3\frac{1}{4}$-inch form, turns spaced $\frac{3}{8}$ inch. The coil was mounted just below the vertical element of the ground plane on a stand-off insulator, and was connected by its top end to the base of the vertical and by its bottom end to the radials. RG-8/U coax line was coupled to this coil by a link, L_2, consisting of two turns of lamp cord the same diameter as the copper coil, inserted between the bottom two turns of the tubing and fastened in place. A 100-$\mu\mu$f. capacitor, C_1, is necessary to tune the coil to resonance in the 14-Mc. band and should be a mica rated at about 6000 volts.

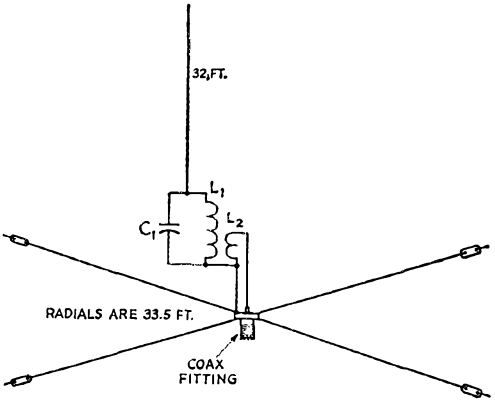


Fig. 3—W6TSX's two-band antenna.

While results on 14 Mc. were quite good, it was inconvenient to have to change antenna connections each time band changing was desired. In an attempt to avoid this, the antenna was tried on 7 Mc. while connected for 14 Mc. The transmitter loaded even better than with the regular ground-plane connections and reports on 7 Mc. seem to indicate that the antenna works just as well as with the original ground-plane connection.[1] No measurements have yet been made as to the s.w.r., but results on both bands have been quite satisfactory.

— *Samuel J. Henderson, W6TSX*

LONGER LIFE FOR THE 6146 BEAM POWER TUBE

DUE TO the popularity of the 6146 beam power tube among hams, here are a few do's which should help you to increase considerably the life of this type.

1) Hold heater voltage at 6.3 volts — at the tube terminals.

2) Provide for adequate ventilation around tube to prevent tube and circuit damage caused by overheating.

3) Keep shiny shielding surfaces away from tube to prevent heat reflection back into tube.

4) Design circuits around tube to use lowest

[1] Probably because the inductive reactance of the *LC* circuit at 7 Mc. just about equals the capacitive reactance of the vertical element at that frequency — a principle commonly used in trap antennas. — *Ed.*

possible value of resistance in grid circuit and screen circuit.

5) In high frequency service, operate tube under load conditions such that maximum rated plate current flows at the plate voltage which will give maximum rated input.

6) Have overload protection in plate and screen circuits to protect tube in the event of driver failure.

7) See that plate shows no color when operated at full ratings (CCS or ICAS conditions).

8) Reduce B+ or insert additional screen resistance when tuning under no-load conditions to prevent exceeding grid No. 2 input rating.

9) Maintain tuning and loading adjustments precisely so that tube will not be subjected to excessive overload. The 6146 is a high-gain, high-perveance tube and can be more easily overloaded through circuit misadjustments than older types not having such features.

10) Use adequate grid drive, keeping within maximum grid current and screen dissipation ratings of tube. Too little grid drive can cause high plate dissipation.

11) Make connections to plate with flexible lead to prevent strain on cap seal.

12) Operate 6146 within ratings as recommended by the manufacturer.

— *RCA Ham Tips*

A NOVEL FEED-THROUGH INSULATOR

An inexpensive feed-through insulator can be quickly made by using parts from the junk box. A polystyrene rod or the center portion of a piece of coax is drilled and tapped to take a 6-32 threaded rod. A rubber grommet of the proper size is placed over the rod as shown in Fig. 4.

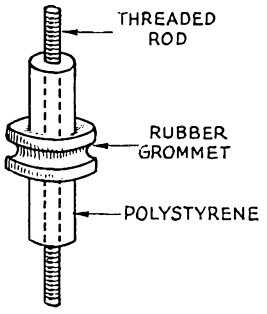


Fig. 4

The threaded rod may be a 6-32 machine screw with its head removed.

— *J. R. Pivnichny, KN3EOV*

V.H.F. CRYSTAL OSCILLATOR

Diagrammed on this page is a circuit that gives 2-meter output directly from 8-Mc. crystals. The circuit is actually two oscillators in one; L_1C_1 forms a tank for a conventional ultraudion 144-Mc. oscillator, and the tuned circuit L_3C_2 in conjunction with the crystal forms a tuned-plate crystal oscillator. The purpose of L_2 is to

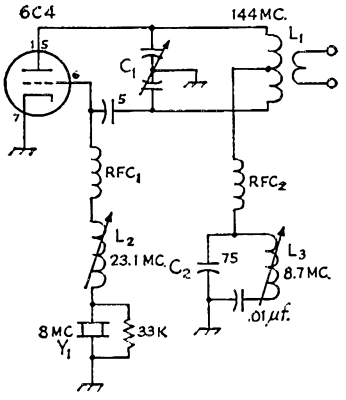


Fig. 5—V.h.f. crystal controlled oscillator. Unless otherwise indicated, capacitances are in μμf., resistances are in ohms, resistors are ½ watt.

C_1—5-μμf.-per-section butterfly capacitor (Johnson 5MB11).

L_1—5 turns No. 19, ⅜-inch diam., ⅜ long, center tapped with 2-turn link.

L_2—17 turns No. 26 enam., ½-inch diam., slug-tuned form.

L_3—12 turns No. 26 enam., ½-inch diam., slug-tuned form.

RFC_1, RFC_2—30 turns No. 26, 3/16-inch diam., ¾ inch long.

add some third harmonic voltage to the grid, thereby giving a more optimum wave form. With the circuit adjusted properly, the 144-Mc. oscillations are synchronized or "locked in" with the 8-Mc. oscillator, and hence give 144-Mc. crystal controlled output.

The circuit is not much harder to adjust than an overtone crystal oscillator. First grid-dip L_1C_1 to 144 Mc., L_2 to 23.1 Mc., and L_3C_2 to 8.7 Mc. These frequencies are about right for an 8-Mc. crystal; if some other crystal is used, they must, of course, be changed proportionately. Next, apply plate voltage and tune in the 18th harmonic of the 8-Mc. crystal on a two-meter receiver. Tune C_1 for maximum S-meter reading (being careful to avoid receiver overloading). It should be possible to find settings of L_2 and L_3 that will permit a very sharp but smooth peak in the tuning of C_1 without plops or heterodynes on either side of resonance. This will not coincide with the settings of L_2 and L_3 that give maximum output. The output is insufficient to drive a Class C amplifier directly but is adequate for local oscillator use. This circuit was described by Alwin Hahnel in the January 1953 *Proc. IRE.*

— *Frederick W. Brown, W6HPH*

IMPROVED R.F. SAMPLER

Here is an idea that should be of interest to hams who have oscilloscopes and are puzzled about a convenient way to sample the r.f. output of their transmitters for checking modulation or keying characteristics.

The *Handbook* indicates that the r.f. sample may be secured by a pickup coil in the field of the amplifier tank. This is not the most convenient setup, especially for those who have com-

pletely shielded transmitters with coax output.

It has been found that five turns of No. 3014 B & W Miniductor can be placed in series with the coax transmission line without materially changing impedance characteristics. Around the Miniductor is a 5-turn link made from the end of a length of small coax. The coil and link are in a 4 × 2¼ × 2¼-inch Mini-box with coax fittings. The link coax leaves the box via a grommet.

Shown in Fig. 6 is the resonant circuit, a multiband tank circuit in a separate Mini-box. Each of the two tank coils is associated with a 4-turn

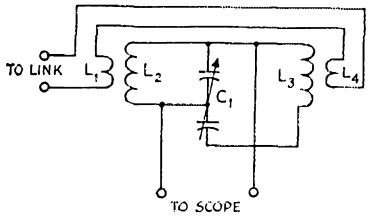


Fig. 6—Multiband circuit used with an oscilloscope to observe r.f. wave forms.
C_1—Midget dual variable capacitor 140-$\mu\mu$f.-per-section.
L_1, L_4—4 turns each wound in series over L_2, L_3.
L_2—22 turns No. 18 enam., 1-inch diam., close-wound.
L_3—8 turns No. 18 enam., 1-inch diam., 1 inch long.

link. The vertical plates of the scope are connected to the multiband tank. The scope is not grounded.

Adequate display heights are secured at resonance with power as low as 50 watts and for higher power the tank capacitor can be detuned as necessary.

The Mini-box that houses the tank circuit also houses the potentiometer, resistors and capacitor associated with the usual circuit for securing a trapezoid modulation pattern. Thus the setup is convenient for observing modulation patterns and keying characteristics at any time.

Incidentally, connection of r f. directly to the vertical plates is not recommended for some of the low-priced kit scopes. With these scopes, feed the plates through .005 ceramic capacitors, and connect the plates to the scope circuit through 1-megohm resistors. This can be done at the rear of the scope with a mounted lucite strip, six binding posts and two jumpers.

— *Cecil W. Guyatt, K3ABN*

INEXPENSIVE SCREEN-GRID MODULATOR

HERE is a simple method of screen-grid modulation. It makes use of a low-power audio amplifier with a low output impedance. A radio, TV or phono amplifier may be used for the modulator. The audio amplifier used here at K2MYC is a phono amplifier capable of two and a half watts maximum output of audio, more than ample to modulate a pair of 807s.

The only change necessary in the audio amplifier is to disconnect the two wires coming from

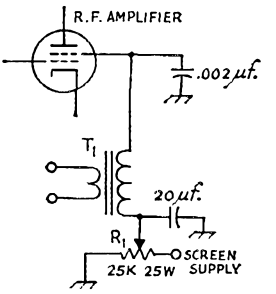


Fig. 7—Diagram of the screen-grid modulator. T_1 is a small audio output transformer, pri. 4000–10,000 ohms, sec. 4–8 ohms.

the audio output transformer to the speaker. The audio output transformer T_1, Fig. 7, was salvaged from a junked radio. The screen-grid voltage should be obtained from a fixed voltage supply with a voltage divider, R_1. Tune the transmitter for maximum output on c.w. using heavy loading; then reduce grid drive until a slight increase in plate current is observed. Note the plate current, then reduce the screen-grid voltage until the plate current is one half the original value. Connect the microphone to the audio amplifier input, then advance the volume control on the amplifier until small upward kicks of plate current are observed on voice peaks. The transmitter is now modulated.

— *Frank Seier, K2MYC*

A COAXIAL STRAIGHT ADAPTER

THE connection of two or more lengths of RG-8/U (52-ohm) coax requires the use of a PL-275 straight adapter, which is often hard to procure. On the other hand, chassis-type receptacles, SO-239, are plentiful on chassis of surplus equipment.

A very practical straight adapter can be made by removing the flanges from two chassis receptacles, either in a lathe or by means of a hacksaw, and filing flush with the diameter of the connector. The normal protruding connections are then soldered together as shown in Fig. 8, keeping both pieces on center line as much as possible. Next, wrap a piece of sheet metal completely around and over the gap, overlapping the start of the sheet slightly. This continues the shielded portion. Finally, solder along all the edges.

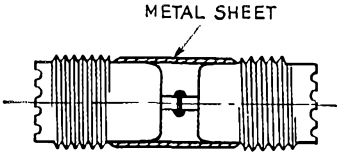


Fig. 8—W8HXB's coaxial straight adapter.

To facilitate soldering, the sheet can be held snugly against the connectors by winding a couple of turns of wire around the outside. The wire can be removed after the solder freezes.

— *W. W. Peterka, W8HXB*

Correspondence From Members-

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

SUPERPOWER

7071½ Cameron Avenue
Dallas 23, Texas

Editor, *QST:*

I hope that your editorial in the September issue of *QST* will inspire other amateurs, who may have a tendency to turn the loading control over a little too far, to try to work some DX QRP for a while. If a novice can work over one hundred countries with only 75 watts and crystal control, a general should be able to do it with one kw.

In the first place, running over one kw. isn't worth the risk and expense because very little power gain is realized by only doubling or tripling the power input. An increase of more than five or six times is practically impossible and the cost is far too great for the small amount of signal gain achieved.

The man running over a kw. has an extremely small advantage over the man running one kw. and when he is found out he has absolutely nothing to show for his misdeed.

— *Bob Clunn, K5GIF*

3420 Timerlake Rd. SW
Knoxville 20, Tennessee

Editor, *QST:*

Hats off to the FCC on their Washington's Birthday Coup d' California kw.! The scourge is, of course, not confined to its namesake locality, and like traffic violators on the highway, probably only a small portion of the guilty were caught. But the effect should be for the good.

— *Herrick B. Brown, W4ZZ*

245 So. O Malley Avenue
Azusa, California

Editor, *QST:*

I would like to shake the hand of everyone at Headquarters for that editorial. I don't believe you have written as strongly as that in the three years I have been a member. I'm trying to say I liked it, I want more of it. The league can only be as strong as its weakest members and these fellows certainly aren't helping us to stay strong.

— *John H. Stratton, K6QOC*

708 Brown Street
Branson, Missouri

Editor, *QST:*

In reference to "It Seems to Us," *QST*, Sept., 1958, the last sentence is a masterpiece in summarizing the superpower situation "We must return to complete self-regulation."

— *J. W. Wilhite, K0IIC*

Box 971
Harlowton, Montana

Editor, *QST:*

Orchids to the FCC for clamping down on the "California Kilowatts." Onions to the amateurs who continue to flaunt the law. Orchids to *QST* for the editorial, "Superpower," in the September issue. Onions to the amateur fraternity if we do not continue the crusade to clean up our own ranks and make our hobby "legal." The chap with the 6L6 will get quite a lift of his morale if he knows he is competing on a more nearly equitable basis and does not have to buy his QSO's. — *Vernon Phillips, W7NPV*

8128 Belford Avenue
Los Angeles 45, California

Editor, *QST:*

Heartiest congratulations on your extremely well expressed editorial on "Superpower." The activity of the FCC with wholehearted support from the League has done much to restore the faith of the vast majority of hams who have seen members of their own ranks brazenly establish their own warped codes of fair play and conduct to the detriment of all who have the privilege of participating in this hobby. May you continue to give future violators the same degree of merited scallions.

— *John Powers, W6QVZ*

37 Longmeadow Avenue
Worcester 6, Massachusetts

Editor, *QST:*

This is my first letter to *QST* after 23 years as a ham.

I have a complaint to make to ARRL and to the FCC (bless 'em): Why in heaven's name did you or FCC wait until 1958 before cracking down on the violators?

— *Walt Szarek, W1KDW*

570 Philadelphia Street
Indiana, Pennsylvania

Editor, *QST:*

I notice with interest the editorial in September 1958 *QST* titled, "Superpower." It seems to me that it is about time the FCC is cracking down on some of the DX men who have no regard for the regulations that apply to the power limitation we are supposed to observe. Under the present state of development in electronic engineering, it seems that even 1000 watts is more than needed. But so long as there is a power limitation of 1000-watts it becomes necessary to use that amount of power in order to compete for wanted QSOs. Those who use more than the legal limit want to be on top of the pile when a rare one comes along, but who are they kidding? — *Art Lewis, W3WKD*

DX QSLS

Box 403
St. Thomas, Virgin Islands

Editor, *QST:*

In view of the letters appearing on page 76 of September *QST*, and especially Mr. Jimenez-Benvenutti's letter, which I have no doubt refers to *Yasme* DXpedition, and which creates an impression quite contrary to fact, I request that the following be published to set forth the facts regarding this expedition, with which I am closely connected, and which may serve to clear up any misunderstandings.

As most DX men know, the original *Yasme* trip, as far as ham radio is concerned, was conceived in 1955 when Danny visited KV4-land. Subsequent contributions by hams and radio manufacturers enabled Danny to get on the air, suitably equipped, and operate from such rare spots as FO8AN, VR1B, VK9TW (Nauru), VR4AA and VK9TW (Papua). This phase of the expedition came to a close when *Yasme* struck an uncharted reef in the Papuan Gulf on October 24, 1956, and was a total loss. Since that time, through lecture tours, further contributions and donation of complete ham gear by a prominent radio manufacturer, Danny was able to purchase and equip *Yasme II* and continue his DXpedition as borne out by his recent activity as YV0AB, VP2VB, and VP2KF. This is a radio expedition sponsored and maintained by DX men. Danny has no other source of revenue. It would be impossible for this expedition to continue on its present level without contributions. Danny's original plan was to work at his watchmaker's trade at each stop and thereby earn enough to carry him on to his next port. It is obvious that such procedure would leave him little time to get on the air and many sparsely populated rare islands would have to be bypassed.

Danny is dedicated to the hard, and many times hazardous, task of putting as many rare spots on the air as he possibly can. This is his No. 1 chore and I think it is generally accepted that he is doing a tremendous job. Circumnavigating the globe, his original intention, is now just a

by-product of the trip. Contributions are voluntary. Contributions are solicited but are not necessary to obtain an answering QSL and never were. I challenge any non-contributor to deny that he has received a QSL from any of Danny's stops, in due time, once that he has sent us his card. Contributors QSLs are answered first. I think this should be considered fair procedure. Some weird idea exists that one may obtain a *Yasme* QSL if a dollar is enclosed even though no contact was made. To this we can say that each and every contact is carefully checked with Danny's logs. Over two hundred QSL's were returned to senders as a result of his recent YVØAB and VP2VB operation. Some were trying to pitch us a slow curve but most were due to incorrect date or time.

After three years of wet-nursing this expedition all my indications are that this is an extremely popular trip wherein full value is received in the form of prompt QSLs from many rare spots. Our gauge is the hundreds of favorable letters received and the number of contributors so kindly helping out. The work connected with this expedition is prodigious to both Danny and myself but it is a labor of love and, we hope, appreciated by most. Direct gripes to me regarding any phase of this trip have been surprisingly small in view of the usually militant, pro or *con*, attitude of the average ham. They can be counted on the fingers of one hand!

Over a year ago the FCC requested, and were given, all information on the *Yasme* trip. They have not commented.

If any self-respecting racketeer should envision this means of reaping a golden harvest I can say that he would be sadly disillusioned, but fast. To date, contributions have just covered expenses. Also, should a "dollar-per-QSL" trend gain momentum among DX stations I am convinced it would quickly collapse of its own weight.

— *Dick Spenceley, KV4AA.*

7761 Parkview Road
Upper Darby, Pennsylvania

Editor, *QST:*

I noticed in the September issue of *QST* three letters condemning the so-called "Buck a QSL" practice of some DXpeditions. Amateur radio is a lot of things to a lot of people and just because an individual doesn't approve of a particular practice is no reason to condemn it. There may be another side to the story.

In the instances named I know for a fact that QSLs were sent out whether or not a buck was received. Of course the boys who contributed got their QSLs first and why not? So the boys on an expedition are having a good time and traveling to unusual places — only wish I could go along, but when they return they face the tiresome, monotonous and expensive job of preparing QSLs. This is the part of DXpeditioning that I *would* not like.

Personally I welcome the opportunity to help DX stations with a buck, some IRCs, or return stamped envelope, and when, as in the case of two of the DXpeditions mentioned in the letters there is a surplus, which in each case is used to finance further appearances as unusual places, all the better.

Being forced to pay a buck for a QSL I would not like and would bitterly oppose. When presented with the opportunity to help a DX station defray expenses of QSLing and possibly contributing to the furtherance of DX travels of a group or an individual I am only too glad to be able to help and I am sure that there are a lot of others who feel the same way.

— *Harry W. Stark, W3CGS.*

2703 Terrapin Road
Silver Spring, Maryland

Editor, *QST:*

With reference to the letters in September *QST* regarding DX QSLs: Not only do I heartily disagree with the three opinions stated, but I question the accuracy of the premise in each case as well. And I feel that, in fairness to DX Clubs, DXpeditions and individual expeditions, the record should be set straight.

As an amateur primarily interested in DX, I understand and appreciate the efforts of these clubs and individuals to keep active and to advance this phase of amateur radio. DXpeditions, of course, are not organized for the purpose of providing fun and DX for its participants, but rather to make these otherwise inactive DX spots available to those of us who are interested. Contributions to these worthy enterprises are sometimes invited, but never in my experience has a reputable DX Club made a contribution a prerequisite to receiving a DX QSL. If it has been done, I would be among the first to question the propriety of such an arrangement.

Regarding the reference to "the biggest racket to hit amateur radio — actually paying for QSLs on an expedition around the world" — this is obviously an unjust reference to the *Yasme* expedition, and is a misstatement of fact. A lot of work, worry, setbacks, expense and plain intestinal fortitude have gone into the *Yasme* expeditions. QSLs are not for sale. Voluntary contributions are invited to help finance the operation, but are not required for receipt of QSLs. I, for one, have nothing but admiration for the enterprise and for the manner in which it is being conducted. Acceptance and participation should be made with the same spirit in which the expedition was planned and in which it is being continued — that of sharing in the advancement of a common interest which, without the encouragement and support of some, would not be available to any of us.

As to the charges of a racket and ham-radio-for-profit, the only racket involved is the noise made by a few dissenters, and by those who, for reasons of their own, choose deliberately to mis-interpret the facts. And the only profit is that realized by the DX fraternity in being able to add *more new* ones to the confirmed list!

Also on the profit side is the satisfaction one feels in having been able to share, even in a small way, in a job well done to the benefit of many others of like interest.

— *Lee Roy Scott, W3PGB*

1316 Cortez Avenue
Burlingame, California

Editor, *QST:*

I read with distasteful disgust the letters in September 1958 *QST*, which were directed at the *Yasme II* Expedition. I understand this expedition is for the DX men only. We have all willingly contributed to Danny's expedition. We as a DX group are responsible, and will continue to keep Danny going as long as he will so graciously risk his life and property to give us DX men a new country. *Yasme II* expedition is to be commended and not ridiculed by other than DX men.

— *Dewey M. Beraldo, W6VE*

8705 Batavia Pike
Cincinnati 44, Ohio

Editor, *QST:*

Several letters appeared in the September issue of *QST* and they contained a variety of statements that certainly need some discussion. Mr. A. D. Lester's letter comments that if DX is so important we have to purchase our QSLs, he doesn't want them. I'm sure 99% of the hams will agree with him and the Ohio Valley Amateur Radio Association's letter, that he received, stated: "all QSLs received would be QSLed 100%." This was true of the Caymen expedition and is true of the Navassa Expedition. Contributions for both expeditions were on a voluntary basis and the same holds true for the Yasme expedition, the Clipperton-San Diego DX Club expedition and any future expeditions the Ohio Valley Amateur Radio Association might hold. Over 3500 QSLs from KC4AF were sent from my shack and the only requirement, for direct mail, was a self addressed stamped envelope. 900 QSLs were sent via the W QSL bureaus and Mr. Lester should have his QSL provided he has an envelope on file with the W6 QSL Manager. It is interesting to note that despite the fact many cards carried the wrong date or time or no date or time at all, every card was answered after a log search. If no entry could be found, cards were returned to the sender for more complete information. Hundreds of letters have been received, from amateurs expressing their approval of our expeditions and KV4AA has received much favorable comment regarding the Yasme expedition both over the air and in DX columns. If these expeditions are rackets . . . let's have more of them for the Yasme expedition is perhaps the greatest one we'll ever have and the tireless efforts of Danny Weil and Dick Spenceley deserve the thanks of every hot blooded DX'er.

— *James W. Rinyland, W8JIN*

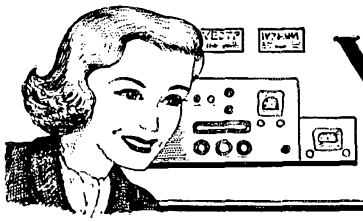
WE, AGAIN

Route 4, Box 285
Texarkana, Arkansas

Editor, *QST:*

Again regarding the fairly common practice of using the

(*Continued on page 170*)



YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

YLRL NINETEENTH ANNIVERSARY PARTY

As always the YLRL extends a cordial invitation to *all* YLs the world over to participate in the annual Anniversary Party. It is not necessary to be a member of YLRL in order to enter the contest; however, only YLRL members are eligible for the cup awards. Non-members will receive certificates. Only YLRL-affiliated clubs will be eligible for the club award.

In nineteen years of YLRL contesting a new participation record has been made each year, and it is expected that the results of this year's contest will again surpass those of last year's affair. So, be sure to be in on the excitement and fun. Set aside November 12 and 13 for the phone contest and November 19 and 20 for the c.w. section.

It is suggested that OMs kindly refrain from breaking for QSOs with YLs who are operating in the contest. OM enthusiasm for contacts with YLs is flattering and appreciated, but frequent interruptions for reports for a QSL exchange slow down a YL's progress in the contest. All OMs will be invited to participate in the annual YL-OM Contest in early Spring, at which time they should have an opportunity to contact hundreds of YLs who will be most eager to work them too.

Here are the Party rules:

Eligibility: All licensed YL and XYL operators throughout the world are invited to participate. YLRL members are eligible for the cup awards. Non-members will receive certificates. Only YLRL-affiliated clubs will be eligible for the club award. Contracts with OMs will not count. (The YL-OM contest will be held in the spring of 1959).

Operation: All bands may be used. Cross-band operation is not permitted. Only one contact with each station will be counted in each contest.

Procedure: Call "CQ-YL."

Exchange: QSO number, RS or RST report, name of State, U. S. possession, VE district or country. California stations will include the name of their section in the QSO. California is divided into eight sections as follows: Santa Clara Valley, East Bay, San Francisco, Sacramento Valley, San Joaquin Valley, Los Angeles, San Diego, and Santa Barbara.

Scoring: (a) Phone and c.w. sections will be scored as separate contests. (b) Multiply number of contacts by the number of different states, sections, U. S. possessions, VE districts and countries worked (Maryland and the District of Columbia count as one state). (c) Contestants running 150 watts input or less at all times may multiply the result of (b) by 1.25 (low power multiplier).

Logs: Copies of all logs showing claimed score must be postmarked not later than November 30, 1958, or they will be disqualified. Send logs directly to YLRL Vice President Kay Anderson, W4BLR, 5210 Raleigh Rd., Richmond 23, Virginia.

Awards: Highest phone score — gold cup. Highest c.w. score — gold cup. Highest phone and c.w. scores in each district, U. S. Possession, VE district, and country will receive a certificate. A gavel will be awarded to the club submitting the highest average score. The club secretary should total the scores of all members participating and arrive at an average by dividing this total by the number of members participating. Send this list with average score claimed to the Vice President of YLRL for confirmation. A certificate will be given to the highest scoring novice YL in the c.w. section.

—···—

CONTEST PERIOD

PHONE —

Starts: Wednesday, Nov. 12, 1958, 12 noon EST

Ends: Thursday, Nov. 13, 1958. 12 noon EST

C.W. —

Starts: Wednesday, Nov. 19, 1958, 12 noon EST

Ends: Thursday, Nov. 20, 1958, 12 noon EST

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

Extra Class License

Early in September Sandra Burke, W1HAG, passed her amateur extra-class exam and thus became about the sixth YL to hold this class of license. Sandy, who attends the University of Maine, has a first-class radiotelephone license too.

YLRL ELECTION RESULTS

The new officers of the Young Ladies Radio League who will serve for a one year term, commencing January 1, 1959, are as follows:

President — Katherine Anderson, W4BLR
Richmond, Virginia
Vice President — Gladys Eastman, W6DXI
Glendale, California
Secretary — Connie Hauck, K6EXQ
Pomona, California
Treasurer — Evelyn Tibbits, W9YWH
Western Springs, Illinois
Publicity Chairman — Mary Meyer, W9RUJ
Brookfield, Wisconsin
Editor — Wanda Gluck, K6ENK
Fair Oaks, California

District Chairmen: Onie Woodward, W1ZEN, Marlboro, Mass.; Lillian Byrne, K2JYZ, Freeport, L. I., N. Y.; Carolyn Currens, W3GTC, Norristown, Penna.; Sue Cable, K4BKT, Asheville, N. C.; Betty Vredenburg, K5IMD, Tyler, Texas; Mary Poe, W6MWU, San Diego, Calif.; Bessie Jeans, W7DIC, Veneta, Oregon; Esther Stuewe, W8ATB, Flint, Mich.; Lois Zehr, W9UXL, Flanagan, Ill.; Laura Stegner, KØJAS, Ortonville, Minn.; Flo Kumukahi, KH6BGE, Hilo, Hawaii; Sheila Goodhue, KL7BHE, Anchorage, Alaska; Maude Phillips, VE6MP, Calgary, Alberta.

Congratulations and good luck to the new officers. YLRL members issue a vote of thanks for a job well done by out-going officers President Beth Taylor, W7NJS; Vice President Kay Anderson, W4BLR; Secretary Betty Rogers, WØTYB; and Treasurer Harryette Barker, W6QGX. Mary Meyer, W9RUJ, will serve another term as Publicity Chairman. Betty Sandberg, W9STR, served for a short time as *Harmonics* editor in 1958, before her duties were assumed by Wanda Gluck, K6ENK.

Custodians of the various awards offered by the YLRL are appointed and serve an indefinite term. President custodians are as follows: YL Century Certificate — Katherine Johnson, W4SGD; YL Worked All States — Grace Ryden, W9GME; YL Worked All Continents — Barbara Houston, KØLYV; DX-YL Award — Kay Anderson, W4BLR.

Evelyn Tibbits, W9YWH, will oversee finances as club treasurer. Licensed in 1953, Evelyn is active in the Chicago LARK and is Treasurer of the Chicago Area RC Council. She and her OM W9RYL reside in Western Springs, Ill.

Serving a second term as publicity chairman, Mary Meyer, W9RUJ, urges members to send photos and clippings for the club scrapbook. Mary is EC for Waukesha County and RO for Brookfield, Wisconsin.

The new YLRL secretary will be Connie Hauck, K6EXQ, of Pomona, California. A busy YL, Connie has some 45 certificates to her credit. She is NCS of the 10-meter Hairpin Net and a member of the Los Angeles YLRC. Connie's immediate ham family includes OM K6DQA (in photo) and relatives W6s AQP, YFF, YFT, K6QPE, and KN6SYB.

The new YLRL Vice President Gladys Eastman, W6DXI, was president of the Los Angeles YLRC last term. In the photo she is shown passing the gavel to the new LAYLRC president Elsa Wheeler, W6JZA. The XYL of W6AWI and the mother of K6EJE, Gladys is RO for Glendale, California.

Kay Anderson, W4BLR, of Richmond, Virginia, currently vice president, will be the club president for 1959. The mother of four young jr. operators herself, Kay is shown here in the role of Cub Scout Den Mother and is acquainting her cubs with ham radio. Licensed in 1953, Kay holds A-1 Op., CPC-30 and YLCC certificates. Her OM is W4BVB.

The editor of YLRL *Harmonics* for 1959, Wanda Gluck, K6ENK, has already assumed her editorial duties, replacing W9STR. Wanda also edits the newsletter of the Camellia Capital Chirps (Sacramento YL club) of which she is President. Wanda and her OM K6BNB have three jr. ops.

KEEPING UP WITH THE GIRLS

Clubs:

YLRL — Cuts of the diamond-shaped YLRL insignia for use on QSLs, stationery, etc., are now available and may be obtained from Harryette Barker, W6QGX, 16011 East Fairgrove Ave., La Puente, Calif., for $1.50 apiece.

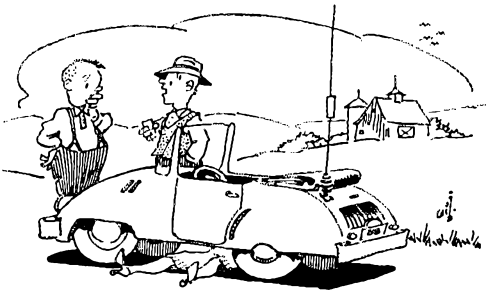
Women Radio Operators of New England — is considering the possibility of hostessing a third international convention of the YLRL sometime in 1959, the 20th anniversary of the YLRL. Next month more definite word on this consideration should be available.

Texas YL Round-Up Net — November 8 is the date of the net's fourth birthday party. Contact Betty, K5IMD, for further information about the affair, which will be held at the Blackstone Hotel in Tyler. K5GMI replaces K5DVE as the net's new vice-president.

San Diego YLRC — New officers are President W6WDL; Vice President W6VSL; Secretary K6UHI; Treasurer K6YGJ.

Miscellany:

After undergoing treatment for polio for almost a year in an Oklahoma hospital, Bina, PY4APA, has recovered sufficiently to return home to Brazil. From their home *QTH*, Rua *Plombagina*, 579, *Belo Horizonte*, *Minas*, Brazil, Bina and her sisters Ziza, PY4AUL, and Eunice, PY4AUT, hope to contact some of the many W friends they made while in the States (see photo in February, 1958 column). . . . W5CCK, Ila, and W5OQT, Sue, organized the licensed YL activities for the West Gulf Convention in Oklahoma City. Thirty-seven YLs attended the special breakfast and YLRL Forum. Doris, K5BNQ, moderated the forum. Lillian, W5EGD, was in charge of *The Monitor* booth at the same convention. Dedicated to W5 YLs, the booth reportedly attracted more interest than any other convention booth. . . . K4CZR, Kay, set up her rig in an Atlanta department store for a public demonstration during Amateur Radio Week. . . . An article on teen-age YLs in the June *American Girl* by Louisa, W5RZJ, aroused much interest among young would-be hams. ARRL headquarters sent out some eighty letters advising teen-age inquirers how to get started in ham radio. . . . W4GXZ, formerly of Jacksonville, Fla., moved to Framingham, Mass., and found that out of ten houses on her street, five are occupied by hams.



"—SHE SAYS THERE'S A SHORT IN THE COAX"

Blanche is all for changing the name of her street from Linda to Ham Alley. . . . K9IGV is a lone ham among her medical family. An RN herself, Roberta's OM is a surgeon and her daughter is an X-Ray technician. Roberta is the new LARK president. . . . Frances, W4RLG is the new RM for Alabama. . . . A WAT certificate is issued to anyone who works all three members of Hazel Thompson, W5KEC's family: W5KEC, OM W5KEA, and son W5EUN (Worked All Thompsons). . . . W9PEX, Rosanna, monitors 147.3 daily for Indiana 2 meter activity. . . . OM JA1ZF (via OM K6DV) lists 14 active JA YL phone stations: JA1s AEQ, BBL, FM, WO, WL, ZA; JA2JX; JA3LB; JA6sKH, PR; JA7JX; JA8FM, JA0EX.

At the age of 17, Alice Bieberman, W3SKQ, of Bala-Cynwyd, Pa., is the youngest YL to make DXCC. Licensed in 1951 when she was 10, Alice worked most of the 114 countries she has confirmed within the past few months, mainly on c.w. Alice's sister Jane, W3OVV, also passed her general-class exam when she was 10, and was hailed as the world's youngest ham. Jane is now a junior at Radcliffe College, where she is studying nuclear physics. W3SKQ hopes to join her sister next year at Radcliffe as a freshman. Proud Dad of the two sisters is W3KT, W3 QSL Bureau manager, and a DXCCer himself.

CONDUCTED BY EDWARD P. TILTON,* WIHDQ

IT was more than 20 years ago that your conductor first ventured into the region above 200 Mc. We put an acorn-tube superregen together to listen for the late Ross Hull, who was then making tests on 224 Mc. from Selden Hill. Much to our surprise, we heard Ross on the first try, which seemed incredible in view of the 25 miles or so intervening. We had no transmitting tubes in stock at W1HDQ that would work on such a frequency, so receiver and antenna experiments were the extent of our project for the time being.

A few years later we got a highly unstable oscillator working in the general vicinity of 224 Mc. and had a lot of fun fooling with beam antennas, and working v.h.f. pioneer W1AIY, some 50 miles distant, but close to line-of-sight.

After the initial rush to get back into full-fledged operation on 50 and 144 Mc. following World War II, we *once again turned some of our* attention to the 220-Mc. band. This time we went to crystal control, and soon after came crystal-controlled reception and adaptation of narrow-band techniques to 220-Mc. communication. By 1950 we had a substantial number of 220-Mc. stations around the country, and our v.h.f. contests saw extensive use of this band to take advantage of the multipliers it offered in contest work.

There was one common denominator throughout the 20 years of work in the 220-Mc. region up to about 1956: almost every contact made involved some "look-for-me-on-220-Mc." arrangements on a lower frequency. Now and then, particularly during contests, you could find activity and catch a contact or two without prior arrangement on 50 or 144 Mc., but such 220-Mc. QSOs were the exception, rather than the rule. Everyone recognized that you could do nearly everything on 220 that could be done on 144, but that was not enough incentive to make for much regular activity on the higher band.

The Technician Class license, made available in the early '50s, was supposed to change all that. Being usable only on 220 Mc. and higher, it was expected to bring to our higher bands a large reservoir of trained electronics technicians and engineers who would populate this largely vacant world above 220 Mc. It never worked out that way. The "Technician" turned out by the new regulations was a fellow who was slow in learning the code. He had an an amateur license which was good for five years in which to increase his code speed, but it amounted to little else, as far as most holders of the ticket were concerned.

Then in April, 1955, the Technician Class ticket was made usable on 50 Mc., at ARRL's request. Things began to happen on 6 almost at

1	WØZJB	14	WØHVW	26	WØMVG	39	WØDDX
2	WØBJV	15	WØWKB	27	WØCNM	40	WØDO
3	WØCJS	16	WØSMJ	28	W1VNH	41	K9DXT
4	W5AJG	17	WØOGW	29	WØOLY	42	W6ABN
5	W9ZHL	18	W7ERA	30	W7HEA	43	W6BAZ
6	W9OCA	19	W3OJU	31	KØGQG	44	VE3AET
7	W6OB	20	W6TMI	32	W7FFE	45	W9JFP
8	WØINI	21	K6EDX	33	WØPFP	46	WØQIN
9	W1HDQ	22	W5SFW	34	W6BJI	47	WØWWN
10	W5MJD	23	WØORE	35	W2MEU	48	K9ETD
11	W2IDZ	24	W9ALU	36	W1CLS	49	WØFKY
12	W7LLL	25	W8CMS	37	W6PUZ	50	W8LPD
13	WØDZM			38	W7ILL	51	WØZTW

W1FOS	47	W4FLW	46	W7ACD	46	WØJOL	46
W1AEP	47	W4EQR	46	W7JPA	46	WØJHS	46
W1CGY	46	W4LNG	45	W7CAM	45	WØOFZ	46
W1LSN	46	W4RFR	45	W7BOC	45	WØYZV	46
W1SUZ	46	W4AKX	44	W7MKW	40	WØQVZ	45
W1RFU	45	W4MS	44	W7JRG	40	KØAKJ	45
W1ELP	44	K4DNG	44	W7UFB	39	WØWNU	45
W1KHL	44	W4HHK	43			KØDXS	44
W1IKO	44	K4GYZ	43	W8SSD	47	KØGKR	43
W1CLH	44	W4FNR	42	W8HXT	47	WØBTG	43
W1LGE	43	W4ZBQ	42	W8WPD	47	WØPKD	43
W1FZ	43	K4AGM	40	W8HJR	47	KØCLJ	41
W1TAM	42			W8RFW	47		
		W5VY	48	W8NOH	47	VE7CN	45
W2RGV	47	W5LFQ	47	W8SQU	46	VE1EF	42
W2BYM	47	W5ONS	46	W8OJN	46	VE7AQQ	40
K2ITP	47	W5VV	45	K8CIC	46	VE3AIB	39
W2FHJ	46	W5EXZ	45	K8ACC	46	VE2AOM	38
K2CBA	46	W5FSC	45	W8NQD	45	KL7AUV	36
K2ITQ	46	W5BXA	45	W8UZ	45	E12W	35
W2SHV	45	W5KTD	44	W8ESZ	44	VE3BHQ	33
K2AXQ	43	W5FXN	44	W8INQ	43	VE3DER	33
W2EIF	43	W5ML	44	W8EVH	42	VE1PQ	32
K2VIX	42	K5ABW	42			VE3OJ	32
K2LTW	42	W5HEZ	42	W9BRN	48	VE4HS	31
W2ORA	40	W5JME	42	W9ZHB	48	XE1GE	30
		W5CVW	42	W9QUV	48	SM7ZN	29
W3TIF	47	W5VVW	42	W9RQM	47	PZ1AE	28
W3KKN	45			W9MHP	47	VE1WL	28
W3KMV	45	W6UXN	48	W9AAG	46	CO2ZX	27
W3RUE	44	W6WNN	48	W9DSP	46	ZE2JV	26
W3MXW	44	W6IWS	48	W9EPT	46	LU9MA	26
W3BGI	44	W6ANN	47	W9JCI	45	ZS3G	26
W3OTC	42	W6GCG	47	W9UIA	45	SM6ANR	24
W3FPH	42	K6JCA	47	K9EID	45	SM6BTT	23
W3NKM	42	K6HYY	47	W9SWH	44	VE1ZR	23
W3ZYK	42	W6NLZ	46	W9KLR	43	CO6WW	21
W3LFC	41	W6JKN	46	W9IMG	42	LA9T	20
		K6RNQ	45	K9GFQ	42	LA7Y	18
K4DJO	47	W6AJF	45			VQ2PL	18
W4UMF	47	W6CAN	44	W9AEH	47	KH6UK	17
W4AZC	47	W6NIT	43	WØFKY	47	JA1AUH	16
W4UCH	47	W6BWG	40	WØNFM	47	JA8BU	14
W4EQM	47	K6ERG	40	KØDTA	47	ZE2JV	12
W4IKK	46	K6UJL	40	KØJJA	47	JA1AAT	12
W4ZZ	46			WØDGE	47		
W4CPZ	46	W7DYD	47	WØIBL	46		
W4FBH	46	W7YJE	46	WØEDM	46		

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

once, and the population of the 50-Mc. band has been growing ever since. The "Technician" became a 6-meter operator, and an active ham. Being exposed to the pleasures of active hamming, he soon began to look for ways to expand his field of operations. Unless he chose to try for a higher class of license and go on lower amateur frequencies, the only way he could go was up. So he went up.

The 220-Mc. band has been the main beneficiary of the movement upward in frequency by Technician Class licensees. At W1HDQ we got back into the 220-Mc. business early in September, for the first operating on that band in several years. A 66-element array (soon to be in *QST*) was erected, a new exciter built, and the W1VLH amplifier, of February, 1957, *QST*, pressed into service. One Sunday morning we got these items of equipment working, and spent a few minutes checking up on how things were going. Then we looked around the 220-Mc. band. Surprise — several stations calling W1HDQ!

It was two hours before we could leave the air, and by then we'd worked 8 stations in New York, New Jersey and Pennsylvania, all more than 100 miles away. In the September V.H.F. Party the next week end we worked 20 stations in 12 ARRL Sections, all without a single "look-for-me-on-220" arrangement. With more operating time we could have caught quite a few others.

These were not all Technicians, by any means. Several were friends of long standing from lower bands. But the fact that there were Technicians on there, spending all or a good part of their time promoting 220-Mc. activity helps to make working on 220 more fun for all of us.

We've heard many Technicians arguing that they should be given operating privileges on 144 Mc. or possibly on lower bands. Here is one amateur who feels that the original aims and purposes of the Technician Class license are just beginning to be served. There is some fine work being done by true *technicians* (and engineers, too) on 220, 420 and higher bands, as well as on 50 Mc. We congratulate the holders of this class of license who have had the fortitude to make the ticket mean something, and we commend their example to others who may be looking for new worlds to conquer. 220 is going places. 420, 1215, and all the higher bands, are showing improvement. The Technician has a place in this picture, and he can do a service to all of amateur radio by moving into it, with both feet, without delay.

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

In July *QST* we reported reception of ZFD 51 by W8BJH, and asked for information as to his whereabouts. Scores of letters and cards have come in telling us that he is in Bermuda. Thanks to you all, including VK3ZCG, our DX on this one. From all we can learn, reception was via a harmonic.

What is the best distance worked by a v.h.f. mobile station, without the aid of skip propagation? Here is the best we've heard of yet. It comes from W3UCH, who says that W3MSR worked WØYPT in Iowa on 50 Mc. from a point on the Indiana Toll Road, not far from the Ohio line. The distance claimed is 275 miles, and it seems all of that on our map. W3MSR also worked W9TQ in Milwaukee at the same time.

A transequatorial 50-Mc. opening is reported by W5LFM, San Antonio, Texas. Cal says that from about 1930 to 2200 CST Sept. 11 CE3AC, LU1DBF, LU7DDG, CE3QU, CE3QC and TG9RC were worked from the San Antonio area. The following evening W5LFM began hearing weak voice signals at 2100. LU3EX was worked on c.w. and a number of weak phone signals were heard.

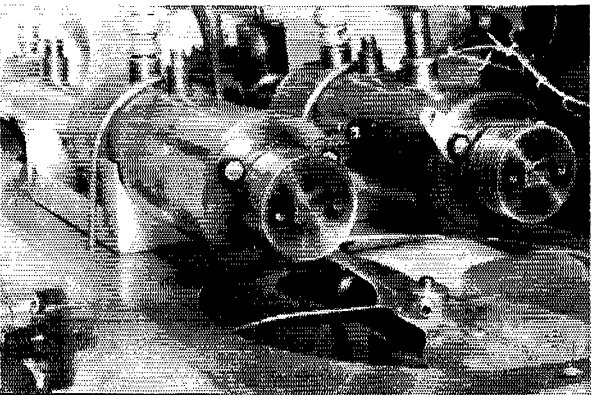
Not all the activity on 6 is at 50.1 or lower. K1ADB informs us of the 51.30 Club, consisting of 6-meter men of the Framingham-Wellesley-Sudbury-Westboro (Mass.) area. To encourage more tuning of the band these boys have gotten out a certificate that will be awarded to anyone who works 10 or more of their members while using a frequency of 51 Mc. or higher. They gather on 51.3 Mc. each Tuesday at 2100.

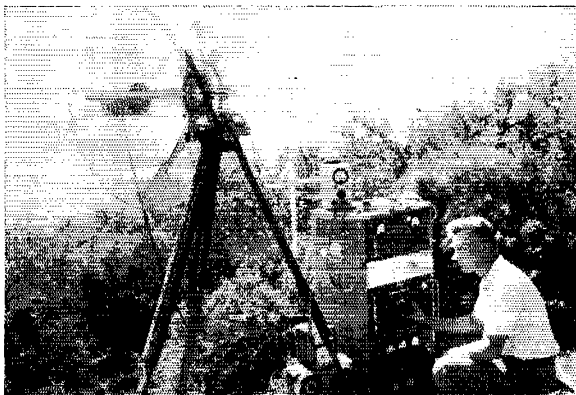
Ever hear some choice DX coming through, and call him at every opportunity only to have evidence that he was utterly unaware of any significant opening and was busily engaged in local or near-local work? This doesn't always happen to Ws. A tear sheet from the Australian equivalent of *QST* devotes several paragraphs to the sad story of VK4ZAZ, one of several Australians who last March heard W6, WØ and W7 stations working one another, without being able to break through the U. S. QRM. We quote him as he closes: "One of the W7s was running only 20 watts, yet he was putting in a good signal, peaking S8 with good copy for quite a long time. It is pounds to peanuts that if he and the other Ws concerned had looked beyond the S9-plus signals from adjacent call areas they'd have had themselves a few VKs!" Is anyone blushing?

Among the 50-Mc. state-hunters of the East the two most difficult catches currently are Nevada and Idaho. Cards from recent applicants for 50-Mc. WAS have included these two new prospects: K2YEB/7, P.O. Box 1412, Reno, Nev., has a 4X150A, 200 watts and a 4-element array. Tony will be on the job at least through next summer. John Butrovich III, W6GTJ/7, Bell Trailer Court, Pocatello, Idaho, uses a Communicator III and 5-element array. Jack will be operating in Pocatello for another year, and he is expecting help on the 6-meter front from K7EEI. Of course, the old standby in Idaho is W7ACD, but Louie is only a summer resident now.

In September *QST* we discussed the future of wideband f.m. and mentioned that this type of signal could be copied

Northern terminal of the 270-mile 1296-Mc. record set during the September V.h.f. Party. Mike Krivohlavek, K6AXN, is shown operating from Mt. Diablo, 3849-foot elevation east of Oakland, Cal. Southern end was W6MMU/6 atop Mt. Pinos. The 2C39 tripler and amplifier stages of the crystal-controlled transmitter of K6AXN/6 are shown at the left. Communication was maintained on c.w. from 8 to 10 A.M. Sept. 21.





only on a receiver designed for the purpose. K9BGN points out that we ignored the Communicators in this. Actually, the passband of the Communicator, either the 50- or 144-Mc. model, is such that wide-band f.m. (communications variety) can be copied fairly well by the slope-detection method. The 50-Mc. Gonset may be on the sharp side, and the 144-Mc. model is a little broad, but you can read the stuff.

W3LFC makes a point about mobile antennas for v.h.f. use that is often forgotten, though it has been mentioned several times in *QST* and *Handbook* information. A single whip can be used for both 6 and 2. A 6-meter whip, 52 to 57 inches, depending on where it is mounted on the car, also works reasonably well on 144 Mc., where it is operated as a $\frac{3}{4}$-wave whip. The feed impedance is nearly the same on both bands, and the whip can be fed with 50-ohm coax without serious mismatch.

The night of Sept. 4 will be remembered as the occasion of one of the most widespread auroras on record. This was one of those rare ones that, viewed from New England, light up the entire canopy of the sky. When such auroras are seen we sit back and wait for reports to come in from the far south. The most southerly report on the Sept. 4 aurora came from W4GJO, Sarasota, Fla., who heard W4IKK with a strong aurora buzz at 2307 EST. This 50-Mc. reception was Grid's first aurora experience in Florida.

We don't have anything from that far south on 144 Mc., but W4LTU, Springfield, Va., turned in an impressive list, including W4VSN, Oak Ridge, Tenn., W5RCI, W4TDW, Knoxville, Tenn., W4FWH, Atlanta, W5LPG, Holly Springs, Miss., W4WNH, Elizabethtown, Ky., W4EQM, Langdale, Ala., and W5JWL, Gurdon, Ark., a good job of covering the South on 144 Mc. Walt's QSO with W4FWH gave him all states west of the Mississippi. Signals heard at W4LTU were almost entirely of southern origin; KØEMQ, Cedar Rapids, was heard briefly, but not worked. The visible aurora extended to overhead, even in Virginia.

More northerly stations worked east and west over unusual distances. WØSMJ, Indianola, Iowa, worked W1REZ, Fairfield, Conn., and heard W1AJR, Middletown, R. I. The WØSMJ-W1REZ QSO took place at 1600 EST, and aurora work was reported by others as early as about 1400 EST.

An interesting report on this one comes from SM6BTT, Göteborg, Sweden. Len heard the buzz on TV Dresden as early as 1700 GMT (1200 EST). Soon there were aurora-propagated TV signals in the 50-Mc. band. At 2000 GMT signals began to come in on 144 Mc. from Stockholm, 250 miles to the northeast. At 2017 SM6BTT worked SP5PD, and soon the band was filled with signals from Norway, Denmark, Poland, Germany and Britain. There were still some signals coming through at 0245 on the 5th, which is 0345 local time in Göteborg. It is worthy of note that these European observations overlap a considerable portion of the American opening in time, raising the intriguing possibility of auroral work across the Atlantic. Nothing like transatlantic distances have ever been worked in America via the aurora, but we should not rule out the possibility.

This same SM6BTT was responsible for the first meteor-scatter observations by amateurs outside North America. Len made schedules with F9AJ, G3HBW, HB9RG and OE6AP. No QSOs were made, but signals were heard by and from G3HBW and HB9RG. This created considerable interest in European v.h.f. circles, and we can expect to see more meteor-scatter activity coming up on future showers.

What is probably the first Colorado — New Mexico 144-Mc. QSO between fixed stations was made Aug. 31 by WØIC, Denver, and W5VWU, Albuquerque. Signals were relatively weak, and of the scatter type, indicating that this may be a consistent scatter path. Contacts were made at 0837 and 2248 CST the first day, and a repeat was made at 1730 the following day. The path is about 350 miles, over as rough country as 2-meter signals have ever traversed.

After many tries by all kinds of propagation, W4LNG, Atlanta, Ga., and W9WOK, Barrington, Ill., finally made 144-Mc. contact by tropospheric propagation. This work was done Sept. 23 on a regular morning sked that had been running for some time, beginning at 0620 EST. Evening skeds are also kept, at 2220, but so far without result. W2ORI, Lockport, N. Y., is also on this sked with W4LNG, but he has not been worked. W4FWH was alerted by W4LNG, and he also worked W9WOK. These 620-mile QSOs gave W9WOK his 40th state, and a tie with W9KLR at the dizzy heights of 5/6 WAS on 144 Mc.

V.h.f. men who have inferior locations should be interested in the experience of K1ABR, Cranston, R. I. Dick has an unobstructed view to the north, but to southwest, where most of the 2-meter DX lies, a ridge rises to 135 feet above his antenna, less than a quarter mile away. He doesn't always hear everything that the more fortunately situated fellows do, but the country beyond the ridge is far from a total loss. With only 55 watts and a 6-element beam, K1ABR has worked 16 states, 12 of them via tropospheric propagation and 4 by aurora. His best DX is W4VVE, Hampton, Va. Frequent use of c.w. has paid off in building up this record from what many would regard as a useless v.h.f. site.

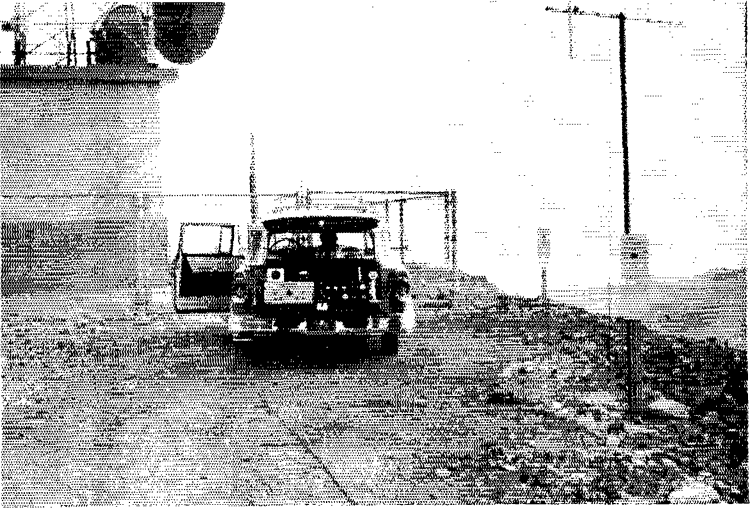
Using the 417A at 144 Mc. — Excerpts from an OES Report by W4LNG, Atlanta, Ga.

Grounded-Grid Operation — The 417A/5842 was designed primarily for grounded-grid service in the i.f. preamplifiers of microwave receivers. It has four grid pins to reduce grid-

2-METER STANDINGS

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

W1REZ	29	8	1175	W5NDE	11	5	625
W1AZK	24	7	1205	W5VY	10	3	1200
W1KCS	23	7	1150	W5ONS	9	3	950
W1RFU	22	7	1120	W5FEK	8	2	560
W1OAX	22	6	800				
W1AJR	21	7	1130	W6NLZ	12	4	2540
W1HDQ	20	6	1020	W6WSQ	10	5	1390
W1MMN	20	6	900	W6DNG	9	5	1040
W1IZY	19	6	875	W6AJF	6	3	800
W1AFO	17	6	920	W6ZL	5	3	1400
W1ZJQ	17	6	860	W6MMU	3	2	950
W1CLH	17	5	450				
K1ABR	16	6	810	W7VMP	11	5	1280
W1BCN	16	5	650	W7JRG	8	4	1040
W1KHL	16	5	570	W7LHL	4	2	1050
				W7JIP	4	2	900
				W7JU	4	2	353
W2CXY	37	8	1360				
W2ORI	36	8	1250	W8KAY	38	8	1020
W2NLY	36	8	1390	W8WXV	35	8	1200
K2GQI	30	8	1200	W8LOF	33	8	1060
W2AZL	29	8	1050	W8PT	32	8	985
W2BLV	27	8	1020	W8SVI	30	8	1080
K2IEJ	25	7	1060	W8SFG	30	8	1000
W2DWJ	23	6	860	W8LPD	29	8	850
K2HOD	23	7	950	W8EHW	28	8	860
W2AMJ	22	6	960	W8WRN	28	8	680
W2SMX	22	6	940	W8BAX	27	8	960
W2PAU	21	6	724	W8DX	26	8	720
K2CEH	21	8	910	W8ILC	25	8	800
W2LWI	21	6	700	W8JWV	25	8	940
W2RXG	20	6	700	W8GFN	23	8	540
W2UTH	19	7	880	W8NOH	21	8	975
W2RGV	19	6	720	W8LCY	21	7	610
W2WZR	18	7	1040	W8BLN	21	7	610
K2RLG	17	6	980	W8GTK	18	7	550
W3RUE	30	8	975	W9KLR	40	9	1160
W3GKP	29	8	1020	W9WOK	40	9	1150
W3KCA	28	8	1110	W9GAB	33	9	1075
W3TDF	28	8	915	W9REM	31	8	850
W3SGA	26	7	700	W9AAG	30	8	1050
W3FPH	22	8	1000	W9ZIH	30	8	830
W3NKM	20	7	730	W9LVC	27	8	950
W3LNA	20	7	720	W9EQC	26	8	820
W3LZD	20	7	650	W9ZHL	25	8	700
				W9BPV	25	7	1030
W4HJQ	38	8	1150	K9AQP	24	7	900
W4HHK	35	9	1280	W9PBP	23	8	820
W4ZXI	34	8	950	W9LF	22	7	825
W4AO	30	8	1120	W9KPS	22	7	690
W4MEJ	28	8	850	W9PMN	19	6	800
W4UMF	27	8	1110	W9ALU	18	7	800
W4VLA	26	8	1000	W9JIY	17	8	790
W4WNH	24	8	850	W9LEE	16	6	780
W4JCJ	23	6	725	W9DDG	16	6	700
W4EQM	22	8	900	W9DSP	15	6	720
W4VVE	21	6	720				
W4IKZ	20	6	720				
W4OLK	20	6	720	WØSMJ	29	9	1075
K4EUS	20	6	710	KØEMQ	29	7	1110
W4CPZ	18	6	650	WØIHD	27	7	890
W4TLV	18	7	1000	WØBFB	27	8	1060
W4RFR	18	7	820	WØGUD	25	7	1065
W4MDA	17	6	650	WØRUF	23	7	900
K4YUX	16	8	830	WØINI	21	6	830
W4CLY	15	5	720	WØUOP	21	7	900
W4LNG	13	5	800	WØTGC	21	7	875
W4RMU	10	5	880	WØZJB	18	7	1180
W4KCQ	10	4	860	WØRYG	17	6	925
W4GIS	9	2	335	WØIBS	16	6	1100
				WØJHS	13	5	700
W5RCI	33	9	1215	WØIC	12	6	1240
W5DFU	25	9	1300				
W5AJG	22	8	1280	VE3DIR	28	8	1100
W5KTD	22	8	1200	VE3AIB	26	8	910
W5JWL	21	7	1150	VE3BQN	19	7	790
W5LPG	19	6	1000	VE3AQG	17	7	800
W5VKH	15	5	720	VE3DER	16	7	820
W5ML	15	5	700	VE2AOK	13	5	550
W5PZ	14	6	1255	VE3BPB	14	6	715
W5FSC	12	5	1390	VE7FJ	2	1	365
W5HEZ	12	5	1250				
W5CVW	11	5	1180	KH6UK	1	2	2540



First Nevada contacts with Southern California on 220 Mc. were made by W6WRE/7 atop Mt. Potosi, near Las Vegas, Nev. Parked alongside the microwave relay station, W6WRE fastened his beam to a signpost. Many stations in the Los Angeles area, up to 225 miles distant, were worked on 220 Mc.

lead inductance. These are Pins 4, 5, 7 and 8, practically surrounding the cathode, Pin 6, and providing good isolation between the input (cathode) and output (plate) circuits. However, when a shield is placed across the grid pins the heater pins (3 and 9) lie in the same compartment as the plate circuit. It is essential that the heater be at ground potential for r.f., or else somehow shielded from the plate circuit. My present 144-Mc. converter has Pin 9 grounded, and Pin 3 is choked off. The heater choke is oriented for low coupling to the plate coil.

Grounded-Cathode Operation — The pin arrangement of the 417A lends itself to grounded-cathode applications better than the 6AJ4 and some other u.h.f. triodes, because the plate pin is separated from the grid pins by the heaters. By proper grounding and bypassing of the heater, low effective grid-plate capacitance and good input-output separation can be achieved.

Cascode Considerations — A principal feature of the cascode circuit is the high-conductance load presented to the first stage by the second stage input. This makes the first stage stable without neutralization, though the noise figure is improved when neutralization is added. When two 417As are used in a cascode circuit it becomes difficult to achieve proper coupling between the two stages, and some of the advantage of the cascode is lost. This is mainly because capacitors of 150 $\mu\mu$f. and higher have self-resonant frequencies lower than 144 Mc., and therefore appear to be inductive in coupling circuits. The higher in value and the longer the leads, the more they transform the interstage impedances away from a match.

I use two 470-$\mu\mu$f. button mica capacitors soldered to a copper plate bent into a shallow "L," bringing the leads closer to the desired tube pins. The only lead that amounts to anything is the short wire running through the shield to the plate pin of the input tube. The rest of the layout follows the W2AZL plan[1] closely. The neutralizing coil lead goes from the copper "L" through a hole in the input shield. The coil is in the input compartment, but the plate end is shielded from the input grid coil by a baffle plate.

Protection from Transmitter R.F. — The very fine wire and close grid-cathode spacing of the 417A (characteristic of high-Gm triodes) make the tube very susceptible to damage from transmitter r.f. A grid leak and blocking capacitor are recommended for the first stage. A shorting type antenna relay is important, and plate voltage should be removed from the r.f. amplifier during transmitting periods.

220 Mc. and Up

A much-used site for providing Nevada contacts to Southern California v.h.f. men has been Mt. Potosi, a high point in the Spring Mountains about 20 miles southwest of Las Vegas. Though it is more than 200 miles over many mountains from the summit of Mt. Potosi to the Los Angeles area, the spot has served well for 144-Mc. work in the past. (Your conductor spent the better part of a day in 1956 trying to find the road up Mt. Potosi, without success.) Its first known use for 220 Mc. was an Aug. 23 expedition by W6WRE/7.

Setting up near the microwave relay station at 1600 PST (see photo) John worked K6s GKX VLM GYF GXT MBL VRE IIHA and W6s NLZ and MMU, all more than 200 miles distant. Signals were strong and steady, as is usually the case with paths involving knife-edge refraction or reflection from mountain peaks.

The record for 1215 Mc. has been extended again, this time to 270 miles. W6MMU, who made the long trek to Mt. Hamilton for the 225-mile record reported in September *QST*, operated from Mt. Pinos for the September V.H.F. Party attempt. K6AXN set up on Mt. Diablo, 270 miles to the northwest. Both used crystal-controlled transmitters and receivers. More details next month.

Not all the work on the 1215-Mc. band is done with mountain-top portable stations. W6JRK, La Crescenta, Cal., reports crossband and 2-way contacts with W6BLK in San Diego, with the latter on 145 Mc. The first contact was made Sept. 2 at 2050 PST, at which time the 1297-Mc. signal was in for only 10 minutes, peaking S5. At 1930 Sept. 3 another crossband contact was made. Again the signal was about S5, until the boys discovered that they were working cross-polarized. When W6BLK rotated his antenna to horizontal the signal went up to S9-plus. There was some fading, but communication was solid over the 130-mile path.

W6JRK uses his 829B 2-meter rig to drive a 4X150A tripler to 432 Mc. This in turn pushes a 2C39A tripler to 1297 Mc., similar to the one described by W6DQJ in July, 1955, *QST*. The antenna is a dipole and reflector, mounted in a 23-inch dish. The feed line is foam-filled 300-ohm lead, which appears to have considerably lower loss at this frequency than other lines tried.

Other stations active in the Los Angeles area include W6s NTW ZW MMU and DQJ. The Los Angeles — San Diego circuit was made two-way on Sept. 12 at 2005, when W6BLK first got his 1296-Mc. rig working. W6DQJ, Riviera, also worked W6BLK two-way, though with not as good signals as prevailed on the W6JRK — W6BLK circuit. The 1950-foot elevation of W6JRK is some help here.

The tropospheric propagation of Sept. 24 gave W1UHE, N. Tiverton, R. I., an opportunity to extend the American record for 420-Mc. DX. At 1825 EST, W1AJR was in contact with W4VVE, Hampton, Va., on 144 Mc. W4VVE was looking for 432-Mc. contacts, so Andy called W1UHE by telephone. Norm made contact with Chic at 1832, but the signals faded out after about 15 minutes. A second contact was made at 1905, with signals reaching S6 peaks at 1920. The power output at both W1UHE and W4VVE runs around 10 watts. W1UHE worked W3VIR, Willow Grove, Pa., the same night, with signals peaking S9 over the 220-mile path. The distance to W4VVE is 430 miles, well beyond the previous best work on 432 Mc. in this country, but not

(*Continued on page 174*)

[1] See November, 1956, *QST*, page 11, for a near duplicate of the unpublished W2AZL converter. — *Ed.*

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Field Organization Report. In the last year, following *QST* calls for SCM nomination, SCM elections were completed in 39 of the 73 sections; there were 28 new SCMs named and 11 re-elected for another two-year term of office. The percent return of ballots in SCM elections ran between 34.1 and 70 per cent. In the year 1957 the number of official-station appointments increased to 4017 the total including 767 ARRL Official Observers in this number. Our average ARRL section membership is now 881 Full Members with about 86 SCM-appointive posts held. There must be *regular operational activity* along designated lines to earn an annual SCM-endorsement to keep SCM-appointments in effect.

Reporting on Your Section Net. One of the beautiful things about reporting on a net is not only that through most accredited Section Nets you have contact with most points throughout the whole nation via the National Traffic System, but that you have become a part of organized doings in amateur radio.

Judging from requests for ARRL Net Directories, joining a net or putting a message in it to assure reliable routing to destination is highly popular these days. However it was something of a surprise to hear some say at the local club meeting "I don't know when it meets" or "I haven't the time." Our directory gives you full information on frequency and time. For the ability to work stations, belong to a fraternal group. To associate with really skilled communicators, it's hard to beat belonging to a net of one's choice. Some amateurs find time to be good active members of several nets!

Amateurs with lots of outside activity and family responsibility can still have fun belonging to their local net, if they know the NCS will dismiss them (QNX) within 15 to 20 minutes, or as stipulated when they report, if no traffic is designated for their station.

Our booklet *Operating an Amateur Radio Station* has some much to-the-point portions concerning network operation and the functioning of the Net Control Station. The best nets aim for ever-higher efficiency in conducting or directing communications to go on between those who have reported in on their net. Nets aim usually to clear their traffic as early as possible. Often 15 to 20 minutes will suffice, if traffic is light, to see it all on its way. The NCS may then declare the net free (QNF) so that members with no formal communications can go about their business and others may ragchew to their heart's content.

New Check-ins. While our booklet lays down the principles of operation for phone and c.w. nets, there will be minor variations in net procedures depending on circumstances, the specific NCS etc. Our best advice to newcomers who plan to share the pleasures of checking into amateur nets is to *listen-and-learn before reporting in.* Rule 1 when you do report is to check in *on time.* To follow one or two sessions of any net shown in the Net Directory will permit you to have some idea of the calls and locations of the stations as well as to note whether you will be likely to work solely on the net frequency or perhaps to be expected to go to frequencies specified 5 to 20 kc. in either direction from the net frequency to meet designated stations. If the latter, you may need to check your v.f.o. calibration points in advance rather carefully or give it some special markings.

Be ready ahead of net time. A second rule to follow is to be sure you are right on frequency! We have heard some new reporters who got reported in by some miracle even though their individual frequency was way off. But to be successful and well regarded as a netter *learn to zero your frequency* to the *NCS's frequency.* First set your receiver to zero beat instead of some audio tone. Then quickly adjust your v.f.o. (with power off the final) to zero beat with the receiver.

Reports Welcome

A report of what you are doing and how you are getting on will be welcomed by your SCM. You will find his address on page 6 of *QST* each month. Such reports will put you in line for ORS or OPS when you are ready. Working in the net takes very little of your daily time so you can still pursue DX and casual amateur radio. You then have added to your wealth of amateur friends that you may call on to visit or for cooperation in communications matters. Best of all, if you are a netter you have it made with some real communications know-how, if you are called upon to explain how amateur communications work or put on the spot in a real emergency where only such experience and your intimate acquaintance with the groups that know the ropes will suffice to do the most commendable job in the public interest. Amateurs who have merely puttered about, belonging to nothing at all are so often the ones that foul up emergency operations by unknowledgeable and inadvised attempts to do irrational things. Individually it's important that we not muff the main chance when a real communications emergency is presented! Net operation, and appointments are

tops on the list of projects for the individual operator to help prevent such a circumstance.

Whatever your circumstance or station in amateur radio, you have missed an important bet, if you have passed up the opportunities in net operations. A daily net has it all over the once a week variety for fraternalism as well as ability to put messages where they are going and get answers speedily. Each member of a modern net may report only a few times a week, if the NCS has the coverage of several stations to represent major cities; yet all can benefit from the organized amateur effort. Supporting the net helps fashion a true communications instrument in which self-training is combined with a traffic performance capability. Amateurs mostly engage in the activity for fun and fraternalism, but as ARRL organization is maintained, it spells out our Public Service values.

Using Bands and Nets to Best Purpose. From time to time much has been said about using the *proper* bands for working across town, and for DX work. For every season and place there are optimum choices in band use; knowledge of the distance-time-frequency probabilities is always worthwhile. Because there are at times rapid changes in propagation, an ear glued to the receiver is better than the best "book" information, of course. Live with a band or schedule for a while, and you can often guess what may happen before it does! In earlier years we were not blessed with versatile equipment capable of quick change from band to band; but today almost every amateur can use almost every band at will. Perhaps today we belong as a class to users of the h.f. or the v.h.f. parts of our amateur world. But increasingly we should equip to take best advantage *of both* our worlds. We want here to make some remarks about the operating proprieties in DX and Local amateur operations.

Before we talk about individual work, there is something to be said for nets not only as an organized means of routing communications, but as a way for several stations to work efficiently together using just one channel. Both h.f. and v.h.f. nets have their special rewards, and give increased certainty of results to the generally short time a net takes to operate. Of course for years the planned use of schedules, trunk lines and nets in the bands between 20- and 160-meters has given us a system for practical nation-wide handling of messages for ourselves and others. In this past season, expanded interest in v.h.f. has sparked more organized (net) communications in the v.h.f.'s than ever before. This has been dedicated to local emergency net coverage and to delivery of our traffic in local areas wherever inkages between h.f. and v.h.f. operators have been made available. This promising added v.h.f. development deserves to be carried much further, as it no doubt will be, another season. We owe much to the organizational efforts of SCMs, RMs and PAMs for the organizing progress in building on what might otherwise be merely numerous casual contacts into a mechanism for exchanging specified intelligence beyond any particular two operators. But a net is more than a conveyor belt for traffic, it develops into a warm fraternal group as you patronize it by reporting and using its facilities!

FCC Suspends Three for Activating Unlicensed Station. Recent Public Information Releases of the Federal Communications Commission include penalties for three persons, who incidentally were amateur licensees, and who installed and placed in operation an unlicensed transmitter.

FCC ordered (August 19, 1958) under authority contained in Section 303 (m) (l) (A) of the Communications Act of 1934, as amended, and Section 0.292 (f) of the Commission's Rules, the following actions:

(1) That the General Class Amateur Radio Operator License of Dean L. Hanson (K6TJE) BE SUSPENDED for a period of one year.

(2) That the Technician Class Amateur Radio Operator License of Rulon Dale Jensen (K6ZTI) BE SUSPENDED for a period of one year.

(3) That the Advanced Class Amateur Radio Operator License of Fred W. Field Jr., (K6IHY) BE SUSPENDED for a period of one year.

It appearing that these licensees installed and placed in operation in a remote area in the Angeles National Forest, Los Angeles County, California, an unlicensed radio transmitter which on various occasions during the period December 24 to 29, 1957, automatically emitted on the frequency 20.005 Mc. signals resembling those of the Russian Satellite "Sputnik," in violation of Section 301 of the Communications Act of 1934, as amended, these actions were taken.

The Commission required that during the period of suspension (one year) as well as the period of any proceedings in connection with the suspension orders, that FCC will not receive or consider any application filed by these licensees for any class of amateur radio operator or amateur radio station license; the operator licenses in such cases are returnable to the FCC offices during any period of suspension.

Also noteworthy: (1) Because of the public interest involved, six FCC men got favorable citations for the prompt monitoring action. (2) We are glad that the report in *Broadcasting* identifies those attempting the hoax as "three electronics engineers . . . arrested and fined" not mentioning that they were amateurs. (3) But we have to note that though the illegal work was not on an amateur frequency, the penalties were extended to include curtailment of FCC's amateur band authorizations for those involved. (4) We all know that the majority of amateurs are good citizens, generally helpful in reporting and locating irregular radio emissions. It is unfortunate when a few, by improper activities, cause possible reverse implications on the good name of the amateur.

RTTYers Eligible for All but OPS Appointments. The Official Station posts available through SCMs (see addresses page 6 *QST*) have long been based primarily on the recognition of the *type of service* activity engaged in consistently by a member amateur. Early in ARRL operating history, the first basic official post established was that of Official Relay Station. "Traffic service" was the *raison d'etre*. The ORS was joined in '33 by an OPS post with the hope to get operators using voice to help with the traffic. Service not only for ourselves but for others was provided as well as recognition for the traffic handler. Later objectivity led to provisions for very definite kinds of new services between

different groups of amateurs to each other, and corresponding personal recognition. ARRL action was taken setting up (1) the OBS post for Bulletin Service, (2) OOs for necessary Observer work, and (3) the OES for the experimenter (for v.h.f. propagation reports and systems development). Leadership posts of EC and SEC were set up to provide stand-by emergency amateur radio facilities and a continuing AREC.

Our Departmental Rules and Regulations for appointments stand amended this fall, as reflected in the new edition of *Operating an Amateur Radio Station*. Amendments are minor, the action taken to clarify and emphasize the availability of the different posts to RTTY stations in the Official Bulletin Station group. A number of the leading RTTYers have undertaken to supply local radio clubs with the bulletins to be posted from time to time. Local as well as national information is given and/or read by club officers at meetings. The operating booklet's 39th edition read "until such time as amateur radio-teletype activity reaches a volume making separate Section provisions desirable, the Route Manager will coordinate any RTTY facilities engaged in traffic work with existing nets." We now in the 40th edition show under ORS provisions: Every radiotelegraphing, *RTTY, or other* amateur interested in traffic work and operating activities who can meet qualifications is eligible for "the Official Relay Station post." Under the numbered points we refer to c.w. traffic activity *or equivalent RTTY activity*. In connection with the Official Experimental Station post, in addition to other provisions, it is now stated that in developing systems the RTTY groups, users of a.f.s.k. and make-and-break, etc. are welcomed as OES. There never were any doubts concerning RTTY eligibility for OO and OBS posts. Depending on their equipment availabilities the Class IV OO engages in radio-telegraph *and/or RTTY* checks.

Our 25th ARRL "SS"! If you have never been in an ARRL Sweepstakes, you have a real surprise and operating treat, we hope, in store. Read again the report on last year's SS and the rules announcement elsewhere in this issue of *QST*. All U. S. and Canadian amateurs are invited to enter. A multiplier helps all scorers in the lower power categories. This is a chance for those working for WAS to complete all states too, since the SS assures that all 48 will have good representation, phone or c.w. There are certificates for section leadership, separate ones for the highest phone and c.w. scores, additional ones for the leading Novice if a Section has at least three entries; also club ARRL certificates where there are enough club entries to meet the definition for competition.

The November 8–9 and 15–16 Sweepstakes requires only your submission of the list of those you work in the form shown with the announcement; logging forms are sent free on request. Operating time is limited to 40 hours total. It's basically the chance to test what your station can do, using any or all of the assigned amateur bands. If time will not permit an all-out try, just enjoy the chance to send CQ SS and get in and meet old and new friends and see how the station is getting around! The two different week ends cut down on the chances of poor conditions, and will help those tied up to try operating on at least one of them, if it comes to that. Best Luck and CU in the SS!

—*F.E.H.*

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.

During the busy July 4 week end, Winthrop (Mass.) RACES turned out to assist the state police in watching traffic conditions on major highways. At this vantage point W1WLP is doing the operating while K1AIQ services the generator.

One of these days, we're going to call a special national convention of all AREC members at a centralized location easily accessible to all of us, and we're going to spend the whole convention program talking about nothing but emergency communications — AREC, RACES, emergency nets, emergency equipment, the works. If all 35,000 of our AREC members show up, it will be better than the best national convention we ever had. Even if only half of them show, it will still be a crackerjack. No definite plans, yet, but we've got it in the back of our minds.

This would be much better than having meetings at national and divisional conventions in which the emergency communications meeting conflicts with about half a dozen meetings on other subjects going on at the same time. Such was the case at the National Convention in Washington in August. While the so-called RACES Session was going on, W3OJU was conducting a V.H.F. Session, W3YAR was conducting a Mobile Session, W3OBR was conducting a TVI Session and FCC's Harold Richmond, W4CIZ, was giving examinations at other places in the hotel. Oh, we're not criticizing the convention management (we should live so long!). It just isn't possible to avoid conflicts of this nature in a large convention program. However, we'll bet that quite a large group of amateurs who might otherwise have attended the "RACES" session were at one of the other sessions as the result of the flip of a coin — because they were interested in both and had to go to one or the other. S'life! So for their benefit, and for those who were unable to get to the convention, here's what went on at the RACES Session, in as few words as possible.

After a few cheery and appropriate words of greeting from the capable chairman, Cecil Harrison, W3PG, we were introduced to Clyde Hendrix, WØHBG, who is the right-hand man of OCDM Administrator Leo Hoegh. He spoke briefly of the FCDA-ODM merger to form a more powerful unit of the civil defense administration, and emphasized the importance of amateur radio as a part of its communications facility. In a new war, he said, there would be no winner, only a survivor. One of the most important functions of communications in such a contingency would be to keep down panic.

Vincent Kenney, W2BGO, N. Y. State RO and chairman of the USCDARA, presented a talk on the N. Y. 2- and 6-meter RTTY network and spoke briefly on the Alliance, stating that 34 states are now members and Alaska is expected to join soon.

Jim MacGregor, W8DUA, the "RACES Man" from OCDM, showed some slides indicating the growth of RACES during recent months, mentioned that security considerations were holding up the USCDARA petition for more RACES frequencies, emphasized that RACES was only a part of civil defense communications, not the whole works, spoke on the place of MARS in the RACES program and that amateurs may belong to one or the other but cannot very well participate effectively in both, and pointed out that there is no conflict between the RACES and AREC programs.

Austin Sparks of OCDM Region 2 said that as far as communications are concerned we are a spoiled nation, and exhorted us to remember that in the event of war RACES will continue while other amateur operation will cease.

John Barolet, W3BUD, CD communications officer for St. Mary's County, Md., gave an interesting talk on trans-horizon RACES communications on 6 meters, emphasizing reliability of communications on this band and urging us to stop knocking ourselves out on 75 and use groundwave communication on six.

General DuPlantis, assistant administrator for communications, OCDM, said that the policy of RACES is to help c.d. communications in every way possible. His talk consisted mainly of a slide-illustrated description of the National Attack Warning System in terms of radar, radio, teletype and Soviet capability. His talk was keynoted by the theme that there is "always something new."

After the scheduled part of the program, W3OMN rose from the audience to propose that a resolution be drafted to request OCDM to seek legislation for a permanent Radio Amateur Civil Emergency Service. Other recommendations included (1) that AREC-RACES recruitment be carried out in the schools and (2) that organization for emergency communications be based on place of business as well as on place of residence of individuals concerned.

It was an interesting meeting, attended by about 100 people. Your NEC got in a few licks regarding the place of the AREC in all this hubbub about RACES, but aside from that there was little mention made of our own amateur communications organization. After all, you see, this was a *RACES* meeting.

Who else was there? Many people, but not as many as we would like to have seen. Many AREC officials, seen later during the convention, had been elsewhere at the time, or had not yet arrived. If you were there and we met you, it was a great pleasure. If you were there and we missed you, this is regrettable but unavoidable in such a large convention. If you couldn't make it, you missed a good convention, OM.

At the 1958 Akron (Ohio) Sports Car Races, the Cuyahoga County AREC set up a control point at start and finish lines on 6 and 10 meters, controlling networks on these two bands. Shown in the photo are (l. to r.) K8AAG, W8DGK and W8VFU.

About July 15, W7FTV/m came upon an automobile accident on the highway ten miles out of Wolf Point, Montana. One of the cars was nearly demolished and the driver, his wife and baby were in critical condition. W7FTV/m contacted W7ECO at Wolf Point, who had an ambulance rushed to the scene. The prompt communication was credited with saving at least one life. — *W7NPT, SCM Montana.*

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On July 18, K6HUS heard a distress call from K6GQJ on 50.4 Mc., and gave him a call. It seemed that a truck carrying butane was on fire on the East Shore Freeway in West Oakland and explosion was feared. Fire apparatus arrived as soon as contact was made, but K6HUS and K6GQJ maintained contact until the situation was in hand, in case any additional need for help might arise.

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Hearing a broadcast report of a flash flood near Charleston, W. Va., on Aug. 8, K8DZU alerted local amateurs and proceeded immediately to the scene with his mobile rig. Over 150 people had been left homeless as 20 houses were washed away and many others damaged. W8IRN assumed net control on 3890 and two additional mobiles, K8IIAI and K8BCH, were dispatched to the scene. Within a half hour more than ten stations, fixed and mobile, were on frequency to assist. *K8s* GAG GAP and AMS supplied information on river stages, blocked roads and flooded communities on Elk River, north of Charleston. Other members of the net assisted Red Cross and the state police in obtaining badly needed information. The net operated from 1800 until 2200, after which normal communications channels became adequate. Other amateurs participating: W8IIZA, *K8s* GEO/m CSG BIT DFS ELB/m JCK. — *K8CSG, Asst. EC Kanawha Co., W. Va.*

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On Aug. 27, W1WSN/m came upon a bad auto accident

on route 28 in Milton, Mass., in which a woman and man were injured and bystanders were shouting to call a police officer. W1WSN informed W1LAT of the accident and the latter put out a general call asking anyone copying in the area to call the police to the scene. A police car arrived within ten minutes after the call was made, thanks to the prompt action by W1WSN.

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In response to an urgent appeal on Sept. 1 from the state highway patrol for all available hand-carried portables to aid in the hunt for a lost child, 11 six-meter amateurs with mobiles and hand-carried units responded from Cuyahoga County, Ohio. Communications equipment available to the state highway patrol was found insufficient to handle the extremely large searching party. The search ended before the amateurs arrived at the scene, but the turnout made a very favorable impression on the officials involved. — *W8AEU, EC Cuyahoga County, Ohio.*

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A trio of amateurs maintained emergency communication for WICC on Sept. 1 when severed telephone lines cut service between Pleasure Beach and Booth Hill, a distance of 15 miles, transmitter and studio locations respectively. Contact was first attempted on 15 meters between W1NUB at the transmitter site and W1LIG, without success. Contact was successful on 75 meters, but unsatisfactory because of the QRM. W1EWK finally brought 6-meter equipment to both locations, after which communication was perfect. The circuit was maintained from 2100 until 0045, and again from 0800 to 0900 the next day. — *W1LIG.*

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Members of the Northern Alberta Radio Club took part, May 3–4, in Canada's "Exercise Cooperation II." RTTY was used between Edmonton and the northern zone headquarters, using 147 Mc. Local amateurs built, installed and operated the converters, tone keyers and whatnot. Operation was solid for eight hours and c.d. authorities were much pleased.

In the Northern Alberta district another group of amateurs operated the Northern Alberta zone c.d. net, covering a circle about 400 miles in diameter of Alberta towns and villages. This net operated on 3993 kc, and passed considerable traffic. — *VE6HM.*

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On May 18 the Wayne County (Ohio) AREC participated in an exercise which assumed that two nine-year-old boys had strayed from their homes and were "lost" in the boondocks. The search was conducted with full participation by the Dalton fire and police departments, the Civil Air Patrol and the Red Cross. Search parties made no personal contact, all communications being by means of AREC and CAP mobile units. The exercise commenced at 1405, when the father of the lost boys first telephoned the police chief. EC K8DFN was then notified and at 1413 alerted the AREC. Six mobiles converged on Dalton and were in position by 1450, forming a six-point circle around Dalton. With the aid of a CAP plane and immediate contact between search parties by the AREC mobiles, the boys were located by 1524. — *W8UPB, SEC Ohio.*

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On June 20, amateurs in Contra Costa County, Calif., participated in a county-wide test simulating a severe earthquake. The test started at 1500. Communications headquarters was activated at the CD Building and stations were active from hospitals, Red Cross centers, police headquarters and a number of strategic locations throughout the county. Twenty messages were originated from the communications center and each received an answer. About 15 amateurs participated. After the test, equipment was dismantled but the beams were left permanently on the hospital buildings. — *Mt. Diablo Radio Club's "The Carrier."*

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On June 21, more than 30 fire engines from departments throughout New Haven County, Conn., congregated at three rendezvous areas and proceeded under escort to a simulated conflagration in Hamden. The Hamden AREC/RACES group took part by providing a communications escort for each group, coordinated by the c.d. station located at the town hall in Hamden. The Area 2 C.D. Headquarters Station at Bethany State Police Barracks was also activated. Operation was on 10 and 2 meters. The whole operation was classed as a RACES drill and tactical calls were used throughout. All equipment functioned normally. — *W1NFG, EC Hamden, Conn.*

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The South County Amateur Radio Society c.d. group of Redwood City, Calif., provided communications from the staging area to the announcing flatforms and judges stands in the annual Fourth of July parade. Mobile units were placed along the parade route so they could report spacing of units, pace being maintained, and inform the reviewing stand of last minute changes in parade entries. A roving mobile unit tied together and directed all these units. Eight mobile units were used and two fixed home stations stood by to help if needed. — *W6DEF, EC Redwood City, Calif.*

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On Sept. 5, the Muskingum Amateur Radio Assn. set up a portable station at the Zanesville (Ohio) Municipal Stadium to assist in directing football teams from the surrounding area to the stadium for the Annual Football Olympia. Mobiles were sent out to meet the buses and lead them to the stadium, keeping in touch with the control station at all times so that officials at the stadium would know just where each bus bringing in a team was located. The whole operation went off perfectly. Seven amateurs participated. — *K8ATA.*

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Eighteen SECs reported July figures, representing 5217 AREC members. This averages about the same as last year — an increase of two reports, a decrease of about 150 AREC members represented. Sections reporting: Conn., Minn., N.Y.C.-L.I., Ga., Wis., Colo., E. Bay, W.N.Y., S. Texas, Santa Clara Valley, Maritime, E. Pa., San Joaquin Valley, E. Fla., N. M., Santa Barbara, Ala., Mont.

RACES News

On July 20, Chicago RACES held a practice drill in Schiller Woods, with the cooperation of the Boy Scouts. Search parties were sent out with hand-carried units to locate missing boys. When they were found, the mobile units were informed and in turn relayed information to the Chicago CD Mobile Bus. The drill was very successful and informative. — *W9STR.*

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On July 26–27, the Long Branch (N. J.) 2-meter RACES group cooperated with the Long Branch Ice Boat and Yacht Club to provide communications for the two-day regatta and outboard races sponsored by the Yacht Club. This group is one of the more active RACES units in the county. — *K2MGM.*

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Orange County (N. Y.) RACES spent a busy August with two extra drills. The CD truck was stationed at the Orange County Fair during the week of Aug. 2 for recruiting and demonstration purposes. Members reported in on 2 and 6 meters. Operators at the truck simulated actual emergency conditions by using the portable generator, by sending messages to the net members as they reported in, and by maintaining communication with the hand-carried unit which was being demonstrated on the fair grounds.

Another drill was called on the August 16–17 week end to provide communications for the sports car races at Montgomery air field. Seven two-meter mobiles and a pair of six-meter hand carried units were used. All traffic was received by the NCS, at the start-finish line. — *W2JJK.*

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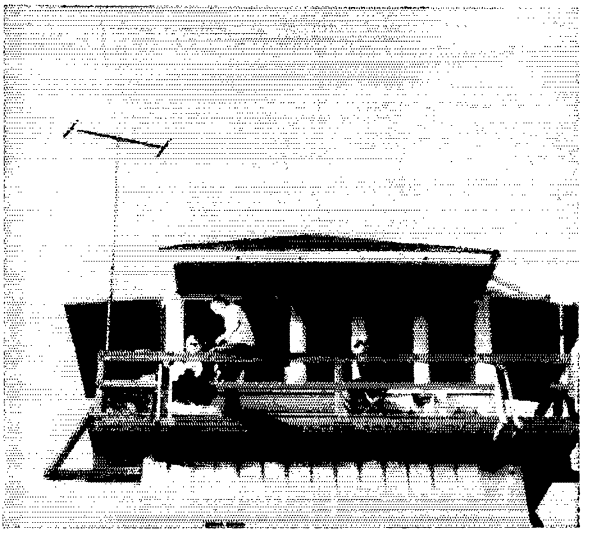
The Bexar County (Texas) RACES plan was approved by FCC in July. Losing no time, the group put on its first mock disaster on Aug. 8, with W5DIB (RO) and W5DRO (asst. RO) at the control station. Twenty-five mobiles took part in the test. During the test, there were two fires and one major accident in the city and county in which the communications group assisted in directing traffic and helping authorities. — *W5DIB, RO Bexar Co., Texas.*

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

These frequencies are employed throughout the United States by amateurs using radioteletype.



Members of the Turlock and Merced Amateur Radio Clubs assisted ranchers in burning off 8000 acres of heavy brush near Coulterville, Calif. This is the base station, W6BXN, atop the lookout tower at Peno Blanco. Operators are (l. to r.) K6EXE, W6GYN and K6SNA.

Cuyahoga County (Ohio) RACES had a big blow-out on August 18 to hash out some pertinent problems. Among these were: (1) Discussion of the telephone alerting system. New calling lists were passed out. (2) Plans for participating in the Cleveland Radio Amateur Convention were discussed and a committee appointed to handle details. (3) A committee was appointed to plan and write a RACES operator's training manual and examination. (4) A committee was appointed to reevaluate the RACES plan and bring it up to date. (5) The group was informed of the procurement of caps containing the RACES emblem for distribution to qualified members, and of the prospect of obtaining two teletype machines for use in the RACES network. — *W8BUQ, Chief RO, Cuyahoga County, Ohio, RACES.*

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The new DuPage County (Ill.) CD Control Center was dedicated on October 19. W9BVB sent us a complete description and a diagram of the building, and we wish we could describe it in more detail than we have room for here (maybe we will, yet). The DuPage County amateurs put plenty of work into the RACES installation, and have built up a county-wide c.d. network of nearly 200 stations and operators using their own as well as county-owned equipment. Stations are located in municipal buildings in 14 towns, operated by members of the Radio Amateur Society of DuPage County on 2, 6, 10 and 75 meters and drills are conducted each Monday at 2000. All stations in the area are invited to check in, RACES or not. The new control center is located near Wheaton, about 30 miles west of Chicago. It is radiation-proof and contains stocks of food, dormitory facilities, decontamination facilities, emergency power, and tie-ins with state-wide nets making it highly flexible. The call used will be that of the RASDC, K9IEO. Special "dedication certificates" were issued to amateurs working K9IEO during the dedication ceremony and afterward.

TRAFFIC TOPICS

Now that FCC monitors are starting to perk up their ears on some of our identification procedures, perhaps we should examine some of the procedures we use in nets. Actually, the regulations make no mention of identification in nets, except that they state a net call may be used by the NCS in place of a "station called." Such being the case, we have to interpret the regulations as they are written.

First of all, let's be sure we all know what identification is. Many of us think it is simply transmitting your own station call. However, according to our regs (sec. 12.82), identification consists of transmission of the call letters of the station or stations (or net) that you are *calling or working*, followed by your own call letters. Anything less than that is not complete identification.

Now, when and how often must we go through this procedure? Well, the regs provide some alternatives. One way of being sure of complying is to go through it at the beginning and ending of every transmission. This procedure can be a bit cumbersome in nets, however, so the regs stipulate that in a contact in which transmissions are of less than three minutes duration, the identification need be given only at the beginning and end of such contact, but in no case less than every ten minutes. The ten-minute rule is a fixed one: you must identify at least every ten minutes whether you are transmitting a bulletin to a net, calling some one, or engaged in a contact; and you must identify at the beginning and end of each transmission lasting more than three minutes. If the whole contact lasts less than three minutes, you can skip the end identification.

Granted, this still leaves some questions regarding nets, such as, for example, what is a transmission? Supposing a station is sending traffic on c.w. and uses full break-in. The copying station breaks him. Does this terminate a transmission on the part of the transmitting station? Or supposing the message lasts more than three minutes without breaks, do you have to identify at the end of it? These are good questions. We think FCC monitors are not unreasonable about such things, and doubt very much if a monitor will issue a citation on the basis of an unidentified 3½-minute transmission in the middle of a contact. But don't stretch it too far!

It appears to us that some of our nets are asking for it by having procedures that are illegal. For example, phone nets that have members checking in simply by stating their call letters, and c.w. nets whose members check in, after the net call-up, simply with " . . . DE WØNET." So just what *are* the legalities connected with identification in and logging of nets? Well, according to the regs, here's about how it stacks up:

When reporting into a net, you must identify the net control station *and* yourself, in that order. You are then considered to be in contact with him until you check out, at which time you must again identify. During the net, you must identify any transmission longer than three minutes, and in any case you must identify at ten minute intervals.

Your log must contain the call letters of the net control station as having been contacted when you report in; your check-out must be entered as the termination of your contact with him. Each net station you contact directly during the net must be entered in the log, including both beginning and ending times.

If you are net control station, after the net call-up you give identification as each station reports in, then again as each station checks out, plus identification of any transmission you make to any net station lasting more than three minutes, and of course identification of the net at least every ten minutes. Your log must contain the call of each check-in, including the time he reports in and the time he

W1AW GENERAL-CONTACT SCHEDULE
(Effective October 26, 1958)

W1AW welcomes calls from *any* amateur station. Starting October 26, W1AW will listen for calls in accordance with the following time-frequency chart:

EST	*Sunday*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
0020–0100 [1]	.....	.....	3555 [2]	7255	3555	7080 [2]	3945
0100–0200	.....	.....	3945	.....	3555	7080	.....
0200–0300	.....	.....	7255	3945	7080	3945	7255
1500–1600	.....	.....	14,280	21/28 Mc.[3]	14,100	.....	.....
1600–1700	.....	14,280	21/28 Mc.[3]	14,100	21/28 Mc.[3]	21,330	.....
1700–1800	.....	14,100	14,280	21,075 [2]	14,280	14,100	.....
1930–2000	.....	7255	.....	7080	.....	7255	.....
2020–2100 [1]	.....	7080	3555	7080 [2]	3555 [2]	7080	.....
2110–2130 [1]	.....	3945	50.9 Mc.	145.6 Mc.	3945	3945	.....
2230–2330	.....	3555	3945	7080	1820	3555	.....
2340–2400 [1]	.....	3945	1820	3945	1820	3945	.....

[1] General-contact period on stated frequency begins immediately following transmission of Official Bulletin which begins at 0000 and 2000 on c.w. and at 2100 and 2330 on phone. Starting time is approximate.
[2] W1AW will listen for Novices (on Novice band indicated) before looking over the band for other contacts.
[3] Operation will be conducted on one of the following frequencies: 21,075; 21,330; 28,080; 29,000 kc.

checks out.

Whether or not these requirements impose a hardship on network operation or whether or not anything can be done to liberalize them is something outside the scope of this column. They are the rules; let's observe them. Let's not give amateur traffic nets a black eye.

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Net Reports. These are starting to get numerous. Let's try a table this month:

Net	*Sessions*	*Traffic*
Interstate S.S.B.	31	762
Transcontinental Phone (1)		1474
(2)		1576
(4, 5, 8, 9, 0)		454
(Total)		3504
Early Bird Transcon	31	531
N. Tex.-Okla.	31	223
7290 Traffic	42	500

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National Traffic System. NTS is now in its tenth season of existence. This is not a very long period of time on which to base a history, or even reminiscences; and yet it seems a long time ago that we sent out copies of that first national traffic plan to some 30 prominent traffic men for their opinions. Much has happened since the system started its official life on October 1, 1949, and most of those happenings have been recorded in this *QST* column. The report of the first month's operation has this to say:

"Initial progress has been encouraging, and as the season progresses we expect improving results and increased participation. . . . Four regional nets have not yet been activated . . . and some of the other nets have had frequency difficulties which have necessitated changes often slightly inconvenient to their members. These little annoyances will soon be resolved and there is no need for anyone to get discouraged because of them. After all, we are just getting started."

Starting off with thirteen regional and four area nets was an ambitious undertaking, and we quickly found that the Mountain Area was not going to work — not that the others functioned perfectly, either. MAN was dissolved, as were the two regions in that area, and joined to the Pacific Area. Other regional and area nets had their ups and downs, depending primarily on the quality of their leadership, but all managed to survive. The first year was a "test" year, to ascertain if the system, or some modification of it, was workable. At the end of that time we got up certificates and started this regular monthly subhead. The first summary which appeared in February 1951 *QST* included five of the eleven regional nets and two of the three area nets; and no section nets. Compare that reporting record with the kind we enjoy today and you will get a rough idea of how much progress we have made in nine years.

We are pleased with NTS, but far from satisfied. We have a pretty good system — better, we dare say, than any which has ever existed in amateur traffic circles. But there is still a great deal of room for improvement, so let's not get complacent. We still have a long way to go.

August reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation (%)*
1RN	26	424	.354	17.0	89.6 [1]
2RN	48	483	.377	10.0	95.8
3RN	42	322	.312	7.4	82.5
4RN	52	375	.190	7.2	56.0
RN5	52	734	.434	14.1	83.3
RN6	21	420	.757	20.0	83.8 [1]
8RN	39	159	.161	4.1	70.1
9RN	51	877	.502	17.1	70.6
TEN	60	726	.411	12.1	63.1
TWN	19	255	.261	13.1	58.9 [1]
ECN	20	60	.217	3.0	70.0 [1]
EAN	20	1042	.895	49.6	94.4
CAN	31	855	.705	27.6	100.0
PAN	29	1107	.577	38.2	100.0
Sections [2]	744	5488		7.4	
TCC East	59 [3]	98			
TCC Central	62 [3]	994			
TCC Pacific	82 [3]	651			
Summary	1255	15,270	EAN	10.8	CAN/PAN
Record	1074	15,277	.718	14.8	100.0

[1] Regional net representation based on one session per night. Other regional nets based on two or more sessions.
[2] Section nets reporting: FMTN & Gator (Fla.); MSPN Noon, MSPN Evening, MSN & MJN (Minn.); AENO, AENT, AENB & AENP (Ala.); VN (Va.); KPN Morning, KPN & KYN (Ky.); WVN (W. Va.); S. Dak. CW; S. Dak. 75 Phone; S. Dak. 40 Phone; CN & CPN (Conn.); Tenn. CW; GSPN (N. H.); GSN (Ga.); SCN (S. C.); SCN (Calif.); Iowa 75 Phone; QKS (Kans.); TLCN (Iowa); ILN (Ill.); NJN (N. J.); MDD (Md.-Del.-D. C.).
[3] TCC functions reported, not counted as net sessions.

Starting with the above table, the "record" will show the previous record rather than the new one. This will indicate by how much the previous record is broken (if it *is* broken) this month instead of being a repetition of the figure in the "summary" listing. Comparison is made with the same month of previous years.

The latest bulletin from the Pacific Area Staff to all NCS in the Pacific Area requests that each NCS make a habit of keeping a pile of reporting cards at the operating position, and fill one out to be mailed immediately after the close of the net. PAS Manager W6HC says that in many cases net managers have resigned because of lack of reports from net control stations. "Let's not," he says, "lose a good net manager because of your thoughtlessness." A very good point, and applicable to other areas just as much as to the Pacific. It only takes a minute to drop the manager a card (or a radiogram, if you prefer) reporting the stations who

were QNI, how much traffic was handled and how long the net lasted from QND to QNF.

K2RYH has accepted manager appointment to 2RN and took over the first of October, relieving W2ZVW who took over only long enough to allow us to find a suitable replacement for W2ZRC. W3UE is discouraged about the performance of the Penna. sections in 3RN; except for one or two notable exceptions, all the support for 3RN is coming from the Md.-Del.-D. C. section. The latest 4RN Bulletin, edited by W4QDY, includes a very good explanation of the significance of the figures in the above summary column; we may repeat it here next month. K6HLR is the new manager of RN6, replacing W6CMA; thanks to K6SXA who has filled the gap so that no RN6 reports are missing. Again, no report from RN7, the only one missing. TEN has put out a special certificate to those members who have consistently braved the QRN and QRM during the summer of '58. TWN Manager W5DWB, submitting his first report, indicates regional net certificates have been awarded to W7OCX, WØKQD and WØTVI. QRN and weak signals are still pulling CAN's figures down, and forty meters has supplemented almost every session. Are they discouraged? Look at CAN's representation percentage! K6DYX, back at the helm of PAN, announces the return of PAN to 80 meters (3675 kc.) and puts out a bulletin to get the new season under way.

Transcontinental Corps, August reports.

Area	Functions	% Successful	Traffic	Out-of-Net Traffic
Eastern	59	89.8	946	98
Central	62	93.5	1081	991
Pacific	82	89.0	1900	651
Summary	203	90.6	3327	1743

The TCC roster: Central Area (WØBDR, Dir.) — W9CXY, *W0s* BDR LCX LGG SCA; Pacific Area (W6BPT, Dir.) — W5DWB, *W6s* ADB PLG BPT EOT UTV ZVT HC ELQ YHM, *K6s* DYX EWY HLR GES GID, *W7s* VIU GMC ZB, WØKQD.

W1AW OPERATING SCHEDULE

(Effective October 26, 1958)
(All times given are Eastern Standard Time)

W1AW will return to its Fall-Winter operating schedule with the return to Standard Time. General operation covers all amateur bands on which W1AW has equipment. Novice periods include operation on 3.5, 7 and 21 Mc. (see footnote 2 in box on p. 89). Master schedules showing complete W1AW operation in EST, CST or PST will be sent to anyone on request.

Operating-Visiting Hours:
Monday through Friday: 1500–0300 (following day).
Saturday: 1900–0230 (Sunday).
Sunday: 1500–2230.

Exceptions: W1AW will be closed from 0300 Nov. 27 to 1500 Nov. 28 in observance of Thanksgiving Day, and from 0300 Dec. 25 to 1500 Dec. 26 in observance of Christmas.

General Operation: Use the chart (p. 89) for determining times during which W1AW engages in general operation on various frequencies, phone and c.w. Note that since the schedule is organized in EST, certain morning operating periods may fall on the evening of the previous days in western time zones. W1AW will participate in all official ARRL operating activities, using scheduled general operating periods for this purpose if necessary.

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 signal, 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.

Code Proficiency Program: Practice transmissions are made on the above listed c.w. frequencies (except 1820 kc.) starting at 2130 daily. Speeds are 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday. Approximately ten minutes of practice is given at each speed.

Exceptions: On Nov. 18 W1AW will transmit a special Frequency Measuring Test and on Nov. 17 and Dec. 23 W1AW will transmit ARRL Code Proficiency Qualifying Runs instead of the regular code practice.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on Nov. 17 at 2130 Eastern Standard Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on Nov. 6 at 2100 PST on 3590 and 7128 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs for ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds trans-

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for August traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W2KEB	192	1554	1203	232	3181
W3CUL	418	846	686	153	2103
W0SCA	29	949	936	5	1919
WØBDR	25	818	717	9	1569
WØPZO	11	773	757	7	1548
W7BA	19	673	635	37	1364
W8UPH	11	636	577	53	1277
WØLGG	342	412	348	53	1155
W4PL	14	572	498	24	1108
K6HLR	13	470	434	35	952
W9CXY	7	451	431	20	909
K0CLS	26	443	421	1	891
W6GYH	193	340	309	26	868
W0CPI	7	427	391	36	861
W9DO	17	412	372	57	858
W5RCE	16	405	382	23	826
K0APS	2	408	384	22	816
W9NZZ	292	256	0	256	804
WØOHJ	9	374	360	14	757
W1UEQ	139	302	249	52	742
W7PGY	23	327	293	28	671
K9ERH	39	310	268	43	660
K4EZL	72	281	268	8	629
K2SIL	15	302	298	6	621
K4ELG	33	300	254	34	621
K6YBV	21	298	261	29	609
W5CEZ	23	282	240	33	578
K9GDF	101	239	222	16	578
K1AQB	30	298	243	4	575
K6CPT	11	278	206	73	568
K2SSE	17	270	265	5	557
WØBLI	1	274	268	5	548
K9ELT	21	263	250	11	545
K6GK	30	234	137	142	543
K4QES	22	259	227	32	540
K4KZP	41	252	232	10	535
KØDCW	2	264	0	264	530
K2UTV	66	220	209	14	509
K4QIX	15	247	202	37	501
K5FJA	1	250	242	8	501
Late Reports:					
WØBLI (June)	2	448	442	6	898
K4EZL (July)	82	378	351	10	821
W4PL (July)	18	410	381	11	820
WØOHJ (June)	4	330	322	8	664
WØBLI (July)	2	321	312	7	642
WØWMK (July)	16	262	260	10	548
WØOHJ (July)	7	270	262	8	547

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
K5WSP	174	566	512	25	1277
KØHEA	859	0	0	0	859
W6YDK	13	354	325	26	718
KGIDT	159	213	77	134	583

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

K6GZ	287	K4RZQ	118	WØKQD	106
W4SHJ	229	W2ATC	115	WØVPQ	106
W5FPI	168	KØIRL	114	K4DSD	102
W8IBX	164	WICMH	112	K6TPL	102
W9ETM	126	KØIDV	111	W9PCQ	101
K4HIA	122	K2DVT	109	K6QHC	100
W2JGV	120	K1BUF	107		

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W2BVE, K2QBW, K4DAS.

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.

A.R.R.L. ACTIVITIES CALENDAR

Oct. 25–26: CD QSO Party (phone)
Nov. 6: CP Qualifying Run — W6OWP
Nov. 8–9, 15–16: Sweepstakes Contest
Nov. 17: CP Qualifying Run — W1AW
Dec. 3: CP Qualifying Run — W6OWP
Dec. 23: CP Qualifying Run — W1AW
Jan. 8: CP Qualifying Run — W6OWP
Jan. 10–11: V.H.F. Sweepstakes
Jan. 17–18: CD QSO Party (c.w.)
Jan. 21: CP Qualifying Run — W1AW
Jan. 24–25: CD QSO Party (phone)
Feb. 4: CP Qualifying Run — W6OWP
Feb. 6–8: DX Competition (phone)
Feb. 13: Frequency Measuring Test
Feb. 19: CP Qualifying Run — W1AW
Feb. 20–22: DX Competition (c.w.)
Mar. 5: CP Qualifying Run — W6OWP
Mar. 6–8: DX Competition (phone)
Mar. 19: CP Qualifying Run — W1AW
Mar. 20–22: DX Competition (c.w.)
June 27–28: Field Day

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

Oct. 31–Nov. 1: RTTY Sweepstakes, RTTY Society of Southern California (p. 186, last month).

Nov. 12–13: YLRL Anniversary Party (phone), YLRL (p. 76, this issue).

Nov. 19–20: YLRL Anniversary Party (c.w.), YLRL (p. 76, this issue).

Nov. 22–23: 21/28 Mc. Telephony Contest, RSGB (p. 68, this issue).

mitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EST. Approximately 10 minutes' practice is given at each speed. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with W1AW.

Date	Subject of Practice Text from September *QST*
Nov. 3:	"*Superpower*," p. 9
Nov. 4:	*A Two-Band Halo for V.H.F. Mobile*, p. 11
Nov. 11:	*Match, or Not to Match?*, p. 13
Nov. 14:	*How to Solder*, p. 16
Nov. 19:	*Combination Power Supply . . .*, p. 18
Nov. 21:	*Contest Operating*, p. 54
Nov. 25:	*A Zoning Problem Solved*, p. 59

NET DIRECTORY

This list includes nets registered up to and including Sept. 19, 1958. Registrations received after that date will be included in the January *QST* listing if received prior to November 15. If you have not yet registered your net for the 1958–59 season, see page 82, September 1958 *QST*, for full instructions.

Nets which do not show a public service purpose in their registration information are not included in the net directory. Nets are registered only on request and upon receipt of the minimum basic information given below. The complete cross-indexed directory is scheduled for completion by the first of December.

Important Note: QST net listings and those in the printed net directory are for *information only*. Insofar as possible, net information is listed exactly as received, with certain common abbreviations used to save *QST* space. Listing in *QST* or the printed directory does not signify that these nets have any official status, does not entitle them to exclusive or prior right to the frequency or frequencies on which they are registered, and is in no sense a form of copyright. Asterisk (*) indicates net is a part of the ARRL National Traffic System.

Name of Net	*Freq.*	*Time*	*Days*
Ala. Emerg. Net "B" (AENB)*	3575	1900 CST	Daily
Ala. Emerg. Net J (AENJ)	3900	1330 CST	Sun.
Ala. Emerg. Net P (AENP)*	3955	1800 CST	Daily
All Service Net (ASN)	7270	1200 EST	Sun.
Amateur Radio Caravan Club of New Mexico Net	29,600	1930 MST	Wed.
American National Red Cross — Marin County Net	3885	1000 PST	Sun.
Atlanta Ten Meter Phone Net	29,600	2200 EST	Sun.
Badger Emergency Net (BEN)	3950	1800 CST	Daily
Barnyard Net (Eastern Area)	3960	0800 EST	Mon.-Sat.
Belleville, Ill. C.D. Net	29,520	1900 CST	Thu.
Berrien County Emergency Net (Mich.) (BCEN)	29,610 50,400	1430 EST 2230 EST	Last Sun. Sun.
British Columbia AREC Net	3755	1800 PST	Mon.-Sat.
British Columbia C.W. Emerg. Net (BCEN)	3650	1830 PST	Mon.-Sat.
British Columbia Emerg. Net (BCEN)	3650	2200 PST	Mon.-Fri.
Broome County AREC Net (N. Y.)	50,400	2100 EST	Fri.
Brown County Emerg. Net. (B.C.E.N.) (Wis.)	3950	1330 CST	Sun.
Buckeye Net (Ohio) (BN)*	3580	1900 EST	Mon.-Sat.
Burlington County RACES Net (N. J.)	29,580 51,000 146,320	2030 EST	Fri.
Calif. C.D. Net (CCDN)	3501 7090	1900 PST 2000 PST	Mon. Tue.-Fri.
Cambria County CD Emerg. Net (Pa.)	29,470	2000 EST	Tue.
Cedar Valley C.D. Net (CVCDN) (Iowa)	50,400	2000 CST	Wed.
Central Fla. Operational Area 2 M Net	145,200	1900 EST	Daily
Central Ind. Six Meter Net	50,400	1800 CST	Mon.-Sat.
Central Iowa 6 Meter Net	50,748	2000 CST 2200 CST	Tue. Fri.
Central Kansas Phone Net	3930	0800 CST	Sat.
Central United Trunk Lines (UTL)	3565 3590 7125	2015 CST	Daily
Colo. High Noon Net (HNN)*	7240	1200 MST	Mon.-Sat.
Colo. Weather Net (CWXN)*	3945	0700 MST	Mon.-Sat.
Conn. Nutmeg Net (CN)*	3640	1845 EST 2130 EST	Mon.-Sat.
Conn. Phone Net (CPN)*	3880	1800 EST 1000 EST	Mon.-Sat. Sun.
Conn. Training Net (CTN)	3640	0800 EST	Sun.
Copper State Net (Ariz.)	3895	1930 MST	Mon.-Fri
Cross-County Phone Net (CCPN)	3900	1630 EST	Tue., Fri.
Delaware Emergency Net	3905	1830 EST	Sat.
Delta 75 Net	3905	0730 CST	Sun.
Doghouse Net	3860	1800 EST	Mon.-Fri.
Early Bird Transcon Net (EB)	3845	0400 CST	Daily
East Coast Radioteletype Net (RTNET)	3620	1800 EST	Wed.
East Tenn. Net	3980	0645 EST	Mon.-Fri.
Eastern Canada Net (ECN)*	3535	1945 EST	Mon.-Fri.
Eastern Penna. CW Net (EPA)*	3610	1830 EST	Mon.-Fri.
Eastern States Net (ESN)	7080	1730 EST	Daily
Eglin AFB Fort Walton Emerg. Net (Fla.) (HAIR)	29,560	1900 CST	Mon.
Eighth Regional Net (8RN)*	3530	1945 EST 2130 EST	Mon.-Sat.
Empire Slow Speed Net (N. Y.)	3590	1800 EST	Daily
Erie County Emerg. Net N. Y.	3915	1230 EST	Sun.
"The FARM Net"	3935	1900 MST	Mon.-Fri.
Fayette Co. Pa. CD Net	28,640	0800 EST	Sun.
First Regional Net (1RN)*	3605	1930 EST	Mon.-Sat.
Fla. Emerg. Phone Net (FEPN)	3910	1830 EST	Tue.
Fla. Midday Traffic Net (FMTN)*	7230	1200 EST	Daily
Florida Net (FN)*	7105	1900 EST	Mon.-Sat.
Fourth Regional Net (4RN)*	3547	1945 EST 2130 EST	Mon.-Sat.

Framingham Radio Club Emerg. Net (Mass.)	28,700	2045 EST	Wed.
Gator Net (Fla.) (GN)*	7105	1000 EST	Mon.-Sat.
Ga. Cracker Emerg. Net (GCEN)	3995	0800 EST 1800 EST	Sun. Tue.-Thu.
Georgia Net (GAN)	7105	1800 EST	Mon.-Sat.
Georgia Novice Net (GNN)	7157	1700 EST	Tue., Thu., Sat.
Golden Gate Net (Calif.) (G.G.N.)	28,700	2030 PST	Tue.
Golden Isles Net (Ga.)	29,200	2030 EST	Tue., Thu.
Golden West Frequency Modulators (Calif.) (G.W.F.M.)	29,400	2400 PST	Daily
Granite State Phone Net (G.S.P.N.)*	3842	1900 EST 0900 EST	Mon.-Fri. Sun.
Green Mountain Net	3855	1700 EST	Mon.-Sat.
Grey-Bruce Net (Ont.) (GBN)	3645	1830 EST	Mon., Wed., Fri.
"Hit & Bounce" Net	7140	0830 EST 1600 EST	Mon.-Sat.
Hudson Traffic Net (HTN)	7060	1645 EST	Daily
Huntington Weather Net (HWN) (W. Va.)	50,550	1900 EST	Mon.
Illinois CW Net (ILN)*	3515	1900 CST	Daily
Interstate Phone Net	3980	1600 EST	Mon.-Sat.
Iowa 75 Meter Phone Net*	3970	1230 CST	Mon.-Sat.
Iowa Tall Corn Net (TLCN)*	3560	1830 CST	Mon.-Sat.
Kansas CW Net (QKS)*	3610	1830 CST	Daily
Kans. 75 Meter Phone Net (KPN)	3920	0800 CST 0645 CST	Sun. Mon., Wed., Fri.
Kansas Storm Net (KSN)	3840	1900 CST	Mon.
Kentucky CW Net (KYN)*	3600	1700 CST 1900 CST	Mon.-Sat. Sat., Sun.
Lake Erie Emerg. Net (Pa.)	29,150	2000 EST	Sun.
Lancaster Emerg. Net (Pa.) (LEN)	146,800	2200 EST	Mon.
Linn County Emerg. Net (LCEN)	3915	1300 CST	Sun.
Lobster Net (Me.)	145,290	1830 EST	Mon., Wed., Fri.
Long Island 6 Meter Emerg. Net (N. Y.)	50,250	1930 EST	Tue.-Thu.
Lorain County 160 Meter Net (Ohio)	1820	1800 GMT	Sun.
Md. Del. & D. C. Net*	3650	1915 EST	Mon.-Sat.
McKean County Emerg. Net (Pa.)	3525	0800 EST	Sun.
Mich. Buzzards Roost Mich. Emerg. Net (BR MEN)	3930	1730 EST 0900 EST	Mon.-Fri. Sun.
Mich. (QMN) TFC Nets (QMN)*	3663	1800 EST 1830 EST	Daily
Mike Farad Emerg. and Traffic Net	7238.8	0745 EST	Mon.-Fri.
Minn Section Net (MSN)*	3595	1830 CST	Daily
Mission Trail Net, Inc.	3854	1900 PST	Daily
Miss. Magnolia Emerg. Net	3870	1330 CST 1900 CST	Sun. Mon.-Fri.
Nassau County 10 Meter AREC Net (N. Y.)	28,720 28,680	2000 EST	Mon.
Net of Central N. J. (NCNJ)	3748	1830 EST	Mon.-Fri.
New England Weather Net	3900	0630 EST	Mon.-Sat.
New Hampshire Net*	3685	1745 EST	Mon.-Fri.
New Jersey Emerg. Phone & Traffic Net (NJFN)*	3900	1800 EST 0900 EST	Mon.-Sat. Sun.
New Jersey Net (NJN)*	3695	1900 EST	Daily
The N. J. 6 Meter Traffic & Emerg. Net	51,000	2300 EST	Wed., Sat.
New Orleans 3825 Net	3825	0930 CST	Sun.
New York State Phone Traffic & Emerg. Net	3925	1800 EST	Daily
Newport County Emerg. Net (R. I.)	29,530	1000 EST	Sun.
Newton Mass. C.D. Net	53,745	2100 EST	Sun.
Ninth Regional Net (9RN)*	3610	1730 CST 2000 CST	Daily
Nite-Owl Net (Ill.)	29,640	2230 CST	Thu.
North Ala. 6 Meter Net (AEN-O)	50,550	1915 CST	Mon., Wed., Fri.
N. C. Six Meter Net	50,285	0830 EST	Sun., Thu.
North Central Phone Net (NCPN)	3915	0600 CST	Mon.-Sat.
North East Texas Emerg. Phone Net	3970	0800 CST	Sun.
Northeast VHF Net	145,800	1930 EST	Daily
Northern Calif Net (NCN)*	3635	1900 PST 2200 PST	Mon.-Sat.
Northwest Texas Emerg. Net	3950	0860 CST	Sun.
Novice Emergency Net (NEN)	3715	1615 EST	Sun.
NYC-LI Section Net (NLI)*	3630	1930 EST 1915 EST	Mon.-Fri. Sat., Sun.
Oak Ridge and Vicinity Traffic Net (ORVTN)* (Tenn.)	50,700	1900 EST	Mon.-Sat.
Oak Ridge RACES Net (Tenn.) (ORRN)	50,700	1930 EST	Thu.
Ohio Emergency Net (OEN)	3860	1800 EST	Mon.-Fri.
Ohio Phone Net (OPN)*	3866	1700 EST	Mon.-Sat.
Ontario Quebec Net*	3535	1900 EST	Mon.-Sat.
Oregon State Net (OSN)*	3585	1830 PST	Mon.-Fri.
Orlando Amateur Radio Club Inc. 10 M Net (Fla.)	29,520	2000 EST	1 3 4 Tue.
Ottawa Radio Net	145,380	1900 CST	Daily
OZK CW Net (Ark.)	3790	1900 CST	Mon.-Fri.
Pacific Area Net (PAN)*	3675	2030 PST	Daily
Peanut Whistle Net	3995	1830 EST 1900 EST	Mon. Fri.
Penna. C.D. (RACES) Net (PACD)	3503.5	0900 EST	Sun.
Penowva 6 Meter Phone Net	50,520	1900 EST	Tue.
Piedmont Local Area Net #2 (PLAN) (S. C.)	50,200	1900 EST	Mon.-Fri.
Pine Tree Net (PTN) (Me.)*	3596	1900 EST	Mon.-Fri.
Quincy Emerg. Net (Mass.)	146,800	1000 EST 1915 EST	Sun. Mon.
Region 3 Calif. Disaster Net	3992	0900 PST 0800 PST	Mon.-Fri. Sat.
Regional Net Five (RN 5)*	3645	1945 CST 2130 CST	Mon.-Sat.
River Forecast Net (RFN)	3656	0800 CST	Sun.
San Diego City Area's #1 Net (Calif.)	29,515	1930 PST	Mon.
San Diego City Area's #2 Net (Calif.)	28,725	1930 PST	Mon.
San Diego City General Welfare Net (Calif.)	50,510	1930 PST	Mon.
San Diego Hospital Net (Calif.)	145,680	1930 PST	Mon.
San Diego 75M Monitoring Net (Calif.)	3991	1930 PST	Mon.
San Diego Two Meter Net (Calif.)	145,500	1900 PST	Tue.
San Francisco Bay Area AREC Net	3900	1030 PST	Sun.
Sea Gull Net (Me.)	3910	1700 EST	Mon.-Sat.
7290 kc. Traffic Net	7290	0900 CST 1300 CST	Mon.-Fri.
Shreveport-Bossier City Emerg. Net (La.)	29,600	1930 CST	Mon.
6 Meter Cross-Band Net	50,850	1930 EST 1000 EST	Mon., Thu., Fri. Sun.
Sooner-Nooner Net	7235	1230 CST	Mon.-Sat.
South Bay Amateur Emerg. Net (Calif.)	147,000	1930 PST	Mon.
South Carolina CW Net (SCN)*	3795	1900 EST	Mon.-Fri.
So. Car. Emerg. Fone Net*	3930	1930 EST	Daily
South Carolina SSB Net (SCN)	3915	1930 EST	Mon.-Fri.
South County Amateur Radio Service (SCARS) (Calif.)	50,710 53,360 145,490 147,310	1930 PST	Mon.
Southern Calif. Net (SCN)*	3660	1930 PST	Mon.-Fri.
Southern Maryland Net (SMN)	28,747	2000 EST	Mon., Thu.
State Side Net	7225	0730 CST	Mon.-Sat.
Steuben County C.D. (N. Y.) Net (SCD)	50,800	0930 EST	Sun.
Susquehanna Emerg. Net (S-E-N)	3910	0700 EST	Sun.
Tarrant County Six Meter Emerg. Net	50,700	2100 CST	Daily
Tennessee CW Net (TN TENN)*	3635	1900 CST	Mon.-Sat.
Tenn. 6 Meter Net (T6N)	50,500	2000 EST	Fri.
Tenth Regional Net (TEN)*	3545	1700 CST 1915 CST 2130 CST	Daily
Third Regional Net (3RN)*	3590	1945 EST 2130 EST	Mon.-Fri.
Transcontinental Phone Net (TCPN)	3970	1700 EST	Daily

Tri-Cities Net (Tenn.)	29,000	2100 EST	Daily
Tri-County Emerg. Net (TCEN) (Calif.)	3720 3815	1030 PST 0900 PST	Sun. Sun.
Twelfth Region Net (TWN)*	3570 7060	1900 MST	Mon.-Fri.
UHF Club of Jamaica 432 Mc. Net (N. Y.)	432,900	2130 EST	Tue.-Thu.
U.S.C.G. Aux. 1st Dis. Net	3825	0900 EST	Sun.
United Trunk Lines (Eastern) (UTL)	3565	2015 EST	Daily
Upper Level Hillbilly Net (N. C.)	28,700	0900 EST	Sun.
UTL East West	7125	2100 CST	Daily
Vanderburgh County AREC Net	29,660	1930 CST	Mon.
Vermont Fone Net (VTPN)	3860	0900 EST	Sun.
Vermont CW Traffic Net (VTN)*	3520	1830 EST	Mon.-Sat.
Virginia Net (VN)*	3680	1900 EST	Daily
Washington County Emerg. Net (Ohio)	3825	1200 EST	Sun.
Washington Section Net (WSN)*	3575	1900 PST	Mon.-Fri.
West Park Radiops Emerg. Net (Ohio)	29,520	2200 EST	Mon.
West Virginia CW Net (WVN)*	3570	1900 EST	Mon.-Sat.
West. Mass. CW Net (WMN)*	3560	1900 EST	Mon.-Sat.
Western Nebraska Net*	3850	0700 MST	Mon.-Sat.
Winston-Salem C.D. Two-Meter Network (N. C.)	147.150	2000 EST	Tue., Thu.
Wis. Intrastate Net (WIN)*	3535	1915 CST	Daily
Wisconsin RACES Net	3505.5 3993	0900 CST 0800 CST	Sun. Sun.
YMCA Amateur Radio Council Net (Ill.)	21,132	2215 CST	Wed.

Mistakes? Of *course* there are mistakes. Let us know what they are, so we can fix them up.

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From August 1, to September 1, 1958 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.

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Station Activities

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

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Richard B. Mesirov, W3JNQ—SEC: DVB, PAM: TEJ, RM: PDJ. The E. Pa. Net meets Mon. through Fri. at 1830 on 3610 kc. PFN meets Mon. through Fri. at 1800 on 3850 kc. New appointees: FEY as OES, WQK as OO. Officers of the West Phila. RA are HAU, pres.; AHX, vice-pres.; DJW, secy.; HAS, treas.; AUT, corr. secy., all serving second terms. YVX enrolled as an E.E. student at Lehigh U. FYR is working phone DX on 15 meters and handling long-haul traffic for KP4s and KL7s. CUL took time off for the convention and has a new HT-32. EU will be a grandfather. VR (CUL's OM) was able to sneak time in at the rig for traffic work. ARK was QRT on vacation. CMN worked 10 new countries in August using a 12-ft.-high doublet. ZRQ was QRL with civic affairs. K3BPQ lost his "N" and got an HQ-100. K3ASH is completing an Apache. GYP bought a Super Pro and lacks only Wyoming for WAS. AXA nears DXCC. The Bucks Co. ARC held a corn and potato roast on Aug. 24, with 73 people consuming 3 bushels of corn and 25 lbs. of spuds. KJ received a Worked All Mass. Counties award—No. 3 issued and the first on 7-Mc. phone. NWJ bought a DX-100 for his Barnegat Pines QTH. GTQ bought a Ranger and is moving to smaller quarters. UIU met a Cuban YL at the convention, but moans that he could speak no Spanish. ELI is aiming for WAS and WAC. HNK is now 3 miles outside of Clarks Summit with the same old gear and a 260-ft. off-center antenna. DYT was entertained by the Radio Club in Helsinki while on vacation. The Lancaster RTS is starting code classes again. BUR is set up for 6 and 2 meters with three- and eight-element beams and a TBS-50D. The Quakertown Club now has equipment. K3ANS has a pair of 6L6 modulators and a 275-watt Matchbox. K3ATX has a new HQ-110. DBL and DBN have a 6-meter three-element beam 70 feet high and again are active. LEZ was at the convention. TEJ and ACH plus their XYLs spent three days in Toledo over the Labor Day week end at the Early Bird Annual: TEJ also attended the Scotland and York Hamfests. K3ALD landed an Asian for WAS. Eleven-year-old KN3EEA won a Gonset Converter (for car use) at the Mt. Airy V.H.F. Picnic. K3ANV won an August contest run by the Oxford Circle RC. IVS has a new D-104, a VX-1 and an AT-4. JNQ became engaged. Traffic: W3CUL 2103, VR 148, TEJ 126, IVS 90, BNR 80, AMR 72, K3ALD 50, W3AXA 48, NF 44, ZRQ 27, BFF 25, GYP 15, K2DEM/3 14, K3ANS 13, W3FYR 12, CMN 11, NQB 10, HNK 8, QLZ 8, K3AFW 6, W3PVY 4, ID 3, UIU 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Asst. SCM for Delaware: Ray deCourcelle, 3DQZ. SEC: YYB. *Section nets:* MDD, 3650 kc. M-S 1915 EST; MEPN, 3820 kc. MWF 1800, SS 1300 EST; DelEN, 3905 kc. Sat. 1830 EST. New appointments: YYB as SEC and K3CIO as OO. We welcome the Regular Fellows ARC of Washington, D. C., to the Foundation of Radio Amateur Clubs and *Auto Call*. The new officers are UFV, pres.; K3CJU, vice-pres.; AZF, secy.; and BGY, treas. The AAARC has elected HRU, pres.; ILB, vice-pres.; TDV, secy.; and EZD, treas. The RCARA had Dept. of Defense movies on Guided Missles and the White Sands Proving Grounds at its Aug. 22 meeting. MDD members were big winners at the 10th ARRL National Convention, with SCL taking the Hallicrafters FPM 200, CQS the GPR-90 with s.s.b. adapter, and TSC a 10-meter beam. HWQ (Wilmington, Del.) is out to give CVG and others in Delaware and the MDD some competition on v.h.f. Dana has an 11-over-11 70 feet high on 3 meters, plus beams on 6 and other v.h.f. bands. K3DKZ reports in by letter from Argentia, Newfoundland, where he is stationed with the Navy. Bob advises that they keep watch on 14.270-Mc. s.s.b. for Newfoundland and other traffic, daily from 0700 to 1600 EDT. BUD reports the St. Marys Net (28.747 Mc.) meets Mon. and Thurs. at 2000 and handles traffic and has liaison with the MDD. LGS/4 reports he will be in Danville, Va. for a year. Don will be missed as a primary NCS for the MEPN. EQK reports NNX has a new Mosley Tri-Bander. MSR has received his DXCC and is well on the way to the second hundred. Larry also is the new owner of a Communicator III and a Hale on 2 meters which worked out very well with a 275-mile contact from the Indiana Toll Road to ØYPT while also in contact with 9TQ in Wisconsin. K3EFF now has a 4-1000A GG on s.s.b. and is going great guns. SW also has a new 4-1000A GG linear on s.s.b. and c.w. K3CWZ is on the air in Baltimore with a Viking Valiant and an NC-300. KN3DHQ/K3-DHQ is new in the Washington Area with a Viking Navigator and a 75A-4 for h.f. and a pair of Communicators on 6 and 2 in the car for v.h.f. KOA is recovering nicely at Mount Alto Hospital after a rather serious operation. Another ham family is the Kunz family: K3EXQ, father; MME, mother; K3EXR, daughter; and IWJ, son. EOV reported that his 10,000-mile mobile trip through the Far West and Mexico (XE3-EOV/m) was a huge success. NNM and PZZ have moved into new homes in Prince Georges County. KN3s DPR and DQO have dropped the "N." W8GUE/3, ex-DL4NV/DL4USA, is now stationed in Baltimore and expects to be on 2 meters soon. K6AWZ is now stationed at the Bethesda Naval Hospital. JQN has taken a research assignment in New York for a year. FWP has recovered from the convention and is back on the air with 300 watts and has been checking into the MEPN after a long absence. CXG has bought a place in Medford Lakes, N. J., and expects to be back on the v.h.f. bands shortly. K2BG, take note of location. Club news, bulletins, and station activity reports for the preceding month should be mailed to reach the SCM by the 5th of each month. *Your SCM is interested in hearing from* v.h.f. and traffic men who would or could participate in v.h.f. traffic nets for the section. Traffic: (Aug.) W3UE 384, MCG 138, QCW 129, K3WBJ 106, W3TN 82, COK 61, BUD 36, CN 29, LGS 16, BKE 14, KA 12, CQS 11, CQX 10. (July) W3MCG 126. (June) W3MCG 83. (May) W3-MCG 156.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: W2YRW. PAM: W2ZI. RMs: W2-YRW, W2HDW and W2ZI. The Cherry Hill Amateur Radio Club is new in the section. WA2BRK is its call and K2GX is president. State C.D. Headquarters had lightning trouble during the summer. W2RG and son K2OOK took QNT honors on NJN this month. NJN plans to have a get-together this November in New Brunswick. W2HDW, NJN's manager, reports an attendance of 397 for the month. K2JGU is heard regularly on NJN, TCPN, VAN and MARS. The N. J. Phone and Traffic Net, cooperating with Ocean County officials, helped to celebrate the 100th anniversary of Barnegat Lighthouse. W2EGM, W2CCO and W2ZI were on the committee that secured the special call of K2BL, operating on 75, 6 and 2 meters. K2CPR now has 236 worked and 227 confirmed. Pennsauken C.D. reports are being received from K2PTJ. Drills are held each Fri. night at 7:30 P.M. K2UQD is now an SJRA director. Glad to have W2PAU back in circulation after a serious illness. K2MBD and W2EWN are heard weekly operating at C.D. Hq. in Camden. K2GCD, Joyce, edits the "Leave it to the Girls" column in SJRA's *Harmonics*. The Southern Counties Amateur Radio Assn. meets at the Northfield Ambulance Garage on the 2nd Fri. A fine monthly bulletin is being published. K2BKG, Atlantic County EC, and K2YYB are active MARS members. Burlington County C.D. members cooperated with the county's sheriff's department in a recent drill. W2WKI is the Burlington Co. Radio Officer. Traffic: K2OOK 386, W2BZJ 128, W2HDW 115, K2EWR 90, K2JGU 62, W2ZI 57, K2CPR 10.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2PPY. PAMs: W2PVI and W2LXE (v.h.f.). RMs: W2RUF and W2ZRC. NYS C.W. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on 3970 kc. at 1600, W2ATC made BPL, got a Tri-Bander beam and 40-ft. tower and is

(Continued on page 116)

SOME NOTES ON RTTY

RADIOTELETYPE operation on the amateur bands is a rapidly growing activity, and the RTTY enthusiasts constantly are seeking new methods of improving their techniques. With the advent of S.S.B. transmitters with their required high degree of frequency stability, this group began to explore methods of adapting this equipment to their specialty.

AT FIRST, the simplest scheme was to feed an audio frequency shift signal into the audio system. If the input audio signals are perfect sine waves, and the transmitter audio amplifier and balanced modulators free of distortion, the r.f. output signal, under S.S.B. operation, would be a clean C.W. carrier shifted in accordance with the audio input keying frequency. However, any harmonic distortion present from the A.F.S.K. source will appear as spurious C.W. signals. Distortion in the transmitter proper will also appear as spurious C.W. signals. To eliminate these problems, some owners of commercial transmitters have added diode frequency shifters to the V.F.O. of the S.S.B. transmitter. While these diode shifters work, they may cause frequency drift in the V.F.O. Furthermore, the frequency shift will not be constant as the V.F.O. is changed in frequency.

A PREFERABLE system is to shift the frequency of a quartz crystal heterodyning oscillator in the S.S.B. transmitter. If the proper oscillator is chosen, the shift will be constant, regardless of the final output frequency of the transmitter. In most cases spurious signals will no longer be a problem. In addition, the excellent frequency stability of the V.F.O. will not be impaired.

IN HALLICRAFTERS HT-32 transmitters the side band inverting crystal controlled oscillators can be easily revised for this arrangement by adding a small capacitor across the highest frequency crystal to move it 850 C.P.S. After modification, the removal of a plug-in adapter restores the HT-32 to its normal operation for S.S.B., A.M. or C.W.

A FIELD SERVICE bulletin describing this modification in detail is being prepared and will be available upon request.

— FRITZ FRANKE

Bud Hallgren Jr. W. S. Hallgren W9AC for **hallicrafters**

HERE'S FACT—NOT THEORY

why the "Pacemaker-Thunderbolt" team is your best HIGH POWER LINEAR BUY!

The "Pacemaker-Thunderbolt" power team will deliver:

1. *More power output* to a wider range of antenna systems than *any other exciter and high power linear amplifier combination!*
2. . . . and it will deliver this power-packed signal at *less dollars per watt than any other exciter and high power linear amplifier combination!*

Provides superb performance and many unique operating and engineering features!

VIKING "PACEMAKER" TRANSMITTER/EXCITER

An outstanding power bargain when used as a transmitter or exciter! 90 watts SSB P.E.P. and CW input . . . 35 watts AM. Unique circuitry uses only 1 mixer for improved spurious signal rejection greater than 50 db. Balanced range audio. Highly stable built-in VFO gives complete coverage of bands without crystal switching or re-tuning. Instant bandswitching 80, 40, 20, 15 and 10 meters. VOX and anti-trip circuits. Wide range pi-network output. Effectively TVI suppressed. With tubes and crystals.

Cat. No. 240-301-2..Wired.....Amateur Net $495.00

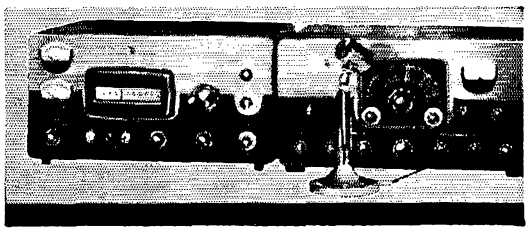
VIKING "THUNDERBOLT" AMPLIFIER

Rated at 2000 watts P.E.P.† input SSB; 1000 watts CW; 800 watts AM linear! Continuous coverage 3.5 to 30 mcs. —instant bandswitching. May be driven by the Viking "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: approx. 10 watts Class AB_2 linear, 20 watts Class C continuous wave. Employs two 4-400A tetrodes in parallel, bridge neutralized—wide range pi-network output. With tubes.

Cat. No.	Amateur Net
240-353-1..Kit	$524.50
240-353-2..Wired	$589.50

Unit	Power input in watts		Cost in dollars per watt	
	SSB† (P.E.P.)	CW	SSB (P.E.P.)	CW
Viking "Pacemaker-Thunderbolt"	2000	1000	$.54	$1.08
Brand "I"	1000	1000	2.09	2.09
Brand "II"	2000*	1000	.74	1.47
Brand "III"	1250	1000	1.23	1.54

*Manufacturer does not publish rating; however, 2000 watts P.E.P. input represents maximum legal limit under average operating conditions.



For the strongest signal on the band!

Unequalled 100% broadcast-type high level amplitude modulation! Full 2000 watts SSB† input—1000 watts CW and AM!

VIKING "KILOWATT"

Brilliantly designed, and engineered specifically for high power operation, the Viking "Kilowatt" is the *only* power amplifier available which will deliver a signal with the authority of maximum legal power in all modes!

Class C final amplifier operation provides plate circuit efficiencies in excess of 70%. Final amplifier utilizes two 4-400A tetrodes in parallel, bridge neutralized — wide range pi-network output. Continuous coverage 3.5 to 30 megacycles.

For unsurpassed enjoyment with every contact an unforgettable experience . . . step up to the very finest . . . the thrilling Viking "Kilowatt"!

Cat. No. 240-1000...
Wired and tested with tubes Amateur Net.....$1595.00

Matching accessory desk top, back and three drawer pedestal.

Cat. No. 251-101-1.....FOB Corry, Pa. $132.00

†The F.C.C. 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. This rating method suggested and approved by Technical Department ARRL.

For easy terms see your Johnson Distributor

E. F. Johnson Company

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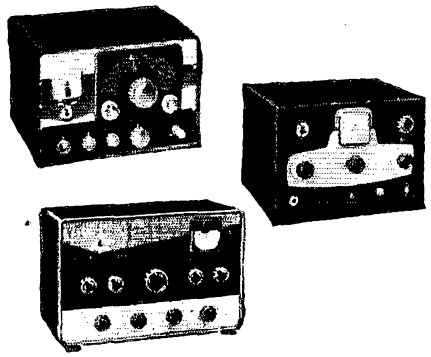


Viking Transmitters —More Effective Watts per Dollar!

VIKING "NAVIGATOR" TRANSMITTER/EXCITER
More than a novice transmitter—also serves as a flexible VFO-Exciter delivering enough RF power to excite most high powered amplifiers on CW and AM! 40 watts CW input—6146 final amplifier tube—wide range pi-network output. Built-in VFO or crystal control—bandswitching 160 through 10 meters. Timed sequence keying. TVI suppressed and filtered. Complete with tubes, less crystals.

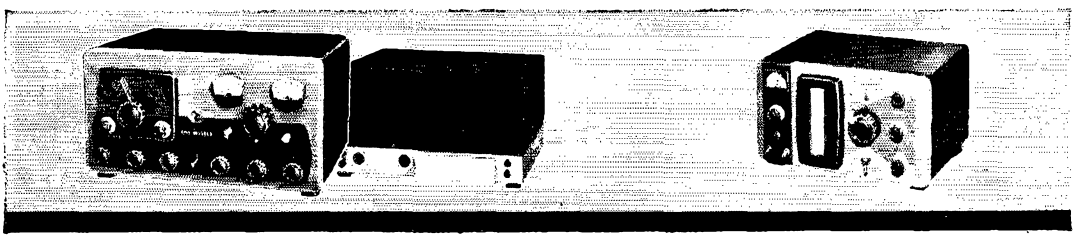
Cat. No. 240-126-1..Kit.....**Amateur Net $149.50**
Cat. No. 240-126-2..Wired and tested....**Amateur Net $199.50**

VIKING "ADVENTURER" TRANSMITTER
Perfect for the novice or experienced amateur! 50 watts CW input—instant bandswitching 80 through 10 meters. Crystal or external VFO control. Rugged 807 final amplifier tube—wide range pi-network output. Clean, crisp keying. TVI suppressed. Complete with tubes, less crystals.

Cat. No. 240-181-1..Kit.....**Amateur Net $54.95**

VIKING "6N2" TRANSMITTER
This compact VHF transmitter punches your signal out with 150 watts CW and 100 watts phone input. Instant bandswitching 6 and 2 meters. Completely shielded and TVI suppressed, the "6N2" may be used with the Viking "Ranger," Viking I, Viking II, or similar power supply/modulator combinations. Operates by crystal control or external VFO with 8-9 output. With tubes.

Cat. No. 240-201-1 Kit.....**Amateur Net $129.50**
Cat. No. 240-201-2 Wired.....**Amateur Net $169.50**

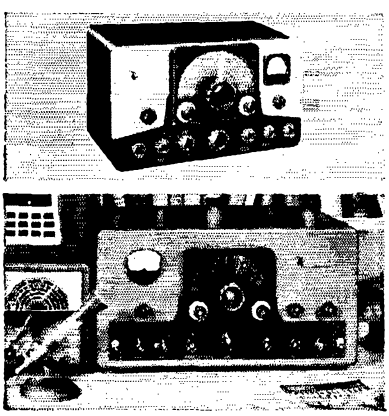


VIKING "FIVE HUNDRED" TRANSMITTER
Rated 600 watts CW input . . . 500 watts phone and SSB (P.E.P. with auxiliary SSB exciter)—instant bandswitching 80 through 10 meters! Compact RF unit designed for desk-top operation—power supply modulator unit may be placed in any convenient location. All exciter stages ganged to VFO tuning. High gain push-to-talk audio system. Operates by crystal control or highly stable, built-in VFO. Class C 4-400A final amplifier provides plate circuit efficiencies in excess of 70% with unequalled broadcast-type high level amplitude modulation. Wide range pi-network output circuit with silver-plated final tank coil will load virtually any antenna system. Low level audio clipping—effectively TVI suppressed and filtered. With tubes.

Cat No.	Amateur Net
240-500-1..Kit	$749.50
240-500-2..Wired	$949.50

VIKING "COURIER" AMPLIFIER
This power-packed Class B linear amplifier is 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. May be driven by the Viking "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: 5 to 35 watts. Employs two 811A triodes in parallel—wide range pi-network, TVI suppressed. With tubes.

Cat. No.	Amateur Net
240-352-1..Kit	$244.50
240-352-2..Wired	$289.50



VIKING "RANGER" TRANSMITTER/EXCITER
Superbly engineered . . . delivers solid audio punch! This popular 75 watt CW or 65 watt phone transmitter also serves as an RF/audio exciter for high power equipment. Built-in VFO or crystal control—instant bandswitching 160 through 10 meters. 6146 final amplifier—wide range pi-network output. Timed sequence keying. TVI suppressed. With tubes, less crystals.

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

VIKING "VALIANT" TRANSMITTER
Here's effective power, wide flexibility, and many unique operating features combined in a compact desk-top transmitter! 275 watts input CW and SSB (P.E.P. with auxiliary SSB exciter) and 200 watts phone. Instant bandswitching 160 through 10 meters—built-in VFO or crystal control. Final amplifier utilizes three 6146 tubes in parallel—wide range pi-network output. Silver-plated final amplifier inductor—built-in low pass audio filter—low level audio clipping. With tubes, less crystals.

Cat. No. 240-104-1..Kit.....**Amateur Net $349.50**
Cat. No. 240-104-2..Wired and tested.....**Amateur Net $439.50**

For easy terms see your Johnson Distributor

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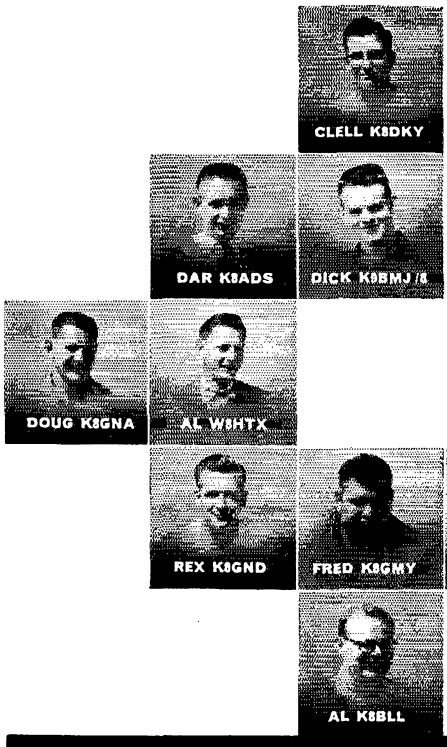


All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

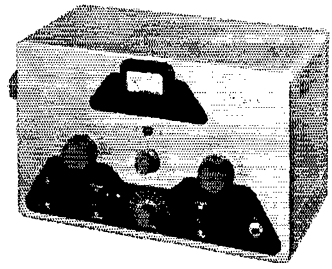
HEATH *hams work to bring you*

ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

$35.95



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 50 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 19 lbs.

HEATHKIT "APACHE" HAM TRANSMITTER KIT

- Newly Designed VFO—Provision For S.S.B. Adapter
- Modern Styling—Rotating Slide Rule Dial

MODEL TX-1 **$229.50** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

Fresh out of the Heath Company laboratories, the brand-new "Apache" model TX-1 Ham Transmitter features modern styling and is designed as a handsome companion to the also-new Heathkit "Mohawk" receiver. The "Apache" is a high quality transmitter operating with 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, the "Apache" features built-in switch selected circuitry providing for single-sideband transmission through the use of a plug-in external single-sideband adapter. These Heathkit adapters will be available in the near future. A compact, stable and completely redesigned VFO provides low drift frequency control necessary for single-sideband transmission. An easy-to-read slide rule type illuminated rotating VFO dial with vernier tuning provides ample bandspread and precise frequency setting. Simple band-switching control allows flip-of-the-wrist selection of the amateur bands on 80, 40, 20, 15 and 10 meters (11 M with crystal control). The "Apache" features adjustable low level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL-34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely enclosed in a perforated aluminum shielding for greater TVI protection and transmitter stability. Cabinet comes completely preassembled with top hatch for convenient access without taking chassis out of cabinet. Die-cast aluminum knobs and front panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. Incorporates all the refinements necessary with many "plus" features for effective and dependable communications. Shpg. Wt. 115 lbs.

...top quality at lowest prices!

HEATHKIT "MOHAWK" HAM RECEIVER KIT

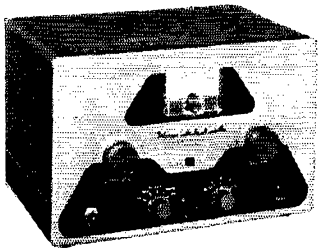
- All Critical Circuits Prewired and Aligned
- Crystal Controlled Oscillators for Drift-Free Reception

MODEL RX-1 **$274.95** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

Outstanding results can be expected with the new "Mohawk" receiver which is designed to combine all the necessary functions required in a high quality communications receiver. A perfect companion for the Heathkit "Apache" transmitter, the "Mohawk" features the same wide-band slide rule type vernier tuning and covers all of the amateur bands from 160 through 10 meters on seven bands with an extra band calibrated to cover 6 and 2 meters using a converter. External receiver powered, accommodations are available for these converters which will be available in Heathkits soon. The "Mohawk" is specially designed for single-sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled, wired and aligned front end assures ease of assembly. All critical wiring is done for you insuring top performance. This 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc. Five selectivity positions from 5 kc to 500 CPS. A bridged T-notch filter is employed for maximum heterodyne rejection. Complete accuracy is obtained with the use of a built-in 100 kc crystal calibrator and the set features 10 db signal-to-noise ratio at less than 1 microvolt input. S-meter and many other fine features built-in for top-notch signal reception. Shpg. Wt. 90 lbs.

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 9, MICH.

HEATHKIT PHONE & CW TRANSMITTER KIT

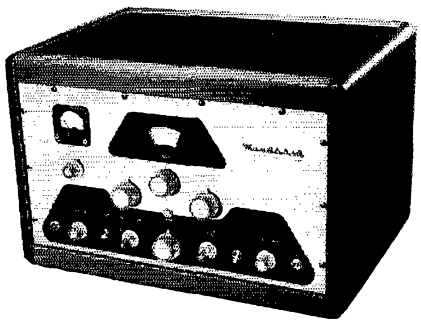


MODEL DX-40 **$64.95**

The DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, control-carrier modulator for phone operation peaks up to 60-watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80-meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so that the buffer stage can be pretuned before the final is switched on. A switch selects any of three crystals, or a jack for external VFO. High quality D'Arsonval meter for tuning. Shpg. Wt. 26 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL DX-100 **$189.50** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.



You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built-in VFO, built-in modulator, TVI suppression, pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, pi network interstage coupling, and high quality materials throughout. Copper plated 16-gauge steel chassis, ceramic switch contacts, etc., are typical of the kind of parts you get, in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11 and 10 meters with a single bandswitch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final amplifier, modulated by a pair of 1625 tubes in parallel. VFO tuning dial and panel meter are both illuminated for easy reading, even under subdued lighting conditions. Attractive front panel and case styling is completely functional, for operating convenience. Designed exclusively for easy step-by-step assembly. No other transmitter in this power class combines high quality and real economy so effectively. Here is a transmitter that you will be proud to own. Time payments are available! Shpg. Wt. 107 lbs.

more fine ham gear from the pioneer

HEATHKIT GRID DIP METER KIT

A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designing new coils, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs. MODEL GD-1B **$21.95**

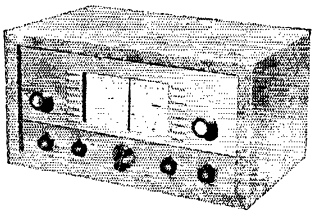
Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC.
Shpg. Wt. 1 lb. No. 341-A **$3.00**

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 9, MICHIGAN

HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal 5½" speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs.
Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. **$4.95**

MODEL AR-3
$29.95

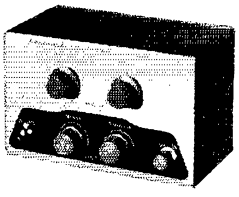


ALL-BAND RECEIVER

HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to build with complete instructions provided. Requires no transmitter or Receiver alterations to operate. Shpg. Wt. 5 lbs.

MODEL VX-1
$23.95

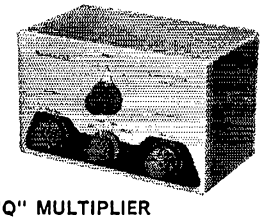


ELECTRONIC VOICE CONTROL

HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a hetrodyne. Functions with any AM Receiver having an IF frequency between 450 and 460 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs.

MODEL QF-1
$9.95



"Q" MULTIPLIER

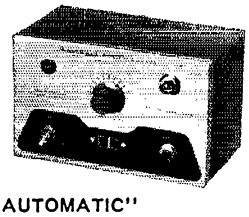
NOTE: $10.65 WHEN ORDERED WITH AR-3 BECAUSE OF EXCISE TAX.

...in do-it-yourself electronics!

HEATHKIT "AUTOMATIC" CONELRAD ALARM KIT

Designed to give instant warning whenever a monitored station goes off the air, the CA-1 automatically cuts the AC power to your transmitter, and lights a red indicator. Works with any radio receiver; AC-DC—transformer operated—battery powered, so long as the receiver has AVC. A manual "reset" button is provided to reactivate the transmitter. Incorporates a heavy-duty 6-ampere relay, a thyratron tube, and its own built-in power supply. A neon lamp shows that the alarm is working. Simple to install and connect with complete instructions provided for assembly and operation. Shpg. Wt. 4 lbs.

MODEL CA-1
$13.95



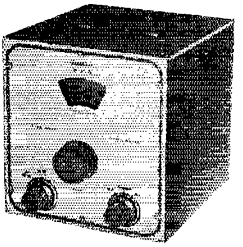
"AUTOMATIC" CONELRAD ALARM

HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1

$19.50



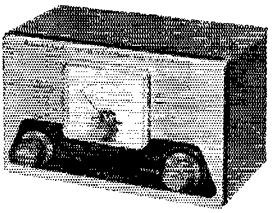
VARIABLE FREQUENCY OSCILLATOR

HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2

$15.95



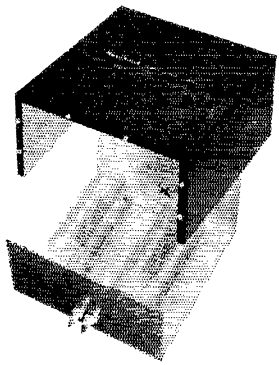
REFLECTED POWER METER

HEATHKIT BALUN COIL KIT

This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

MODEL B-1

$8.95



BALUN COIL

save ½ or more . . . with HEATHKITS

FREE 1958 Catalog

Send for this Free informative catalog listing our entire line of kits, with complete schematics and specifications.

☐ Rush Free 1958 catalog.

HEATH COMPANY

BENTON HARBOR 9, MICH. a subsidiary of Daystrom, Inc.

name _____

address _____

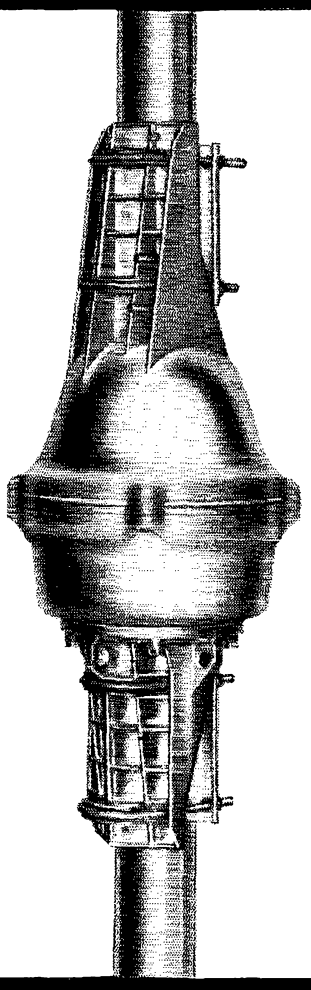
city & state _____

QUAN.	ITEM	MODEL NO.	PRICE

$_____enclosed. Parcel post, include postage—express orders are sent shipping charges collect. All prices quoted are Net F.O.B. Benton Harbor, Mich. and apply to Continental U.S. and Possessions only. All prices and specifications subject to change without notice.

"HAM-M" BY CDR

America's most popular ham antenna rotor



Preferred because:

EXTRA HEAVY-DUTY

Holds heaviest commercial arrays — ice-proof, wind-proof, moisture-proof!

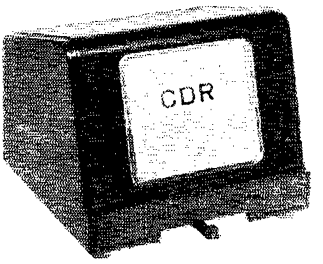
WON'T DRIFT

Provides 3500 in.-lb. resistance to lateral thrust.

EASIEST TO INSTALL

It's complete! Mounts on shaft or flat on plate in 30-minutes.

CONTROL CABINET: Pin-point calibrated in 5° units. Needle operates without activating rotor. Built for 8-wire cable.



ROTOR MECHANISM streamlined to resist moisture, "ice-lock." Actually stronger than your antenna itself. 98 ball bearings for smooth action. Positive brake ends drift.

YOU CAN'T AFFORD LESS! WHY PAY MORE? In only a few months the new CDR "Ham-M" Rotor has become the "pet" of hams from Coast to Coast. Costs less than rotors that won't give you any better performance, won't hold heavier antennae, won't give you any more resistance to the elements. It's the complete rotational system—no extras to buy. At your distributor's: only $119.50!

EXCLUSIVE OFFER: CDR "CALL-LETTERS" JEWELRY FREE! Handsome rhodium-finish tie-bar and key chain, both with your call-letters engraved FREE with your purchase of the "HAM-M". Both bear amateur radio emblem. Just *examine* the "HAM-M" and get both for only $3.60 (tax included) a $7.20 value for half price. See your CDR distributor for details.

CDR

HAM ANTENNA ROTOR

Cornell-Dubilier Electric Corp., South Plainfield, N. J.

***The Radiart Corporation,* Indianapolis, Ind.**

This is hallicrafters' SSB and VH

MORE THAN $14,000 IN PRIZES!

5 GRAND PRIZES

plus more than 100 CERTIFICATES each worth $100.00

ENTER BEFORE NOV. 30th

Continued through Nov. 30th

To enter [illegible] of the participating distributor [illegible]

HERE'S HOW YOU ENTER

1. Go to one of the distributors listed here—any time during the month of October. See a demonstration of Hallicrafters' latest equipment.

2. Fill out the entry card which your distributor will supply you, including call letters and completion of, in 50 words or less, *either* of these two statements:

(a) "*I prefer Hallicrafters single sideband equipment because . . .*".

(b) "*I prefer Hallicrafters V.H.F. equipment because . . .*".

3. Turn in card to distributor —do not mail to Hallicrafters. Each distributor will judge his entries and select his local winner. More than 100 such local awards will be made to entrants submitting the best, most sincere and original statements in the opinion of the distributor or other individual(s) he may designate.

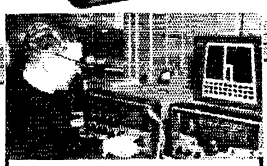
4. Each local winner will receive from this distributor a *Gift Certificate worth $100.00* toward the purchase of any model of Hallicrafters communications equipment. Decision of the distributors' judges shall be final.

5. Local winners' names and entry statements will be forwarded to the Hallicrafters Company, where a panel of judges will select 1st, 2nd, 3rd, 4th and 5th place Grand Winners. Prizes to be awarded

contest month!

You may win!

5th PRIZE SX-101



Rev. Peter A. Ricke, K8HHY
Grand Winner,
1957 Hallicrafters
SSB Contest

are illustrated above. Judges decisions shall be final.

6. Entries become the property of the Hallicrafters Company, and will not be returned. Winning statements may be published by the Hallicrafters Company and winners identified.

The Hallicrafters Co.
Chicago 24, Illinois

ENTER HERE!

Visit one of these distributors in October!

ARIZONA
Phoenix: Southwest Wholesale Radio, Inc.

CALIFORNIA
Berkeley: Electronics Suppliers
Burbank: Valley Electronic Supply Co.
Culver City: Bill Thompson's Radio Supply
El Monte: Kimball & Stark, Inc.
Inglewood: Universal Distributors, Inc.
Long Beach: Larry Lynde Electronics
Scott Radio Supply Co.
Los Angeles: Henry Radio
Radio Products Sales Co.
Oakland: Elmar Electronics Inc.
Palo Alto: Zack Radio Supply Co.
Pasadena: Dow Radio Supply Co.
Riverside: Mission Radio Ham Supplies
San Diego:
Electronic Equipment Distributors
Western Radio & Television Supply Co.
San Francisco:
Northern California Amateur Supply
San Francisco Radio & Supply Co.
Television Radio Supply Co.
Zack Radio Supply Co.
San Jose: Frank Quement
Santa Barbara: Channel Radio Supply Co.
Van Nuys: Valley Electronic Supply Co.

COLORADO
Denver: Radio Products Sales Co.
Rogers Radio Co.

CONNECTICUT.
Hartford: Hatry of Hartford, Inc.
New Haven: Radio Shack

DISTRICT OF COLUMBIA
Washington: Electronic Wholesalers, Inc.

FLORIDA
Miami: Electronic Supply Co.
Tampa: Kinkade Radio Supply

ILLINOIS
Chicago: Allied Radio Corp.
Green Mill Radio Supply Co.
Newark Electric Co.
Genoa: Crawford Electronics
Moline: Lotgren Distributing Co.
Peoria: Klaus Radio & Electric Co.
Selectronic Supplies, Inc.

INDIANA
Fort Wayne: Warren Radio
Frankfort: M. H. Dossett Co.
Indianapolis: Graham Electronics Sup. Inc.
South Bend: Radio Distributing Co., Inc.

IOWA
Council Bluffs:
World Radio Laboratories, Inc.
Des Moines: Bob & Jack's Store for Hams
Fort Dodge: Ken-Els Radio Supply Co.

KANSAS
Wichita: Molers Camera Clinic

LOUISIANA
New Orleans: Radio Parts, Inc.

MARYLAND
Baltimore: Amateur Radio Center
Silver Springs:
Uncle George's Radio Ham Shack

MASSACHUSETTS
Boston: DeMambro Radio Supply Co.
Radio Shack—Washington St.
Radio Shack—Commonwealth Ave.
Lawrence:
Young & Young of Lawrence, Inc.
Reading: Graham Co.
Springfield:
Young & Young of Springfield, Inc.
Soundco Electronic Supply Co.

MICHIGAN
Detroit: M. N. Duffy & Co.
Reno Radio
Grand Rapids: Radio Parts Co.

MINNESOTA
Minneapolis: Electronic Center, Inc.

MISSISSIPPI
Jackson: Swan Distributing Co., Inc.

MISSOURI
Kansas City:
Associated Electronic Supply Co.
Radiolab
St. Louis: Walter Ashe Radio Co.

NORTH CAROLINA
Asheville: Freck Radio & Supply

NEW HAMPSHIRE
Concord: Evans Radio

NEW JERSEY
Bloomfield: Variety Electronics Corp.
Newark: Hudson Radio & T.V. Corp.
Trenton: Almo Radio Co.

NEW YORK
Albany:
Fort Orange Radio Distributing Co., Inc.
Bluepoint, L.I.: Standard Parts Corp.
Hempstead: Standard Parts Corp.
Jamaica: Harrison Radio Corp.
Mineola: Arrow Electronics, Inc.
New York: Harrison Radio Corp.
Harvey Radio Co.
Hudson Radio & Television Corp.
Terminal Radio Corp.
White Plains: Melville Radio Corp.

OHIO
Canton: Burroughs Radio, Inc.
Cincinnati: Steinbergs, Inc.
Cleveland:
Pioneer Electronic Supply Corp.
Columbus: Universal Service
Dayton: Custom Electronics, Inc.
Marietta: Marietta Radio & Electric Co.
Toledo: Selectronic Supplies, Inc.

OKLAHOMA
Tulsa: Radio, Inc.

OREGON
Portland: United Radio Supply, Inc.

PENNSYLVANIA
Allentown: A. A. Peters, Inc.
Elkins Park: A. G. Radio Parts Co.
McKeesport: Barno Radio Co.
Philadelphia: Almo Radio—Arch St.
Almo Radio—Frankford Ave.
Ham Buerger
Pittsburgh: Radio Parts Co., Inc.

RHODE ISLAND
Providence: DeMambro Radio Supply
W. H. Edwards Co.

SOUTH DAKOTA
Watertown: Burghardt Radio Supply

TEXAS
Amarillo: R & R Electronic Co.
Dallas: Central Electronics
Crabtree Wholesale Radio Co.
Fort Worth:
Electronic Equipment Co., Inc.
Bill Sutton's Wholesale Electronics
Houston:
Busacker Electronic Equipment Co., Inc.
R. C. & L. F. Hall, Inc.
Lubbock: R & R Electronic Co.
San Antonio: Modern Electronics Co.
Texarkana: Lavender Radio Supply Co.
Wichita Falls: R & R Electronic Co.

VIRGINIA
Arlington: Key Electronics

WASHINGTON
Seattle: Amateur Radio Supply Co.
Pacific Electronics Sales Co.
Seattle Radio Supply
Tacoma: C & G Radio Supply

WISCONSIN
Fond du Lac: Harris Radio Corp.
Madison: Satterfield Electronics, Inc.
Milwaukee: Amateur Electronic Supply

HAWAII
Honolulu: Kaimuki Radio Co., Ltd.
Precision Radio Limited

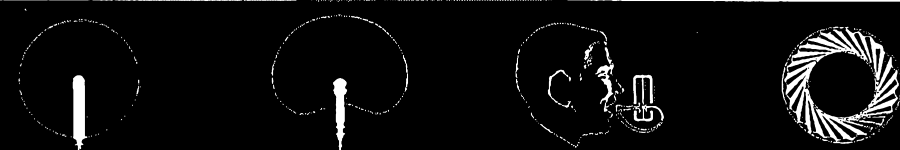
one of these Electro-Voice microphones will meet your needs best

CHOOSE FROM THE WORLD'S MOST COMPLETE LINE: ELECTRO-VOICE THE CHOICE OF PROFESSIONALS

Whatever your microphone problem, Electro-Voice has the solution. Because only Electro-Voice offers you such a wide selection to choose from, and only Electro-Voice has spent years of painstaking research to bring you microphones which rate BEST in every category.

Choose from carbon, crystal, ceramic or dynamic E-V microphones; choose any pick-up pattern: non-directional, cardiod, or differential Electro-Voice has them all. Look at this chart... and choose the BEST. And, for detailed information regarding special applications, write

Electro-Voice INC., BUCHANAN, MICHIGAN



NONDIRECTIONAL MICROPHONES pick up sound equally well from all directions. In this diagram of a pick-up pattern the omnidirectional microphone is in the center. Diagrams of pick-up patterns are often called polar patterns.

CARDIOID (UNIDIRECTIONAL) MICROPHONES, so named because their polar pattern is heart-shaped, pick up sound arriving at the front and reject sound arriving at the back. Proper placement of cardioid microphones reduces pick-up of ambient noise and echoes, minimizes risk of feedback.

DIFFERENTIAL MICROPHONES have a noise-cancelling pick-up pattern. Sound waves originating from a point more than a few inches away from the microphone enter both sides of the case at the same time and cancel each other. When sound source is close to microphone, the sound waves do not cancel. Differential microphones are ideal for use in areas of high surrounding noise.

ACOUSTALLOY DIAPHRAGM IN ALL DYNAMIC MICROPHONES. Acoustalloy—the virtually indestructible diaphragm material—gives peak-free response, prevents popping as commonly experienced by explosive syllables "B" and "P" in ribbon-type microphones. Because Acoustalloy gives improved response, operators can work with confidence under rigorous program conditions.

ELECTRO-VOICE MICROPHONES FOR EVERY PURPOSE

MODEL NUMBER	647	666	665	655C	654	649A	646	635	664	636	630	647	623	611	605	615	911
PICKUP PATTERN																	
BROADCAST—TV																	
Telecast	•	•	•	•	•	•	•										
Studio	•	•	•	•	•	•	•	•	•			•					
Remote		•	•	•	•	•	•	•	•	•	•	•	•				
PUBLIC ADDRESS																	
Auditorium	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•
Outdoor		•	•	•	•	•	•	•	•	•	•	•	•	•	•		•
High noise																	
Motels																•	
Broad Coverage—Stage	•	•	•	•	•				•	•	•						
Localized—Stage	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Paging									•	•	•		•	•	•	•	•
Church Pulpit		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
COMMUNICATIONS																	
Railroad																	
Emergency—Fixed									•	•	•	•	•	•	•	•	•
Emergency—Mobile																	
Marine															•	•	
Aircraft—Ground Station									•	•	•		•		•		
Aircraft—Airborne																	
Bus, taxi—Mobile																	
Inter-communication										•	•		•	•	•	•	•
Amateur—Fixed									•	•	•		•	•	•	•	•
Amateur—Mobile																•	
RECORDING																	
Studio Recording	•	•	•	•	•			•	•								
Tape—Professional	•	•	•	•	•			•	•								
Tape—Professional	•	•	•	•	•			•	•								
Tape—Home									•	•	•		•	•	•	•	•
DICTATING MACHINES																•	
SOUND LEVEL MEASUREMENT				•	•			•		•	•						
GENERATING ELEMENT																	
Dynamic	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Crystal																	•
Ceramic																	
Carbon																	

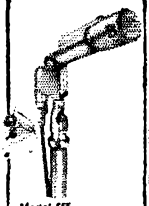
MODEL NUMBER	926	990	715	727	924	912	951	622SPK	625SPK	606	648	6000	600TR	602	607TR	210KK	205KK	205STCKK
PICKUP PATTERN																		
BROADCAST—TV																		
Telecast																		
Studio																		
Remote											•							
PUBLIC ADDRESS																		
Auditorium	•	•	•	•	•		•											
Outdoor	•		•	•	•		•			•		•		•				
High noise									•	•				•				
Motels												•	•					
Broad Coverage—Stage							•											
Localized—Stage	•	•	•	•	•		•											
Paging	•	•	•	•			•	•	•	•	•	•	•	•	•			
Church Pulpit	•	•	•	•	•		•				•							
COMMUNICATIONS																		
Railroad									•	•		•	•	•	•		•	
Emergency—Fixed	•	•	•	•			•	•	•	•	•	•	•	•	•			
Emergency—Mobile			•					•	•	•		•	•	•	•	•	•	
Marine				•				•	•	•	•	•	•	•	•	•	•	
Aircraft—Ground Station								•	•	•	•	•	•					
Aircraft—Airborne														•	•		•	•
Bus, taxi—Mobile								•	•			•	•	•	•	•	•	
Inter-communication	•	•	•	•			•	•	•	•	•							
Amateur—Fixed	•	•	•	•		•	•	•			•	•						
Amateur—Mobile			•	•								•	•	•	•	•	•	
RECORDING								•	•									
Studio Recording																		
Tape—Professional																		
Tape—Professional																		
Tape—Home	•	•	•	•	•	•	•											
DICTATING MACHINES			•	•		•		•				•						
SOUND LEVEL MEASUREMENT																		
GENERATING ELEMENT																		
Dynamic								•	•	•	•	•	•	•	•			
Crystal	•	•			•	•	•											
Ceramic			•	•														
Carbon																•	•	•

ELECTRO-VOICE, INC. BUCHANAN, MICHIGAN

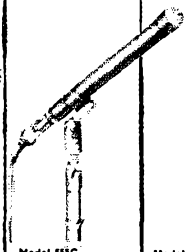
BROADCAST AND TV MICROPHONES

Model 886
Dynamic, Cardioid
Rejects unwanted sound—doubles the working distance—wide range. Floor or desk stand and boom mount available.

Model 667
Dynamic, Cardioid
Variable response—low noise—transistorized—shockproof. Controls compensate for varied acoustic conditions found in TV, broadcast, recording.



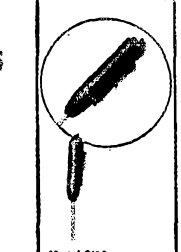
Model 665
Dynamic Cardioid
Economical—high value—top performance. Similar to 666 but designed for less exacting conditions.



Model 655C
Dynamic, Nondirectional
Widest range—to 21KC for TV, broadcast and recording. Can be hand-held or mounted on floor or desk stand.

Model 654
Dynamic, Nondirectional
Similar to 655C except designed for all-around use; economical.

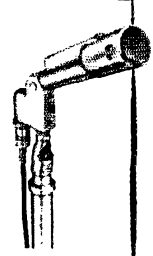
Model 646
Dynamic, Nondirectional
Compact lavalier for chest, desk or hand use. Designed for broadcast, TV or PA use.



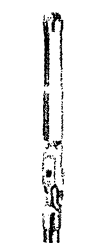
Model 649A
Dynamic, Nondirectional
Exceptionally small highest quality lavalier that can be easily concealed anywhere for chest or hand use.

Model 635
Dynamic, Nondirectional
For TV, broadcast, recording; ideal for remote use—rugged. May be hand held or mounted on desk or floor stand.

PUBLIC ADDRESS, RECORDING AND GENERAL PURPOSE MICROPHONES

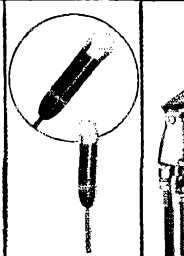


Model 664
Dynamic, Cardioid
Designed for rugged use in any PA, recording or communications situation. Doubles working distance—minimizes feedback.



Model 636
Dynamic, Nondirectional
World's finest for wide range PA, recording and general purpose. Slim style does not hide entertainer.

Model 630
Dynamic, Nondirectional
Favorite for years in PA, with recording, amateurs and broadcast applications.

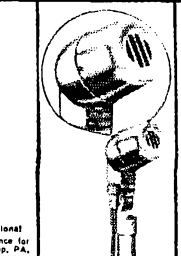


Model 647
Dynamic, Nondirectional
A versatile PA lavalier for chest, desk or hand use, indoors or outdoors.

Model 623
Dynamic, Nondirectional
Handsome modern styling Designed for PA general use or recording.

Model 611
Dynamic, Nondirectional
Offers fine performance for general sound pick-up, PA, recording and amateur uses

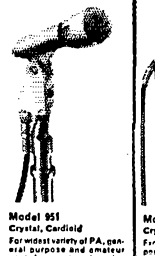
Model 911
Crystal, Nondirectional
For economical PA, home recorders, amateur uses. Desk or floor stand mounting.



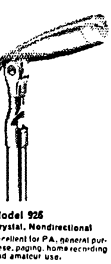
Model 605
Dynamic, Nondirectional
A small, convenient microphone for PA, general purpose, or paging. Desk or floor stand mount.

Model 815
Dynamic, Nondirectional
An inexpensive, PA and general purpose microphone for hand, desk or stand mounting.

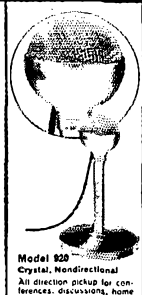
Model 715
Ceramic, Nondirectional
An inexpensive microphone for general PA, home recording and amateur uses. Hand held, or mounted on desk or floor stand.



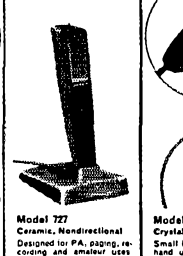
Model 951
Crystal, Cardioid
For widest variety of PA, general purpose and amateur uses. Increases working distance—retards feedback.



Model 926
Crystal, Nondirectional
Excellent for PA, general purpose, paging, home recording and amateur use.

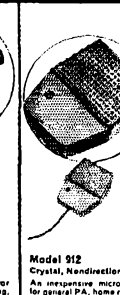


Model 920
Crystal, Nondirectional
All direction pickup for conferences, discussions, home recording and PA.

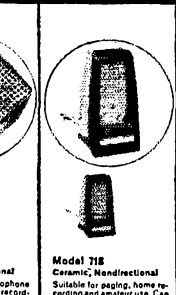


Model 727
Ceramic, Nondirectional
Designed for PA, paging, recording and amateur uses. Hand held, desk or stand mounted.

Model 924
Crystal, Nondirectional
Small lavalier for chest or hand use, home recording, PA and amateur applications.

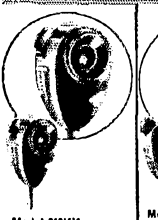


Model 912
Crystal, Nondirectional
An inexpensive microphone for general PA, home recording and amateur uses. Hand held.



Model 718
Ceramic, Nondirectional
Suitable for paging, home recording and amateur use. Can be hand held or desk mounted.

COMMUNICATION MICROPHONES

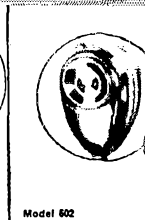


Model 210KK
Carbon, Nondirectional
Single button microphone for general replacement and amateurs.

Model 600D
Dynamic, Nondirectional
A rugged mobile microphone Offers flat response and light weight.

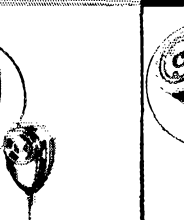
Model 205KK
Carbon, Differential
Noise cancelling close talking microphone for Private Aircraft or any noisy vehicle. Discriminates against all noise from any direction.

Model 205STCKK
Carbon, Differential
A noise cancelling microphone for commercial aircraft Has CAA type carbi cale 1040



Model 602
Dynamic, Differential
Noise canceling, hand held, microphone for mobile or fixed station use

Model 600TR
Dynamic, Nondirectional
Same as 600D but has built-in transistor amplifier. Works in carbon microphone input to give high quality sound.



Model 602TR
Dynamic, Differential
Same as 602 but has built-in transistor amplifier. Works in carbon microphone input.

SPECIAL PURPOSE MICROPHONES

Model 606
Dynamic, Differential
Noise cancelling microphone for stand use under high ambient noise.

Model 648
Dynamic, Nondirectional
For intercom, paging or PA Mount on stand, boom, gooseneck or Model 448 boom.

Model 622SKK
Dynamic, Nondirectional
Handset type microphone for paging, intercom and communications uses.

Model 625SKK
Dynamic, Differential
Noise cancelling handset for use under high noise conditions.

Model 805
Crystal, Contact
Mounts directly on body of guitar, banjo, mandolin, violin or any vibrating musical instrument.

ELECTRO-VOICE, INC. BUCHANAN, MICHIGAN

10% PRICE SLASH!

"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

ALL-BAND VERTICAL ANTENNAS

GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

10% PRICE SLASH!

TAKE 10% WHEN ORDERING

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

V40 vertical for 40, 20, 15, 10, 6 meters.....$14.95 ☐
V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....$16.95 ☐
V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....$18.95 ☐

Name.....

Address.....

City.....Zone.....State.....

QUALITY MATERIAL

Brand new mill stock aluminum alloy tubing with Aluminite finish for protection against corrosion. Loading coils made by Barker & Williamson.

ALL-BAND OPERATION

Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

EASY ASSEMBLY

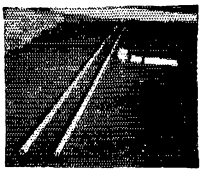
Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

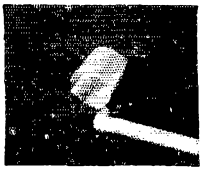
SIMPLE INSTALLATION

Goes almost anywhere. On the ground, on the roof, or outside your window.

AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.





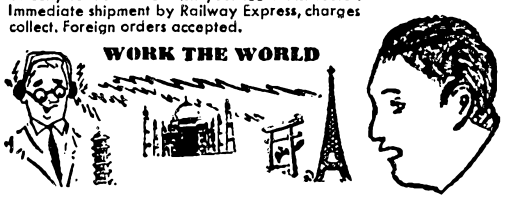
PROVEN DESIGN

Over a thousand Gotham verticals are on the air — working the world and proving the superiority of Gotham design.

AND THE PRICE IS RIGHT!

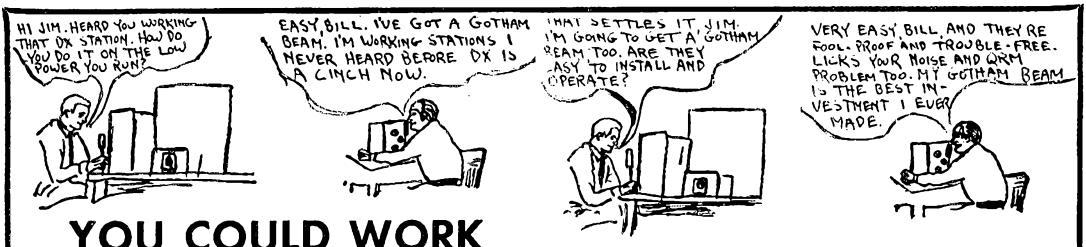
"I worked LU3ZS on Half Moon Island in Antarctica on Dec. 26 at 21150 Kc. I was using my Gotham V80 vertical antenna and only 35 watts." KN5GLI

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



GOTHAM MARINE ANTENNA, super-efficient, base-loaded, 12 feet overall length, telescopes to 6 feet, completely assembled, only $21.95; with mounts $29.95.

10% PRICE SLASH!



YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!

Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are of the best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between ¾" and 1⅝".

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use ⅝" and ¾" tubing elements; the deluxe models for these bands use ⅞" and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

TRIBANDER BEAMS

6–10–15 TRIBANDER.....$39.95
10–15–20 TRIBANDER..... 49.95

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.

TWO BANDER BEAMS

6–10 TWO BANDER.....$29.95
10–15 TWO BANDER..... 34.95
10–20 TWO BANDER..... 36.95
15–20 TWO BANDER..... 38.95

Each Two Bander has twin 12' booms, and full-size half-wave elements. ⅞" and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy.

PUT AMERICA BACK TO WORK!

10% PRICE SLASH!

TAKE 10% OFF WHEN ORDERING

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
1805 PURDY AVE., MIAMI BEACH, FLA.

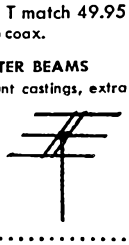
Enclosed find check or money-order for:

TWO BANDER BEAMS			
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			
☐ 6-10-15	$39.95	☐ 10-15-20	$49.95
2 METER BEAMS			
☐ Deluxe 6-Element	9.95	☐ 12-El	16.95
6 METER BEAMS			
☐ 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			
☐ 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
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			
☐ 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.)

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

Name.....

Address.....

City.....Zone....State.....

In Stock! GLOBE electronics hy-gain! Now!

540w AM & CW; 700w max. on DSB or SSB (P.E.P.) input

Globe King 500C

Completely Bandswitching 10-160M

W/T: $795.00

Relay-controlled, built-in antenna relay, VFO, commercial type compression circuit. Separate power supply for modulator. Time sequence keying.

350w CW, 275 AM, 450w SSB (P.E.P.) input

Globe Champion 300A

W/T: $495.00

Kit: $399.00

Bandswitching 10-160. Built-in VFO. Pi-Net output, 48-700 ohms, push-to-talk antenna changeover relay, time sequence keying, compression circuit. Kit with preassembled VFO.

Plate Modulated

Globe Scout 680A

W/T: $119.95

Kit: $99.95

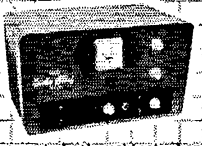
65w CW

50w AM

Self-contained, bandswitching, 6-80M, with built-in power supply. Pi-Net 10-80M, link-coupled on 6M. High level modulation. Forward Look.

90w CW for 10-160M

Globe Chief 90A



W/T: $74.50

Kit: $59.95

Forward Look cabinet, bandswitching Xmttr. Built-in power supply. Pi-Net. Provisions for external VFO.

Bandswitching 6 & 2M Xmttr.

Globe Hi-Bander

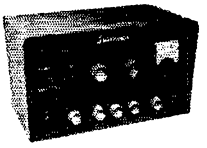
Power Input: 60w CW; 55w AM on Both 6 & 2M

W/T: $149.95 Kit: $129.95

Regulated screen supply, 4-stage RF section allowing straight through operation. Good harmonic and TVI suppression. RF Stages metered. Provisions for mobile use. 52-72 ohm coax output. New duo-band final tank circuit eliminates switching.

100w PEP DSB Input, Suppressed Carrier 40w AM, 50w CW

Sidebander DSB-100



W/T: $139.95

Kit: $119.95

Complete transmitter, bandswitching 80-10M. Min. 45db carrier suppression. 3-stage RF section, pi-net; speech clipping. Inverse neg. feedback. Ceramic band and function switches. Narrow bandwidth. Forward Look.

Globe's VOX Model 10

For voice operated control, with extra contacts for auxiliary circuits. Plug in socket at rear of DSB Xmttr. Adaptable for Scout, Champ and similar Xmttrs.

W/T: $24.95 Kit: $19.95

QT-10: Anti-trip accessory for VOX.

W/T: $9.95

VFO 755A

160-10 Meters

W/T: $59.95

Kit: $49.95

For 10-160M; output on 40 & 160M. Vernier drive with shock absorbing features. Self-contained, well-filtered power supply with voltage regulation.

VFO 6-2

W/T: $59.95

Kit: $49.95

Perfect zero beat. Built-in power supply with voltage regulation. Drives 6 & 2M Xmttrs. Temp. compensated. Ideal for Hi-Bander. Sideband stability.

Model 666 for 6M, w/t only, $49.95

Power Attenuator PA-1

Use with Xmttrs. up to 70w input; for swamping drive to linear amplifiers. Three power reduction positions. Coax input and output. W/T: $10.95

Antenna Tuner with VSWR Bridge

Globe Matcher Sr.

W/T: $79.50

Kit: $69.50

Shielded Cabinet

For Xmttr. with final RF input up to 600w, 80-10M. Fixed link coupling in output. Coax input, 2-wire balanced output. Monitor SWR between Tuner and Xmttr.

Globe Matcher Jr., AT-3

For input to Xmttr. of 100w CW, 75w fone or less. Substantial harmonic attenuation. Unbalanced output. Self contained.

W/T: $15.95 Kit: $11.95

Grounded Grid, Class B or C 6-80 Meters

Globe Linear LA-1

W/T: $124.50 Kit: $99.50

Complete with well-filtered power supply. 200w input AM Class B; 300w DC or 420 PEP input Class B linear SSB or DSB. 300w Class C for CW. Pi-Net 80-10M. 52 ohm Pi-Link coupled on 6M. Extensively TVI-protected.

Versatile Modulator

Plate Modulator UM-1

Modulates RF inputs up to 100w.

W/T: $49.95

Kit (less tubes): $32.50

Class A or AB_2 modulator, driver for higher power modulator PA Amplifier. Matches output impedances 500-20,000 ohms. Carbon or crystal mike usable. Perforated steel cover. $3.00 extra. Supplies 10-45w audio output. Ideal for use with Chief.

Controlled Carrier Type

Screen Modulator Kit

Ideal for use with Globe Chief. Permits radio-telephone operation at small cost. Self-contained. Connections, instructions, printed circuits, etc. supplied.

Kit: $11.95

6 Meter Converter

Compact, stable, crystal converter for receivers tuning output frequencies 10-14mc. Cascode RF stage, bandpass coupling, shielded input and output, high sensitivity. Crystal for 10-14mc output supplied.

W/T: $27.50 Kit: $19.95

Power Booster PB-1

For straight through operation on 6M (plugs internally into Globe Scout); approx. 50% more power output, while attenuating harmonic and further suppressing TVI.

W/T: $21.95 Kit: $14.95

Peak Limiting Pre-Amplifier

Speech Booster FCL-1

W/T: $24.95 Kit: $15.95

Perfect for Scout, Hi-Bander & other Xmttrs. Clips and filters speech frequencies at preset amplitude. Response: 300-3500 cycles. Increases modulation intensity.

ALL PRICES F.O.B. N. Y. C.

Prices Subject To Change Without Notice

ARROW ELECTRONICS, INC.

65 Cortlandt St., New York 7, N. Y. DIgby 9-3790

525 Jericho Turnpike, Mineola, N. Y. Pioneer 6-8686

New TAPETONE *Sky Sweep* 6 Meter Receiver

Single Conversion | High Frequency IF. | Crystal Lattice Filter | No Secondary Image

Tapetone, specialist in frequency conversions, now brings to the air waves an amazing, new six-meter receiver that will give you consistant top performance.

- **RECEIVER FEATURES:**
  - ★ Noise figure less than 3.6 db (0.5MV signal produces 10 db signal to noise).
  - ★ Long linear slide rule dial with smooth inertia tuning.
  - ★ Dial calibrated for 6, 2, 1¼ and ¾ meter bands.
  - ★ Power available from receiver for future companion 2, 1¼ and ¾ meter converters.
  - ★ Cascode RF amplifier.
  - ★ Linear detector for SSB and CW with AVC on or off.
  - ★ Coverage — 49.0 — 54.0 mc.

- **CRYSTAL LATTICE FILTER ACHIEVES THESE FEATURES:**
  - ★ Band width at 6 db: 3.5 KC.
  - ★ Band width at 60 db: 12.5 KC.
  - ★ Band pass flat to ±½ db for 3.0 KC. band width.
  - ★ Image rejection 60 db down.
  - ★ Rejection of all other spurious and unwanted signals 70 db down.

TAPETONE ALSO OFFERS YOU THESE OTHER QUALITY PRODUCTS:

6 METER SERIES
with RF Gain Control to Reduce Mixer Overloading

Model XC-50	I.F. Tuning Range 14 to 18 mc
Model XC-51	I.F. " " 10 to 14 mc
Model XC-50-C	I.F. " " 26 to 30 mc
Model XC-50-N	I.F. " " 30.5 to 34.5 mc
Model XC-50-C4	(with Dual Crystal Oscillator) I.F. Tuning Range 28 to 30 mc
Model XC-40	(Russian Satellite Converter) RF Input: 40 mc I.F. Output: 14.4 mc

NEW 1¼ METER SERIES
with Low Noise High Gain 417A Tube
Covering input frequency of 220 to 225 mc

Model TC-220-6	I.F. Tuning Range 49 to 54 mc
Model TC-220-N	I.F. " " 30 to 35 mc
Model TC-220-G	I.F. " " 20 to 25 mc

2 METER SERIES
with Low Noise High Gain 417A Tube

Model XC-144	I.F. Tuning Range 14 to 18 mc
Model XC-144-C	I.F. " " 26 to 30 mc
Model XC-144-N	I.F. " " 30.5 to 34.5 mc
Model XC-144-CE	(Special European Converter) RF Input Range: 144-146 mc I.F. Tuning Range 28 to 30 mc
Model XC-144-C4	(with Dual Crystal Oscillator) I.F. Tuning Range 28 to 30 mc
Model TC-108 Vanguard	RF Input: 108 mc I.F. Output: 14.4 mc

REGULATED POWER SUPPLY

Model PSR-150	available..... price $49.95
Model PSR-150	Kit Form..... price $39.95

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Win a free Prize!

Over $1500 in prizes to be given away by TAPETONE, INC., Webster, Mass.

There has been a rapid growth of radio amateur 6 meter (50 mc band) activity. There are more TV stations with better antennas and operating with higher power. Other VHF communication services and man-made noise of various kinds has increased. **All this** has created **serious problems** of **receiver overloading** more so in city areas not considered in years gone by. Tapetone is vitally interested in this **receiver design problem.** To have more **facts** and **information** of these interference conditions and **without regard to technical solution,** **Tapetone offers these prizes for:**

The best description of interference conditions encountered in 50 mc reception. The judges will be guided by the most complete factual, accurate and informative entry describing these interference conditions.*

*Although technical solutions may be interesting and might later be published with proper credit to the writer, the judges will not give additional credit or be guided by these suggested technical solutions.

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TEN 3RD PRIZES	YOUR CHOICE OF TAPETONE'S 1¼ METER, 2 METER OR 6 METER CONVERTERS.
PLUS	100 HONORABLE MENTION GIFT CERTIFICATES VALUED AT $5.00 EACH.

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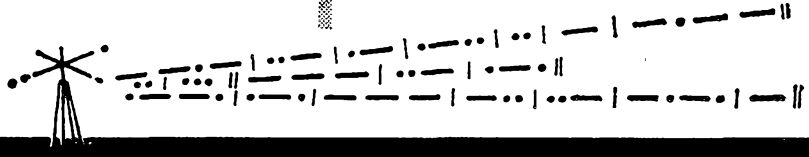
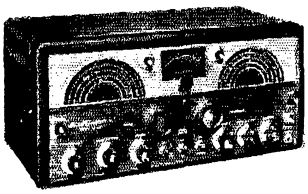
T. W. LANMAN, Pres. Tapetone, Inc.

RULES:

1. All entries must be mailed to TAPETONE, INC., 10 Ardlock Place, Webster, Massachusetts, complete with entrant's name, address and call letters clearly indicated.
2. All entries must be postmarked before December 15, 1958 and received before midnight December 29, 1958.
3. Each entry will be judged on the basis of clarity, facts, and completeness. The judges' decision will be final.
4. Only one prize will be awarded to a person. All entries become the property of TAPETONE, INC., to use as it sees fit, and none will be returned.
5. This contest is subject to all Federal, State and local regulations.
6. All winners will be notified by mail by January 30, 1959 and a list of winners will appear in March QST.



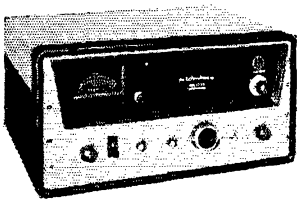
TAPETONE, INC. 10 ARDLOCK PLACE, WEBSTER, MASS.



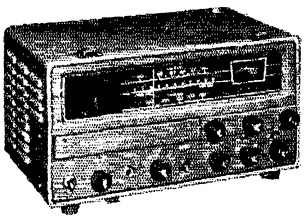
SX-100 $295 net

SX-101 $395 net

HT-32 $675 net



HT-33A $775 net



SR-34 $495 net

MEET AL COE, W1RVQ

Al is our new Manager of Amateur Sales. Whenever you get to Boston, be sure to drop in and say hello to him.

TRADE IN BY MAIL AT RADIO SHACK!

No money down! And look at the terrific allowances that your old rig brings! There's nothing up our sleeve . . . all the cards are on the table. The chart lists the trade-in allowance you will receive on your old gear against the purchase of any one of the five top Hallicrafter units. All that you have to do is send in your old equipment, and pay the difference between the net price of the unit desired and your allowance in easy monthly payments. All that we ask is that your trade-ins be in operating and presentable condition.

FREE!

NEW 232-PAGE 1959 CATALOG

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Largest stock of ham equipment in the East!

IF YOU TRADE...

BIG ALLOWANCES AND NO MONEY DOWN!

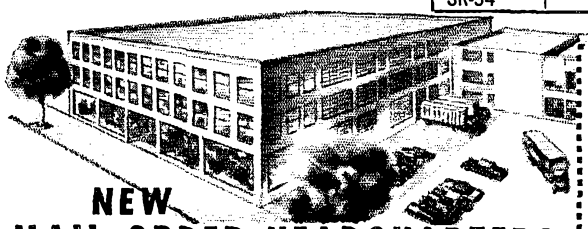
If your old equipment isn't listed in this chart, write for your allowance.

	Allow. toward SX-100	Bal. per month	Allow. toward SX-101	Bal. per month	Allow. toward HT-32	Bal. per month	Allow. toward HT-33A	Bal. per month	Allow. toward SR-34	Bal. per month
National Co. NC-183D	$200	$ 9	$225	$13	$295	$24	$310	$30	$250	$16
NC-125	125	13	135	17	140	33	140	39	135	24
NC-98	85	15	90	21	95	36	100	42	90	27
Hammarlund HQ-100	130	13	140	17	165	33	175	36	150	21
HQ-140X	125	13	130	17	165	33	180	36	130	24
129-X	100	14	105	19	125	33	144	39	110	24
HQ-110	175	13	195	14	200	30	200	35	195	19
Pro 400-X w/PS & Spkr.	145	12	175	10	175	30	200	34	150	21
Collins 75A-2	195	10	200	14	230	27	250	31	215	19
75A-3	200	9	250	12	350	21	360	27	300	14
32V-3	—	—	—	—	500	13	530	16	400	9
Johnson Pacemaker	—	—	—	—	250	27	280	30	250	16
Viking II	170	10	170	15	200	30	223	33	190	21
Viking I	125	13	130	17	145	32	160	36	130	24
Ranger Central Elect	145	12	160	16	175	30	180	36	170	21
20-A	95	15	95	19	115	33	120	39	100	24
10-A	50	16	60	21	85	36	100	42	65	27
Hallicrafters SX-28A	90	15	105	19	95	36	107	39	90	27
S40-B	45	16	50	21	50	37	64	42	50	27
SX-99	100	14	110	19	115	36	115	46	115	24
S-76	80	15	95	19	100	34	120	39	95	27
S-38-D	35	17	40	24	45	40	—	—	45	27
SX-71	95	15	105	19	120	36	128	36	100	24
SX-100	—	—	235	12	250	27	255	32	255	16

IF YOU BUY WITHOUT A TRADE...

EASY PAYMENTS FIT YOUR BUDGET!

Model	Cat. No.	Net	Down	Monthly
S-38E	45DX313Y	$54.95	$5	$5
S-94	45DX307Y	59.95	6	6
S-95	45DX308Y	59.95	6	6
SX-104	45DX309Y	89.95	9	8
SX-105	45DX310Y	89.95	9	8
S-53A	45DX315Y	89.95	9	8
S-85	45DX304Y	119.95	12	10
S-86	45DX305Y	119.95	12	10
SX-100	45DX300Y	295.00	30	17
SX-99	45DX306Y	149.95	15	11
SX-62A	45DX301Y	375.00	35	21
SX-101	45DX303Y	395.00	40	24
HT-32	45DX317Y	675.00	68	39
HT-33	45DX318Y	775.00	78	45
SR-34	45DX320Y	495.00	50	30



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I am sending my old..... via Express Prepaid. As soon as it arrives enter my order for one Hallicrafters..... on Radio Shack's "Easy-Pay, Trade-In Plan"

Please send your FREE 1959 Catalog to:

Name.....

Address.....

City.....Zone.....State.....

Station Activities

(Continued from page 94)

building a kw. K2QDT operated K2WAS/2 at Camp Drum and handled 28 messages. K2DXE reports that during the first six months of this year NYSPTEN operated 418 hours and 49 minutes; a total of 8730 stations called in and 2598 pieces of traffic were handled. K2RIR is going n.f.m. on 6 meters with his Globe Scout 680. W2NNN now has 330 watts on 6 meters. K2OVB has 120 watts. W2EMW received a YLCC certificate and sent in for a 210 sticker on DXCC. K2QNM received a 30-w.p.m. certificate. K2DOZ was appointed Net Manager of ECEN. K2MES, K2JDD, W2PGA and WA2ABL are new NCSs in NYSPTEN. Appointments: W2ATC and W2BKC as OPSs, W2TPV and K2AOQ as ORSs, K2LXB as OES, W2QYT as OO Class I. Endorsements: K2RIT as OBS, K2RIT as OPS, K2EE purchased an NC-300. The ARATS held a transmitter hunt in August. K2KTK expects to operate K2BVD at Alfred this fall. Your SCM attended the 10th National Convention in Washington, D. C. Our congratulations to the gang in Rochester. The AWA exhibit was the most popular. W2GB's kw. spark transmitter, which was specially licensed, stole the whole show and won first place as the outstanding non-commercial exhibit. W2QY, W2LF, W2-MG, W2VVG and W2ICE handled the crowds. The September RARA *RAG* contains many fine pictures and a full report. W2ICE was official photographer. W2UTH presented the v.h.f. gang's newest show "The World Above 50 Mc." W2SAW has all his certificates on display and Kelley presented "The Story of DX." The Corning ARA provided communications for the Corning Beagle Club field trials. Walkie-talkies were used with each "brace." Participants included K2UMY, W2YZA, K2-LTD, K2UYU, K2BFN, WA2ADZ, K2AOQ, K2INI, W2-YIY, W2QLI, W2SLE, K2TXW and K2YPG. K2SIL made BPL. Traffic: (Aug.) K2SIL 821, W2RUF 275, K2MES 229, W2ATC 191, K2RYH 155, K2GWN 133, K2JDD 99, K2JBX 77, K2IYP 74, K2KIR 63, K2UYK 62, K2RTN 54, W2PGA 49, K2AOQ 47, W2OE 37, W2-COB 36, W2PVI 27, K2QDT 26, WA2ABL 25, W2RQF 19, W2TPV 14, K2BCL 13, K2QNM 11, K2RWV 11, K2-KTK 10, W2EWO 3, W2EMW 2, W2GBX 2, K2HUK 2. (July) W2ATC 58.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA, RMs: GJY, GEG and NUG, PAMs: AER and TOC. New appointment: K3-AJB as OO. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. Students at State College are YOZ and BZR. The new president of the Carnegie Tech. RC (NKI) is ZWZ. ABW now has 100 DXCC confirmed. The McKean RC now meets in a new club house. K3BZA is the new call of the Amateur RC of Westmont-Upper Yoder High School, with K3AJB, pres.; and KBZ, vice-pres. New General Class licensees are K3CFU and ZSV. UVD is building the HBR-14. KN3-GCT is a student at St. Fidelis Seminary. LSS now has a Globe Champ 300. WRE is rebuilding her rig. JWZ/1 presented an exhibit portraying amateur radio at the Stinson Lake, N. H., Hobby Show. YOZ is planning 2-meter activity at State College. K3BZP has a new HQ-150. Yours truly enjoyed seeing so many W. Pa. hams at the ARRL National Convention. Among those who attended were QCN, WRE, YOZ, LXU, NUG, UGV, UTR, UL, WAQ, GJY, YA, IDO and RSB. Congrats to GJY, who won the code speed contest at 45 w.p.m. using a stick. The Etna RC reports the following via *Oscillator:* K3AMY now is mobile; MLU passed his General Class exam; LMM now is operating a KWM-1; a new Novice up Millvale way is KN3GFT, who is blind. NCE, secy. of Coke Center RC (NAV), reports the following: The club station is on 2 meters running 100 watts; Field Day was held on Negro Mt.; the club is playing an important role in Fayette County's RACES program; JW is using a Johnson Atom Smasher; K3-BND is attending U.C.L.A.; WST is at Penn. State. Up Erie way: KVB was honored for his traffic-handling from the Antarctic Expedition; at Camp Sequoyah K3-ERK did nicely with the summer program for the Scouts; POS, JOQ, JTF and YLI furnished communications on 6 meters at the Wattsburgh Fair Grounds; K3BKW received his General Class license. SUK has 350-watt s.s.b. on 50 Mc. LAG received the WAC award. UZB has a new multi-frequency divider. *Kilo-Watts' Harmonics* reports: NKM has a new tower up; APN has a new mobile Elmac; ZPZ and JQJ vacationed out West; GQJ and ANX went to Florida; KWH operates on 2 and 6 meters. A new Novice at Allison Park is KN3GCQ. Traffic: (Aug.) W3LXU 362, BZR 95, LSS 40, PDY 4, YA 4, LOD 2, K3AJB 1. (July) W3LXU 272, BZR 69.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzer, W9PRN—
(Continued on page 118)

The New ELENCO COMMANDER

OUTCLASSES THEM ALL!

4 KW P.E.P. LINEAR AMPLIFIER

NOW AVAILABLE

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Costs Little More Than Others of Half the Power

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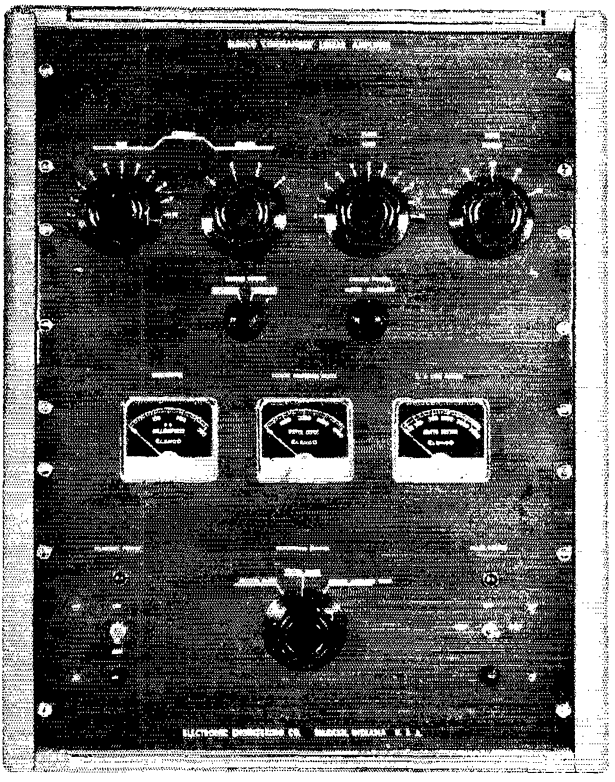
Save ⅓ with our new Factory-to-Consumer Sales Plan



- ▶ 4000 watts P.E.P. Single Sideband, 1500 watts AM input.
- ▶ 6000 Volt power Supply.
- ▶ High-low Power Switch, for tuning and quick power change.
- ▶ Double interlocked for absolute safety.
- ▶ Continuous frequency coverage 3 to 30 Mc.
- ▶ Forward and Reflected power circuits built in. Output meter calibrated in watts, 0-3000.
- ▶ Plate input meter calibrated directly in watts, 0-4000.
- ▶ Hipersel transformers for compactness, light weight, and good regulation.
- ▶ Will fit in desk top space equal to average receiver. Weighs only 170 lbs.
- ▶ New factory-to-consumer sales plan (direct sales only) includes trade-ins, time payments, money back guarantee.

Although designed to commercial specifications, the Elenco Commander operates with excellent efficiency at legal amateur power limit, giving superior performance on five amateur bands, 10 through 80 meters.

A post card will bring an elaborate 8 page brochure.

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Manufacturers of Commercial and Amateur SSB Equipment. Now in the Eighth Year.

ELECTRONIC ENGINEERING COMPANY **WABASH, IND.**

Asst. SCM: Grace V. Ryden, 9GME. SEC: HOA. RM: MAK. PAM: RYU. EC Cook County: HPG. Section net: ILN, 3515 kc. Mon. through Sat. at 1900 CST. JJN had a minor celebration in honor of his 100 country QSL. MAK is turning the reigns of RM over to PCQ because of stiff school duties. This is his last month. Thanks, Bob, for all the help and reports of the ILN. New appointments: JJN as OO; GPV, SPB and K9-EXP as EC. New calls heard were KN9OUM, KN9PED, KN9PEW and KN9OZM. Our sympathies to WGY on the death of his mother. VBV is back to school after a very active summer vacation. K9JIN is back in DX business with a new antenna, and SKR's new Zepp also is pulling in new signals. DO has just received his 53 BPLs and the average is 1000 total. The ILN handled 212 messages in 27 sessions according to MAK, and CSW reports that the North Central Phone Net's traffic total was 403. NN, chairman of the W9DXCC Annual Dinner held at the Sheraton Hotel in Chicago finally received his WAE award. The Prairie Amateur Radio Club (Galesburg) is erecting 6-meter antennas and installing new equipment for emergency communications. SXL reports that the Bloomington gang also is following suit, except on 2 meters. ICF says that the person who has been bootlegging his call can receive his QSL cards by contacting the FCC. K9BLY made DXCC with 110 countries confirmed. UVM is moving to the Waukegan Area. K9DTB is in the building mood and among his projects are a new s.s.b. exciter and a 4X150A linear to go with it. K9NNL reports that the *Chicago Daily News* Regatta was a success, thanks to Chicago RACES which operated walkie-talkies on the USCGA boats. K9-ANI can now go mobile as a result of receiving his driver's license. He also is taking flying lessons and perhaps we may hear him soon on aero mobile. 1LVQ, of the Headquarters staff, visited the Sangamon Valley Radio Club (Springfield) gang on Oct. 2 and delivered an interesting talk on the upcoming radio frequency convention. UBI has been getting his share of DX this summer and will have to cut it now to a minimum as he is deep in studies. K9KPP has gone mobile. K9DHH is recovering rapidly from a serious operation. EGI combats TVI by inviting the neighbors in to watch him operate on the air. The Rockford ARA has reactivated the 28.7-Mc. net and the NCS duties are being rotated among new members. The club's 6-meter net also is very active with new personnel being added weekly. The SWANI radio gang held its annual picnic at Lake Geneva with an FB time. K9ESQ has a new 10-meter beam and reports that the DX is pouring in daily. K9IXA has been appointed civil defense director of Litchfield. If any of the gang would like some culinary secrets have the Starved Rock Radio Club put you on its monthly newsletter. Some interesting recipes have been published in recent months. Traffic: (Aug.) W9DO 858, K9ERH 660, W9PCQ 189, FAW 130, K9GDQ 112, W9MAK 100, IDA 54, K9ISP 47, W9TZN 14, RYL 12, PVD 10, SKR 4, K9JIN 2. (July) W9RYL 7.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: CMT. PAMs: BKJ, KOY, SWD and UXK. RMs: DGA, JOZ and TT. IFN meets daily at 0800 and M-F at 1800 on 3910 kc. QIN meets daily at 1930 on 3656 kc. BHW has been appointed as OBS. KT has been elected president of the Wabash Valley ARA. Other officers are K9EBK, vice-pres.; IGS, secy.; ITK, treas. and IHO, trustee. ZSK is editor of the *Monitor*, a new paper being put out by the Martinsville ARC. The IMO 6-Meter Net centered in the Angola Area is getting off to a good start with a traffic total of 52 for August. The NCS is K9GLL, who just put up a 5-over-5, 50 ft. up. Congrats to K9AYI, who earned a 9RN certificate. WLY is a freshman at Rose this year; he plans to keep active on the club station, NAA. JIY is building a 32-element beam for 420 Mc. KN9PAW is a new call at Whiting. K9JQO has a new linear and is putting out an FB signal. MHP is building an 832 final for 220 Mc. The Duneland ARA is holding a QSL Contest. K9CBY, IYI, JIY, MHP and MNA, all operating mobile with JZV as base station, put on a very convincing demonstration of how AREC could work with the C.D. Police in Marion Co. They provided communications for the walking patrols and kept an entire section of the city in touch with C.D. Hq. K9DWK is modifying a T-23 for 6 and 2 meters. Morning 102 and evening 157 for a total of 259 was IFN's traffic, as reported by SWD. JOZ reports QIN traffic as 144. TT reports RFN traffic to be 82. More stations are needed in the River Forecast Net to check in and list a message giving local weather conditions RFN meets Sun. from 0800 to 1000 on 3656 kc. ETM and NZZ made BPL, No. 90 for NZZ. Traffic: (Aug.) W9NZZ 804, ETM 184, ZYK 174, JOZ 172, VAY 161, TT 132, TQC 105, SWD 83, K9AYI 82, W9BUQ 39, FJR 35, K9NBK 35, W9UQP 35, EJW 32, K9GBB 30, W9RTH 26, EHZ 25, WID 24, K9IXD 20, W9BDP 19, GJS 17, YYX 16, K9IHG 15, W9IMT 14, CC 13, K9AOM 12, W9ENU 11, MMY 11, MHP 10, SNQ 10, HUF 8, DGA 7, K9GFQ 7, W9WLY

(Continued on page 120)

7, K9BSU 6, GSV 6, W9BDG 5, K9DWK 5, W9IMU 5, WAU 5, WTY 5, URQ 4, OCC 3, ZSW 3, K9CFG 2, W9HHH 2, QR 2, NTA 1. (July) W9OCC 10, K9LBH 7, W9STC 7, DDT 5, GDL 1.

WISCONSIN—SCM, George Woida, W9KQB—SEC: YQH, PAM: NRP, RMs: SAA, K9AEQ and K9ELT. New appointees: VRI as EC, UFV as ORS, K9IQO as OBS. DYG now is NCS for 9RN. K9JIG, now minus the "N," has a new SX-100 and is attending Teachers College. New calls in Washburn County are KN9s LNK, MMU, OAG and OHY. A TCC certificate was received by CXY. MWQ is getting acquainted with a new electronic key. K9EQW is a new RCC member. K9ALP has his OD5 and XZ2 QSLs after waiting 2 years. K9IAE is taking traffic from the boys on Baffin Island. K9s IKM and GBK are new PRP reporters for IGY. The MIRAC has a new meeting place at the Engineers Society Bldg., 3112 W. Highland, Milwaukee. Meetings are held the first three Wed. of each month and visitors are always welcome. ERW's WAC confirmations arrived while he was chasing trout this summer. K9GDF had receiver trouble but managed to pick up his 30-w.p.m. sticker. Greetings and well wishes from the Wisconsin amateurs were sent Dr. Lee de Forest on his 85th birthday Aug. 26th. Public Service Awards were received by those with high activity during the Dunn County tornado disaster. RCC is busy putting the RACES station in shape at Stevens Point. The ex-Marine Corps and CAA operator IXA has become active on WTN. SAA has a new Tribander and kw. trap antenna. GAB has five states and 355 miles as best DX on 432 Mc. NLA has a new NC-109 receiver. K9IQO is OBS on the 6-meter band. KQB will welcome comments from all stamp-collecting amateurs in the State relative to a weekly net. IZE/7 has a new HT-32 and an NC-300 and is looking for Wisconsin contacts on 10- and 20-meter s.s.b. from North Bend, Wash. Traffic: (Aug.) W9CXY 909, K9GDF 578, ELT 545, W9SAA 124, DYG 106, K9CJL 41, W9NRP 41, K9DTK 37, W9KQB 35, K9AEQ 31, W8RMF/9 19, W9YZG 17, CBE 15, GFL 9, SIZ 9, K9GSC 6, W9MWQ 6, K9ALP 5, CEF 5, W9IPC 4, K9IQO 4, W9NLJ 4, K9EQW 2. (July) W9RTP 10, SIZ 5, MWQ 4.

DAKOTA DIVISION

NORTH DAKOTA—Acting SCM, Arnold L. Oehlsen, WØYCL—Whatever your interest or activity may be in amateur radio, let's all support our new SCM, HVA. It will take the support of all amateurs as well as designated leadership to keep our state organized so that we may all be proud of our affiliation and thereby be ready to serve in case of emergency. Traffic: KØADI 44, WØYCL 21, KØPZN 20, CNC 14, JLW 14, KJR 8, MHD 7, CMX 4, GGI 4, KBV 4, GRM 2, IAB 2, WØIRN 2, KØAZN 1.

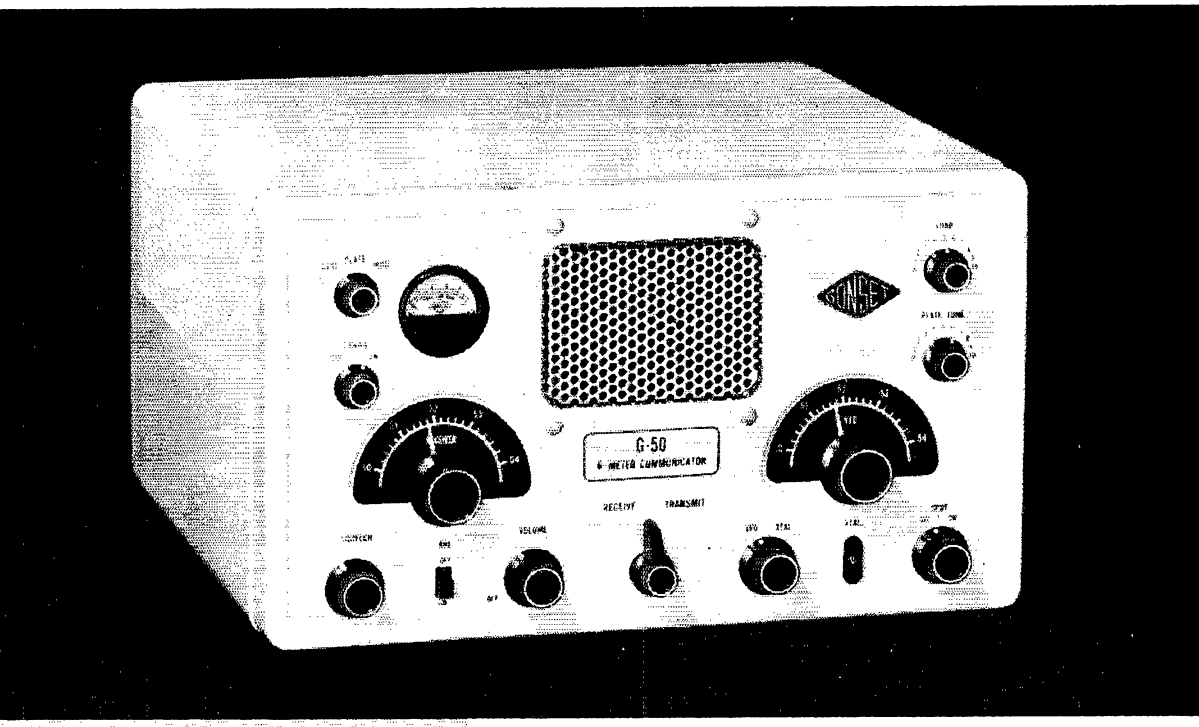
SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM: Gerald F. Lee, ØYKY. SCM assistants: FKE and NEO. PAM: SCT. RM: GWS. The South Dakota C.W. Net meets Mon., Wed. and Fri. at 7 P.M. CST on 3645 kc. and reports 13 sessions, QNI 39, high 6, low 1, average 3.7; QTC 7, high 3, low 0; informals 3. The 75-Meter Net meets daily at 6:30 P.M. CST Sun. and holidays at 9:30 A.M. CST and reports 36 sessions, QNI 678, high 28, low 7, average 18.8; QTC 63, high 5, low 0, average 1.7; informals 69, high 5, low 0, average 1.9. The South Dakota 40-Meter Noon Phone Net meets Mon. through Sat. at 12:15 P.M. CST on 7225 kc. and reports 26 sessions, QNI 312, high 19, low 5, average 12; QTC 86, high 11, low 0, average 1. Traffic: WØSCT 379, DVB 56, KØBMQ 44, LXF 41, IAW 14, DUR 12, WØBYV 8, NNX 7, KØLXH 4, JOK 2, AMP 1, KLR 1, MPJ 1.

MINNESOTA—SCM, Robert M. Nelson, WØKLG—Asst. SCM: Bob Schoening, ØTKX. SEC: TUS. RMs: KØDIA and KØGCN. PAMs: QVR and TCK. A new radio club has been organized at New Ulm, with YAC as pres. and KØLKK as secy.-treas. KØISV, EC for Brown County, visited the club's first meeting to explain the AREC program and signed up several new AREC members. The St. Paul Mobile Radio Club furnished communications for the Auxiliary Police at the Minnesota State Fair. KØEWC spent several weeks in the hospital following a swimming accident. KØHNL completed a five-element beam on 6 meters and is looking for schedules. KØJNX has a new SX-101 receiver. KØHGP is building a new 500-watt linear final. KNØRAC and KNØRAE are new brasspounders at Glencoe. KØPAU is a new General Class licensee at Blue Earth. ILZ now runs a Johnson Viking "500." KØGVW visited VE3DRO while on a trip in Canada. KØORK now has a v.f.o. and may be found on the 80-meter traffic nets. KØAEE has been appointed Asst. EC for Metropolitan Minneapolis by WMA, who is EC there. The new NCS on Thurs. night MSPN is KØMNY. He also has been appointed OPS. KØIDV made BPL for the third time, now qualifying for the BPL Medallion. He also has received the Traffikers Club 1000 Award. The Mankato

(Continued on page 122)

Another Gonset advance brings added performance and value

NEW 6 METER fixed station COMMUNICATOR



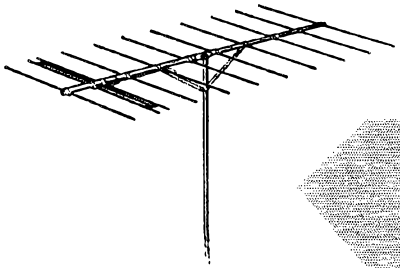
- Coverage 50-54 mcs.
- Complete 6 meter station...50 watts input...
- Type 6146 tube with Pi Network output...
- Highly stable, calibrated VFO with spotting switch to aid tuning...
- Highly selective, sensitive receiver...
- Adjustable squelch...noise limiter... "S" meter...panel mounted loudspeaker
- Heavy duty 115V AC power supply built in

Now...Model G-50, a highly compact, beautifully designed unit, adds materially to the pleasure of local contacts... to the thrill and excitement of 6 meter DX.

Everything's in one cabinet: 50 watt transmitter with pi-network and calibrated VFO (or optional xtal)... sensitive, selective communications receiver... AC power supply. All elements are completely integrated, operate perfectly together. This is Gonset's exclusive "packaging" concept... eliminates extra cost of several individual units... gives you excellent performance, exceptional value.

Simple, straightforward in operation and adjustment, G-50 will put a crisp 6 meter signal with real authority on the air in little more than the time required for connection of antenna and power. This is the sure, easy, inexpensive way to get on 6 meters. G-50, at your dealer soon.

Model No. 3221



GONSET'S NEW 10 ELEMENT, 6 METER YAGI

Gives more than 12 db forward gain... 23 db minimum FBR... tripole driven element provides excellent match... usable frequency range, 50-54 mcs.... husky 16 foot boom... light but balanced and rigid construction... no sag or droop... rotated by any heavy-duty TV rotator... makes 50 watts approach a KW...

Model 3282... net 27.50.

GONSET

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Area Radio Club visited the club at Rochester, and together they toured the I.B.M. plant there. New EC appointees are KØCRB for McLeod and Wright Counties, BHA for Renville and Sibley Counties, OLB for Carver and Scott Counties, ZMK for Big Stone, Swift and Stevens Counties. Recently UMX sent an envelope to the ARRL QSL Bureau and in return got four Russian SWL cards, dated 1947, 1948 and 1949. The stumper is that UMX wasn't licensed until 1952! Traffic: (Aug.) KØIDV 401, GCN 300, JCF 86, ORK 84, WØKLG 59, KØLBC 55, EPT 39, KYK 39, WØRQJ 38, KØAEE 36, GVS 32, WØUMX 32, OJK 29, KJZ 28, KØHJC 27, WØDQL 25, ALW 23, KØMIJ 23, WØPET 22, QVR 22, OJG 21, KØKIF 17, WØLST 17, QVQ 16, KØGVX 15, WØBUO 14, WMA 14, FGP 13, TCK 13, KØMNY 11, JWK 10, LBA 10, IZD 7, BDD 5, MGT 4, WØRA 2, KØGKI 1. (July) WØPET 15. (Apr.) KØHJC 18.

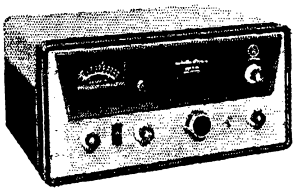
DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: K5CIR. PAM: DYL. It looks as if 6-meter operation is still on the up-climb. Several of the boys at Hope and Nashville have gone to 6 meters. They have formed a club which meets each Tue. and are busy trying to get their net going. The amateurs of Osceola and vicinity mourn the passing of WN5RFX, recently slain while on duty as a State Trooper. ØJHY/5 has a new all-band vertical up. Reports are that WSM now is holding rag-chews with the boys in ZL-Land. K5HOL has been vacationing and visiting hams in Florida. A new ham in Osceola is KN5QYC. We appreciate very much the opportunity to serve the amateurs of the Arkansas section for the next 2-year term. We also appreciate the co-operation, loyalty and trust you have shown me in the past term. I will do my best to serve you to the best of my ability. Traffic: K5FJA 501, W5SZJ 96, BYJ 38, DAG 17, K5IPS 16, W7BED/5 6.

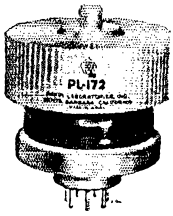
LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—We note the passing away of K5EAX. Emergency Coordinator for Crowley, on Aug. 31. HKJ, active on 75 meters, is now sporting a new HQ-170. K5KZI is champing at the bit gathering gear to build an 813 final. TL has been ailing. ML and KTD are new OESs. CEZ made BPL with a traffic count of 578. This happens so seldom in this section that Carter should get a special award. K5LKC, whose father is K5SBF, is active on several nets with a new Viking II and an HQ-110. She is NCS for the Nitwit Net 0700 Sun. on 3825 kc. and is Louisiana editor for the *Monitor*. MXQ reports that LAN will be reactivated again. LAN meets nightly on 3615 kc. 7:30 P.M. for the purpose of handling traffic. K5AGJ sends the ARRL Official Bulletins on tape same frequency 15 minutes before net time at about 10 w.p.m. Listen to the transmissions and report into the net afterwards. K5-ESW now has 55 countries using a DX-35, an NC-125 and dipole antennas. I was glad to see K5DMA at Alexandria, too. The Alexandria Hamfest held Aug. 30-31 was a success with 275 registrations. The 10B was won by EKK and K5MKE won the 10-meter whip antenna. K5PXU received an award for selling the most tickets. AU is back on the air with an HT-32 and an SX-101. Traffic: W5CEZ 578, MXQ 67, K5LKC 21, ESW 11.

MISSISSIPPI—SCM, John Adrian Houston, sr., W5 EHH—The Biloxi Hamfest was attended by 205 hams and their families. Winner of the DX-100 was 4UCC, the portable TV set was won by YEN and K5JHY won the tape recorder. Tops in the hidden transmitter hunt with 5.2 miles was K4PIQ, second with 10.8 miles was SWB and third with 11.5 miles was K5MGA. For best mobile rigs, commercial equipment, the winner was 8REP, with K1CTX second and K4LIR third. Home-built equipment winners were HSK first, 4WHW second, 4ZGR third. With the transfer of YAA to an overseas appointment, CBW took over as V.H.F. PAM as well as publicity manager of the Two-Meter MARS Club. The club recently elected VLE, pres.; SGJ, vice-pres.; KN5QIJ, secy.; VRW, treas. The club has its own call, K5RUA, frequency is 144.450 Mc. and meetings are held each Mon. from 8 to 9 P.M. The Cleveland Amateur Radio Club is the proud owner of a new W.R.L. dou-

(Continued on page 124)



HALLICRAFTERS HT-33A



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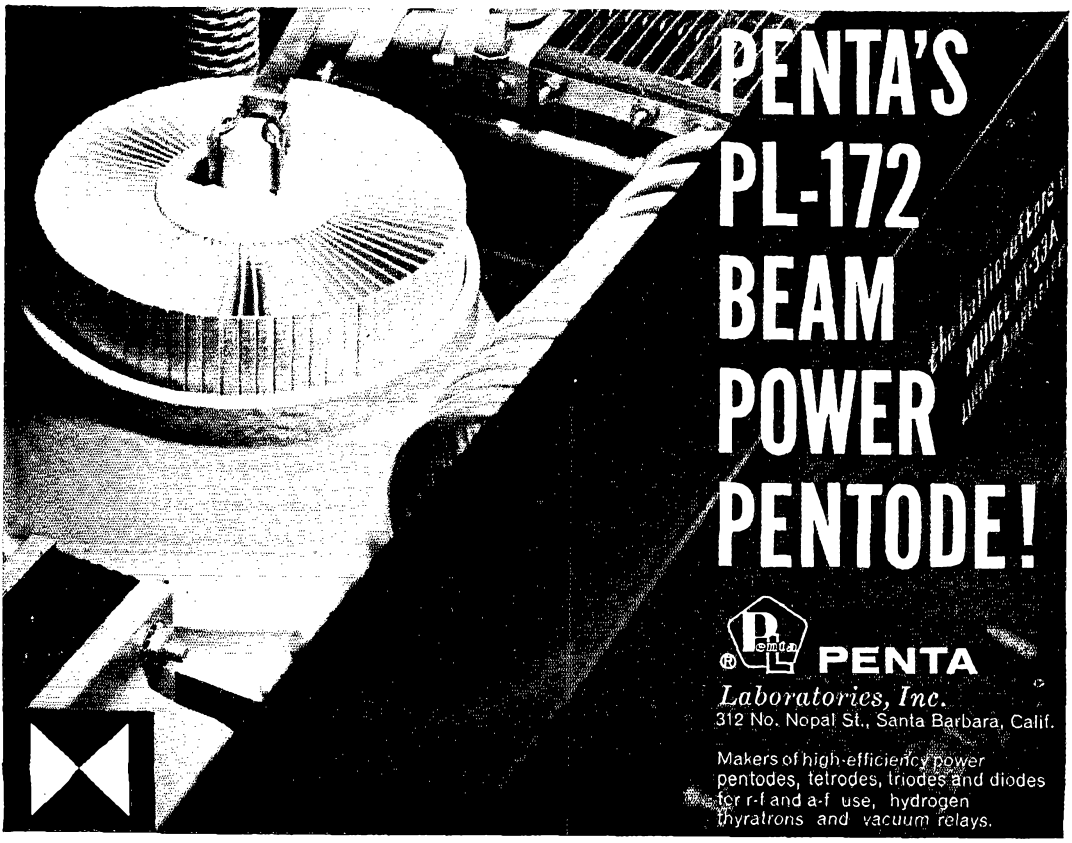
FREE SIX-PAGE DATA SHEET gives full ratings of the PL-172, curves, and actual test result information on Class AB_1 and Class C operation. Write for yours today.

ASK FOR A FREE COPY of "Transmitting Tubes for Linear Amplifier Service." This nine-page bulletin discusses linear amplifier tube requirements in detail. Graphs, characteristic curves, oscillograph linearity patterns and data show why Penta's exclusive beam pentode designs outperform four-element tubes.



ble sideband transmitter. K5LEA was in California. K5HPV is visiting in Florida. 9GG and wife recently visited EHH and the Cleveland hams. Traffic: W5FPI 346, K5HAR 23.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—SEC: RRV. RM: NHT. PAMs: VQE, ZZ, UOT and PAH. Congratulations to K4LTA on making DXCC and to BPL winners PL and 5RCF. Best of luck to TZB and K4KJC, who are returning to school. Welcome new OBS and OO station TDZ. JVM reports August activity in the c.d. DTI is meeting TPN regularly but says his antenna is not as good as the one he had at Fontana. SGI reports that CXY will resume as manager of ORVTN in September. K4KYL reports new equipment, a nine-element beam and a converter for 6 meters. Utah has been confirmed for his 42nd state on 6 meters. Thanks to PVD for his FB OO reports. New hams: KN4ZZA, Humboldt; KN4ZVO, Kingsport. OGG reports a fine time working 10 and 15 meters for the first time in 20 years. Traffic: (Aug.) W4PL 1108, W5RCF 826, W4NHT 75, K4LLB 61, W4CXY 44, K4LTA 35, JNK 19, W4PAH 17, 1GW 15, UIO 11, K4KYL 10, W4OGG 8, VQE 8, TZB 6, TYV 5, K4KJC 2. (July) W4PL 820.

GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thomason, W4SUD—Asst. SCM: William C. Alcock, 4CDA. SEC: JSH. RM: K4AIS. PAM: OGY. V.H.F. PAM: K4LOA. S.S.B. PAMs: NGN and K4HBF. Thanks for the congratulations received. Everyone thanks KKW for an excellent two-year term. K4ECJ has dropped KSN because of his work schedule. Good luck to NGN and K4HBF as the new S.S.B. PAMs. JSH received RACES license. There is a new radio club at Newport with VLC as president. K4SPJ is working 220-Mc. DX with 50 watts. Schedule arrangements can be made on 50.58 Mc. K4LOA reports good prospects for the fall KY6M. The Kentuckiana Hamfest held at Louisville was enjoyed by all. HOJ reports this club furnished the communications for the Marine Regatta. K4DLI, KIN and KIO report they are almost ready for s.s.b. CDA has a new rig nearly completed. HTD is planning a big signal for KYN. BAZ has a new 140-ft tower for 2- and 6-meter emergency work. PXX, K4LHR, SBP and QPB were issued KYN certificates. KKW and OGY attended the ARRL National Convention. KIS has a new 10-meter beam. Traffic: (Aug.) W4ZDB 157, KKW 109, BAZ 93, K4KIO 78, AIS 67, W4GTC 66, K4MMW 55, W4OGY 53, K4CSH 51, W4SUD 50, RPF 49, KKG 42, K4WBG 41, PGH 39, OAH 33, LHQ 29, LHR 26, KIS 20, W4ELG 19, K4HBF 16, JOP 16, SBZ 14, W4HTD 10, SZB 10, K4QCN 9, W4HNI 8, BZY 6, NGN 6, K4JGN 5, QCW 3, QHZ 1.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—SEC: YAN. RMs: DAP, FWQ and OCC. From the looks of the traffic totals and the limited amount of news items received, this must have been a good month for just about anything BUT hamming. The QMN Picnic and business meeting was held in Lansing as per schedule and those present accomplished much. Oct. 1 saw both QMN nets in full swing at the appointed times. FX is sporting a new RX to go along with his snappy layout, but he still is collecting all of the "spark gear" that he can get his hands on in order to make up some more historical exhibits. OCC has converted to grid-block keying and has his antennas in shape for the winter traffic season. His new job as liaison from QMN to 8RN ought to be easier. As EC, QQO has a going AREC net in Berrien County. It functions every Sunday afternoon on both 10 and 6 meters. WXO is pleased with his new TX that even brings a good report from FX. AHV has a new home-brew kw. on BR/MEN. Congrats to JYJ for the Navy Award, which was presented to him at the ARRL National Convention. HKT still is on his DX binge with the DX-40 and a vertical. IWV is being heard in KL7. Traffic: (Aug.) W8FWQ 191, FX 107, OCC 73, QQO 73, DJN 67, YAN 44, TBP 29, MSK 28, K8CKD 14, W8WXO 14, IZS 13, ILP 12, AHV 11, DSE 11, FDO 10, NOH 10, AUD 8, JKX 7, MAI 6, UCN 6, K8NAW 5, W8TIC 2, HKT 1. (July) K8ADD 14.

OHIO—SCM, Wilson E. Weckel, W8AI—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RM: DAE. PAMs: HPP, HUX and HZJ. K8s GAS, GVV, HWO, HZN, IDH, JUZ and JZN dropped the "N." New appointments in August were VDA, K8EKG and K8EJL as ORSs. New hams are KN8s LCK, LCX, LDX, LDZ, LEV, LEW, LRG, LSI, LSJ and LVM. ARO is now K7EWZ and all the Buckeye Net members wish him luck. LMB operated portable from Michigan. The Triangle ARC's 1958 officers are WSY, pres.; K8EPR, vice-pres.; WIF, treas.; K8EID, secy.; and RZ, act. mgr. Meetings are held the 2nd and 4th Mon. Green Valley RC's 1958 officers are BHI, pres.; K8HVM, vice-pres.;

(Continued on page 126)

Quality...

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HQ-170

For the amateur who wants the very finest in SSB receivers. Contains all the functions necessary for solid contact in today's crowded bands. 17-Tube superheterodyne. Dual and triple conversion. Separate vernier tuning. Adjustable 60 db notch filter. 6, 10, 15, 20, 40, 80 and 160 meter amateur bands.

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K8JZF, secy.; and PXX, treas. Holders of amateur radio station licenses in Ohio who do not have 1958 call letter license plates must write the Bureau of Motor Vehicles, Reservation Department, 275 S. Fourth St., Columbus, Ohio, and request an application form if they wish 1959 call letter license plates. The Dayton ARA held its picnic. DG vacationed in Michigan. TZO received Keystone Award No. 6. Your SCM attended the Buckeye Net Picnic in Columbus with DAE, DSX, EZE, OPU, OPV, OUU, QLJ, VDA, VWX, YGR and K8s DDG, EHE, EJL and HGI in attendance. I also attended the Green Valley RC's hamfest in Alliance along with 228 amateurs and their families. ETN won an HQ-110. CJG a v.f.o. kit and TUY a D-104 mike. K8BXT has a new NC-300. PKC has a new beam and is on s.s.b. EPW moved to Texas. FBE is mobile. RQL is s.s.b. with a B&W-5100 and a 75A-4. KJE has a 75A-4. PPH is on s.s.b. with a 10B and an HT-31. KAK, UYX, OKC and K8ECW moved into new houses. The stork brought a jr. operator to UYX. K8ANG, KN8s IDT and KMG enlisted in the Navy. ADX has a new SX-100 and is on s.s.b. K8BMM has a new DX-100. K8GAS has a new Ranger. Another old-timer, GW, joined Silent Keys. The Cuyahoga County AREC furnished communications at the Akron Sport Car Races with ADV, AEU, AVR, AVU, BDZ, DGK, FAG, IDM, MWE, OXI, PVA, PVC, QXG and VFU on 10 meters and AOA, HAE, LHX, SQU, TTL, K8s AAG, DPA, ETF, ETX, GJW, IHC, JHZ, KKO and KKP on 6 meters. DBU now is K4HFR. Mr. Albin Shirk, radio engineer of the Ohio State Patrol, spoke on the Communications System of the State Highway Patrol at Springfield ARC's meeting. The Fulton County AREC mobiles provided communications for the Wauseon Homecoming Parade. NAT and K8GID have new beams. Toledo *Shack Gossip* names KIX as its "Ham of the Month" and states the Wood County RC held an auction. The stork brought a baby girl each to CIX and K8DPE. UKX and his XYL vacationed in Canada. ADI and BMN in Michigan. IUC and KPJ in Florida. Columbus ARA's *Carascope* tells us that K9CJT spoke on "Future Applications of Semi-Conductors." OMV is operating in Mexico as XE8OMV. Noro ARC's 1958 officers are KN8HUI, pres.; K8HWO, vice-pres.; KN8KOJ, treas.; KN8HTZ, secy. The club call is K8LYC. K8DHJ received a WTO certificate. YGR worked ZS6IF/7 and UA9KCC. The Seneca RC meets the 1st and 3rd Mon. at 8 P.M. EST in Tiffin City Hall. NPE has a new halo on 6 meters. UUM and K8KSZ are new on 6 meters. The Geauga County ARC has a c.d. trailer on 6 meters at the County Fair under the call K8DJB. TZO tells us the stork brought his XYL, K8BOF, a jr. operator. IBX and UPH made BPL in August. NCE joined Silent Keys. Traffic: (Aug.) W8UPH 1277, IBX 199, VDA 134, DAE 118, K8DHJ 64, W8DSZ 54, AL 52, HXB 52, SYD 30, RO 25, K8EJL 24, W8BEW 20, LMB 20, YGR 20, HPP 18, HZJ 17, WHU 14, AAU 11, DDW 10, QIE 10, K8DDG 10, W8DSQ 9, STR 9, K8DTZ 9, W8STF 8, UHW 8, MXO 7, PMJ 7, K8HEJ 5, W8HYJ 4, CQP 3, QCU 3, WYS 3, JHH 2, K8BJL 2, DXZ 2, W8ALZ 1, CSK 1, DG 1. (July) K8BJL 2.

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; 1PN on 3970 kc. at 1530; ESS on 3590 kc. at 1800; ENY (emerg.) on 29.490 and 145.35 Mc. Fri. at 2100; MHT (Novice) on 3716 kc. Sat. at 1300. *August found* K2UTV with a new vertical and a 25-w.p.m. certificate. Endorsements: K2EHI and K2TCD as OOs; K2EHI and K2EIU as OPSs. K2YZI says that there is no comparison between the old Adventurer and the Viking I. Our hats are off to the Albany Amateur Radio Association for sponsoring the Hudson Division Convention at the Sheraton Ten Eyck Hotel. W2FBA reports confirmed DXCC of 201. K2TCD also reports 113/94 in the DX department. Prospective AREC applicants should forward their applications directly to their Emergency Coordinator. The following

(Continued on page 128)

NEW! 27 MC TRANSCEIVER

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are County Coordinators: Albany, W2AWF; Columbia, K2ZMH; Dutchess, K2GCH; Greene, K2SFY; Orange, W2PCQ; Putnam, K2EHI; Rensselaer, W2JJO; Rockland, W2ZTZ; Schenectady, W2WWK; Ulster, K2RCU. Emergency Coordinators in Westchester County include Armonk, W2VRE; Haverstraw, W2EHZ; Harrison, W2PIE; New Rochelle, W2QOM; Scarsdale, W2SQW; Walkill, W2VPG; Yonkers, W2IRT. In addition to the above, these coordinators have jurisdiction over the following cities and towns: Delmar, W2GTI; Altamont, W2NOY; Guilderland, W2CYW; Monroe, W2HO; Poughkeepsie, W2HZZ; Stony Point, K2CXO; Wappingers Falls, W2RTE. Drop a line to the SEC, W2KGC, if you are interested in holding an Emergency Coordinator appointment. Remember disaster can strike anywhere at any time so let's be prepared. Traffic: K2UTV 509, K2YZI 169, K2YTD 100, W2PHX 95, W2ATA 69, W2EFU 63, K2UYK 61, WV2AKK 31, K2SQV 29, K2VCZ 28, W2FVP 14.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2WFL. PAM: W2OBW. V.H.F. PAM: K2EQH. Section Nets: NLI, 3630 kc. nightly at 1930 EST and Sat. and Sun. at 1915 EST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST; NYC-LI AREC, 3908 kc. Sun. at 1730 EST; V.H.F. Traffic Net, 145.8 Mc. M-W-F at 2000 EST. BPL cards are earned this month by W2KEB, K2SSE, K2DVT and W2JGV, the latter two on originations plus deliveries. K2SSE earned his first BPL just prior to moving to the W. Pa. section. K2DVT and K2QBW received their Extra Class certificates. When K2QBW's rig developed trouble, he used his Knight v.f.o. "barefoot" and kept his traffic schedules. You can't stop an avid traffic man! K2HVY added a new Matchbox and two-element 20-meter beam to his station. The Mid-Island RC invites visitors to its meetings on the 1st and 3rd Thurs. at the Baldwin C.D. Hq. The Tu-Boro RC retired its veteran Comet Pro receiver for an HQ-120X. W2DUS vacationed in New Hampshire and enjoyed 144-Mc. mobile operation from the tall "hills" which are just a few feet higher than our Long Island "mountains." W2OME put up a Cusheraft trap vertical for 10, 15 and 20 meters. K2DEM has now reached 89 countries with 77 confirmed. K2VBL joined the sidebanders with a 20A driving a 6146. K2EOR is mobile with an AF-67. K2IGY dropped the "N." The Larkfield ARC, with 35 members, is seeking ARRL affiliation. K2PHT built a linear amplifier for 50 Mc. K2OEG is on 144 Mc. with a walkie-talkie. He and K2DEM visited ARRL Hq. and W1AW. W2BQM has reached 180 countries, phone only, with 171 confirmed. Wally is planning the addition of s.s.b. to add a few more of the elusive countries. K2DVT is using a heterodyne v.f.o. K2UEK will be on the air from Plattsburgh where he will attend State Teachers College. K2LCM joined the traffic gang with his DX-100 and NC-109. K2DZU and his 50-watt home-brew rig received the WAC-phone certificate. The W-Conn. Award was awarded to W2FLD. KZ5RM visited K2JYM/JYZ on a recent trip to this section. W2PCV returned to 144 Mc. after several years' absence. K2RKL worked Pennsylvania on 432 Mc. K2AZT worked a few new stations on 220 Mc., including two in New Jersey. K2HZC/LUR vacationed in Vermont and are trying to catch up on QSLs for all those needing the sometimes rare State. It was indeed a pleasure meeting so many of the NYC-LI fellows and gals at the National Convention at Washington, D. C. All hands enjoyed a fine convention. See you in the SS? Traffic: (Aug.) W2KEB 3181, K2SSE 557, W2VDT 260, K2DVT 198, W2JGV 145, K2QBW 144, K2SFS 114, K2LCM 56, K2HVY 53, K2MYS 33, W2JBQ 19, K2KJV 16, W2LGK 16, W2DUS 15, W2EC 15, W2PF 15, K2DEM 14, W2OME 14, K2DDC 13, KN2KVL 12, K2LDG 12, WN2BAN 11, K2TSE 10, K2VBL 10, W2EW 9, K2MEM 8, K2EQH 7, W2IVN 6, K2AAW 5, K2GB 4, W2IVS 4, K2KRJ 3, K2ABW 2, WN2AZE 1, W2FZI 1, W2IIU 1, K2RDP 1, K2RUP 1, K2TBU 1. (July) K2PHF 71, K2DVT 68, K2UEK 9.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—The Mason City Club was host to the Iowa 75-Meter Phone Net Picnic at Clear Lake. There were 111 hams registered with a total attendance of about 400. The Des Moines Club held its picnic on Aug. 10. The Central Iowa V.H.F. and U.H.F. Club held its picnic Aug. 17. The Sioux City Clubs held a combined picnic Aug. 24 with State Representative Doyle as a speaker. The Des Moines Club operated KØHEA again this year at the Iowa State Fair. LGG set up a station at the Central Iowa Fair in the Ground Observers Corp booth. YDV received an OO appointment. Renewals: MEL and YDV as OPS and SRQ as EC. KØOWM and OCI now are General Class licensees. KNØQWM, QWA, QVZ and RGM are new Novices in Ames. KØIDC is a new Technician.

(Continued on page 130)

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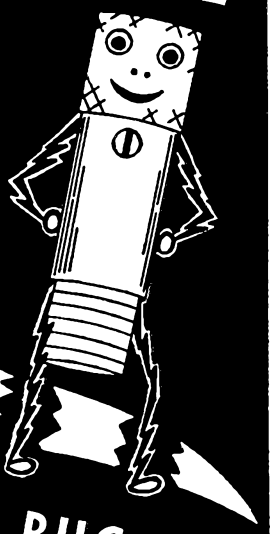

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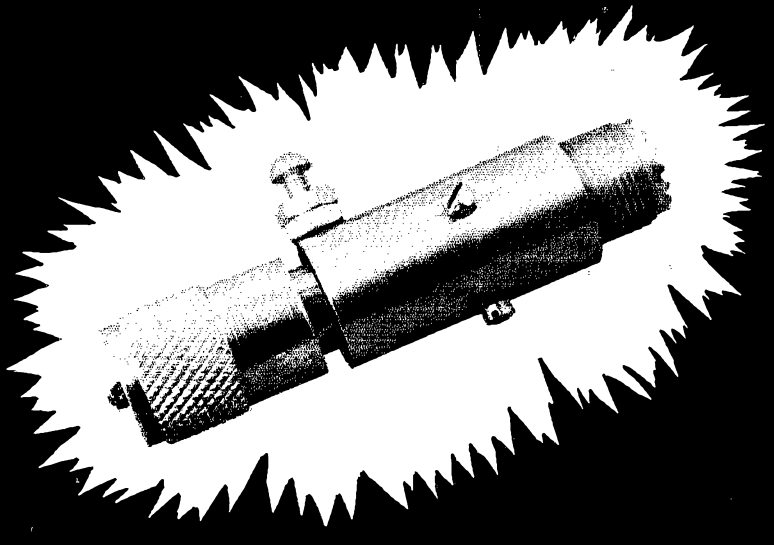

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CLS has a new SX-99. WØNTB vacationed in Colorado. KØEXN went to Florida for his. MMZ is back in Iowa and is reporting into TLCN. Congratulations to APS on making his first BPL. KØHTF reports considerable activity and interest on 220 Mc. in Indianola. Traffic: (Aug.) WØSCA 1919, BDR 1569, PZO 1548, LGG 1155, KØCLS 891, HEA 859, APS 816, WØLCX 374, GXQ 281, KØMMZ 250, WØQVA 146, KØBLJ 100, WØLJW 43, VWF 40, SLC 32, KØMIB 31, EXN 30, WØNYX 29, KØGOQ 27, HBD 26, WØUTD 25, BLH 21, KØGBB 18, GXP 18, DPT 16, IQB 14, WØMEL 13, BTR 11, KØEYX 11, WØUIZ 11, UHO 10, KØAPL 9, LKE 9, HFQ 8, WØHNE 8, NTB 8, KØIHC 7, WØJPJ 7, K5KUC/Ø 7, KØMMS 6, WØREM 6, YDV 6, KØBRE 5, IGU 5, WØEEG 4, FDM 2, PTL 2, KØAVZ 1, BPE 1. (July) WØCZ 354, KØIGU 54.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH, RM: QGG, PAM: LEW, V.H.F, PAM: ZJB. As I was in Western Canada for two months I was unable to send in the June and July reports of activities. I have listed below the traffic reports as received. I appreciate receiving many of the news items sent in but I think the many club newsgrams are doing such a wonderful job in covering news items it is not worth while reprinting them. Traffic: (Aug.) WØOHJ 757, BLI 548, TOL 412, FNS 215, KØIRL 154, WØIFR 133, QQQ 110, UOL 84, ABJ 61, TTG 36, KØBIX 30, KMZ 24, WØLEW 24, UTO 24, IRE 20, SYZ 20, KØGZP 18, EFL 16, WØFDJ 9, ASY 7. (July) WØBLI 642, OHJ 547, FNS 313, TOL 302, QGG 85, IFR 62, ABJ 57, KØIHA 34, WØUTO 33, TTG 27, MXG 26, SYZ 23, KØAWO 17, BIX 15, WØLEW 8, KØAHW 7, WØARO 5, UOL 5, FDJ 3, WWA 3. (June) WØBLI 898, OHJ 664, TOL 384, FNS 315, QGG 102, SAF 78, IFR 36, UOL 31, ABJ 30, MXG 24, QQQ 19, KØBIX 18, WØMEF 12, SYZ 12, UTO 12, KØIHA 10, WØFDJ 9, LEW 9, ARO 6, KØAWO 5, WØYXB 5, KØGYA 4, WØLOW 3. (May) WØQQQ 229, MXG 52, KØBIX 46, WØYXB 16, LOW 15, UTO 15, FDJ 14, KØGYA 8, IHA 7, WØLQX 4.

MISSOURI—SCM, James W. Hoover, WØGEP—Net reports: MON, 51 sessions: QNI 246, QTC 143; NCSs, OUD 43, GBJ 4, RTW 4. KØONK is NCS for the Nebraska Slow-Speed Net. EBE passed away Aug. 22. Les was well known throughout the State for his faithful participation in state nets and emergency communication. KØJPJ has a new HQ-110 and a Viking II. BVL attended the Early Bird Net Picnic in Toledo, Ohio, on Aug. 31. KØDEX has entered the Navy. The Midwest V.H.F. Association (St. Louis) has the new call KØQQC and lists 46 members. GAR has missed the BPL list for the last two months with the pressure of business restricting his normal activity. New officers of the Kansas City Amateur Radio Club include QLW, pres.; KØAFW, vice-pres.; KØIAH, secy.; OLA, treas. GCL has been attending CAA school in Oklahoma City but is back at the home QTH. KNØLWT, the daughter of QHL, passed her General Class license exam on her 13th birthday. A new club, the Aurora Amateur Radio Club, has been formed with KØBIY as president and ULF as vice-president. AUB and son, TDR, have a new Triband beam. Traffic: (Aug.) WØCPI 861, VPQ 127, ARO 116, KIK 113, VZB 105, OUD 100, OVV 66, KØLNQ 48, ONK 35, LJX 30, JPJ 29, WØGBJ 27, RTW 20, BUL 12, KØLRG 10, DGT 6, WØGEP 6, WFF 4, BVL 2, KØIHY 1, WØKA 1, KØKOB 1. (July) KØLNQ 130, HHG 53, WØGAR 40, VZB 39, KØLJX 29, WØWYJ 2.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—The Tri-State Radio Club of South Sioux City and the Sioux City Radio Club sponsored a hamfest Aug. 24 with about 130 amateurs in attendance from 5 states. ZOU reports 3 new states on 6 meters. The Western Nebraska Net, reported by NIK, had QNI 495, QTC 71. The Nebraska 75-Meter Emergency Phone Net, on 3983 kc. daily at 1230, reports QNI 436, QTC 29, with 31 stations on roll call. The Nebraska C.W. Net started operation on Sept. 1 with 16 on roll call and operates on 3525 kc. daily at 1900 CST with ZWG as RM. Traffic: KØIJW 106, WØZJF 91, MAO 84, KØDGW 72, WØNIK 59, KØBDF 50, WØZWG 33, KDW 17, OCU 17, UJK 17, ZOU 15, KØHKI 12, WØOKO 11, EGQ 10, VZJ 10, BOQ 9, MTI 9, PUT 8, AFG 7, SWG 7, WZR 7, KØBRQ 4, WØHOP 4, ORN 4, VGH 4, KØKJP 3, WØURC 3, ZWF 3, KØLXS 2, WØVEA 1.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—SEC: EOR, RM: KYQ, H.F.-PAM: YBH, V.H.F. PAM: FHP. Traffic nets: CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1800 and 2130 on 3640 kc.; CVN, Mon. Wed. and Fri. at 2030 on 145.98 Mc; CTN, Sun. 0900 on 3640 kc. K1AQE made BPL. HAT has joined MARS. K1BDL made WAS and WAC. FHP reports that CVN handled 14 messages in 11 sessions. High QNI goes to K1BMM, K1BML, KN1DZI and FHP with 10 each. KN1IED is a new station on CVN.

(Continued on page 132)

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Type of Emission: C.W. — A.M. — SSB
Power Ratings: DC average input SSB-100 watts; A.M. input (two tone test)—60 watts. Peak envelope power input SSB-144 watts. Peak envelope power output SSB-100 watts.
Keying: Grid block, full break-in.
Harmonics and Spurious Responses: Spurious mixer products—50 db or more down. Third order distortion products—35 db or more down. TV interference suppression—40 db or more second harmonic, 60 db or more higher harmonics.
Unwanted Sideband and Carrier Suppression: 50 db minimum attenuation, through low frequency crystal lattice filter.
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"The engineering is excellent."

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"The operation of this exciter has aroused a lot of interest and favorable comment, especially concerning the naturalness of a voice."

"I like the SSB-100F very much . . . Nothing but good reports."

"Everything is working in fine order and I am enjoying the SSB-100F very much indeed."

"I have been very much pleased with the SSB-100F transmitter. Reports from those stations contacted with this transmitter are invariably complimentary."

"My present opinion of the transmitter can be summarized by saying it's really good engineering design."

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MDB, K1EJB, NHK, K1CYU and KN1EIG are starting a school radio club. DHP is back at school and getting the U. of Conn. emergency net in operation. Latest awards at ECH are S6S, WAM, WAMC and he now has all 67 New England counties. BDI attended the Maritime Provinces Convention at Truro, N.S. K1GTZ, KN1GZH, KN1HAH, K1ICM, KN1IF and KN1IIG received their licenses after attending code classes run by FXK and PRT. GTF is working on a 40-watt mobile rig. K1IJF, a newcomer to Connecticut, is busy putting up a trap vertical and building an 813 final. YBH advises that CPN handled 215 messages during 31 sessions with an average daily attendance of 26 stations. QNI honors go to K1BEN and FHP, 28; K1AQB and OQC, 26; VQH and ZQO, 24. JSQ would like to see 29,580 kc. monitored on a state-wide basis. JMI finds air-conditioning helps summer mobiling. GWV and RLD are moving. HAN, the Bridgeport ARS station, is now located at the home of EJH. KLK won an MM-2 'scope at the National Convention. KN1IHA is a new Novice in Meriden. KN1DME dropped the "N." Ex-FQ is back as FS after 30 years. KYQ reports that CN handled 235 messages in 26 sessions including 23 on the second session and had a daily attendance of 7.3. High QNI goes to GVK, AW and RFJ. YDS would like to run some 220-Mc. tests with someone. TXI and K1DCS are on 6 meters. YOL is getting better results with his antenna out of the attic. KN1IML is a new Novice in Washington. In a 2-meter transmitter hunt held by the Torrington ARC, ZUQ, of Bristol, won first place over AQE by three-tenths of a mile. LGE received an OES appointment. Appointments renewed: VIY as EC, EYF as OBS and OO; VKZ as ORS. Reports received: SEC from EOR; OO from MBX, MWB and K1AJJ; OES from MWB, LGE, K1BMM, K1BML, K1CKZ, HQM, KLK, VWP, GTG, YOL and FVV. Traffic: (Aug.) K1AQB 575, BEN 315, W1KYQ 273, AW 224, YBH 204, ULY 128, GVK 78, LV 62, KLK 61, FHP 57, EYF 57, NJM 48, TYQ 48, K1AQE 36, WIVIY 28, QJM 24, ZUQ 23, BDI 21, MWB 20, ECH 16, K1ACC 15, W1MDB 14, DHP 12, RFJ 10, K1BDI, 8, W1GIX 8, HAT 8, YOL 8, OQC 6, K1BMM 4, BFJ 2. (July) W1ULY 71, HAT 11.

MAINE—SCM, John Fearon, W1IKP—SEC: QJA, PAM: VYA, V.H.F, PAM: JMN, RM: EFR. Traffic nets: The Sea Gull Net meets on 3940 kc. Mon.-Sat. at 1700; the Pine Tree Net on 3596 kc. Mon.-Fri. at 1900; the Barnyard Net on 3960 kc. Mon.-Sat. at 0800. DHH is planning to return to 75-meter phone after a long absence and is building a new homemade rig. A successful ham picnic was held at Mapleton on Aug. 24. VST is the proud father of twins born Aug. 19. The State RACES Mobile Unit is making a favorable impression at the various hamfests throughout the State. VYA has returned home after a checkup at the Mercy Hospital in Portland. GZS has moved to Orlando, Fla. Sorry to report that BDJ, formerly of Scarboro, passed away Aug. 31. KN1IBF is a new Novice in Belfast. BX is very busy with the opening of school. JMN now has 250 feet of ground radials under his antenna. K1BUC has improved his signal with an inverted "V" antenna. K1DXC is a new ham in Winterport. FQM is working mobile in the Portland Area. K1CMH dropped the "N." K1IFV is a new ham in Addison. K1HGII is active on 75-meter phone from N'East Harbor. NXX won first prize for the mobile hunt at both the Augusta and Dexter Hamfests. CRA is an engineer on Mt. Washington for WMTW-TV. VEH is back on 80 meters from Bucksport. BPM received his 10-meter WAS certificate. GPY and IHN are very active on the Eastern States Net on 7080 kc. Sorry to report that the two sons of ARV died in an auto accident at Embden Aug. 24. IZK reports that his new shack is completed. KN1INL is active on 80 and 40 meters from Sanford. The Bangor hams are already making extensive plans for the demonstration of amateur radio at the Bangor Sesquecentennial. Traffic: (Aug.) W1LKP 217, UDD 114, GPY 107, OTQ 42, FV/1 36, BX 24, LHA 22, EFR 21, HYD 12, K1BQT 10, AKO 9, W1IZK 8, RJE 8, K1BAY 6, W1FNI 6, LXA 6, UOT 1. (July) K1AKO 12, BYE 11.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—The following changes have been made in Area 1: Sector 1C is now 1B, 1D is now 1C, 1E is now 1D, 1G is now 1E, 1B has been shifted and is now in Area 2, Sector 2D, Area 1 Radio Comm. held a meeting and JZQ is now the secy. NO passed away. ZBT is RO and EC for Sudbury. New OOs: AFA, CFT, DEY and DJG. EUJ is a new OES. K1ICJ, Sharon, is on 2 meters and has an Apache transmitter. KN1GSU is on 2 meters. 2TDZ now is working in Boston. CZQ has his General Class license. Appointments endorsed: CZW New Bedford, FZJ Medfield, JSM Waltham, FEC Middleboro, RK Reading, TRC Maynard, DVS Falmouth, MOJ Millis, LQQ Hamilton and ISU Holbrook as ECs (in most cases these fellows are also the ROs); HWE, WU, EAE and DIY as ORSs; SAD and LQQ as OOs; MEG, JSM and IHC as OESs; SAD as RM; GDY, LQQ and DIY as OPSs; LQQ and DIY as OBSs. K1AII

(Continued on page 134)

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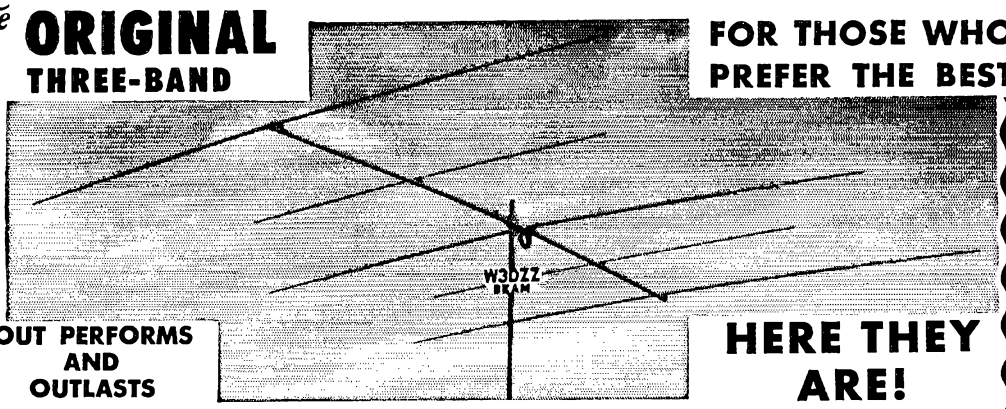
FOR THOSE WHO PREFER THE BEST



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- ✓ **NO STACKING REQUIRED**—all elements are at the full height yet wind resistance is held to a minimum.
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- ✓ **RUGGED DESIGN**—Booms consist of 2¼" dia. tubing with .065" wall. All tubing is of 6061-T6 heat-treated aluminum alloy for maximum weather resistance and strength.
- ✓ **NO GALVANIZED STEEL TUBING USED IN OUR BEAMS.**
- ✓ **ALL MODELS** complete with chromate dipped hardware and aircraft type stainless steel clamps (to assure against corrosion and rust), assembly instructions and prints.

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MODEL	FT-100	FT-105	FT-110	FT-115	FT-120	FT-125
ELEMENTS	5	3	2	5	3	1
BANDS	3	3	3	2	2	3
FREQ. COVERAGE	10/15/20M	10/15/20M	10-15-20M	10-15M	10-15M	10-15-20M
BOOM LENGTH	24′	16′	12′	24′	16′	Driven Element only of FT-100 Beam. Feed with 72 ohm twin lead or coax with balancing choke
FRONT-TO-BACK	25-30db typical	20-24db typical	12-15db typical	25-30db typical	20-24db typical	
FORWARD GAIN	10-9/10db 15-8.5db 20-8db	10-7db 15-8db 20-7.5db	10-5db 15-5db 20-5db	10-9+db 15-8.5db	10-7db 15-8db	
SWR	10-1.5/1 15-1/1 20-1/1	10-1.2/1 15-1.4/1 20-1.4/1	10-1.1/1 15-1.1/1 20-1.1/1	10-1.5/1 15-1/1	10-1.2/1 15-1.4/1	
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MULTIBAND DESIGN FOR WIRE ANTENNAS—The W3DZZ design employs a concentric coil and condenser completely potted in Polyester Resin. Polystyrene insulation of concentric capacitor can withstand highest amateur transmitter voltages.
MODEL FT-200 TRAPS for 5-band antenna operation on 10-15-20-40 and 80 meters, (75 ohm feed line). Pair, postpaid..... **$12.50**

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is on 6 meters. SS's OPS, ORS and EC appointments were endorsed. AJU/6 says someone is using his call on 75 meters. ZOP is back in the hospital. IHC, in MARS, will be on 220 Mc. NF is waiting for new DXCC. GDY flew to the West Coast. KN1HRM is new in Waltham. A V.H.F. QSO Party was held at KN1HBA's QTH. KN1GRP is waiting for his General Class license. WU has his house finished and will have new masts up. MEG has the call K1CXN for his other QTH. RM vacationed in New Hampshire. CGU has a summer home in Hopkinton. UG is busy with his boat. LMU went on a Windjammer Cruise and visited RQR in Maine. KVX is getting on the air. DYS is busy fishing. AGR is mobile. MFI is going to VK-Land. NSH vacationed in Colorado. QMU is doing photo work. QMA moved to W6-Land. JOW has a larger boat. PIW went up to Maine. KBS has moved to San Diego, Calif. COL, our Cambridge EC, says things are coming along fine. UKO is NCS for TCPN on Mon. and joined MARS. K1BUF has been acting as NCS for TCRN-3. FJJ is rebuilding the rig. K1BYL will have a new rig. KN1HYT is new in Lexington. AUQ is having ITV troubles. DIY says his AT-1 on 75 meters is working well. LGO went back to school. HWE says he had a bad summer. EUJ has beams up for 6, 2 & 1¼ meters. The MV-6 Net is active. K1ACJ is building a cubical squad. NJL went across the country, went to the National Convention and has a Mosley vertical. ZSU says the Dimlight Boys certificate takes no QSLs or fees. Send him calls, dates and band on your blank QSL after working 9 So. Shore "Dimlight" members in U.S.A. (or 4 from DX) and you too can be certified. Traffic: (Aug.) W1EMG 375, UKO 234, K1BUF 198, W1EAE 133, FJJ 131, K1BYL 97, W1AUQ 62, QPU 56, TY 48, DIY 18, K1AII 14, W1LGO/1 12, K1DGG 10, W1WU 9, HWE 4, JMS 4, EUJ 3, K1ACJ 1, W1KXT 1. (July) W1NJL 69, AOG 19, K1BUF 14, CMS 12, W1JMS 3. (June) K1BUF 90.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKeraghan, W1HRV—RM: BVR. PAM: MNG. The West Mass. C.W. Net meets at 1900 EST on 3560 kc. The Mass. Phone Net meets on 3870 kc. at 1800 EST. UEQ makes BPL again this month. Nice going, Red. The SCM requests that all official appointees check their certificates and send them in for endorsement. A good many of them are overdue. The Annual West Mass. Net Family Picnic was held at Quabbin on Aug. 24. Arrangements were in the capable hands of DVW and MNG. The SCM was unable to attend but hears that the affair was a success. EKO reports making DXCC with 112 confirmed out of 133 worked. He also has a new three-element 15-meter beam to try to work more of that DX. DGL has a new Tribander beam in operation. KGJ is getting ready for the fall contests with new dipoles for 80, 40 and 20 meters. GKK, of North Adams, has been appointed QSL Manager for New England. AEW has a new Tribander beam finished and now has a total of 205 countries confirmed. New calls in the Pittsfield Area are KN1s HFR, HFI, HRL and W9BHK/1. BKG has just raised a 20-meter beam atop a 50-ft. tower. DPY has a Tribander on a 40-ft. tower. Looks like the Pittsfield boys are really going after that DX. FGV has a new HT-32. BUM has a new Apache working FB for him. The Hampden County Assn. held an auction at its September meeting. Reports from the section appointees were slim this month, fellows. How about it next month? Traffic: W1UEQ 742, BVR 81, KGJ 51, DGL 50, OSK 22, AGM 14.

NEW HAMPSHIRE—SCM, John A. Knapp, W1AIJ —SEC: BXU. RMs: COC and K1BCS. PAM: CDX. V.H.F. PAM: TA. RVQ is now ham radio gear sales mgr. with the Radio Shack, Boston. EET takes over Al's duties in the same capacity at Evans Radio, Concord. OGZ is attending CAA school in Oklahoma City. SJS has returned to Bradford and is active on 2 meters. FTZ has two new MARS nets: /A and /B. AOQ and VAU have joined the s.s.b. ranks. KN1DFQ is now a General Class license. In the new gear dept.: MTX has an NC-300 receiver. VAU a 20-A exciter and RVQ a 75A-4 receiver and a Viking Valiant. KOC has added a kw. linear amplifier to his rig. GVL is attending Dartmouth College. ENM is attending N. H. Tech. Institute at Portsmouth. GZR has left for duty with the U. S. Govt. teaching English in Turkey. BFT is opening a new department at Evans Radio which will be a wholesale electrical equipment outlet. K1CIF is a new ORS. Certi-

(Continued on page 136)

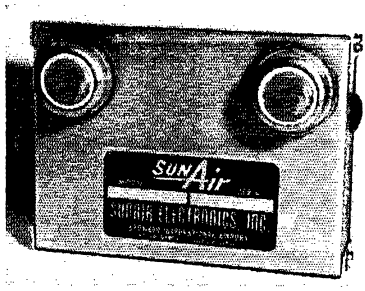
Transistor Power Supplies* and Components

*Complete Units

D SERIES (Standard)

Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at ½ selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**



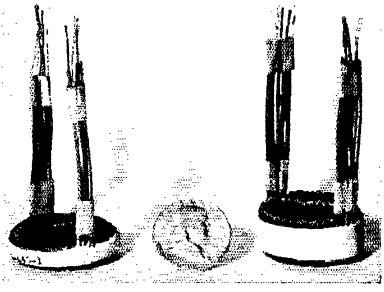
DA SERIES

Continuous operation at 45 watts. 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA; 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 14 oz 12-V Input: **$57.50** 24-V Input: **$79.50**

Toroid Transformers for Transistor Power Supply Application

H SERIES



H-6-450-1	Input: 6-VDC. Output: 450-VAC center tapped...450 and 225 VDC from bridge rectifier...45 watts.
H-14-450-12	Input: 12/14-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...55 watts.
H-28-450-15	Input: 24/28-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...65 watts.
H-6-100-125-150-D	Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.
H-12-100-125-150-D	Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC: DC Output: 200, 250 or 300-V at 125 MA.
H-24-100-125-150-D	Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.

Without Encapsulation (2 ozs.). 1-10 units: **$16.00** ea. With Encapsulation (3 ozs.). 1-10 units: **$18.50** ea.

HD SERIES — 2000 CPS

HD-14-225-300-2-D	Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.
HD-28-225-300-2-D	Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$18.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$21.50** ea.

HDS SERIES — 2000 CPS

HDS-14-225-300-3-D	Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.
HDS-28-225-300-3-D	Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$21.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$24.50** ea.

400 CYCLE SERIES

14-115-1.5-400	Input: 12/14-VDC. Output: 115-V at 1.5 amp.
24-115-1.5-400	Input: 24/28-VDC. Output: 115-V at 1.5 amp.

Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.). With Encapsulation (16 ozs.). Per Unit: **$76.00.**

Matched Pair HD Transistors:
12/14-V operation—**$11.00** per pr.
24/28-V operation—**$21.00** per pr.

OEM *Prices on Request*

All fully performance tested, 100% guaranteed. Manufactured by makers of world-famous SUNAIR H.F. Aviation Transceivers.

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ficates endorsed: QGU as ORS, COC as RM, BXU as SEC, GDE as EC. Traffic: (Aug.) K1BCS 154, W1QGU 123, K1CIF 114, W1HKA 58, CDX 22, EVN 11. (July) W1HKA 23, YHI 5.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAMs: KCS and YRC. RMs: BBN and BTV. New appointments: K1CBR as OES and LQJ as OO. Section Net certificates were awarded to TGD, KCS, CKH, LSP, TXL, HIK, GV, MDT, WTR, CSG, K1s BWX, ELI, AFJ, AJC, GRC, COI and CEP. KCS has worked Wisconsin for his twenty-third state on 2 meters. LSP is now manager of the Johnnycake Net and K1BWX is manager of the Fish Net. At the Sept. 11 meeting of the Roger Williams V.H.F. Society K1BWX was elected pres.; TXL, vice-pres.; LSP, secy.; and MDT, treas. CMH has earned his BPL medallion. GR has a new 70-ft. telescoping tower in use with rotator and Triband antenna. The R. I. State Phone Net (RISPN), on 3915 kc. at 1830 Tue., Thurs., Sat. and Sun., still is looking for someone in the Providence Area to check in regularly. The BVARC is running code and theory classes again this fall and another bean supper is planned for November. KN1HXZ is a new Novice at the BCRA. FVZ has been making many contacts with his mobile on 6 meters. LQJ has a new NC-300. CHE has been working W2s and 3s on 220 Mc. NQH now is president of the BCRA. Traffic: W1CMH 295, YRC 89, TXL 79, YAP 77, TGD 50, DDD 12, LQJ 11, WED 6.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK—SEC: EIB. RM: K1BGC. PAM: ZYZ. Traffic nets: VTN meets at 1830 Mon.-Sat. on 3520 kc., GMN a 1700 Mon.-Sat. on 3855 kc., VTPN at 0900 Sun. on 3860 kc., the State RACES at 1000 Sun. alternately on 3501.5 and 3993 kc. *RACES News* is published monthly at c.d. headquarters in Montpelier for all RACES members in Vermont Civil Defense. K1BGC is the newly-appointed RM for VTN, and net controls Mon.-Sat., respectively, are TXY, K1BGC, DAQ, ELJ, KRV and GQJ. Nightly representation to 1RN also is filled. Appointments: EXZ as OES, K1BOL as OO, K1BGC and GQJ as ECs for Washington and Caledonia Counties, respectively. AVP sent in EC, OPS, OBS and OO certificates for endorsement. K1BKK enjoys 144 Mc. using a 6N2 with 70 watts. K1DKV, 2TUR and K2YNV operated portable on 50 Mc. in Vermont during August. K1BYQ received his Conditional Class license. BJI, from Putney, is operating HL9KS around 14,140 kc. in South Korea. KN1IGD is new in Hartford. WVV is a junior at Amherst College majoring in physics. JLZ/1 is working in Springfield. PTB moved to Burlington. KKM is working in Massachusetts. K1BVH conducted a c.d. booth at the Rutland Fair. QO vacationed in Vergennes. Traffic: W1OAK 276, BXT 242, WVV 62, ZEW 35, K1CYY 31, W1VSA 29, K1BOL 12, BSU 7.

NORTHWESTERN DIVISION

ALASKA—SCM, Eugene N. Berato, KL7DZ—Accompanied by the XYL, BVC, we went to Kodiak and had an excellent visit with the gang. The Kodiak Amateur Radio Club elected CSY, pres.; DG, vice-pres.; BRI secy.-treas. The majority of the hams in this area are strong advocates of s.s.b. BEM has a kw. on s.s.b. homebrew. ALU has a Qubex-Quad on 20-meter s.s.b. and a Thunderbolt final. COU has a new mast for the Gonset Tribander. BMZ's XYL passed the General Class exam. BMZ is back from a vacation in the States and can be heard guarding the Sourdough Net again. BDD, BDK, ML, AWR, BEM, BMZ, BRI and BRX are on s.s.b. Kodiak and Navy hams got together for an enjoyable potluck and special meeting for the SCM. DG provided transportation. En route we visited AX, AV, AKC, CSQ, QI and W7BYR. W7RCM/KL7 is a new ORS. BCH is the proud father of a new harmonic. BJD's and CAH's first grand harmonic. CRE has 21 countries confirmed. BYN and PIV are sporting new KWM-1 equipment. Traffic: KL7BJD 339, W4CRM/KL7 6, KL7CEJ 4, CRE 1.

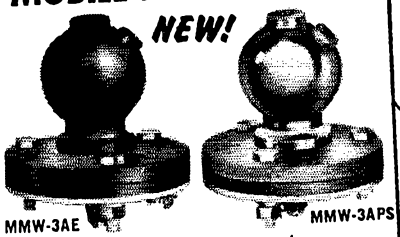
IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—The Idaho Radio Club elected OZJ as new editor for *Ham Hill News*. The club received a new club house from the city. Six-meter activity is booming in Pocatello as well as Lewiston. 6GTJ/7 worked 12 states there. A new TVI committee was formed at Pocatello to handle any complaints. The Caldwell Club is growing rapidly. Most of Eastern Idaho was represented as a picnic and mobile hunt held at Blacktoot. GMC reports there are some new irrigation pipe verticals in the Lewiston Area. We hear of proposals to charge for training Novices. This is a far cry from the real amateur spirit: most clubs are eager to set up groups to get new eager members for our clubs and nets. The license is free; let's keep our instruction free, too. Has an FCC monitor visited YOUR home yet to check on your code speed? It can and may happen. Traffic: W7EEQ 13.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI

(Continued on page 138)

HEAVY DUTY
MOBILE BASE MOUNTS

NEW!



MMW-3AE MMW-3APS

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Ebony Finish $6.95 Polished Finish $7.95
Ebony Finish, S. S. Hardware.. ..... $8.95
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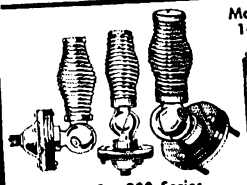


Model 232-C 232 Series

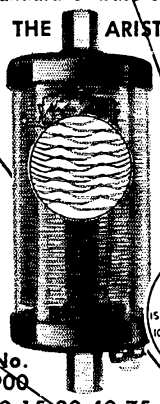
Model 142 — 100X Heavy Duty — 100 Reg.

Model 140 100WX

NEW MULTI-BAND ANTENNA COILS

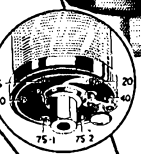
New *Plug-In* type coils for the Ham, designed to operate with a standard 3′ base section and standard 5′ whip

THE ARISTOCRAT



No. 900
10-15-20-40-75 METERS

THE VICTORY



- Rigidly tested & engineered—found to have "Q" of 525
- Handles 500 Watts input
- Operates into a 52-ohm cable
- Positive contact—noisefree, troublefree operation
- Weathersealed
- Factory pre-tuned—no adjustments needed

No. 999
10-15-20 METERS

YOUR CHOICE
Amateur Net
$14.95

Now! 2 New Coils... just plug in and presto! your coil is ready for operation on the desired band! No switches, no sliding contacts, no loose connections. Built and pre-factory tested in Master Mobile's own laboratories.

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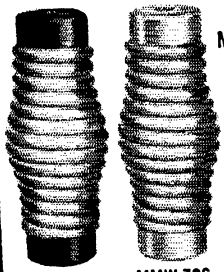
NEW HEAVY DUTY
MOBILE SPRINGS

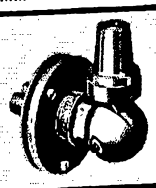


MMW-7 MMW-7SS

PROTECTS YOUR MOBILE ANTENNA

Heavy duty flexible mounting spring mounts on the base and holds the antenna. Special flexible "give" spring prevents sharp impacts and breakage. Lockwashers included.

MMW-7 Cad. plated, black painted ends $4.50
MMW-7HC Heavy Cad. plated—Extra Protection $5.50
MMW-7SS Deluxe Stain. Steel... ..... $8.95



No. 321 BODY MOUNT

Swivel base body mount, less spring. Specially constructed diagonal ball joint for maximum strength. Amateur Net **$7.95**

NEW!
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ALL-BAND BASE LOADING ANTENNA COIL

FOR 10 11 12 15 20 40 80 METERS

96" WHIP

SIZE 1⅜"x 19"

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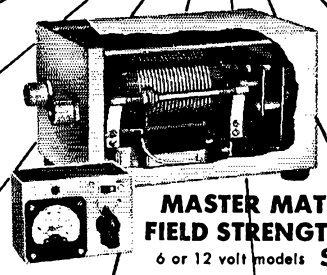
Positive action, just slide whip in or out to loading point and lock nut into position. **$17.95**



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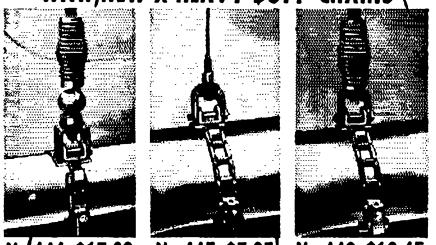
6 or 12 volt models **$24.95**

BUMPER MOUNTS
WITH NEW X-HEAVY DUTY CHAINS



No.444 $17.80 No.445 $7.95 No.446 $13.45

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AT LEADING RADIO JOBBERS EVERYWHERE

--FTV/M and ECO were credited with saving the life of an auto-accident victim by supplying communications. TNJ was seriously injured in an auto accident. WVL has a new baby daughter. Ham picnics were held at Fishtail, King's Hill and Livingston. New calls: K7s EIR, ENM, EUB, KN7s EYX, EYY, EZE, EZF, EZI and EZJ in Billings; KN7ECD in Bozeman; K7ESX in Libby; KN7ETM in Livingston; and KN7EXK in Lewistown. TGG and TPE earned DXCC. KN7AZF joined the Navy. KØPXD is operating portable in Billings. JHR is at CAA School in Oklahoma City. VLY moved from Missoula to Dillon. KVU moved from Ramsay to Arizona. DEO moved from Fort Benton to Fairfield. NMF transferred from Butte to Clarkston, Wash. VHA moved from Brady to Broadus. IVD and IUM moved from Cutbank to Libby. K7AXD moved from Great Falls to Stevensville. GFT moved from Great Falls to W1-Land with the FCDA. ECA operated from the Fair at Great Falls. YTG is president of the Harlowton Senior Class. Traffic: W7WRK 21, K7BYC 12, W7SFK 6, DEO 5, TGM 4, K7BON 3, DVZ 3, W7NPV 2.

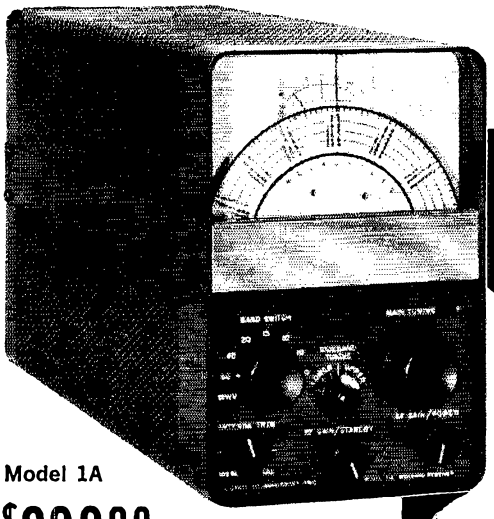
OREGON—SCM, Hubert R. McNally, W7JDX—ALG is busy handling traffic for military personnel. JCJ has some busted ribs but expects to be active again soon. TMF is busy with the new QSL Bureau. RCL had a nice vacation in W6-Land. The OSN now is showing improvement but expects higher check-ins next month. BRATS were AJN, ZFH and BYH, with OMO hoping to get a better score. DEM was in the hospital but is fine now. ZFH received a CP sticker for 30 w.p.m. Congrats. ENU says she will be more active later in the year but her report indicates quite a traffic total. GAJ says he is lazy in the hot weather but look out when the cool weather arrives. CUW also promises more activity soon. RCL is busy with AREC work. SH is home again but still taking treatments and has not been a regular on OEN. QYS is the net mgr. of the OEN. We regret to announce the passing of two more old-timers, ASX and VLS. PQJ is busy with the Lebanon Club. BZC is very active at The Dalles and is lining up more AREC members. A nice report was received from K7AWH and K7BJN, both 20-meter c.w. specialists. WNV has moved to Oswego and will resume OO activity soon. ISP has moved to Klamath Falls. JDX took time off for a trip to Chicago to see the Yankee and White Sox games. Traffic: (Aug.) W7ENU 91, ZFH 36, BYH 29, AJN 28, LT 13, VPH 3, DEM 2, OMO 2, RCL 1. (July) W7RCL 6, GAJ 4.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—EQU reports that four AREC drills and one mobile hunt were held in the Spokane Area in August. K7DMC provided communications for forest-fire fighters for two days. K7CEE is operating portable W2 from the New York Area. SOX is sweating completion of twenty years' service in the USAF and signing K3EFF from Washington, D. C. He plans to reside in the Seattle Area when he retires. NWP acquired a 32V-2 and now is having trouble loading the sky hook. FIX still is trying to get news from the boys for P.I.N.N. QLH nearly made BPL. VZZ is looking for a Seattle contact on 433.35 Mc. HLM is moving to Utah. PUA is going to U. of W. A new c.w. traffic net was started Sept. 2 with IEU as net manager and is on 3700 kc. at 2100 PST Mon. through Sat. K7AJT conducts a code class each Tue. at 7:30 P.M. CYV is putting up a new 20-meter beam. OEB reports from the Valley ARC (Puyallup). JJK is on leave of absence from Boeing to attend Everett J. C. OIV moved to Puyallup and is working for CAA at McChord AFB. PGY, QHI and RT were visitors at the VARC meeting Aug. 15. GIP is moving to a new QTH near Tacoma. VLC was home on leave from Annapolis and paid a surprise visit to the VARC. OEB is dreaming of a new half-gallon rig. BJV is working skeds with the Montana gang on 75-meter phone. A Western Washington transmitter hunt de luxe was held on Aug. 31 with forty-one mobiles participating. A total of 81 prizes were won with KUE getting the top one. ZIQ was the hidden transmitter. CZY hiked around Mt. Rainier for his vacation. WAH is having v.f.o. trouble; ZIZ ditto. HZE has a new Ranger. AIB, on the sick list, says, "Lost fourteen pounds and no appetite." EKQ was appointed c.d. signal officer for Lewis County Civil Defense. EVW went to the hospital for an eye operation. The North Seattle Radio Club is looking for new quarters. LFA is overhauling the big rig for the winter traffic season. RDL has a new Morrow transmitter for mobile. CAM also has a new mobile transmitter, home-brew, using a 6146 and super modulation. BA cuts way down on traffic. Traffic: (Aug.) W7BA 1364, PGY 671, QLH 404, DZX 191, HUT 154, APS 81, AMC 48, BBT 42, LFA 42, EHH 38, LVB 32, WAH 26, AIB 20, CZY 10, EKQ 10, JEY 4, EVW 2. (July) W7USO 21.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—Guam Activities: New calls are being heard from

(Continued on page 140)



Model 1A

$299.00 Amateur Net

The improved

R. L. DRAKE SIDEBAND RECEIVER

Late Engineering Changes

- Crystal Calibrator with front panel control.
- Switch position for WWV for accuracy.
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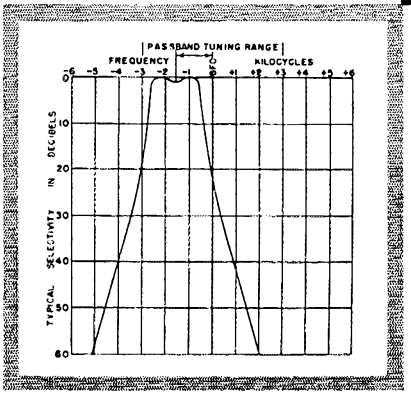
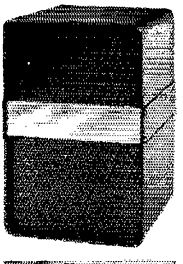


Dimensions 6¾" wide x 11" high x 15" deep
Weight 18 pounds
Power Consumption 50 watts at 115v, 60cps
Transformer Power Supply

ACCESSORIES



5" x 7" Oval Speaker
in matching cabinet, acoustically designed for voice communications. Speaker is submounted to permit installation of accessories on front panel. $15.00 Amateur Net

100 KC Crystal Calibrator
—with front panel control for earlier sets available at $20.00 Amateur Net

Features for best SSB and CW

STABILITY: High stability VFO has warm up drift of less than 300 cps after 15 minutes operation. Crystal-controlled, high frequency conversion establishes this same stability for all bands.

SELECTIVITY: 2.5 kc at 6 db—8.1 at 60 db. Sideband tuning control adjustable plus or minus 3 kc.

AVC: Amplified-delayed AVC. Integrating dual-action time constant circuit gives fast charge—slow discharge for modulation, but fast charge—fast discharge on short pulses. This provides some noise limiter action.

DETECTION: Product Detector for SSB, CW and AM by exalted carrier method.

PLUS

OPERATING RANGE: Seven 600 kc tuning ranges cover five "ham" bands: 80M(3.5-4.1 mc), 40M(7.0-7.6 mc), 20M(14.0-14.6 mc), 15M(21.0-21.6 mc), 10M(28.0-28.6 mc), 10M(28.5-29.1 mc), 10M-(29.1-29.7 mc) and WWV-10 mc.
MAIN DIAL: Scale length 8.3"—10 kc divisions—600 kc each band—tuned with 4½ turns fast knob or 30 turns of slow knob.
SENSITIVITY: Less than 1 uv for 20 db s/n.
ANTENNA ATTENUATOR: 30 db. Switch provided to switch pad in or out.
"S" METER: Meter calibrated in "S" units to S9 and 20, 40, 60 db over S9. S9 is approximately 100 uv. "S" units are at approximately 6 db intervals.
AF RESPONSE: 300 to 3000 cps.
AF OUTPUT: To internal speaker or 4 ohms to external speaker, headphones and transmitter anti-trip.
RF INPUT IMPEDANCE: to match 50-75 ohm coax line.
BUILT-IN SPEAKER FOR PORTABLE USE.

THIRTEEN TUBES

6BZ6—1st RF
6AB4—crystal oscillator
6BE6—1st mixer
6BQ7A—V.F. oscillator
6BE6—2nd mixer
6BY6—3rd converter
6BZ6—I.F.
6BJ8—AVC amplifier and rectifier
12AU7—product detector
12AU7—L.F. oscillator and 1st AF
12AQ5—A.F. output
12X4—Rectifier
12BA6—crystal calibrator

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Guam, and include AHU, AHV, AHW, AHX, AHY and AHZ. Several s.s.b. stations are operating. With the cooler weather arriving, activity on 10 meters is on the move. Fifteen meters is also becoming an excellent band again. For the stations who would like to work KG6, note we are an American possession and must abide by the FCC Regulations, i.e., within the American phone band. The RK6 and KA boys are fortunate to have DX band privileges. There are fifty actives on Guam. Send QSLs to GARL, Box 145, Agana, Guam, M. I.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6HYM—SEC: W6NVO, PAM: W6ZLO, RM: W6QMO. K6PQH has been selected to replace W6QMO as manager of NCN. Jeri has resigned after doing a very great job of breathing new life into the net. Appointment: K6PQH as ORS. Endorsements: K6GID as ORS, W6WAI as OES. Officers of the SCARS are W6CTH, pres.; K6JUU, vice-pres.; W6WIU, secy.; W6CQK, treas.; K6IEE, W6RBO, W6AUC, K6OEJ and K6MPN, board of directors. W6PLG has returned from vacation and is resuming his OBS skeds. W6CBE is building s.s.b. exciters. W6MMG reports that KN6IHP is working on 144 Mc. W6DEF reports plans are under way to check into NCN from the C.D. Base Station. W6RFF remodeled his shack. W6YHM had his receiver serviced. K6YKG has a new QTH in San Jose. K6DYX improved the bandswitching in his final. K6GZ is holding a sked with K6GES on 3750 kc. at 1930. W6QMO holds a daily sked with A6USA to pass overseas traffic. K6HEG now has an 80-ft. tower to get into the air. K6JJU reports a total of 43 states on 6 meters. W6WIU has dropped the "N" from her call. W6RLP reports the PARRA had an Old-Timers Night at the September meeting. The Greater Gilroy Radio Club has been given use of the City Court Room in Gilroy City Hall for meetings. W6MVL had a short stay in the hospital. K6SQW has a Viking mobile transmitter. K6MZD installed a mobile rig using a 6146 in the final. W6KNM has received a certificate confirming 102 countries for DXCC while running 75 watts to a Ranger. Traffic: (Aug.) K6GZ 395, W6QMO 202, W6BPT 197, K6DYX 178, W6FON 106, W6YBV 104, K6PQH 101, W6RFF 87, W6AIT 77, W6HC 77, W6PLG 77, K6HGV 72, W6YHM 26, W6DEF 24, W6MMG 12, K6PQC 7, K6YKG 4. (July) W6PLG 264, K6PQH 66, W6MMG 9.

EAST BAY—SCM, B. W. Southwell, W6OJW—Asst.

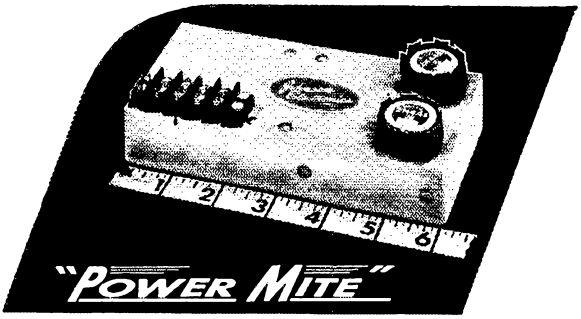
(Continued on page 142)

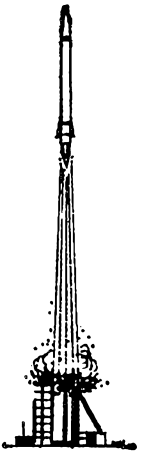
EAST BAY SECTION V.H.F. PARTY

The 2nd Semi-annual East Bay V.H.F. Sweepstakes will begin at 0800 PST, Nov. 22, end at 0800 PST, Nov. 24. Call used will be "CQ East Bay Party," or "CQ EBP" on c.w. Exchange RS(T) reports and number of QSO, starting with 001. Scoring to include total of all contacts, phone and c.w. Use any frequency in the 6 or 2-meter band. Count one point per contact (except 5 for each E. Bay contact after the fifth), plus 25 points if power input under 10 watts, 25 points if receiver is independent of electric mains, 10 points if you are SEC, EC, OES appointee or registered in the AREC. Multiply total points by number of counties worked. Submit logs (in duplicate) to the SEC (J. Wayne Clark, W6CAN, 70 Hoffman Ave., Napa, Calif.) not later than Dec. 4; logs should indicate station worked, number of counties, bonuses claimed, power input, numbers sent and received and a summary showing total number of contact points plus bonuses times multiplier to get final score; also appointment held (if any), AREC status and remarks. Only single-operator stations are eligible. Portable or mobile station operation under one call, from one location only, is permitted. No cross-band contacts count. A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

Other rules: (1) Scoring is not limited to East Bay Section. Contacts with outside stations may be counted. (2) To be eligible for certificate awards, at least 5 stations in the East Bay Section must be worked. (3) For each station over 5 in the East Bay Section, 5 points may be claimed instead of one. (4) Certificates will be awarded to (a) highest-scoring fixed (commercially-powered) station; (b) highest scoring portable (emergency-powered) station; (c) highest-scoring mobile (all mobile operation must be within 5-mile radius). (5) Decisions of the SEC regarding scoring shall be final.

65 WATT TRANSISTOR POWER PACK FOR *MOBILE UNITS*





THE MINIATURIZED TRANSISTOR *POWER SUPPLY*

MODEL PS-6-12

SIZE:	6" h x 3" w x 1" h
WEIGHT:	1 lb. 2 oz.
INPUT VOLTAGES:	6-7 v and 12-14 v
INPUT CURRENTS:	12 amps or 6 amps
AT NO LOAD:	1.5 amps or 0.8 amps
OUTPUT VOLTAGES:	200 and 400 v
OUTPUT CURRENT:	40 ma at 200 v; 135 ma at 400 v
TOTAL OUTPUT RATING:	65 w nominal
TEMPERATURE RISE:	20° C above Ambient 30° C
EFFICIENCY:	Full Load—85%

UNITIZED FOR 6 AND 12 V OPERATION

This special designed POWER SUPPLY used with Transmitters rated to 65W. continuous duty, or 75W. intermittent duty; will also supply a receiver with 200 V. @ 40 MA, continuous duty. Highly recommended for use in all MOBILE TRANSMITTER-RECEIVERS, e.g. automobiles, boats, trucks, motorcycles, aircraft, where power source is 6 or 12 V. Paralleling doubles ratings. **$49.50**

MODEL PSK-6-12 KIT FORM

Identical to Model PS-6-12, except in Kit Form. Complete schematic and detailed assembly instructions included. Pre-tested quality assured components included, no other parts to be purchased. Simple to assemble in Heavy Aluminum Case . . . you save cost of labor. **$39.50**

MODEL PST-6-12; POWER TRANSFORMER

INPUT VOLTAGES:	6-7 v or 12-14 v
OUTPUT VOLTAGES:	200 v and 400 v
CONSTANT LOAD:	up to 65 W.
DUTY CYCLE:	25% to 85 watts

Toroid supplied with 6" leads, Teflon wrapped, epoxy resin coated, proven for salt water use. Unit designed for your own particular power supply. **$14.00**

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TO: JOHNSON ELECTRONICS, INC.
Dept. PM, P. O. Box 1675, Casselberry, Fla.

Enclosed please find CHECK____ MONEY ORDER____
TOTAL AMOUNT_____ for the following
( ) MODEL PS-6-12 at $_____ each_____
( ) MODEL PSK-6-12 at $_____ each_____
( ) MODEL PST-6-12 at $_____ each_____
SHIP TO: _____
ADDRESS: _____
CITY: _____ STATE: _____

HEART OF THE MISSILE COUNTRY

SCM: Mary E. Lorenz, W6PIR. SEC: W6CAN. ECs: W6LGW, W6ZZF, W6IUZ. K6EDN, K6JNW and K6QZG. W2VIX visited W6OJW. W6TI has a DX score of 266/265. WA6BZO is a radio shop teacher at Berkeley High School. W6ASJ reports traffic low because of vacations, but RTTY bulletins still are being put out. K6ZBL is building a new antenna coupler. K6QHC is burning up DX bands to a 120/63 total. K6QHC and K6GK made BPL this month. Congrats. WV6BBW, WV6BKR, WV6BKS, WV6BKU, WV6BXS and WV6BBO are new Novices in Walnut Creek. WV6BBO is a radio shop teacher at Las Lomas High School. MARS Director K6OUR retired from the U. S. Sixth Army and will be on with a new call at an Iowa QTH. W6LGW has a new 60-ft. tower with 2- and 6-meter beams, and built a new SWR bridge. Six out of ten in W6LGW's code class are now Novices. FB. K6MFA is a new member of the MDARC. K6EHX has a new car for mobile. W6LGS is stationed at the U. S. Navy Base in San Diego. K6ZWJ has a new rig and trap doublet. K6QKD has a new DX-100. K6LVH is building a mobile rig. W6QCM/KA signed up for another year in Lotus Land. W6QEN flew to Texas for an eyeball QSO with his brother. K6BOV, W6CGS has a new jr. OM operator. Congrats. W6HOF has a new mobile rig. The XYL of K6ZWJ now is WV6AZI. FB. K6DKZ is coordinator of the C.D. and Disaster Agency, City of Martinez, and is a member of RACES. K6HUS and K6EHR are new Official Mobile Units. K6PQH is the new manager of the NCN. Congrats to W6QMO on a job well done. K6QNZ is a new General Class licensee. K6OKK is a new OES and has a 30-ft. mast with rotatable five-element 6-meter beam and new Communicator III. BCNU all next month. Traffic: (Aug.) K6GK 543. K6QHC 128, W6JOH 30, K6OSO 30, W6ASJ 13, W6PIR 12, K6OKK 2. (July) K6ZBL 51.

SAN FRANCISCO—SCM, Fred H. Laubscher, W6OPL—Summer vacations have come and gone and according to reports there is much activity among members and operators in this section readying their stations for emergency communications for the coming winter season. W6GQA reports that he is getting out so well on 2 meters that the Sonoma County Net sent him one of their net frequency crystals. K6ALF has given a diamond to W6GGC's daughter. He first met her at W6GQA's shack. W6NLQ has moved into his new house at Inverness and gets out FB on a new antenna. W6LFM had a dandy article printed in another magazine. K6KVX (the Legal Eagle) is working 40-meter phone using that rig with the eight 807s. K6MZN and his XYL K6UDT have moved to Daly City out of the San Francisco section. W6RZS has a B&W rig with an 813 driving two 833As. W6EQA's two sons are on the air signing WV6ABR and WV6AFH. W6BYB finally returned from FO8-Land to reopen the store. W6AWT sent us correspondence from New York on his way to Europe and also a post card from Italy. W6YC worked FO8AT, Clipperton Island, for a new one in August and also received the WACAN (Worked All Canadian) and Okinawa Award. K6UFT thought this information might be used in *QST*'s DX QTH list: ex-VQ8AJ/C, now VQ8AJC, QSL via VQ8AF. K6EKC says things were pretty quiet up Fortuna way in August. He gave two Novice and one Conditional Class exams. The Far West RC is ready to start work on its radio club station. K6EKC is on the air with a new Valiant. K6TMY, of Ferndale, has a new Apache. The San Francisco Radio Club with W6BIP as its president and his corps of officers is doing a fabulous job. The meetings are outstanding and the guest speakers are superb! The SFRC held its meeting Oct. 14 to accommodate 1LVQ, John Huntoon, Asst. Gen Mgr., ARRL, who had just returned from the Geneva Conferences and reported on the amateur outcome. Send in *YOUR* Traffic report. Help build up the section. Traffic: W6PCN 60, W6BIP 12, W6GGC 8.

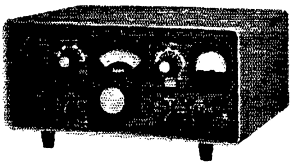
SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—Every now and then one amongst us takes on an obligation in the interests of our hobby and does an exceptional job. Such has been the case with W6QMO and her management of the Northern California Net (NCN). Jeri has truly done an outstanding job. Her successor will have a rough time maintaining such a fine record.

(Continued on page 144)

HARVEY has it!

The Completely New S/Line from Collins. The Latest addition to its distinguished single sideband series of amateur radio systems.

THE COLLINS 32S-1 TRANSMITTER $590.00



The 32S-1 is an SSB or CW transmitter with a nominal output of 100 watts for operation on all amateur bands between 3.5 and 29.7 mc. Input power is 175 watts PEP on SSB or 160 watts on CW.

Frequency Range: 80, 40, 20, 15, and 10 meter amateur bands. Easily retuned to frequencies between amateur bands by using different crystals.

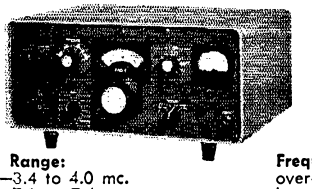
Output impedance: 50 ohms.

Frequency stability: After warm-up over-all stability due to temperature, humidity, pressure and voltage variation is 100 cps.

Calibration accuracy: 1 kc.

Oscillators: Double conversion circuit is used with CR-18/U crystals in the HF oscillator. A VFO tuning 2.500 to 2.700 mc, provides 200 kc bands. A crystal oscillator operating on either side of the Mechanical Filter passband provides carrier for SSB generation and choice of upper or lower sideband.

THE COLLINS 75S-1 RECEIVER $495.00



The 75S-1 provides SSB, CW and AM reception on all amateur bands between 3.5 and 29.7 mc. It is capable of coverage of the entire HF spectrum between 3.5 and 20 mc by selection of the appropriate high frequency beating crystals.

Frequency Range:
80 meters—3.4 to 4.0 mc.
40 meters—7.0 to 7.4 mc.
20 meters—14.0 to 14.4 mc.
WWV—14.8 to 15.0 mc.
15 meters—21.0 to 21.6 mc.

Choice of three 200-kc portions of 10 meters: 28.5 to 28.7 furnished.

Overtravel—7.5 kc on all bands.

Frequency Stability: After warm-up, over-all stability due to temperature, humidity, pressure, and voltage variation: 100 cps.
Calibration accuracy: 1 kc.

Visual Dial Accuracy: 200 cps all bands.

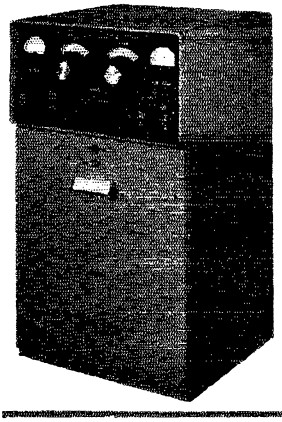
Electrical Dial Accuracy: (after calibration): 300 cps all bands.

Backlash: Less than 50 cps.

Sensitivity: The CW sensitivity is better than 1 microvolt (with a 50-ohm dummy antenna) for a 10 db single-plus-noise-to-noise-ratio.

Selectivity: 2.1 kc Mechanical Filter for SSB; 0.5 ks. Mechanical Filter (not supplied) for CW; 4.0 kc IF transformer passband for AM.

THE COLLINS 30S-1 LINEAR AMPLIFIER



The 30S-1 Linear Amplifier rounds out the S/Line to make a single, complete, high powered amateur SSB station.

Frequency Ranges: 3.5—4.0 mc; 7.0—7.3; 14.0—14.4; 21.0—21.45; 28.0—29.7. Covers entire spectrum from 3.5 to 30 mc by retuning cathode circuit.
Output Impedance: 50 ohms.
Input Impedance: 50 ohms unbalanced.
Power Input: SSB-1 kw average, CW-1 kw.
Power Output: SSB: 1000 watts PEP with 40 db signal to distortion ratio; 1300 watts PEP with 35 db signal to distortion ratio.
CW: 600 watts with 1 kw input.
Controls: Band Change, Multimeter, Filament, H.V., Bias Control, Tuning, Loading.

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ACCESSORIES:

312B-4 SPEAKER CONSOLE integrates the 32S-1, 75S-1 and accessories into an operating system. $185.00

312B-3 SPEAKER contains a 5"x7" speaker and connecting cable. $27.50

516F-2 AC POWER SUPPLY operates from 115V AC, 50-60 cps to provide all voltages for the 32S-1. $105.00

516E-1 DC POWER SUPPLY operates from 12V DC to provide all operating voltages for the 32S-1 and 75S-1 for mobile or portable operation. $262.00

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Although Jeri lives in South San Francisco she took us under her wing along with the San Joaquin Valley section. When our Central Valleys Net folded the few remaining members were asked to join NCN. Let's hope that we can encourage interest and have our own traffic net again soon. W6HJP attended the National ARRL Convention in Washington, D. C. He says he will have his 4-1000A s.s.b. rig in Sacramento shortly—having almost completed 20 years in the U. S. Air Force. W6QYX recently turned engineer. Listen around the bands for some of Bob's new innovations. The North Hills Club of Fair Oaks (K6QWL) and the Camellia Capital Chirps of Sacramento set up a fine amateur station at the California State Fair. All equipment—receiver, transmitter, beam, tower, etc.—was donated for the occasion by various manufacturers. Most of the equipment used was seen for the first time by amateurs in this area. The League donated some real FB literature for this job of public relations. All official appointees who recently received cards from the SCM are urged to return their certificates for endorsement. Traffic: K6YBV 609.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—K6HII is president of the Pleasant Valley Radio Club. K6RBB is putting together an Apache transmitter. W6RLG is building a new rig with an 813 in the final. W6PJF, KN6UII, W6QVR and K6SFJ furnished communications for a boat race using 2 meters. K6BFX got his General Class license. The Turlock Amateur Radio gang helped out again with a controlled burn by supplying communications. Those helping were W6GYN, W6SKH, W6SQR, W6LRE, W6USV, W6HAB, K6DYM, K6EXE, K6IXA, W6FEJ and K6YML. W6AZX is on 40 and 10 meters. W6ECH is having v.f.o. problems. W6AJE is getting his 300 watts back on the air. I would like to correct an earlier report, to wit, W8SCJ was the winner of the TR switch, not W6UBK. K6BKZ is on 20-meter s.s.b. with 180 watts. K6LKJ is on 20 meters with a KWM-1. W6ONK was reported to have key clicks with his TCS. W6NKZ is on 75-meter mobile with 10 watts. K6QOK is on 40-meter c.w. W6PSQ has a new s.s.b. adapter for his HRO using a mechanical filter. W6OUX is heard back on 75-meter mobile. K6EJT has a new Triband Quad. The Fresno Amateur Radio Club helped out with the CP telethon using both 75 and 6 meters. K6KYW is with Collins in Burbank and is on 75-meter mobile. W6NTK has moved up into the mountains, north of Fresno. K6GOX is putting a pair of 450TLs on 6 meters. W6NCG, with the Navy in Japan, with a scooter climbed up Mt. Fujiyama. Traffic: W6ADB 110, W6USV 9.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL. PAM: DRC. V.H.F. PAM: ACY. Much has been said to encourage amateurs in the State to give v.h.f. a try. We sincerely hope you have made some arrangements to get on these frequencies. Most counties can work within the county on a vertical antenna. To work outside the county you will need a good beam. (See *Antenna Book*.) I hope you will give this some serious thought and *do* something about the matter. A 6-meter net is being formed within the State. (My office and classroom was painted recently and I misplaced the letter. Will the person writing please write again.) At a meeting held in Winston-Salem of RACES personnel it was decided to allot 2-meter frequencies on a basis of mutual aid. Target areas and evacuation areas will have the same frequencies. The slave station on 2 meters was tried on High Peak in Burke County and it proved to be able to communicate as far east as Greensboro and as far west as Brevard. With the slave station on Mt. Mitchell and a repeater or slave station on Sourtown Mt. we can cover the State effectively. Congratulations to the Cleveland County Amateur Radio Club for an excellent hamfest. These boys know how. The business meeting was short. RRH, ZNY and HUL gave short talks. The program was so well planned everyone was home before dark. GXR was top traffic man, DSO was second.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—K4MXK and MOT are new ECs for their respective counties. K4ROE, PIA and HQK are now on the A.M. Phone. K4ADD is looking for contacts into

(Continued on page 146)

Your Ham Headquarters—
WASHINGTON to FLORIDA

SPECIALIZING IN THE BEST AT EASY TERMS
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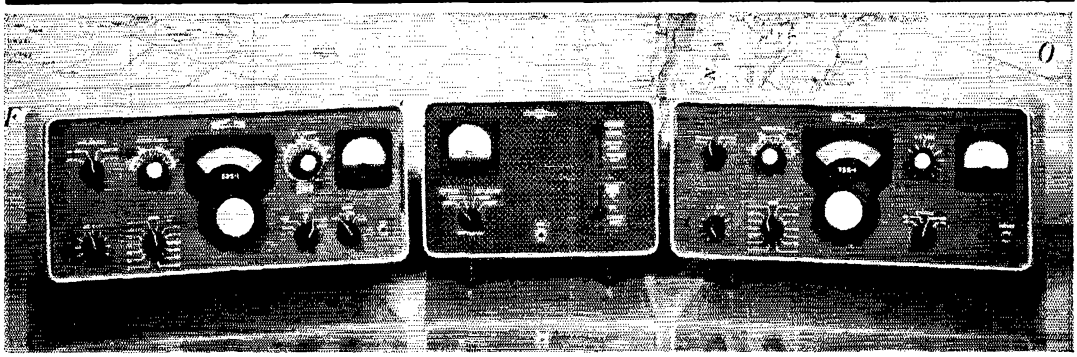
WRITE FOR DETAILS OF OUR TIME PAYMENT PLAN



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Smaller (only 6⅞" high) and more compact, the new S/Line maintains superior Collins standards in performance and operating convenience. Improved and simplified single sideband design incorporates time-proven features of the KWM-1, KWS-1 and 75A-4. (See the 4-page insert in this issue for complete technical specifications.)

Collins new S/Line will be on display beginning Nov. 8 at all three of our locations. Call, wire, write or stop in.

S/Line Net Prices

32S-1 Transmitter	$590.00
75S-1 Receiver	$495.00
30S-1 Linear Amplifier w/power supply	
516F-2 Power Supply	$105.00
312B-4 Speaker Console	$185.00
312B-3 Speaker	$ 27.50

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South Carolina on 40 meters. In Greenville, K4KSU reports great activity on 6 meters with regular nightly nets on 50.20 Mc. Regulars are W4VIW, TLC, K4s SRQ, AWB, HEA, HDX and KSU. The Greenville Senior High ARC's new call is K4TWM—the club trustee is EJH. UMW is up and about following a car accident in which he received a broken arm. His hospital stay was made more pleasant by 2-meter activity from his bedside. The Palmetto Novice Net on 3745 kc. is back in action at 2000 EST Mon. through Fri. Pawley's Island Hamfest Notes: ZRH caught a shark by the tail and fought it out on the beach, HDR ate heartily, a nice visit was had with K4RUY and the jr. operator, COA took the kids water-skiing, K4ANI had a couple of "experts" working on his mobile antenna, HAQ was busy trying to keep jr. operator Pat filled with food. K4RLX's insignia for the S.S.B. Net drew much attention. YOS, back from Virginia, came to the rescue with his portable rig after GIF's went off the air while guiding in mobiles. Traffic: K4WCZ 266, AVU 83, W4AKC 70, CHD 16, K4PIA 14, W4PED 13, CJD 8, K4PIK 8, BVX 6, K6RUO/4 6, K4HQK 5, ROE 2.

VIRGINIA—SCM, John Carl Morgan, W4KX—The Old Dominion really was represented in traffic figures in August. SEVEN, count 'em, SEVEN Virginians made BPL! VSN is back in action (Mon.-Fri. 1900 EST, 3680 kc.) with LW continuing as net mgr. EC K4MJZ invites participation in the NORVA (Arlington-Fairfax Area) Emergency Net which meets on 29.48 Mc. the 1st and 3rd Fri. nights. K4BCP reports the activation of ROVEN (Roanoke Valley Emergency Net) every Fri. at 2200 EST on 29.6 Mc. K4EZL has been reappointed mgr. of ESN. K4JKK takes over as publisher of *Virginia Ham* and says he will attempt to make it a monthly affair. Ken says he's most gratified with the results of the expansion of VN to 7 nights a week. Virginians-on-the-move: K4GWO now is in the Navy, BGP is out of the Army and QSYed to Norfolk, K4EAQ has gone to Massies Mill in Nelson Co., K4MBL now is at U. Va. and the rest of the college crowd are knee-deep in studies. Ex-KN8EYD now is K4ZJJ in Winchester. K4RBQ and K4UGN made General Class. CVO sends reports from VP9- and WØ-Land as he scrambles about the map. K4KWW is home from V.P.I. 'til January. K4EUS is building a 40-element 2-meter beam and reports FJ, QF and ZPE are populating 145.32 Mc. nightly. WBC is building an s.s.b. rig that changes bands like a TV turret. K4QER and QES say it was either forego the National Convention or abandon hopes for a new 75-A4 for Christmas. The latter won! Ye SCM enjoyed meeting so many of the Virginia gang at the convention. Sorry we missed some, but had difficulty reading those identification tags through bifocals! Traffic: (Aug.) K4EZL 629, ELG 621, QES 540, QIX 501, W4QDY 402, SHJ 387, K4JKK 172, DSD 164, HIA 136, MEV 55, KNP 40, W4BZE 39, K4EIG 30, W4BGP 26, K4SGQ 22, MSG 21, W4KX 17, K4BCP 16, W4RHA 15, AAD 11, LW 9, OOL 9, YIA 9, K4LEF 8, MJZ 8, RBQ 2. (July) K4EZL 821.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: KXD. PAM: FGL. RMs: GBF, HZA, PBO and VYR. The Black Diamond Radio Club is to be congratulated on the fine ham picnic held at Bass Lake, Hinton. ZAA, RACES State Radio Officer, has been appointed as SEC. We want to express our appreciation to KXD for the fine job he did as SEC. The new PAM is GAD. We express our appreciation to FGL for his fine performance as PAM. The Worked W. Va. Award, as listed on page 63 of Sept. 1958 *QST*, is becoming popular. The Kanawha Radio Club requests that W. Va. amateurs support this award as well as the Worked All Counties Award offered by the Mountaineer Radio Assn. by sending QSL cards to stations worked. Several Kanawha Valley amateurs, including IRN, DZU, HAI, BCH, GEO, CSG, BIT, DFS, ELB, JCK, HZA, AMS, GAG, GAP, DUX, GWV, EDP and EUA, did a fine job in providing communication during the flash flood emergency in this area on Aug. 8. KN8GLH has received WAS and is awaiting a card from OA4BP for WAC. BLR is a new OPS. There is a slow-speed c.w. net on 3570 kc. (WVN) at 1800 6 days per week open to all who would like to participate in traffic work. 4CQA/8 issued 251 OO notices during Aug. ZHN is on 20-meter phone. DUO is on phone with a DX-100. CWV is having rig trouble. K8ARF and GXR are very active on the 6-Meter Weather Net. HRO is doing a fine job as OPS and OBS for the Weather Net. Charleston Area hams participated in a simulated industrial emergency test on Aug. 20. JM, former SCM of West Virginia, after 12 years has obtained WACWV (Worked All Counties in West Va.) Certificate No. 1. Traffic: (Aug.) W8VYR 126, PBO 64, FNI 47, HZA 42, K8CSG 16, K4CQA/8 8, K8CNB 5, KLI 2, W8QWE 2. (July) W8FNI 354, K8HRO 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML

(Continued on page 148)

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Stampede to **S**witch to **S**ideband!

And **S**mart Hams will **S**ave by
Swapping now, while I can
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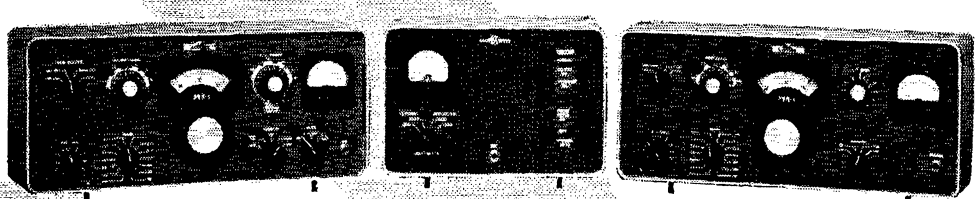

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I'll be looking for your visit, letter, or phone call—and the mutual pleasure of serving you, OM. TNX

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—SEC: NIT. ORSs: IA, KQD, SGG and WMK. PAMs: IJR and CXW. OESs: KØDIQ, KØCLJ and FKY. OOs: OTR and RRV. OBS: KØBTU. The Lamar Amateur Radio Club's officers are WTN, pres.; NVY, vice-pres.; and NVX, secy.-treas. KQD's reports were received from Nebraska while en route to Iowa to visit relatives and friends. She planned to visit with BDR, LGG, SCA, LCX and other traffic-handlers on the way. KØMDV should be in DL4-land and KØJAI in ET2-Land by this time. KØJAI will be transmitting on 14,325-kc. s.s.b. and listening on 14,265. The Colorado Springs gang has been having a big time spotting pigeons turned loose each Sunday by KØDXF. BON, HXP and VYP are retiring directors of the Denver Radio Club. The LCL-YL gals are sporting small clothespins as their emblem. KØHPF, KØEPD, KØCOI, VDY, WYX, SIN, LO and others furnished communications for the Annual Worlds Championship Burro Race over Mosquito Pass, an altitude of 23,180 feet. ENA/Ø, the Pueblo College club station, operated from the State Fair Grounds. NIT, KØMZN, KØIFC, KØBOH, KØWDZ, NCB, SKB and others helped out; 42 messages were handled. Traffic: (Aug.) KØDCW 530, WØKQD 469, WMK 300, NIT 120, DQN 112, KØEDK 100, DXF 94, EDH 81, IIT 65, EVG 58, WØCBI 50, WME 47, TVI 41, QOT 33. (July) WØWMK 548, KØHDN 24, WØNIT 8.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 7OCX. SEC: FSC. PAM: BBN. RM: UTM. V.H.F.-PAM: SP. The UARC (Salt Lake) held its annual picnic at Storm Mountain and had a turnout of over 60. BOD won the left-footed code contest and the father-and-son team, KN7COM and W7JBV, won the antenna-stringing contest. OCX received the BRAT (Brotherhood Radio Amateur Traffickers) Award and also a TWN (Twelfth Regional Net) certificate. The Beehive Net had pretty rough going this summer because of band conditions and not lack of personnel. JBV is now ORS. EII erected 50-ft. antenna masts to support an all-band Windom and has just finished a 6-meter transmitter using an 807 in the final. The Utah C.W. Net is struggling to keep alive. Please send your station activity reports to the SCM by the 3rd of each month. Traffic: W7OCX 117, QWH 2.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. RM: DWB. The NMEPN meets on 3838 kc. Tue. and Thurs. at 1800 MST and Sun. at 0730 MST. The Breakfast Club meets on 3838 kc. at 0700 MST Mon. through Sat. RMN meets on 3570 Mon. through Fri. at 1900 MST. FPB, from Albuquerque, attended the 10th National ARRL Convention. From all reports he had a very enjoyable time and was able to visit old friends he hadn't seen in a long time. K5DAA is a proud member of the A-1 Operator Club. The Cavern City Amateur Radio Club of Carlsbad had its annual picnic Aug. 24. There was a big attendance of 213 registered. The SCM, SEC, PAM and 2 ECs were there. A big delegation from El Paso was over for the day also. New Mexico, Texas and Arizona were represented. A new EC for the state is K5LWN. Welcome to the ranks and very glad to have you from Las Cruces. Traffic: (Aug.) K5WSP 1277, W5DWB 469, K5IQL 13, LFE 13, W5GD 11, K5DAB 7, W5BQC 4, CIN 3, K5LFF 3, CXN 2, LWN 1. (July) K5IPK 55, HRK 10.

WYOMING—SCM, L. D. Branson—W7AMU—The Casper and Cheyenne Clubs are sponsoring a bill for call letters on license plates. The Sheridan Club is sponsoring the 1959 Hamfest. AEC was elected County Clerk again. ABO and DTD have new rigs and receivers. HX, 84 years old, has been in a coma for several weeks. AHO is a new ham in Worland. BKI moved to a new house. FSR has gone to the University at Laramie, mobile. DW and IDO are working on club by-laws. LKQ is president of the Casper Club. PVN is trying to keep the sheep and cows separated. YXM is new in Casper. UFB is on 6 meters. NAC is in the Air Force headed for Korea. MXA and IJW are engineers at KSPR-TV. CQL is net control for the Pony Express Net and will have an alternate soon. Twenty-three stations checked in on the Pony Express Net. ITW, K7EWV and K7AHL are new stations checking in on the Pony Express Net.

SOUTHWESTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4HKK—SEC: EBD. PAMs: DGH and K4BTO. RM: RLG. Congratulations to the new officers of the Tuscaloosa Club, K4AJG, pres.; RLG, vice-pres.; MI, secy.-treas. Welcome to the following new hams: KN4YBR Helen, KN4YWE Bill, KN4YGQ Bill, all in Alexander City; KN4YTR, the Mayor of Dadeville; KN4YNR Sara, K4UJH Bob and KN4ZNK Betty, all in Montgomery. Selma started new code and theory classes Sept. 1. Troy and Elba both have new clubs. New equipment added recently: WHW an SP-600, K4SSB an SX-101, ENO 32V-3 and 310B exciters, the Mobile Club a truck with communications equipment, CEF a double sideband transmitter, YXS a new 6-meter converter, VUO a new 50-ft. tower and a three-element beam for 15 meters. The

(Continued on page 150)

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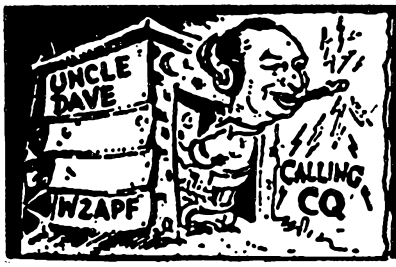
AENB welcomes two new members, K4UEE and TWJ. ZSQ and ANT both are recovering from recent heart attacks. Mobile has transmitter hunts on 29.560 Mc. every Sat. night at 7:30 originating at the LOOP. Visitors are welcome. KØEIH is a new resident of Mobile. K4POZ is the new manager of AENT. K4KAK is a new OPS and K4CXC has revived his ORS appointment. Traffic: (Aug.) W4RLG 338, K4BTO 57, W4PVG 54, K4JDA 31, W4DGH 26, K4AOZ 21, W4MI 19, K4RWW 18, SSB 17, W4CRY 16, K4PHH 16, W4CEF 14, K4HJM 13, JSP 13, ANB 12, GOW 10, KJD 6, W4IIKK 5, CIU 4, EOH 4, K4KAK 4, KBT 4, KQH 2, W4YXS 2. (June) W4RLG 254.

EASTERN FLORIDA—SCM, John F. Porter, jr., W4KGJ—SEC: IYT. RM: K4SJH. PAM: TAS. The New Smyrna Beach ARC participated in the emergency drill put on by the Daytona Beach ARA. Weather was handled to the Miami Area and points north. K4OYR has a new E-Z Way Tower. K4IXG is now running a full gallon on 2 meters to a pair of 4X250Bs. K4RZQ has a new Heath VFO, has received his RCC certificate and was appointed ORS. K4DAS received his DXCC certificate and also scored 118,525 in the July CD Party. K4MTP has been appointed comm. chairman for the Red Cross at New Port Richey. GGQ and IYT enjoyed seeing 29 Florida hams at the National ARRL Convention in Washington, D. C. A new net has been formed for Florida teenagers. The frequency is 7210 kc. The time is Sun. at 1300 EST. The Novice Hurricane Net has moved to 40 meters in order to cover more area. The frequency is 7160 kc. each Sun. at 0730 EST. Your SEC and SCM visited with the Polk County hams at Winter Haven Aug. 6 in the home of CCC. From Winter Haven we motored on up to beautiful Alexander Springs in Lake County for the Annual V.H.F. Picnic. Over 80 v.h.f.ers turned out for this fine event. At this meeting a new PAM for v.h.f. was voted on and the winner was your *Florida Skip* v.h.f. correspondent, RMU. Allen will organize a v.h.f. section net for Eastern Florida and will coordinate all activities along this line. Please, all of you active v.h.f.ers, give him all the help you can and spread the word around about the net. We hope to have a calling frequency for 50 and 144 Mc. soon. If you are interested in an OES appointment, contact Allen or myself. Traffic: K4RZQ 218, DAS 173, SJH 165, LCF 145, OIE 133, W4DVR 128, K4BR 118, ILB 97, TFS 79, AKQ 70, W5TKI/4 70, W4LDM 69, IYT 67, K4JCF 40, BLM 38, BNE 37, RNS 37, PAE 36, CJE 26, W4WS 26, K4AHW, 24, ODS 24, W4BJI 18, EHW 16, K4JJZ 15, W4SGY 15, K4YOQ 14, W4YOX 14, BWR 11, SJZ 7, K4IWT 5, MTP 2.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: AXP and BVE. Tallahassee: News from the Capital comes from ACB and K4PVU. ACB has been appointed EC and PVU as OO and ORS. Officers of the Leon High School ARC are PVU, K4MZT and KN4VBN. The club station is K4CAY, usually on 40-meter c.w. The 2-Meter C.D. Net includes ACB, CHZ, DKT, YUU and PVU. CHZ has a new GG kw. final. GAA is now on s.s.b. with a 75A-4 and a 300-watt PEP. Tom usually is heard along with UEU and KXW on TPN. IPV has moved here from Albany, Ga. K4MJN has moved to Pensacola and GQM to Miami. The State RACES Net resumed on Sept. 15, with HIZ in Pensacola and ACB in Tally representing the section. K4RZM, EC and ORS, is a new reporter for Port St. Joe. Durel uses a DX-40 and an HQ-110. Other hams in St. Joe are ALN, SSG, MXN, K4LQQ and K4RZF. The N.W. Fla. C.W. Net has added OCG in Crestview and SRK in Pensacola. K4CEF put out an EB newsletter on net activities from Panama City, Ft. Walton: BPJ, BVE, UBR, JUA and mobiles RKH, 5HRY, GSK, OFP, MTQ, LQE and 9KPU helped police with traffic during the Labor Day week end. JUA has a new Heathkit TX-1 and an RX-1. K4EEH, from Mobile, was at Eglin for two weeks and brought his KWM-1. Pensacola: The PARC has a new TX-1 and a BC-683. A v.h.f. club has been started with about 20 members. Traffic: K4OID 35, PVU 31, DSH 17.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs. 0800 Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Sat. at 1900 EST on 3595 kc. with PIM as NC; 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc., MV as NC.; the Atl. Ten Meter Phone Net each Sun. at 2200 EST on 29.6 Mc., VHW as NC; GTAN each Sat. at 1000 EST on 7290 kc.; GPYL Net each Thur. on 7260 kc. at 0900 EST, K4CYV as NC; the Georgia Novice Net Tue., Thurs. and Sat. at 1800 EST on 7157 kc., K4HMS as NC. The Confederate Signal Corps turned out one of the largest hamfests of any we have seen this year. TTT won the complete Collins station with KWS-1, 75-A4 and beam. The Glyn Amateur Radio Club elected EOQ, pres.; K4RCI, vice-pres.; K4ULT, secy.-treas. The club now has 14 active members. K4KZP made BPL. K4LEM got his 25-w.p.m. sticker. BXV is preparing for the SS Contest. K4OQY has not been too active as school is stiff. K4APC has a new 300-watt c.w. final and moved

(Continued on page 152)



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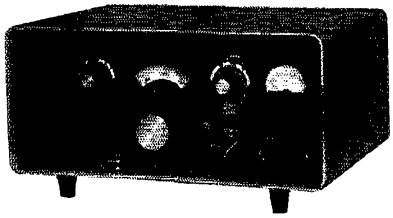

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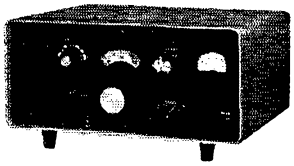
TYPES OF EMISSION: SSB — upper or lower sideband — keyed tone.
POWER INPUT: 175 w PEP on SSB, 160 w on CW
FREQUENCY RANGE: 80, 40, 20, 15 and 10 meter amateur bands — choice of any of 14 200-kc bands selected by means of crystal switch. Easily returned to frequencies between amateur bands by using different crystals. Crystal provided for one 200 kc segment of 10 meters.

Price subject to change. **$590.** **Less P.S. and Acc.**



COLLINS 75S-1 RECEIVER

FREQUENCY RANGE: 80 meters — 3.4 to 4.0 mc. 40 meters — 7.0 to 7.4 mc. 20 meters — 14.0 to 14.4 mc. WWV — 14.8 to 15.0 mc. 15 meters — 21.0 to 21.6 mc.
11 meters } choice of three 200-kc portions of these bands;
10 meters } 28.5 to 28.7 furnished.
Overtravel — 7.5 kc on all bands
SENSITIVITY: The CW sensitivity is better than 1 microvolt (with a 50-ohm dummy antenna) for a 10 db signal-plus-noise-to-noise ratio.
SELECTIVITY: 2.1 kc Mechanical Filter for SSB; 0.5 kc Mechanical Filter (not supplied) for CW; 4.0 kc IF transformer passband for AM.

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JOHNSON VIKING II w/VFO $225.00
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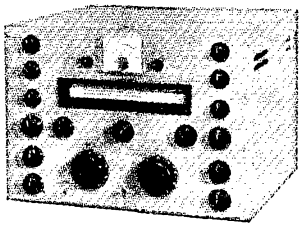
HALLICRAFTERS SX99 w/spkr $125.00
HALLICRAFTERS S38E $44.95
HALLICRAFTERS S38D $39.95
HALLICRAFTERS S85 (Like new) $99.50
HALLICRAFTERS S53A (Like new) $75.00
WRL 755 VFO (Like new) $44.95
NATIONAL HR060 w/ coils, spkr $495.00
COLLINS 32V3 (Excellent) $475.00
SONAR SRT120 (New No. P. S.) $75.00



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Transmits or receives SSB suppressed carrier (upper or lower), single sideband with carrier or CW.
Receiver sensitivity: 1 microvolt at 6 db S/N Ratio.
Built-in VOX and QT.
Operates from any universal power supply.
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Dimensions: 17" wide x 12" high x 15" deep.

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Weight 6½ oz. **Length 6½ in.**

KW-10-15-20

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Weight 4 oz. **Length 5¾ in.**
All coils High Q and Tensile Strength. Waterproofed. Guaranteed to handle a full KW

Price per pair

KW-10	$11.50
KW-15	11.50
KW-20	11.50
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24 HR. SERVICE on stock items

to Atlanta. K4TDX has a new DX-100B on the air. PDP has been working FB DX. K4CYV is the new secy.-treas. of the GPYL Net and also the new NC. CYV is home from the hospital doing nicely. K4TAG and K4TDY have removed the "N" from their calls. PFF's XYL is now KN4ZZS. The Georgia Slow Speed Net started on Aug. 11 and meets on 3595 kc. at 1830 EST. The GAN now meets on 7105 kc. Mon. through Sat. at 1800 EST and ends at 1900 EST. K4KZP and K4SJH are NCs. LNG worked W1AZK on meteor scatter on Aug. 12. Traffic: K4KZP 535, LBC 108, W4AQL 100, K4BAI 47, W4DDY 44, BXV 25, K4OQY 19, APC 5, TDX 3.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: AAA. AAO ties in with 4RN on 40 meters. The Antilles Weather Net was alerted three times during August with the threats of Hurricanes Cleo, Ella and Fifi. USA was NCS with FAC and ALO as alternates delivering reports to the USWB at San Juan from VP2s DJ, LE, LY, VP4MM, VP5FH, KV4AA and KV4BA plus many KP4 stations. The frequency used was 7250 kc. The P. R. Amateur Emergency Net at present unofficially uses 7210 kc. during daylight, switching to 3925 kc. after 6 P.M. AST. RK has worked 108 countries since getting the Valiant and Tribander beam. ANQ, ZC, AAA and RK are operating mobile on 75 meters. ACF operates 20-meter phone and c.w. after several years on 15 meters. YT has 158 countries confirmed. MV put up a two-element beam for 40 meters. KZ5EL (KP4ML) spent his vacation in P.R. but is back on 20 meters with a DX-100 in C.Z. W5UEQ, the brother of KP4EK, is in P.R. HZ took down the three-band Christmas tree array and is putting up a single Tribander. The Elbeetian Legion Convention of former Lone Scouts of America held in San Juan brought together W2EXE, KN3DUY, KN3DUX, ACI, RK and Don Julio Conesa, amateur radio pioneer in Puerto Rico and the father of CP. KD received a DXCC 220 sticker and the first KP4 WAZ certificate. ACQ sent hurricane reports to HI8BE from the San Juan Weather Bureau on 40 meters. ACQ is on 10 meters mostly. ACQ is using a Globe Scout while the DX-100 is being repaired. ABW has a new QTH in Montefiores. WT has separate receivers for 80, 40 and 10 meters. AKC, at Guayama, is active on all bands with a Globe Scout and an NC-183. WP4API is on 15 meters with a DX-20 and an NC-300. QR has a new YL harmonic. AAA connected the Q-Multiplier into the HRO. ALC and ACI are using cubical quad antennas. FJ is using a W3DZZ Tribander beam. USCG *San Juan* sends hurricane advisories at 8:20 P.M. and 12:20 P.M. on 4795 kc. c.w. and on 2678 kc. voice at 11 A.M. and 11 P.M. Traffic: (Aug.) KP4WT 71. (July) KP4WT 40.

CANAL ZONE—SCM, P. A. White, KZ5WA—WZ and his XYL attended the ARRL Convention. Wally signed up for a new Eldico s.s.b. exciter and 1-kw. final amplifier. The XYL of K5CJE, of Little Rock, Ark., and her two children are visiting WA in Gamboa. CC and family are back from a Stateside vacation. W6SNK/MM came through the Canal on his ship, the SS *Ventura*, in August. VR met the ship at Miraflores Lock to pass greetings from Cliff's friend KH6AGB. W7ESB/MM came through the Canal in August. K5MRU, ex-KZ5DG, is back home in La Feria, Tex., after a cool vacation in Colorado. She has her 15-meter beam pointed toward the Canal Zone for evening contacts with old friends. Jamie Ward of Balboa passed his Novice Class exam recently. FL operated regularly on 20 meters during August handling important traffic to Guayaquil. VR, Virginia, passed the 300 mark in holding QSOs with W1KS/MM of the SS *Robert E. Hopkins*. LC has returned from a Stateside leave, where he saw W1ICP and others of the Hq. staff. He has a new 75A-4 and a B&W 5100. All our new c.d. equipment arrived in August: 4 NC-300s; 4 Viking IIs; 4 Johnson Matchboxes; 10 Motorola walkie-talkies for 47 Mc.; and 6 Gonset Communicators for 28.9 Mc. Traffic: KZ5VR 49, KA 25, WA 19, RM 16.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP. RMs: W6BHG and K6HLR. PAMs: W6ORS and K6BWD. The following stations were awarded BPL this month: W6GYH, K6HLR, K6CPT and K6TPL. Congrats, gang! New officers of the Los Angeles YLRC

(Continued on page 154)

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EASIEST TERMS — Our own liberal financing with only 10% down, up to 24 months to pay and easy terms to fit your budget.

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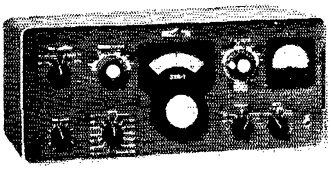
NEWEST CATALOG—

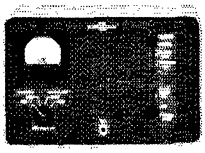
Catalog #758 just released. Loaded with the latest in new and used amateur equipment. It's the most up-to-date catalog available—get your free copy today!

Ready for fast delivery — the completely new Collins S/Line single sideband amateur radio system. Burghardt's — always stocked with the latest in fine amateur equipment — will give you fast service on any S/Line unit. Check all the great new design features in this outstanding Collins station — then check Burghardt's for a top deal and quick delivery on the unit of your choice!



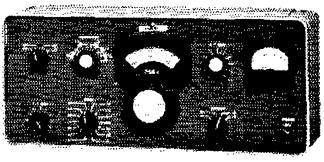
32S-1 TRANSMITTER — SSB or CW transmitter with nominal output of 100 watts. Operates all amateur bands between 3.5 and 29.7 mc. Input power is 175 watts PEP on SSB or 160 watts on CW. Unit incorporates many of the time-proven features of the famous KWS-1 and KWM-1 — built throughout to the highest standards of excellence.

32S-1 .....Net $590.00



312B-4 SPEAKER CONSOLE — 312B-4 integrates the 32S-1 and 75S-1 into an easy-to-work-with operating system. Unit houses a speaker, RF directional wattmeter, and several station control functions. Unit is the perfect accessory for new S/Line system.

312B-4.....Net $185.00



75S-1 RECEIVER — Provides SSB, CW, and AM reception on all amateur bands between 3.5 and 29.7 mc. Unit has dual conversion with crystal-controlled first beating oscillator, bandpass first IF, mechanical filter, permeability-tuned VFO, and excellent AVC characteristics for SSB reception. Loaded with advanced, new features for top performance.

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ACCESSORIES

312B-3 SPEAKER — Contains a 5" x 7" speaker and connecting cable. Attractively styled to match receiver and transmitter.

312B-3 .....Net $27.50

516F-2 AC POWER SUPPLY — Operates from 115 V AC, 50-60 cps. Provides all voltages for 32S-1.

516F-2 .....Net $105.00

516E-1 DC POWER SUPPLY — Operates from 12 V DC. Provides all operating voltages for 32S-1 and 75S-1 for mobile or portable operation.

516E-1 .....Net $262.00

30S-1 LINEAR AMPLIFIER — Provides full legal power for SSB, or 1 kw input for CW. Frequency coverage is consistent with the 32S-1 and 75S-1. Correct tuning and loading are immediately indicated by a meter — all controls are set up for fast, convenient operation. 30S-1 rounds out S/Line to make a complete, high powered amateur station.

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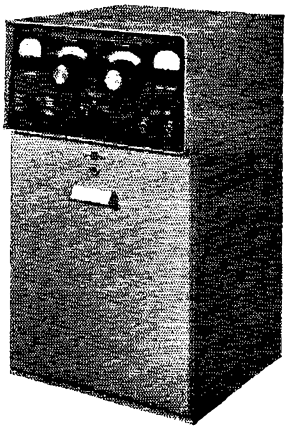

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are W6JZA, pres.; K6BUS, vice-pres.; W6AVF, corr. secy.; K6PFY, rec. secy.; K6OQD, treas. K6DDO has just 2 counties to go for WACC! W6HJY was appointed asst. mgr. of SCN. Congrats, Harvey! K6PLW and W6BES report fine vacations. W6CIS got FO8AT for a new one and with W6OFU, W6EA, W6AM, W6GTE, W6EKM, W6CMN, W6JQB and W6GM did a bang-up job for the WESCON Show on the Historical Exhibit. K6HXX is heading for HL-Land and hopes to get on the air shortly after arrival. K6TFA is now KL7AWR. K6ICS has a new Hy-Gain vertical up and is working a lot of DX. KN6EOK is sporting a new HQ-110 receiver. K6HOS is busy tracking satellites. W6QVS has moved to San Diego! K6SHC and K6JJY recently were married. Congrats! Support your section nets—on phone, the So-Cal 6 Net on 50 Mc. nightly and on c.w. the Southern California Net on 3600 kc. at 1930 PST. Traffic: (Aug.) K6HLR 952, W6GYH 868, K6CPT 568, K6OZJ 311 W6-BHG 273, K6PQM 145, K6TPL 143, W6HJY 138, K6OQD 109, W6ORZ 70, K6KUU 44, K6QMK 40, K6QIV 36, K6-EA 26, K6PLW 20, W6USY 16, K6DDO 13, W6CMN 8, W6CIS 7, W6SRE 6, W6BUK 3, K6TRL 3, W6ORS 2. (July) K6PQM 122, K6QMK 60, W6ORZ 54.

SAN DIEGO—SCM, Don Stansifer, W6LRU—The Chula Vista Chamber of Commerce, through K6OLS, has donated 10,000 free QSL cards to amateurs in that area. The Annual South Bay WAS Contest has ended with excellent prizes for the winners. K6s BTO and OWV are both doing experimental work above 420 Mc. KN6TUP in Pine Valley has worked four WH6s in Hawaii. SK is now up to 102 countries on phone. K6GAK is now in the Air Force. K6ATL has moved to Colorado. WNN added FO8AT and FK8AU for new ones. KN6IYK, in Anaheim, reports a traffic count for August with 2 weeks activity and the rest of the month near Lake Shasta. The Convair Club Net meets each Wed. at 7 P.M. on 7290 kc. New Convair Club officers are K6IAF, pres.; MMV, vice-pres.; K6ROL, treas.; and K6ITA, secy. K6QXN was presented with a daughter and a General Class license at the same time. K6CZF has a new Heathkit RX-1 operating. UKU is back from Europe. Seven San Diego DXers are now at 240 or more countries worked: W6s BZR, CAE, CHV, KSM, KYG, LRU and OME. The Helix Club had a dinner meeting with the members' wives as guests in September at the Navy Officers Club. K6IWU is now a student at Cal. Tech., and K6IIR is a student at M.I.T. in Boston. K6s ITB and JUQ are at the University of California in Berkley. A thanks and well-done for all those in the area who made the recent convention such a success. Traffic: W6YDK 718, W6EOT 488, KN6IYK 149, W6VMS 37, K6IAF 15, K6EDA 13, K6UJL 12, K6ROL 9.

SANTA BARBARA—SCM, Robert A. Hemke, K6CVR —The Santa Barbara Hamfest was a great success. Many eyeball QSOs were exchanged. W6ULS won a Gonset Communicator II. The Poinsetta Radio Club needs an all-band receiver to go with the DX-100. New calls around the Paso Robles Area are WA6BM Land WB6BGL. In Santa Margarita WV6AAX reports doing FB with a DX-35 and an SX-43 receiver on 80, 40 and 15 meters. WV6BGL is a proud owner of a new factory-built Ranger. K6THH is getting his first taste of 40-meter phone. W6BRY has completed installing a mobile rig in the new station wagon and has a very nice signal. W6MSW now has an FB homebrew 100-watt DSB on 20 meters. K6YZQ has returned from 6 months in Alaska and plans to be on the air as soon as he sweeps the cobwebs out of the shack. K6SJC has an FB kw. rig with p.p. 813 in the final using a DX-100 as a driver. W6EGC is using the KWS-1 for a door stop—no 220 volts in the hotel room. W6UWL moved from Port Huenme to Oxnard, is active on 2 meters and just received his XE0UWL call. Traffic: W6YCF 1.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—Asst. SCM: E. C. Pool, W5NFO. SEC: K5AEX. PAMs: BOO and IWQ. RM: ACK. AEX has consented to accept the appointment as SEC. BOO is the new PAM replacing AEX. With the help of NFO, ACK and IWQ I hope to be able to fulfill the duties of my new job. Thanks to TFP for good judgment shown in picking leaders. Congratulations to the Waco Club on the FB Hamfest held Aug. 31, and attended by 501. PVT is the new NCS for NWTEN. K5KAB is the new NCS for NETEN. K5IBB is the new NCS for NTEN. JMS is the new pres. of the Terry County ARC. The Lamb County Amateurs recently was organized with 22 charter members. VEZ recently put up a new three-element beam and also finished a new Valiant. RVI reports plenty of DX with 40 watts. GY, c.w. traffic hound, is off the air with rig trouble. Glad to hear from LIU and thanks for the kind words. DTA/5 received orders sending him to the Far East. NFO advises that at this writing many hams in West Texas are planning to attend the Ft. Worth Hamfest to be held Oct. 18 and 19. Preregistration prize: A 75A-4. I appreciate all the reports and the news you have sent in.

(Continued on page 156)

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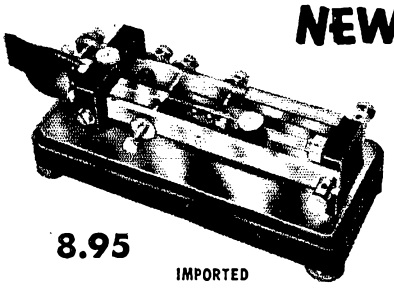
NEW! SEMI-AUTOMATIC "BUG"
SUPER SPEED TELEGRAPH KEY



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MS-435 Semi-Automatic "Bug" ..... Net **8.95**

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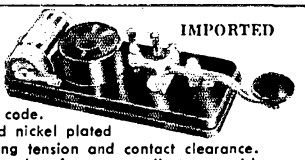

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Economical and practical code practice key and buzzer unit for learning code. Telegraph key chrome and nickel plated with both adjustable spring tension and contact clearance. The high frequency buzzer has frequency adjustment with locknut to keep tone constant. Screw type pin jack terminals for headphone connection. Works with inexpensive 1½ volt battery. Heavy black molded phenolic base and buzzer housing. Base 6¾" x 2¾" x 1⅜", overall length 8½". Shpg. wt., 2 lbs.

MS-438 Code Practice Set (less battery) . **1.95**

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MS-369 Stethoscope Headset **1.69**

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Precision loudness meter. Calibrated in Volume Units and percent, with 20 db variable attenuator. Ideal for setting output level in paging and music systems; removes guesswork when used as record-level indicator with tape recorders. Highly damped meter; responds to average level of voice and music. Impedance 10,000 ohms; sensitivity 1.4 volts for 0 VU. With capacitor for blocking DC to prevent burnout, 4" w x 2-3/16" h x 1-3/8" d. Shpg. wt., 1 lb.

IMPORTED

LAFAYETTE TM-20 Audio Level Meter ..... Net. **5.95**

NEW! STEREO BALANCE VU METER

IMPORTED

Removes guesswork in providing perfect balance of the 2 amplifier or preamplifier channels in any stereo system. Can be used as record-level indicator with stereo tape recorders, and for balancing stereo tuners. Impedance 10,000 ohms; calibrated 20 db attenuators, capacitors for blocking DC. Calibrated in Volume Units and percent; highly damped, reads average voltage of voice or music signals. Sensitivity 1.4 volts for 0 VU. Shpg. wt., 1 lb.

LAFAYETTE TM-40 Stereo Balance Meter ..... Net **8.95**

ILLUMINATED SCALE VU METER

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● JEWELLED BEARINGS ● 2% ACCURACY

● MEETS ACCEPTED VU METER SPECIFICATIONS

A high-quality precision built unit, only 3⅛" square, 2-5/16" x 1⅜" silvered dial face, 1-11/16" overall depth. Black pointer, highly legible black calibrations. Clear optical glass front. "B" scale, has 0-100% on upper scale, −20 to +3 VU on lower scale. Reads 99% of applied VU in 0.3 secs., with overshoot between 1-1 ½%. Calibrated for 0 VU when 1.228 volts sine wave AC applied through external 3600 ohm series resistor from a 600 ohm source with 600 ohm load. 6-8 volt scale illuminating lamp. Shpg. wt., 1 lb.

TM-80 ..... Net **7.50**

NEW! Miniature *Panel Meters*

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UNUSUALLY LOW-PRICED FOR SUCH EXCELLENT QUALITY

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"S" METER — Standard "ham" signal strength indicator. A 0-1 ma dc meter calibrated in S units from 0-9. Scale terminates in + 10 and + 30 db calibrations and also fully calibrated linearly 0-5 and 0-10.

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VU METER — Volume level indicator calibrated in standard — 20 to +3 VU and 0-100% ranges. Indicates output level with complex audio wave-forms. Standard VU meter damping.

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TM 400 ..... Net **$3.75**

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0-150 AC VOLTMETER — Rectifier type, 1000 ohms/volt.

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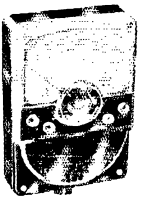
TM-100 ..... Net **$3.75**

0-200 DC VOLTMETER 1000 ohms/volt, linear scale

TM-101 ..... Net **$3.75**

IMPORTED



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Traffic: W5ACK 246, BKH 218, BOO 89, K5LEZ 87, JZK 81, JBQ 82, PXV 52, ETX 20, W5LR 20, K5DNQ 17, IBB 15, ACD 12, W5RVI 3.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC—SEC: K5KFS. PAMs: MFX and DRZ. RM: JXM. K5INC resigned as PAM for 40 meters. DRZ was appointed to take his place. AOZ resigned as Asst. SEC and EC of Oklahoma County. Thanks for all the FB work, Sandy. K5EMY left Oklahoma City for a new job so resigned as president of the ACARC. UYQ took over as president. EHC was appointed Oklahoma State AF MARS Coordinator. New officers of the Chisolm Trail ARC are K5IBZ, pres.; ERI, vice-pres.; UGA, secy.-treas.; K5DUJ, act. mgr. We congratulate K5OVI and K5MTJ, who have dropped the "N." KN5OVU was granted his Ph.D in chemistry by Texas A. & M. MRK mobiled to North Carolina on vacation and reports many interesting contacts. NS has a new Apache. Does that make him a "Squawman"? AQZ renewed his OO appointment. KS bought himself a Thunderbolt and his wife a new house. Were the two events somehow connected? Oklahoma's Ham of the Month: JXM for his many hours of work and accomplishments as RM. Traffic: K5CAY 284, W5HCG 100, JXM 94, FEC 43, MGK 43, K5LGV 38, INC 33, W5CCK 31, MFX 21, GOL 20, K5CBA 19, BGI 13, W5KY 13, PNG 11, VLW 4.

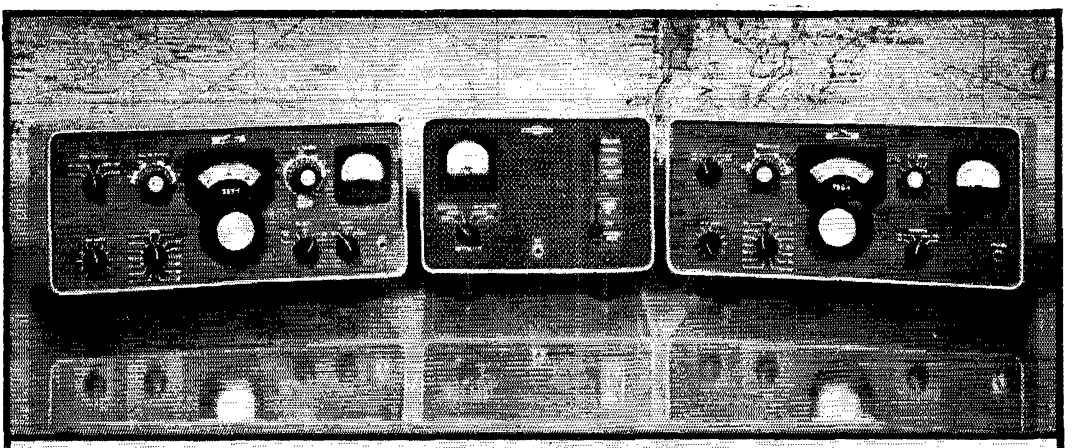
SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. RM: K5BSZ. PAM: ZIN. K5JTP has a new Triband beam. QKF, QFA, QEM, ZMK, W4BBX/5, K5COZ and K5CPA attended the convention in Oklahoma City. KN5QJR has 22 states and Hawaii confirmed on 40 meters with 10 watts. He also worked with KN5QFL on Field Day and they made 25 contacts in 12 states using 10 watts. K5OQN worked 6 meters on Field Day and made 50 contacts. He also has a new 38-ft. tower and eight-element beam. DIW and EGD are now on s.s.b. UMY is back on with a pair of 4-125As in Class AB2. K5BSZ is after DX with a new Courier. K5EUP is the new EC at Beaumont. It is Silent Keys for DFA, AQK and BKG are vacationing in the Northwest. AIR is a new OO. HKE is an ORS and K5BSZ is a new RM, all in Houston. Sorry to lose FCX as RM, but because of circumstances beyond his control, he felt he wouldn't be able to handle the job as he should. QKF, the SEC for Southern Texas, has asked me to express his appreciation to the South Texas Emergency Net members for their courtesy in relinquishing their drill time and helping to keep the frequency clear while the mobiles at Beaumont were hunting the 8-year-old boy who was lost. He was found in about one hour. HQR is in Philadelphia and New York as guest of the RCA Corporation. K5JJC has a new 75A-4. Sorry to have missed the column, but work piled up while on vacation and the time slipped by. Traffic: (Aug.) K5OEA 109, W5EGD 98, ZIN 90, K5MZS 85, JCC 13, (July) W5EGD 122, K5BSZ 88, W5ZIN 77, K5MZS 53, JCC 17, OEA 16, W5UMY 14, QLT 12, URW 7, KN5QFL 2, QJR 2.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, 1OC. SEC: AEB. Congratulations to the Truro Area Amateur Radio Operators on their fine performance in sponsoring the Truro Convention. Some hamfest highlights: The GR Memorial Trophy for meritorious service was awarded to VN. The President's Plaque (NSARA), donated by the late FH, was awarded to AAR. EK won the Brown-Holder DX Trophy. The VE1 Contest Cup was presented to AV. Mobile award winners were 2AZT (high power), GA (home-built), BE (commercial installation). Congratulations and best wishes to FQ and his XYL on their recent marriage. The new address of the VE1 QSL Bureau is P.O. Box 663, Halifax, N. S. Newly-elected officers of the NSARA are VN, pres.; GA and FR, vice-pres.; YR, secy.-treas. New appointments include XR as EC (York County, N. B.). VO1 news: AE has moved to Cornerbrook. AI has a new 6146 rig and AY has a new DX-40. AO is NCS for the Newfoundland Net. BD operates as FP8AY when on St. Pierre. BF is mobile on 75 meters. BH and BY are active again. BJ has his A3 endorsement. CZ is Newfoundland Radio Club president. EX is ex-MP4BCA. DQ is back from the North. BU is c.d. communications officer. New calls include FB, FD, DK (the XYL of DQ). Traffic: K3DKZ/VO1 79, VE1OM 16, PZ 13, AEB 6.

ONTARIO—SCM, Richard W. Roberts, VE3NG—Reports are few this month, probably because of vacations. KM was ARRL representative at the Timmins Hamfest held in that city. The Hamilton Picnic was a success in spite of the rain. Among those present were ADA, AKC, KM, DSM, CDX, DZA, AJR, NG, DIO, AML, CEC, DJE, RG and a great number of the Hamilton lads. CDX won the hidden transmitter hunt on 75 meters. DPO also was in attendance. The Scarboro Club

(Continued on page 158)



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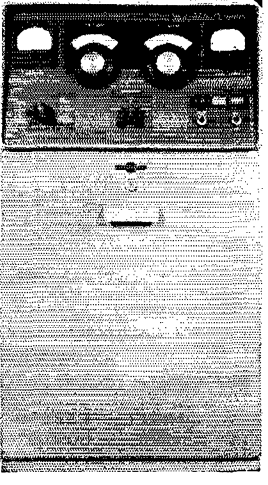

now on display at ACK RADIO SUPPLY COMPANY

We're ready to talk Collins S/Line with *you*. In our opinion, this systems-engineered equipment represents the last word in SSB. Offers every operating convenience. Prices are lower, with no sacrifice of quality Collins features. Superior frequency stability and selectivity will increase your enjoyment of amateur radio to the fullest.

Call, write or stop in and let's talk trade-in allowances, time payment plan or a cash deal. Be the first in your town to get on the air with the Collins S/Line!

P.S. See the Collins 4-page insert in this magazine for all the technical specifications on the new S/Line.

32S-1 Transmitter.....$590.00
75S-1 Receiver.....$495.00
312B-4 Speaker Console.....$185.00
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30S-1 Linear Amplifier w/Power Supply (coming soon)

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still is holding week-end hidden transmitter hunts. The Nortown ARC is preparing for a big season. DUU nearly lost a finger but surgery saved it. The ARRL Ontario Convention was held Oct. 18 at the Royal Connaught Hotel in Hamilton. BOH will be in VE2-Land this winter. The Sarnia Club held a fine picnic in Sarnia. Also the group from the Gray Bruce Net had a good time at its first attempt. Goderich also was successful at the summer get-together. DMI was in the hospital but is back to normal. Our PAM, WT, has resigned. We are sorry to lose you, Frank. Two new PAMs have been appointed, TX and RH, both of whom the majority of you know very well. Good luck, men. CAB wishes to try the call license plate deal with the Ontario Government. After the effort that your SCM, SEC and over 1000 hams put into the last deal, good luck, OM. PK had trouble with the local Gendarmes re TVI on their receivers. DUU heard 2TT on 144 Mc. KM is a proud grandpappy. AEJ vacationed in Ottawa. Traffic: VE3BUR 82, NG 78, BZB 77, DPO 73, NO 62, AUU 55, KM 50, DEX 42, DTB 41, EAM 32, AOE 28, DUU 28, DZA 26, CHF 25, DWN 24, GI 21, BH 18, EII 12, CE 5, AVS 2.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—Nets C.W., PQN, 3535 kc., 1900; Phone, Quebec Traffic Net, 3780 kc., 1845. UJ and ACD are newcomers on phone. EC skeds AEM and KJ daily. YU now is QRO and a successful DX hunter. AHW visited VE6 and joined the boys in Field Day. ATL's contemplated Washington visit was substituted by visits to many W1, W2 and VE3 hams. APC accompanied him and they received a hearty welcome from neighbors across the border; they also had the first experience on communications via meteor bursts at W1PZJ. BAB is a newcomer on 40 meters. AZS operated from Atlantic City. AWV has a two-element beam on 15 meters. QV when not hobbying with guided missiles, is active on 20-meter phone. IK is ex-VE3AAS. AKQ is ex-G3DHF, ZB1DHF and VS9AR. AZI is ex-G3GGN. PW and RR make an OM/XYL team. AYC is operator at Noranda. Ex-PA0TOB expects a VE2 call soon. TL, Montreal, is a newcomer. JB, at Granby is building a Heathkit Apache transmitter. AFU returned to 80-meter c.w. DE has returned to Basille-le-Grand after operating DE/2 at La Minerve. LE is interested in radio-controlled planes. VE3DU paid a pleasant visit to DR. 3AUU also surprised your SCM. NI skeds W1AZK on 2 meters. AUD has a sports car and is busy installing a 2-meter portable. CK and LV are two crack photographers. YA bought a rotor for the beam. W3BTQ/VE2 is looking for Zone 23 for WAZ. JS likes the new KWS-1 on s.s.b. AWR, Rawdon, finally bought a new mike. AZN is on 10 meters and AFN is a newcomer on 80 meters using home-built gear. Traffic: VE2DR 86, BG 34, EC 15.

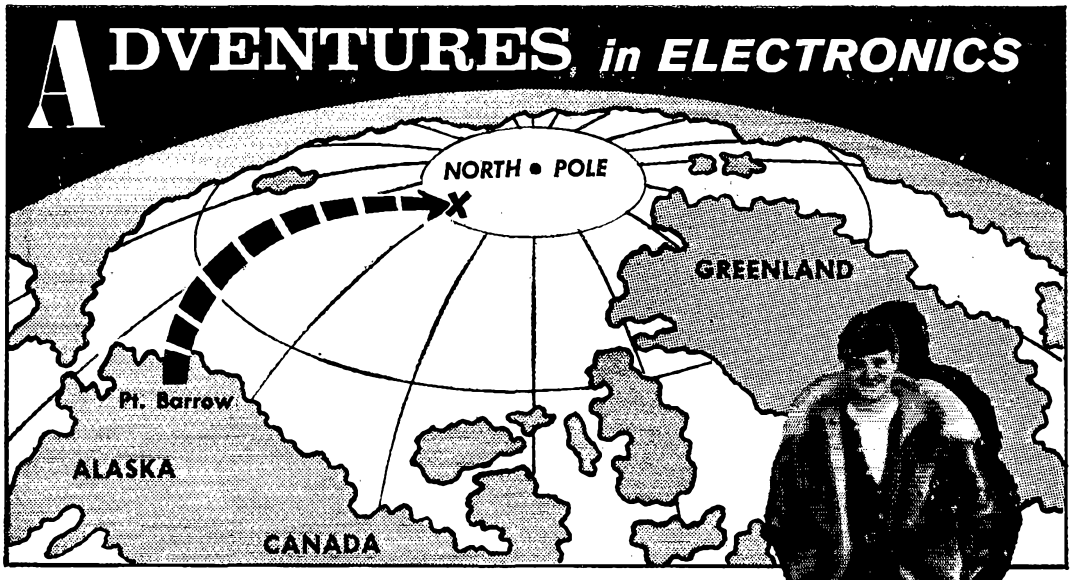
ALBERTA—SCM, Gordon W. Hollingshead, VE6VM —PAM: OD. The Alberta Hamfest was a spectacular success under the sponsorship of the NARC and the able direction of EH and committee. The province-wide TV hookup (a first in ham history) and call letter license plates highlighted the meet. "The Charles H. Harris Trophy," an annual code speed award, was initiated this year and was won by NX. Subsequent contests will be held annually at hamfests. HM vacationed in Nova Scotia during July and visited 1FQ, LY and VN. WL is back from a vacation on the French Riviera and a European Tour with lots of movies. WG is active on 40- and 20-meter c.w. MJ vacationed in Jasper. BA, RM and AX are reported active on 80-meter s.s.b. Traffic: (July and Aug.) VE6HM 261, OD 10, MJ 2, VM 1.

MANITOBA—SCM, James A. Elliott, VE4IF—At least three clubs participated in the Field Day, the ARLM (VE4AC), the Beausejour (VE4JW) and the Ragchewers Club. The highlight of the season was the Dauphin Hamfest. The registrations were more than ever. Congratulations to the organizers. LK is the proud owner of a Collins S.S.B. mobile. He also is interested in scatter propagation. JW is busy with the Beausejour Radio Club. RO has moved to a new QTH, Birds Hill, where he hopes to work more DX than ever. HH and NW, from the land of the Windigoes, were recent visitors to civilization. We were most pleased to meet K1HNN again after twenty years. FK is constructing a new G4ZU beam. TA is leaving for a QTH in the U.S.A. We are sorry to lose you, Ron. TJ has taken up fishing, and with success, too. Please send in those activity reports, gang. Traffic: VE4PA 16, QD 14, GE 6, RB 6, JY 4, JW 3, AN 2, IF 2, NW 2.

Strays

W8DED is offering a small 50¢ desk calendar with country prefixes printed on the back.

ADVENTURES *in* ELECTRONICS



AT THE TOP OF THE WORLD ON AN ISLAND OF ICE

"TechRep" Floats 8 Months On Arctic Ocean Ice Floe

by C. F. Graebe

Mike Swiercz, well-traveled Philco Field Engineer, is a veteran of 6 years in Japan and Alaska. He is now in Tripoli, North Africa.

Seven men adrift on an island of ice twelve feet thick, a mile above the Arctic Ocean floor, floating just 450 miles from the North Pole in bone-chilling minus-40-degree temperatures: that was the hazardous setting for Project Ice Skate — one of America's significant contributions to the International Geophysical Year.

On this isolated team of adventurous volunteers was Field Engineer Mike Swiercz — the group's communications expert and only civilian. With him were three Army polar specialists, two Eskimos, and a Jesuit priest who doubled as an Arctic veteran.

Flown from Pt. Barrow, Alaska, to their wind-whipped ice floe on April 5th last year, this hand picked crew was left to observe and measure Arctic phenomena. With special instruments they studied Arctic conditions of geomagnetism, gravity, oceanography, meteorology and seismology. For eight months their sole contact with the outside world was by radio.

"Radio communication was better than anyone had thought possible," reported Mike. "I had an antenna up four days after we landed on the ice, and that same day we were talking to the men at the South Pole and later listened to Sputnik's 'beep-beep' as it passed overhead."

Asked if the dangers of the icy wilderness and the fight against endless cold didn't grate on the men's nerves, Mike replied, "No, that's Hollywood stuff; we all got on just fine. Remember, there was plenty of interesting work to be done, and the food was very good. I'm glad I asked for the assignment."

We, at the Philco TechRep Division in Philadelphia, are proud of Mike Swiercz's contribution to the IGY. His experience as a Philco TechRep doing an exciting job is, however, only the first of a series profiling the fascinating and unique adventures of our TechRep engineers and technicians to be published here in the months ahead.

Recommended Tube Types

(Continued from page 25)

To outline the reasons for choosing a particular tube for a certain application over another of very similar characteristics[2] would exceed the primary purpose of this article. The types chosen will be found to apply on an average basis for the function given. Thus, with the help of this chart of Recommended Receiving-Tube Types, it will be much easier for you to design your own "dream receiver" around 23 tubes than to attempt the task faced with an assortment of some 2000-odd tubes!

[2] Such as 1-volt difference in cut-off bias on control grid.

The "Mickey-Match"

(Continued from page 28)

principles are the same.

If you have an extremely low-power transmitter, the forward readings on the 80- and 40-meter bands may be less than full scale, or even half scale, with the sensitivity pot full out. This can be overcome by using a longer piece of coax for additional pick-up. You can coil up as much of the stuff as necessary, with no effect on the performance. However, a full-scale deflection isn't actually necessary to the functioning of the instrument, just so enough of a forward reading is obtained to allow a good comparison with the reflected reading.

Variable Frequency Oscillator

(Continued from page 32)

The standoff insulators on which L_1 is mounted are Millen No. 31002. Sharp-eyed readers will note an extra padder in the 4 × 5 × 6 box, one not shown in the circuit diagram. This was used originally to get coverage on 11 meters.

Adjustment

Getting this v.f.o. operating is no particular problem. The only adjustments required are the padder-capacitor settings, in order to establish the proper tuning ranges and band spread, and to choose the capacitor values in the keying system.

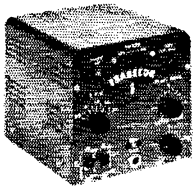
To adjust the band spread, first set the switch S_1 in the 80-meter position and with the tuning dial set to 0, adjust C_2 for a signal at 3500 in your calibrated receiver. Then, tune up to 4000 kc. and check to ensure that you can indeed reach that frequency before you run out of dial. The second set of adjustments comes with S_1 in the 7–28 position. This is simply a trial and error sequence with the goal being 3500 (7000) kcs. at 0 on the v.f.o. dial and 3650 (7300) at 100 on the v.f.o. dial. The way to go at it is to set C_3 arbitrarily at half capacitance, and then set C_1 for 3500 kc. at 0 on the v.f.o. dial. Having done that,

(Continued on page 162)

ARROW...Hamdom's One Stop Shop

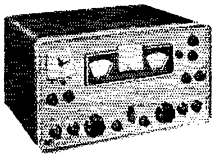
NEW

Transcon
MARK II



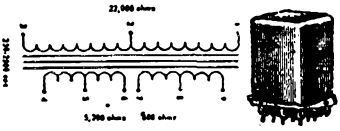
6 or 10 Meter VFO or Xtal Xmitter & Xtal Controlled Broad Band Converter

Improved model. Phone or CW. Push-to-talk operation. Carbon or xtal mic. Constant modulation indicator. TVI suppressed. Quick switch to B.C. Up to 4 watts using auto radio or home station receiver for power supply — 12 watts with external supply. Compact 5" x 5" x 7". 6 volt and 12 volt operation. 6 or 10 meter models. Switch on rear panel to demodulate Final & supply audio drive for Transpower or any other higher power amplifier.
Amateur Net **$99.50**



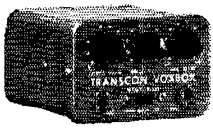
Hammarlund Model HQ-170 Triple Conversion Receiver

The HQ-170 is "hot". It offers the amateur a practically endless combination of tuning techniques whereby optimum reception of SSB/CW and AM/MCW may be achieved. Using vernier tuning, adjustable bandwidth, and the basic, precision front-end of the HQ-170, the user has full control over SSB signals as well as adjacent, or co-channel signals. Provides 10 db signal-to-noise ratio at 1.5 μv AM or approximately .5 μv CW, or better depending on bandwidth. The front-end provides tuning of the 6, 10, 15, 20, 40, 80 and 160 meter amateur bands. Designed for use with a single wire flat top, a folded dipole, or doublet antenna. Separate antenna terminals are provided for 6-meter reception.
Amateur Net (Less clock) **$359.00**
Amateur Net (With clock) **$369.00**



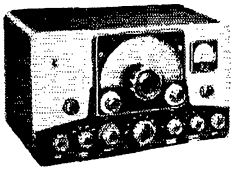
Versatile Miniature Transformer

Same as used in W2EWL SSB Rig — March '56 QST. 3 sets of CT windings for a combination of impedances: 600 ohms, 5200 ohms, 22,000 ohms. (By using the centertaps the impedances are quartered). The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, high impedance choke, line to grid or plate, etc. Size only 2" h. x ¾" w. x ¾" d. Brand new. Fully shielded.
Amateur Net, each **$1.39**
3 for **$3.49** 10 for **$10.75**



Transcon H308 Voxbox A.M. Voice Control

Here for the first time is a small compact **Voice Control Box** adaptable to any A.M. rig. No time wasted, no buttons to push. Designed for crystal or dynamic mic. input. Controls: Audio Gain, Relay Adjust, and Time Delay. D.P.D.T. relay for transmitter control. Operating B plus voltages 150 to 225 VDC. Filament voltage 6 VAC, 6 VDC or 12 VDC. Size: 2⅝" x 4¼" x 4⅛".
Amateur Net **$27.50**



Johnson Viking "Ranger"

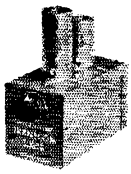
Built-in VFO, fully TVI suppressed, bandswitching 160 through 10 meters, small size, self-contained, including power supply and modulator, 75 watts CW, 65 watts phone, Pi-network output.
Amateur Net (Kit) **$229.50**
Amateur Net (Wired & tested) **$329.50**

Toroid Coil Form

As featured in October 1958 Radio & TV News article on Automatic Tracking Mobile System.
Amateur Net **$1.10**

"Wonder Bar" 10 Meter Antenna

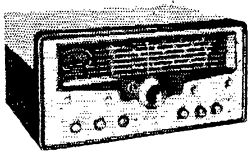
As featured in Nov. 1956 QST. Complete with R&W 3013 Miniductor. Only 8 ft. long for 10 meters.
Amateur Net **$7.85**



Transcon Twin Noise Squelch

Can be installed in any car radio rapidly. Tubes: 6AK5 & 12AX7. DC power input: 150 V. DC to 225 V. DC. Filament: 6 or 12 V. Noise Level Attenuator: S2. Size: 2¼" x 2½" x 4".
Amateur Net **$12.95**

Field Strength Meter. For both mobile or fixed station use **$11.95**



Hallicrafters Model SX-101

New heavyweight champion! Rugged is the word for the SX-101 receiver — and it's all amateur. Heaviest chassis in the industry. Full gear drive. Complete coverage of 7 bands: 160, 80, 40, 20, 15, 11 & 10 meters. Special 10 mc. pos. for WWV. Tee-notch filter. S-meter functions with AVC off. Selectable sideband.
Amateur Net **$395.00**

Sub-Miniature 0-200 Microampere Meter

A high quality instrument made to rigid U.S. Govt. Specs. by International Inst. Co. (Model 100). Only 1" in diameter. Ideal for limited space applications & transistorized circuits. A natural for the transistorized grid dip oscillator as described in June '58 QST.
Amateur Net $3.95 ea. **2 for $7.50**

2" round 0-500 microamperes. Bakelite case. Made by G. E. and Dejur.
Amateur Net $2.95 ea. **2 for $5.50**

Weston 2" 0-4 amp RF meter Model 507. A giveaway at **$2.95 ea.** **2 for $5.50**

Weston 1½" sq. (ruggedized) 0-100 μa. **$4.50 ea.** **2 for $8.75**

866 filament transformer 110V. primary 2.5V. 10 amp. 10 KV. insulation shielded, compact. Shpg. wt. 7 lbs. **$2.95**

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determine what the frequency is when the v.f.o. dial is set at 100. If the resulting frequency is not 3650, then the capacitance at C_1 needs either to be increased or decreased and C_2 reset for 3500 kc. at 0. A few trials will show you how to get there.

The caption for Fig. 1 gives some representative values for the capacitors C_6, C_7, and C_8 which shape the keying characteristic. You can vary these to suit your own particular preferences. The result will be a v.f.o. with a clean, well-keyed signal that is a pleasure to operate.

Sporadic-*E* Skip

(Continued from page 85)

Summary of High-Band TV DX Loggings

June 9, 1955 — Edward Sparks, W5LID, Odessa, Texas, received Channels 7, 9 and 11 from Cuba, 1315 to 1330 CST. Signals were weak and fading. Richard Lowry, Temple, Texas, logged Havana Channel 7, 1413 to 1416 EST. Signal was weak and fading, but may have been receivable prior to 1413.

June 27, 1955 — Robert Seybold, Dunkirk, N. Y., saw KHQA, Channel 7, Hannibal, Mo., 1658 to 1710 EST; video good, audio fair. This was during a widespread skip opening that included double hop between the East and West Coasts on lower channels. The distance was only 790 miles, unusually short for high-band *E*-layer possibilities.

July 1, 1955 — Richard Lowry, Temple, Texas, logged XEX, Channel 7, Mexico City, during a very strong E opening on lower frequencies. Reception was at 2335 EST, with fair signals. Distance: 900 miles.

January 19, 1956 — Richard Lowry saw XEQ, Channel 9, Mexico City, during a strong opening to Mexico City and the East Coast on lower frequencies at 1830 EST.

August 2, 1957 — Robert Grimes, Little Rock, Ark., received YVLV, Channel 9, from Maracaibo, Venezuela, near 2000 EST. Bedford Brown, Hot Springs, Ark., saw YVLV also, at 2220–2240, and Venezuela, Channels 2, 4 and 5, and Brazilian Channels 2 and 3. This appears to rule out tropospheric effects, because of the wide range of frequencies involved. The distance, 2300 miles, is odd for a high-band logging for E_s, giving all this work an air of mystery. Signal strengths were all good, with Channel 9 the best.

Strays

W1WFR, newly moved to Pittsburgh, promptly joined the South Hills Brass Pounders and Modulators, and found that a fellow member was W3WFR.

—·····—

The W1 said he had just returned from Holden, Mass. The W7 immediately replied that he was happy to QSO a member of the clergy. — *W1FR*

NOW!

READ THE AMAZING TRUE LIFE STORY OF HAM RADIO AND THE DARING ADVENTURES OF ROBERT FORD, AC4RF OF LHASA, TIBET! READ ABOUT HIS CAPTURE BY CHINESE 'LIBERATORS' AND HIS IMPRISONMENT IN CHUNGKING IN

"WIND BETWEEN THE WORLDS"

by Robert Ford, AC4RF

AC4RF's personal account of his life in far-off Tibet and his experiences with ham radio make exciting reading for any amateur!

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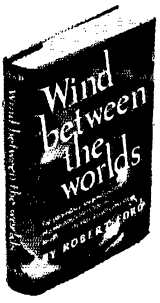
- **Read about Bob Ford's trial for radio-espionage! Read about his five year imprisonment in a Chinese prison for being a ham!**
- **Read about Red China's indictment of ham radio! Read how AC4RF tried to explain ham radio and QSL cards to his Chinese captors! (How would YOU explain a DX contest to a "brain-washer"?)**
- **Read about AC4RF's struggle against Red China's indoctrination—his chilling account of five years of mental torture!**
- **Read how Bob Ford's ham station in Tibet almost cost him his life!**
- **Read how his every QSO was monitored and logged by the Chinese Reds! Read how his contacts with American hams were judged to be espionage! Amateur radio on trial!**



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Entirely devoted to the construction, adjustment and installation of rotary beam antennas! This book will make your antenna work! Eliminate guesswork in your new beam!

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Complete and concise information about beam antennas. Dimensional charts, SWR data, and construction data on parasitic arrays for the 6, 10, 11, 15, 20 and 40 meter amateur bands! Invaluable!

NOW HEAR THIS!
KA5MC worked over 500 DX stations in all continents on 28 mc. phone with 12 watts and received 59-plus on five continents with 3 watts using a home-made beam designed from specifications in this Handbook!

RADIO PUBLICATIONS, Inc., Wilton, Conn.

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Enclosed find: ☐ **check** ☐ **cash** ☐ **money order**

Five-Way Antenna Coupler

(*Continued from page 43*)

using an 18-foot whip. This was about a 600-mile haul. Then, loading a 200-foot wet string supported by a regulation-size kite,[3] I worked eleven different stations in seven call areas on 80-, 40-, 20-, and 15-meter c.w., with the best DX being W6WNI, who gave me a 469 report. Using the wet kite-string antenna, however, presented one major problem. The wind would dry the string out in about 10 minutes' flying time. I would then have to pull in the string, soak it a few seconds in salt water, then reel it back out. Another time, using the same kite to hold up the end of a 200-foot wire, many other stations were worked with excellent signal reports.

For the ham with space limitations or with plans to work portable with short antennas, this tuner will provide an easy way to load any antenna that is used.

[3] It's the truth, so help me! — *W4UWA*.

DXpedition or Vacation?

(*Continued from page 60*)

Leaving St. Pierre was an experience never to be forgotten as was the first contact from there. We had checked through customs that morning only to be called back, boat and all, just as it was pulling out from the dock, in order that we might *officially* sign out, an oversight on somebody's part that morning. We hated to leave, having made many friends, including an American couple vacationing there who presented us with a huge loaf of French bread and a couple of bananas for the trip. Two Newfoundland buddies who snored loudly in the next room gave us a half gallon bottle of Napoleon cognac for the trip, which later was discovered to be colored water, and of course there were the many "*Au revoir*'s," and "See you next year." And next year they shall!

Several comments were overheard on the air about St. Pierre being great for ham radio but "I can't see using my vacation for such a trip." Well, I can assure you I've never had a better nor more interesting one and next year we'll take the XYLs all the way. I'll not go into detail about the trip back except that it was a calm and pleasant one. The *Miquelon* is a larger boat, a converted Coast Guard cutter, and carried some twenty-nine passengers. Both boats had wonderful crews, and although it's not the Waldorf, we wouldn't have wanted anything changed. Passage is twenty dollars each way with two meals, and as far as I'm concerned a real bargain. I did lose a bottle of champagne on the way through customs but gained many new friends and a different outlook on amateur radio as reward. Total cost was about three hundred dollars each which also took care of our XYLs and children back on the mainland, and also included about fifty dollars in extras such as gifts for the folks back home.

(*Continued on page 166*)

from CARTON to CONTACT in 47 minutes!

WITH THESE POWERFUL hy-gain TRAP VERTICALS

MODEL 14-AV

The Model 14-AV is only 21 feet high and weighs just 13 pounds. It incorporates the exclusive Hy-Gain capacity hat assembly which increases the electrical length of the maintaining high efficiency on 40 meters.

Model LC-80 loading coil adds 80 meter operation to the 14-AV vertical. Only, $2.00 Ham Net.

Combination mast and radial roof mounting kit complete with hardware, $9.95 Ham Net.

the Self Supporting **14-AV**

$27.95

for 6*, 10, 15, 20 & 40 M

INSU-TRAP

Acting as an insulator at resonant frequencies but allowing radio energies of other frequencies to pass freely the Hy-Gain Insu-Trap becomes an automatic electronic switch which isolates various sections of the vertical to make it the proper length for each band. Hy-Gain Traps use exclusive adjustable capacitor plates and are individually factory resonated maintaining a high degree of efficiency. Each trap is completely weatherproof and air tight. No water or condensation can ever enter. Enclosed in carbon activated polyethylene cover and cap assembly the Hy-Gain Insu-Trap is rated to take the full maximum legal input power. Traps are only 2x8", weighing just 8 oz. each.

MULTI-BAND OPERATION

Completely factory pre-tuned with no further adjustments necessary these Hy-Gain Multiband Trap Verticals maintain an SWR of 2 to 1 or less across the entirety of each band for which they are designed. (52 ohm coaxial feed line). True ¼ wave marconi resonance on each band makes possible low angle DX radiation pattern.

NYLON BASE MOUNT

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.

*Available as an accessory, the specially designed decoupling stub adds 6 meter operation with low SWR to Models 12 or 14-AV.

Order Model 6MK, $4.95 Ham Net.

MODEL 12-AV

The Model 12-AV is only 13.5 feet high and weighs just 12 pounds.

Combination mast and radial roof mounting kit complete with hardware, $8.95 Ham Net.

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for 6*, 10, 15 & 20 M

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EXPORT BUSINESS WELCOMED

For those planning a trip, the following prices on the island will be of interest.

Room and board per person at $7.50/day	$45.00
Transportation from N. Sydney, N. S., round trip	40.00
Taxi fares, total	7.00
Extra charge for electricity	4.00
License fee	2.00
Fine (in lieu of passport) [3]	5.00
Total	$103.00

In addition, St. Pierre is a free port and many things, such as cameras, watches, perfumes (all popular French makes), can be purchased at about thirty to fifty per cent of the U. S. prices, including excellent champagne at $3.75. Considering the time spent from home, thirteen days, and the distance traveled, which was about twenty-eight hundred miles round trip, the expense was, in our opinion, very reasonable.

Judging by the number of hams going there this year, some twenty plus, FP8 will not be very rare very long, but we'll go back anyway.

[3] Because of the proximity of St. Pierre to Canada and the fact that no passport is required between the U. S. and Canada and vice versa, special provisions have been made to allow U. S. and Canadian citizens to leave and enter St. Pierre at will. Should a citizen of either country arrive in St. Pierre without a passport he is *fined* (usually between five and seven dollars) and promptly allowed to proceed. You can see that this charge, or fine as it is properly referred to, is lower than the usual passport fee and involves no red tape.

How's DX?

(Continued from page 69)

looks forward to renewing many on-the-air friendships from Benghazi . . . . "Perhaps FL8AD may get on soon," writes vacationing FL8AC to W2GT . . . . ELIX (W6FHB) is an electronics proctor at Kankata's Booker T. Washington school. W8CSK says he expects to revisit California next month where his son will marry . . . . Interesting ST2AR remarks: "My rig at the moment is a v.f.o. affair ending with an 813 at about 100 watts. I have two fixed W8JK beams which I can couple together or use independently. The receiver is a very old ex-U. S. Navy HRO without crystal filter, so the going is pretty rough at times. My score at the moment is 170/141 — still missing Nebr., N. Dak., Nev. and Utah for WAS. I have no secret plans for DXpeditions but I'm always looking out for such spots around this part of the world. Meanwhile I have pile-ups enough!" . . . . DeRidder DX Club inquiries to Fort Sao Joao Baptista de Ajuda (p. 71, April *QST*) brought these data from one Antonio Borges, Resident: "If you have intentions of visiting this place I would appreciate it if you tell me in advance the day and hour of arrival. A French West Africa visa will suffice. There are airlines coming through from Paris or Dakar, or else ship routes from Marseilles or Bordeaux. Also there is a plane between Accra and Lagos going to Cotonou, our nearestairport." No hints on hamming possibilities, though . . . . At QRT time CN8GU (W9FJY) tots up his Morocco DX ledger at 224/147, not bad at all for a short seven-month siege . . . . Ex-ZD3G-ST2NG-VS9AG particularly thanks W2s ZGB AMS, K2BZT and DL7AH for services rendered while he beat the African DX bush. "Those guys did their best to keep me on the air and free from QSL chores." . . . . WVDXC sleuths report a VQ3CF Zanzibar zoom imminent and also learn that ZD2DCP returns from the U. K. to Lagos with improved DXing facilities and new determination.

Oceania — "W3CHH (KX6BT) expects to be on Eniwetok for about eighteen months," advises W3LEZ. "The Frankford Radio Club will attempt to get QSLs to all stations worked. Joe is using a BC-610 and generally will be on

(Continued on page 168)

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175 Watts PEP Input
80 through 10 Meters
10 DB RF Feedback
Automatic Load control
Upper and Lower SSB, CW

75S-1 RECEIVER

Sensitivity—1 uv for 10 DB S/N
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Address .....

City ..... Zone.....

State .....

20 c.w. He's on 20 and 15 phone occasionally, also on 7 Mc., and he emphasizes that the 10-meter phone band out there runs from 7100 to 7150 kc. Eighty-meter work also is planned." . . . . . Former KX6BP op Gene postaled W7DJU from Travis AFB while making for an undisclosed new assignment . . . . . K4IRG reports that VR2DA "lost" his FB second operator, for the lad now signs VR2DK on Viti-Levu with a 15-watter. "VR2DA's long-wire runs right up to VR2DK's back yard but the next-nearest ham is 70 miles away." . . . . . The Danger Islands are back in DX headlines. This time it's KH6MG/ZK1 and WØPWB/-ZK1 using mostly 10 and 20 meters on special IGY assignment due to terminate immediately if not sooner. K6SHJ grabbed 'em on the first bounce . . . . . Receipt of a 150-watt sender by ZL3VB courtesy W6LMB/7 should help ease Chatham pressure. Neighboring ZL3DA (ZL3DX, ex-VR2CG) was swiftly swatted by W6ZZ and friends on 20 s.s.b. and c.w. . . . . W8YIN remarks, "VK9AD closed shop on August 20 and probably won't get back on the air till he returns to Western Australia." VKs now can run 150 watts, you know . . . . . OVARA diggers have VK2AIR toying with ZM7 and VR5 DXpeditionary probabilities and KB6BJ (W3PZW) also is tantalized by Tonga temptation . . . . . ZL1ABZ seasons his 14-Mc. techniques after months of the 75-meter grind. WGDXC hears that W7MGT was No. 1 20-meter customer for Mike . . . . . VS4JT is said to be QRT until January or February . . . . . The Wallis intentions of FK8AS were frustrated by licensing delays (what, no "reciprocity" between FK8 and FW8?) though other obstacles were readily surmounted.

Hereabouts — KP4KD's '58 ARRL Convention kicks were climaxed by a confab with League Vice-President W5NW, their first personal QSO after thirty years of on-the-air association . . . . . VP2VB & Co. unlimbered heavy multiband Antigua artillery to batter the ether with fierce VP2AY fusillades in early September. A Dominica demolition detail followed. W6ITH DXecuted a simultaneous VP2MR flanking attack from Montserrat . . . . . "Our August FO8AT jaunt was quite successful," opines SDDXC stalwart W6KSM. "We would like to have worked at least 3000 stations but preliminary estimates are around 2000. Our ops faced many problems and I hope all DXers will appreciate their efforts." . . . . . It's now back to West Virginia for KG1DL, says K1RJM . . . . . In an effort to promote contacts with overseas American areas, K2QXG offers to certify your qualified confirmations from any 20 of 23 K-prefixed countries on the DXCC List, our mainland excluded. The diploma is dubbed "20-K" and all contacts must date on or after January 1, 1955. Check with Mac for full specs . . . . . K2DQD reports brisk trade on St. Pierre while signing FP8RB in early September . . . . . W2BZN finds newcomer PJ3AE enjoying 15-meter s.s.b. with a Valiant and 3-element squirter . . . . . VP7NA's DX-40 is out after a 14-Mc. c.w. DXCC according to K2QXG's observations . . . . . OA4EZ, a Connecticut Yankee in Lima, does okay on 40 c.w. with a 25-watt 6L6 slingshot. But K5JVF hears he's somewhat disheartened by QSL returns; of twenty states already in the log King has heard from only eight . . . . . KV4s BD and BU, bent on settling down our West, dropped in on W6ZZ for a gala chin session. KV4BD dashes about with his mobile outfit and finds his call sign a convenient conversation piece . . . . . Belatedly we learn from W2GKP that the photo in June 1957 *QST* is that of HH2X, not HH2Y . . . . . KZ5CN is an import to 75- and 20-meter s.s.b. circles from Ft. Kobbe . . . . . W6KG personally visited several VP9 hams and confirms that Yanks may obtain Bermuda tickets . . . . . W2JBL blasts callers of directional CQs who chicken out and reply to improper answers — and then complain about other improper answers. One wouldn't go so far as to bawl out AC4AX for answering one's CQ JA/KA, of course, but we know what George means . . . . . W3GAU takes to task the palsy-walsy-with-juicy-DX types who crack the same pile-ups every morning with the same old sweet nothings while those with less robust signals QRX.

Ten Years Ago in "How's DX?" — In November 1948 the LFMB (Listen For My Buddy) boors come up for castigation . . . . Eighty meters is quiet save for VQ8AY and ZD2RGY pursuits. On seventy-five phone G8VB has been working numerous Ws plus PYs 1AGR 1RC 4DW 4NS 4OF 4QE 4RJ and 4ZI . . . . . KJ6AF, UF6s AA and AC top a meager 40-meter crop . . . . . Ten-meter phone items include one HDPP purportedly in the Galapagos, MI3ZJ, VS7PS, YR5W and ZS8A . . . . . On fruitful 20 c.w. we find AC4YN, AR1WW, EK1GW, FI8s AB, ZZ, FM8AD, FT4AN, HAs 2C 4AB, HL1s AB BE BG, Js 2ANT 2CDJ 3KBE 9ABW 9AKG 9ATT, KA1s ACJ AI, KW6AK/KX6, MB9AD, MI3AB, MP4BAB, PJ6X, PKs 2KK 3XIN 4PQ, TR1P, VS7s AD CR PH, VU4AC, roaming Ws 1EEC/KW6 2EJV/PK3 3KIF/VQ3 4FVI/KX6 7KMV/1wo 8WEA/-Truk ØMCF/C1, YR5I, ZC6s LA UN XY, ZD9AA and 4UN/Rhodes . . . . . Miscellaneously, we welcome H1s HR and PL back from their successful San Marino campaign and also note that tricky Trieste prefixes now include AG2 (U. S. military), MF2 (British military) and I1 . . . . . Photos of popular H8N and VO4X round out the column while quarterback Jeeves calls signals on a rotary-rhombic team.

Correspondence from Members

(*Continued from page 75*)

plural pronoun "we" in the singular . . . Dr. Bergen Evans reminded us on his TV program recently that we have the best authority for the use of the singular "we", the King James Bible.

"Let us make man in our image and after our own likeness." (Genesis I, 26)

Maybe we ourself have rocks in our head. Hi.

— *Few C. Holmes, W5VAA*

Editor, *QST*:

When that untouchable pronoun "we" is used on the phone bands in my shack, it definitely does refer to two distinct personalities, me and my home-brew pair of 809s. Anyone who has ever built up a rig that may be temperamental upon occasion is very careful to stay on its good side and not to anger it. I find that an occasional, polite, on-the-air acknowledgement of my rig's efforts help me to keep it in a good humor. — *James T. Hanlon, W4VIV*

CONTESTERS' CONTEST

New Lyme, Connecticut

Editor, *QST*:

QST uses many pages each year to tell us slow rag-chewing hams about the hot contest operators, and in the September issue there's a tale of true confession by one of these experts.

However, we lids still don't know who is the best. There is no official star we can worship: no Mickey Mantle, no Teddy Nadler, no Louis Armstrong. So let's find out just which operator should be enshrined in the Amateur Hall of Fame, just who is the real McCoy[1]. Obviously, a contest is the way to do it.

The contest should be on c.w. only, since you ARRL boys seem to think that a.m. phone is not here to stay and that s.s.b. is only an engineer's dream. It should last for 24 hours so the sleepless wonders can neglect their families for a day and a night and prove their youthfulness by operating straight through. And of course there must be multipliers; otherwise the bookkeeping might be as easy as the operating.

Only those who have finished first, second or third in each ARRL Section in the SS and in each Section and country in the DX Contest during 1958 should be eligible to take part. This will keep down the number of entries and will give the ubiquitous "CQ no contest" men a better chance of maintaining contact while they gripe to each other.

You can see that although the quality of the contestants will be the highest possible, the number will be low. So the problem is how to make the affair exciting, or, as one of the non-integrated entrants might describe it, the most fascinating little old contest you all just ever had.

And here's my solution — positively the greatest: NEGATIVE MULTIPLIERS.

It works like this: Suppose W5XXX uses two bought receivers, a home-built v.f.o. with amplifiers on 10, 15, 20 and 40, a telephone pole and two commercial towers, and beams he put together himself. His station has a good location on a hill and he has a 35 w.p.m. ARRL Code Speed Certificate.

After multiplying his number of contacts by the number of countries worked on each band he gets down to business, applying the negative multipliers. First, he multiplies his score by −.5 because he uses a home-built v.f.o., then by another −.5 for each home-made amplifier. The use of commercially built equipment must be encouraged — after all, *QST* advertisers have to live — and any fuddy duddy who rolls his own should be penalized. Next comes a −.3 for the pole, since it was probably chiseled from the telephone company. The use of the towers, provided the towers were actually bought, carries no penalty, but a multiplier of −.3 applies for each of the home-built beams. It's −.3 instead of −.5 because the aluminum may have been paid for. Now, a −.6 multiplier for his good location, obviously an unfair advantage, and then the big one: −2.5 for the 35 w.p.m. certificate.

You may change the values of the other multipliers after you have one of those meetings I hear you're always holding

(*Continued on page 172*)

[1] A colloquialism, not referring to L. McCoy, the Novices' Big Brother.

in that back room of yours, but no tampering with the — 2.5, please. Any ham who can receive 35 w.p.m. has too great an advantage over the others and the — 2.5 may well be the equalizer.

You work out the rest of the multiplier table. It's all negative, so it should not be too hard for your staff. If it were not for an important series of meetings that demands my presence, I'd do it for you; but those local zoning matters will not wait.

By this time you are realizing that under this system the total score is likely to be negative. Well, that's O.K. You can let the operator with the smallest minus score win if you want to, but a better plan is to throw out all the scores that are minus. Your one-man crew of log checkers might greet this plan with even more than his usual post-prandial enthusiasm.

Anyway, in the case of the W5 it won't matter because that location of his is undoubtedly on top of an oil dome and he's so lousy rich he can afford to buy ARRL and run his own contest. — *A. L. Worrom, 8AOF/1*

T9?

8820 East Underwood
Pico Rivera, California

Editor, *QST*:

I just got through listening to a typical pile up on 20 meter c.w. and felt compelled to write a letter concerning honesty in signal reporting. In this particular pile up, the DX station had an extremely rough note but every W and K station that worked him gave him a T9. It would appear that many of our DX fraternity have forgotten that there is anything but a T9 to be used for the last digit in the RST report. I would like to refresh the memory of these hams by directing their attention to page 580 of the 1958 ARRL *Handbook* where the tone numbers are listed together with the explanation of each. They will note that T9 means "purest d.c. note." If the note transmitted by the DX station mentioned above was the "purest d.c.", I don't know raw a.c.!

I think we ought to be honest in our appraisals even if it might lose us a QSL! In fact if you gave the DX station an honest report, he might be so surprised that he would send you a QSL instead of all those giving him the T9 reports! Following this line of reasoning, on this particular morning, I was trying hard to work this DX station in order to give him RST 573 but I never made it. For all I know, he is still working state side hams in blissful ignorance of his atrocious signal because everybody tells him he is T9.

Let's have more honesty in signal reporting.

— *William Edmunds, K6RIP*

Strays

W9LZV suggests the following "improved" phonetic alphabet: Archipelago, Brachycephalic, Czechoslovakia: Djibouti, Either (pronounced eye-ther), Fortuitous, Gnu, Hyoscine, Ichthyophagous, Jeopardy, Kodiak, Ljubljana, Mnemonic, Nebuchadnezzar, Otorhinolaryngologist, Pterodactyl, Quebec (pronounced ka-bec), Rhododenron, Sjambok, Tzigane, Uxorious, Vladivostok, Wladziu, Xylophone, Ypsilanti, and Zodiac. One suggestion is that the first one be changed to Abalone (pronounced aw-baloney).

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EVERY MONTH MORE AMATEURS SEE WARD
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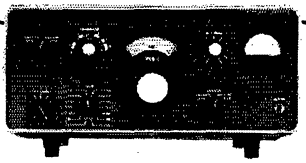

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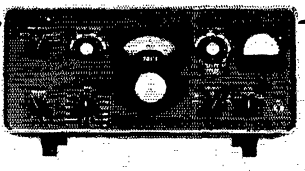

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175 Watts PEP Input
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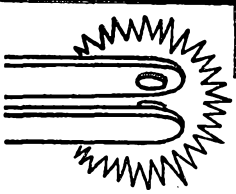

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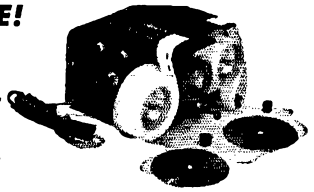

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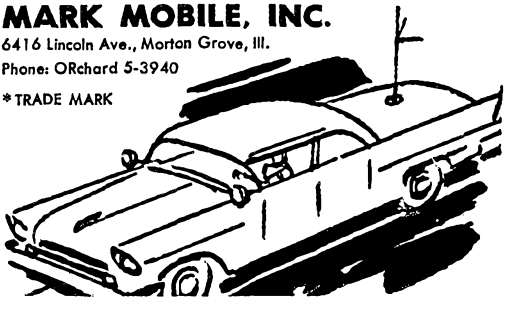

The World Above 50 Mc.

(Continued from page 82)

up to the European record.

We almost got a new 10,000-Mc. record Sept. 6. On the day W7JIP/7 was set up on 4000-foot Marys Peak, near Corvallis, Ore. W7LHL/7 was in business on Green Mountain, a 3400-foot elevation near Granite Falls, Wash. Two-meter gear was used for liaison, over the 265-mile circuit. Both stations were ready for a 10,000-Mc. try at 1100, at which time the 2-meter signal was S9, but on its way down. W7LHL first heard W7JIP's 10,000-Mc. tone after a little tuning, but it was very weak and fading in and out. By 1230 there was nothing left on 10,000 Mc. and the 144-Mc. signal was down to S2 after about 1300. The 2-meter signal remained poor throughout the afternoon, but it built up after 1800. At 1850 the 10,000-Mc. signal was heard again, this time weak, but steady. The expeditions ran out of time and had to dismantle, but another try will be made at a later date, probably next year.

W7JIP was feeding 300 milliwatts output from a Varian X-13 to a 30-inch dish. W7LHL used a Varian V-262 oscillator, a balanced mixer and a 30-Mc. i.f. with 1-Mc. band width. His reflector was also 30 inches in diameter.

OES Notes

K1BML, Bethlehem, Conn. — Best tropospheric opening of the year Aug. 31. Heard 144-Mc. stations as far south as W4KHR, North Carolina.

W1FOM, Southington, Conn. — When using a lamp as a dummy load the relative power can be determined easily by using an exposure meter, provided the latter is held in a constant position with respect to the light source.

W1GTG, Hamden, Conn. — Have completed mobile transmitter covering 160 to 2 meters, in two plug-in r.f. units.

W1HDQ, Canton, Conn. — Now on 220 Mc. with 250 watts, phone and c.w., and 66-element array. Find coverage under normal conditions is about comparable to that on 50 and 144 Mc. Will be on c.w. during aurora and tropospheric openings whenever possible. Presently on 220.02 Mc.

W1LGE, Windsor Locks, Conn. — Note more use of c.w. on 50 Mc. than ever before. Hope trend continues as aid to DX work.

W1MWB, Westport, Conn. — Keeping m.c.w. skeds with K2ESY on 145.3 Mc. for code practice. Will accept calls from others interested in improving code ability.

W1UHE, N. Tiverton, R. I. — Low-power DX is possible on 220. Heard W4UBY, 360 miles, when he was running a 6360 final stage. Also hearing several New Jersey stations on 432 Mc.

K4EUS, Chester, Va. — Heard 16 states on 144 Mc. via aurora Sept. 4.

W4FNR, Ft. Lauderdale, Fla. — First transequatorial scatter of fall season heard Sept. 5. CE8AE and OA3AAE were in for 50 minutes, beginning at noon EST.

K4MWM, Augusta, Ga. — Experience on 50 Mc. indicates that high power is not necessary in most DX work. Far more important is a good beam; at least 5 elements. This need not be exceptionally high, so long as it is in the clear. A good rotating system is important, in order to zero in quickly on signals coming from unknown directions. A ground-plane antenna is very useful at times, and it may provide as good a signal as a directive array when the skip is right for its radiation angle.

K4SPJ, Hazard, Ky. — Would like 220-Mc. skeds. Can work crossband from 50.58 or 50.91 Mc.

K6OKK, Vallejo, Cal. — Oscillator using 6AF4A made to work up to 1700 Mc. Though efficiency was very low it should make fine local oscillator for 1215-Mc. receiver. Double-hop sporadic-*E* skip to 4th call area on 50 Mc. Aug. 31.

K6QMK, Pacoima, Cal. — Caught *TE* opening to LU and CE Aug. 18, beginning at 1945, and double-hop *Es* to Alabama and Florida Aug. 31.

W6OYM, Sherman Oaks, Cal. — Tests with K6OAC, Inglewood, on 145 Mc. show no signal via direct path, with low power and small beams. When both stations aim at Mt. Wilson a consistent signal is maintained both ways. Signal varies regularly with the time of day, dropping from S5 at 1500 to close to the noise at 2130.

K9GFQ, Grabill, Ind. — DSB in use for past two months

(Continued on page 176)

with good results, where receiver operators recognize it and tune it in properly. Many do not.

W9JIY, Indianapolis, Ind. — Skeds with K9GWP, Bloomington, 50 miles, on 220 Mc. show signals averaging 8 S-units above noise. Also work Ohio stations occasionally on 220.

W9LVC, Beloit, Wis. — Experiments with long Yagis on 144 Mc. indicate that about 50 feet is maximum that can be made to pay off. Currently using two 50-foot Yagis stacked 24 feet apart, 90 feet above ground. This array has been outstanding in aurora work, making possible contacts with W4TDW, Knoxville, Tenn., and WØTGC, St. Louis, while running only 25 watts output.

W9MHP, Indianapolis—Worked into Tipp City, Fairborn and Cincinnati on 220 Mc., up to 100 miles, with 6360 final.

WØKLQ, Jefferson City, Mo. — Improved signal-to-noise ratio of 6-meter converter by eliminating 6CB6 second r.f. stage. This was done by plugging a 0.001-μf. disk ceramic into the plate and grid pins of the 6CB6 socket.

FEEDBACK

Reference to MASER principle, October *QST*, page 83, should say December 1957 *QST*, instead of 1947.

Happenings of the Month

(Continued from page 61)

allow stations in the Radio Amateur Civil Emergency Service[1] "to use the frequencies in the 220–225 Mc. RACES band for radio remote control of base stations" and to "use 6F2 emission in the 50.35 to 50.75 Mc band. . . ."

3. The petitioner, in support of its request for amendments necessary to permit remote control operation by RACES stations in the 220–225 Mc. band, alleges:

(a) Remote control is not presently permitted on a frequency available for utilization by RACES stations, which fact "is hampering progress in the development of the full capabilities of the service";

(b) Terrain conditions in the areas where many "Civil Defense Control Centers" are situated make maintenance of "the required primary communication links" impossible without physically relaying messages so long as remote control operations are not permitted;

(c) Use of wire lines for the remote control of RACES base stations will hamper the "mission" of amateur radio in Civil Defense, "to supply emergency communications," because "if all wire lines are intact after attack, RACES will not be called upon to play more than a minor role in communications."

(d) Adoption of the requested amendments would make it "possible to minimize error" by elimination of the necessity for physical relay of messages, thus enhancing the value of the Radio Amateur Civil Emergency Service in time of disaster.

4. Arguments advanced by the petitioner in support of the requested amendment of Section 12.231 (a) (2) so as to allow use of 6F2 emission by RACES stations when operating on frequencies between 50.35 and 50.75 Mc. include the following:

(a) 6F2 emission is presently permitted when RACES stations are operated between the frequencies 53.35 and 53.75 Mc. and the characteristics of such frequencies are substantially identical to the characteristics of frequencies between 50.35 and 50.75 Mc.

(b) Authority to use 6F2 emission when operating on frequencies between 50.35 and 50.75 Mc. as well as when

(Continued on page 178)

[1] Hereinafter sometimes referred to as RACES stations.

operating on frequencies between 53.35 and 53.75 is required "in order that simultaneous transmission and reception of radio teletype signals be maintained, thereby affording maximum use of available frequencies at greater speed of transmitting and receiving."

(c) Rules presently restrict emissions on frequencies between 50.35 and 50.75 Mc. suitable for telegraphy to type "A" emissions and equipment necessary for utilization of such emissions in radio telegraphy is unsatisfactory, not readily available and more expensive than that which would be required to utilize 6F2 emission.

(d) "Permission to use 6F2 in the 50.35 to 50.75 Megacycle band will encourage the Radio Amateur Civil Emergency Service to develop radio teletype communications in civil defense networks" and will aid in "increasing the speed with which traffic can be moved" by RACES stations.

5. The requested amendment of Section 12.64 (b) would, if promulgated, permit not only RACES stations but also other amateur radio stations to be authorized for conduct of remote control operations on frequencies in the 220–225 Mc. band. Remote control operation by such stations is presently permitted only on "frequencies within amateur frequency bands 420 Mc. or higher." The requested amendment of Section 12.231 (a) (2) which would permit use of 6F2 emission by RACES stations on frequencies between 50.35 and 50.75 Mc. would not provide for such use of 6F2 emission by other amateur radio stations operating on these same frequencies. Authorizations for operation of RACES stations are issued only to persons holding an amateur radio operator's license and "an appropriate amateur radio station license." Therefore, it would appear that if provision is made for use of 6F2 emission by RACES stations on frequencies between 50.35 and 50.75 Mc., similar provision should be made in Section 12.111 (h) for use of this emission by other amateur radio stations.

6. The requested amendments appear to have sufficient merit to warrant issuance of a Notice of Proposed Rule Making envisioning effectuation thereof.

Amendment of Section 12.111 (h) so as to permit use of 6F2 emission by amateur radio stations operating on frequencies between 50.0 and 54.0 Mc. is also being proposed.

7. Proposed amendments of Sections 12.64 (b), 12.111 (h) and 12.231 (a) (2) of The Commission's Rules are contained in the Appendix attached hereto and are issued pursuant to the authority delegated to the Commission by section 303 (c) and (i) of the Communications Act of 1934, as amended.

8. Any interested person who is of the opinion that the proposed amendments should not be adopted or should not be adopted in the form set forth herein, may file with the Commission on or before November 20, 1958, written data, views or briefs setting forth his comments. Comments in support of the proposed amendments may also be filed on or before the same date. Comments in reply to the original comments may be filed within ten days from the last day for filing said original data, views or briefs. The Commission will consider all such comments prior to taking final action in this matter.

9. In accordance with the provisions of Section 1.54 of the Commission's Rules, an original and fourteen copies of all statements, briefs or comments filed shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION

Mary Jane Morris
Secretary

Adopted: September 17, 1958
Released: September 19, 1958

(*Continued on page 180*)

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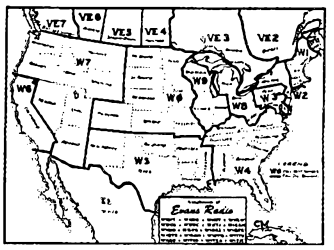

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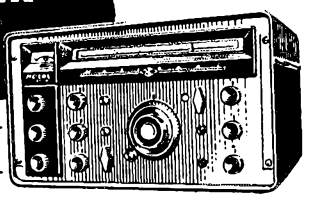

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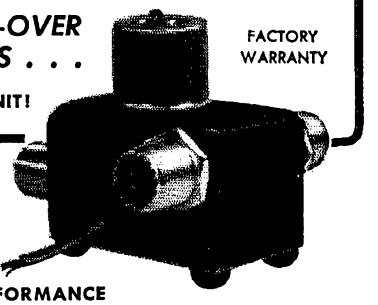

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APPENDIX

IT IS PROPOSED TO AMEND PART 12, AMATEUR RADIO SERVICE, AS FOLLOWS.

1. *Amend Section 12.64 (b) (6) to read as follows:*

(6) In the event that operation of an amateur transmitter from a remote control point by radio is desired, an application for a modified station license on FCC Form No. 610 or FCC Form No. 602, as appropriate, should be submitted with a letter requesting authority to operate in such a manner stating that the controlling transmitter at the remote location will operate within amateur frequency bands 220 megacycles or higher and that there will be full compliance with subparagraphs (1) through (5) of this paragraph. Supplemental statements and diagrams should accompany the application and show how radio remote control will be accomplished and what means will be employed to prevent unauthorized operation of the transmitter by signals other than those from the controlling unit. There should be included complete data on control channels, relays and functions of each, directional antenna design for the transmitter and receiver in the control circuit, and means employed for turning on and off the main transmitter from the remote control location.

2. *Amend Section 12.111(h) to read as follows:*

(h) 50.0 to 54.0 Mc. using types A1, A2, A3, and A4 emissions and narrow band frequency or phase modulation for radiotelephony or radiotelegraphy 51.0 to 54.0 Mc. using type Aθ emission, and on frequencies 52.5 to 54.0 Mc. special emission for frequency modulation (radiotelephone transmissions and radiotelegraph transmissions employing carrier shift or other frequency modulation techniques).

3. *Amend Section 12.231 (a) (2) to read as follows:*

(2) For use by all authorized stations:

Frequency Band	*Authorized Emission*
28.55–28.75 Mc.	0.1A1, 6A3, 6A4, 6F3
29.45–29.65 Mc.	0.1A1, 1.1F1, 6A3, 6A4, 40F3
50.35–50.75 Mc.	0.1A1, 6A2, 6A3, 6A4, 6F2, 6F3
53.35–53.75 Mc.	0.1A1, 1.1F1, 6A2, 6F2, 6A3, 6A4, 40F3
145.17–145.71 Mc.	0.1A1, 1.1F1, 6A2, 6F2, 6A3, 6A4, 40F3
146.79–147.33 Mc.	0.1A1, 1.1F1, 6A2, 6F2, 6A3, 6A4, 40F3
220–225 Mc.	0.1A1, 1.1F1, 6A2, 6F2, 6A3, 6A4, 40F3

Strays

K8EQC worked KN7AOZ on 15 c.w. and sent him a QSL. In the meantime he had also written away for some QSL samples. A few days later the postman delivered a QSL from KN7AOZ *and* the QSL samples. Included amongst the samples was one of KN7AOZ's cards!

—•••—

Another certificate for the wallpaper collectors. To celebrate the 300th anniversary of the town of Scarborough, in Maine, the Scarboro Radio Club is awarding a handsome certificate to anyone who works three of the town's ten amateurs. K1DPG says your best bet is to call "CQ Scarboro" on either 10, 15, or 75 meters.

Russian Amateur Radio

(*Continued from page 64*)

of requirements (here somewhat shortened):

1. High Frequency. Take first or second place in DOSAAF USSR or international contests, work all 15 republics in 3 hours, work 100 districts in 12 hours, find two "foxes" operating in the 80-meter band (and at least 4 km. from the "hounds") in an hour. (So far, 104 Russian hams have qualified for this award.)

2. V.H.F. and U.H.F. Take first or second place in All-Union competition, set a new All-Union record in v.h.f. and u.h.f. communications, make 200 QSOs (at a distance of at least 5 km.) in the 38–40-Mc. band in 12 hours, in the 144-Mc. band make 15 QSOs with at least 10 different stations in 12 hours (must be at least 50 km. distant), on 420 Mc. make 15 QSOs (at least 10 km. distant) in 12 hours, make 20 QSOs on 38–40 Mc. at a distance of 3000 km. in 12 hours, find two "foxes" operating between 38 and 144 Mc. (and at least 4 km. from the "hounds") in 50 minutes.

3. Sending and Receiving. Copy letter text on a typewriter at a speed of 200 letters per minute and figure text at 150 figures per minute, send letter text at 140 letters per minute and figure text at 100 figures per minute, copy by hand letter text at 180 letters per minute and figures at 140 per minute.

Each of these major divisions is divided into three subdivisions, reflecting various levels of achievement. It was reported that by the end of 1957 some 42,000 persons had won these awards.

Russian amateur radio contests are treated as sports competitions. Before a lengthy contest (four hours or more), participants are urged to take only light foods, and, to maintain their endurance during the contest, they are urged to eat omelets and to drink strong sweet tea, coffee, or cocoa. During international code-speed competitions, Russian participants wear sweat shirts with the letters "SSSR" (USSR) emblazoned across the front of the shirt.

Miscellaneous

a. The Russians claim that one Sergei Zhidkovsky built "the world's first amateur radio receiving-transmitting station." This was in the fall of 1914. Since there were no other amateur stations on the air at that time, Zhidkovsky was forced to receive signals from military stations in Kiev, Odessa and even Paris.

b. The youngest "Master of Amateur Radio Sport" is 17-year-old Dimitry Alekseevsky, of

(*Continued on page 184*)

Novosibirsk.

c. The number of Russian ham stations increased 10.2 times from January, 1955 to October, 1957. In January and February, 1958, more than 50 new high-frequency stations went on the air. (I have never seen an absolute figure for the number of Russian hams.)

d. 1500 to 2000 women now participate in the annual YL short-wave contests. *Radio* provides prizes for this (and other) contests.

e. Hidden transmitter hunts are called "fox hunts." Direction-finder receivers are carried on the back (no mobile operation is permitted).

f. I would say that ham radio in the Soviet Union is *not* restricted to well-heeled individuals. This would not be in line with the government's aim of making radio a mass movement. The government, in fact, subsidizes ham radio, just as it does other hobbies having military application.

Strays

First Army MARS will sponsor a 26-hour course in "Basic Electronics" beginning Nov. 5. These lectures will be given on 4030 kc. a.m., immediately preceding the technical net session (see page 53), and lasting one hour (from 2000 to 2100 EST). The course will be given in cooperation with the Ft. Monmouth Signal Corps School and will use the ARRL *Handbook* as a study guide.

—...—

Dr. Jack Herbstreit, Chief of the Tropospheric Propagation Research Section, NBS, and WØIIN, has been named by the IRE to receive the Harry Diamond Memorial Award "for original research and leadership in radio-wave propagation." The award is presented annually to an outstanding engineer in government service.

—...—

During the September V.H.F. QSO Party, K2VDR worked W2DZA and K2DZA, W2SEU and K2SEU, and K2ICM and K1ICM.

—...—

Another coincidence for you to suffer through. VE2XR's brother-in-law is VE3XR.

W7KCN found that the name of this town in Washington is pronounced just like the familiar war cry.

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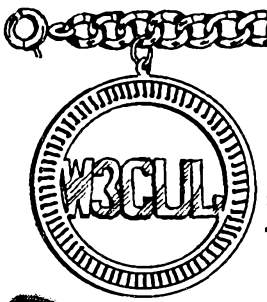

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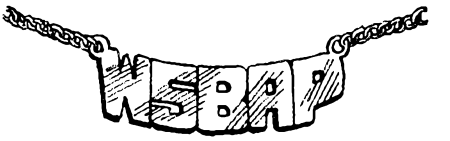

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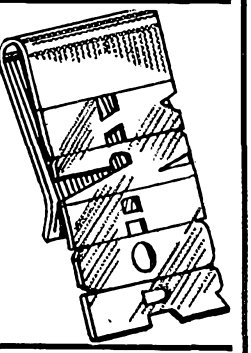

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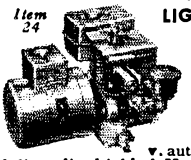

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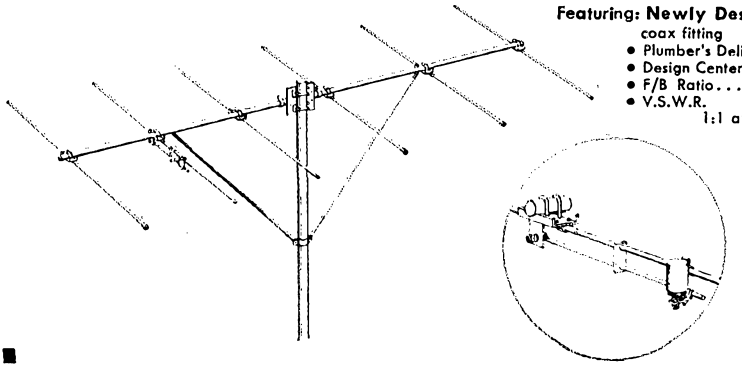

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It's easy to lose track of a satellite if for some reason observations have to be discontinued for several days. Although attempts have been made to broadcast up-to-date tracking information for the use of observers (*QST*, April 1958, page 59), in recent months these predictions have had to be limited to satellites that would be visible optically over some part of the United States. With the help of the new Satellite Prediction Kit and a change that is scheduled to be made soon in the form of the CAP broadcast, both radio and visual observers should be able to figure out for themselves the most favorable times for making observations, at their own exact locations. The authors of this booklet have worked out a calculation method based on modified orbital elements — these can be broadcast in quite compact form — which, requiring nothing more than the ability to follow directions and do simple arithmetic, leads to the desired information.

Using the method described in the book, predictions can be made for several days in advance, since the orbital elements do not change rapidly. A fresh set of orbital data, available from the broadcasts, should be used if the interval is longer than about a week, but it is not necessary to get the corrected elements daily.

"Do-it-yourself" prediction data has been badly needed. This kit will be welcomed by all who are interested in keeping up with the satellites.

General Electric Transistor Manual, third edition, published by General Electric Company, Semiconductor Products, 1224 West Genesee St., Syracuse, New York. 5¾ by 8¼ inches, 168 pages. Price, $1.00.

In going into its third edition the G.E. Transistor Manual is definitely in the best-seller class — according to G.E., close to a quarter of a million copies of the first two editions were distributed. Obviously, to attain such a circulation the book must have elements that satisfy a wide variety of needs, particularly in the practical-application department. The new edition continues to have the same sort of appeal, but in considerably greater volume.

The Manual has three divisions, broadly speaking — basic principles, practical circuit applications, and characteristic data on commercially-available transistors. The applications section constitutes the major portion of the book — 104 pages out of the total. Of particular interest to the home experimenter are the chapters on radio circuits and hi-fi

(*Continued on page 188*)

circuits. The former covers converters, i.f. amplifiers, a.v.c., and reflex circuits, and includes twelve pages of complete receiver diagrams covering practically everything from a one-transistor set to superhets with Class B audio output. The hi-fi section has a discussion of tone controls as applied to transistor circuits, and gives practical circuit data for pickup and recording-head preamplifiers as well as power amplifiers up to 10 watts output. Another part of the book describes a.c. power-supply arrangements suitable for transistor circuits — something that often seems to be neglected when power amplifiers are under discussion.

Other topics covered include unijunction-transistor applications, "logic" circuits, tetrode transistors, and silicon controlled rectifiers. There is also a discussion of transistor characteristics and ratings as they should be interpreted from published information, detailed specifications on G.E. transistors, and a listing, with ratings, of all registered (E.I.A.) transistor types on which information was availavailable at mid-year.

Oscilloscope Techniques, by Alfred Haas. Published by Gernsback Library, Inc., 154 West 14th St., New York 11, N. Y. 5½ x 7½ inches, 224 pages, including index. Paper cover, $2.90; cloth, $4.60.

This is a very practical-looking book on the oscilloscope, with the accent on using the instrument for doing all sorts of jobs. After a few opening chapters on the principles of the cathode-ray tube and the circuits used in oscilloscopes, the text takes off into the world of measurements that can be made with the scope. Beginning with voltage and frequency, running through distortion and complex wave forms, clipping, differentiation and integration, it gets into such things as plotting vacuum-tube and transistor characteristics, magnetic properties, modulators of various types, receiver trouble shooting and testing (including television receivers), and winds up with a chapter on identifying oscilloscope faults — all well illustrated with actual pattern photographs. The owner of a scope should find plenty in it to stimulate his use of the instrument and widen its field of application.

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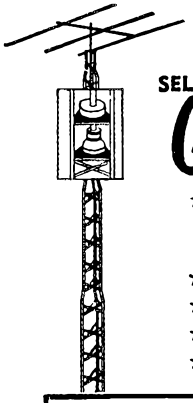

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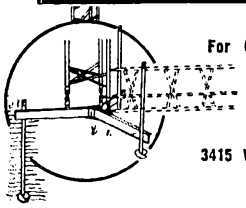

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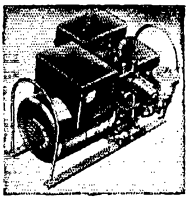

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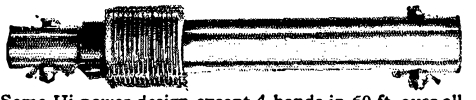

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40M-A 4 band KW antenna **$24.50**
All antennas have 88 ft. KW twinlead, heavy duty insulators, copperweld wire.

FIVE BAND ANTENNAS STILL AVAILABLE:

HC-F 5 band KW coils **$19.95**
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Improved quarter KW 5 band models:

5 BC-F phone coils; 5BC-C CW coils **$12.50**
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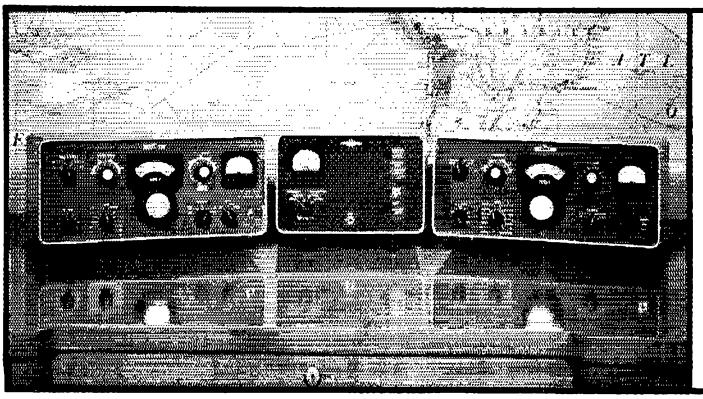
Precision quartz crystals — High Frequency and Low Frequency available in your most exacting and specific requirements. Close tolerance quartz crystal blanks and plates. Transducers for Ultrasonics. Crystal Ovens to give precise frequency control = 1° C. at setting. We invite you to bring your crystal problems to our attention. Catalog Q-11 available upon request.

Postpaid in U.S.A.

MONEY BACK GUARANTEE

GENERAL CRYSTAL COMPANY, INC.
372 Wilmot Ave., Burlington, Wis.



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Collins S/LINE AT

VALLEY RADIO DISTRIBUTORS

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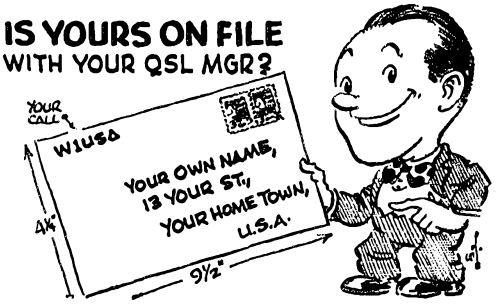
Call, write or stop in

VALLEY RADIO DISTRIBUTORS
518 N. Appleton St., Box 975
APPLETON, WIS. Ph. REgent 3-6012

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.
W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.
W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount Avenue, Oakland, Calif.
W7, K7 — Salem Aaateur Radio Club, P.O. Box 61, Salem, Oregon.
W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. F. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Pointe Claire, Montreal 33, Que.
VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 833 10th St., North Lethbridge, Atla.
VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newf.
VO2 — Douglas B. Ritcey, Dept. of Transport, Goose Bay, Labrador.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.
KZ5 — Catherine How, KZ5KA, Box 407, Balboa, C. Z.



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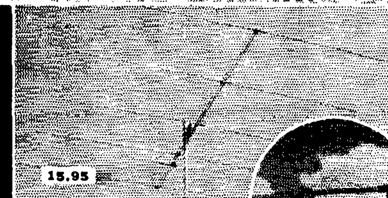
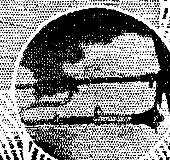
VHF from hy-gain

Easy Assembly • Easy Operation

6 METERS



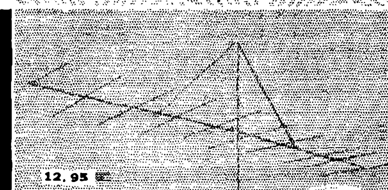


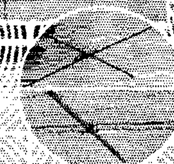
6M, 5E
9 db Forward Gain
Net wt. 9 lbs.
Boom length: 9 ft.
$15.95

6M, 9E
12 db Forward Gain
Net wt. 18 lbs.
Boom length: 18 ft.
$26.95

New pre-calibrated (Gam-maxial) Gamma Match assembly with coaxially formed reactance cancelling capacitor built in, makes possible for the first time a perfect 1:1 SWR. Coax connector for 52 ohm feed included.

2 METERS





2M, 10E
13.4 db Forward Gain
Net wt. 3¼ lbs.
Boom length: 12 ft.
$12.95

2M, 5E
9 db Forward Gain
Net wt. 1½ lbs.
Boom length: 6 ft.
$6.95

All hy-gain 2M beams incorporate the hairpin dipole matching system. Perfect 200 ohm match for K 200 low-loss parallel line or 52 ohm coax thru a half-wave balun. Instructions included for matching 72 ohm coax, 300 & 450 ohm balanced lines — ¾ and 1¼M beams use ratio dipole adjusted for perfect match to 450 ohm low-loss open wire lines.

1¼ M

1¼M, 11E
14.2 db Forward Gain
Net wt. 3 lbs.
Boom length: 12 ft.
$10.95

¾ M

¾M, 13E
16.1 db Forward Gain
Net wt. 1¼ lbs.
Boom length: 8 ft.
$9.95

2 & 6 M's

VHF VERTICAL

A new decoupling sleeve principal makes possible low SWR ¼ wave resonance maintaining efficient operation for the 2 and 6 meter bands. Overall height 5', 52 ohm coax feed. Net weight 24 oz. Complete with 2 band tuning ground plane and nylon base insulator assembly.
$16.95

Q-11

NAME: ____________________

ADDRESS: ____________________

CITY & STATE: ____________________

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 non-commercial in nature.** Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 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.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 218 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, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

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.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT/ARN7, BC610E, ARN6, BC788, ARC3, BC342. Highest prices possible paid. FOR Action we will buy immediately for cash all types amateur equipment or trade against new amateur gear. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator regulator & rectifier, $85.00. Good condition. H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, I-152C, Collins, Bendix equipment, test sets, dynamotors, inverters. We pay highest prices. Advise quantity, condition, price in first letter. Aircraft Radio Industries, Inc., 70 East 45th St., New York City. Tel. LExington 2-6254.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problem, invited, any equipment. Associated Electronics, 58 South P St., Livermore, Calif. W6KF, Skipper.

RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our twenty-first year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

TECHNICAL Manuals TM11-273, 120 pages covering BC-312 receivers and BC-191 transmitters, $2.50. ID-60/APA-10 Panadaptor maintenance manuals, $2.75. Both postpaid in U. S. A. Electronicraft, Bronxville, N. Y.

"PIG-In-A-Poke"? Not if you visit Ham Headquarters, USA, and pick your choice from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-In Center. Greater values, because tremendous turnover means lower overhead! Terms, Trades. Send us postcard for mouth-watering photograph and price-list. For the best in new and used equipment it pays to come to Ham Headquarters, USA! BCNU. Bill Harrison, W2AVA, 225 Greenwich St., New York City.

"THE Saga of Telegraphy", LP recording & brochure. Historical. $3.75. Ralph Graham, W4RJX, Box 3556, Arlington 3, Va.

$299.99 takes my NC-300 with crystal calibrator. L. A. Morrow, W1VG, 99 Bentwood Road, West Hartford 7, Conn. Phone ADams 2-2073.

QSLS? SWLS? Finest and largest variety samples 25¢ (refunded); Call books (latest) $5; "Rus" Sakkers, W8DED, P. O. Box 218, Holland, Michigan. (Religious QSL samples, 10¢. Booklet, "Your Best Contact" free).

QSLS-SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 201 Adams St., Rutland, Vt.

QSLS-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS, SWL's VHF's, XYL-OM's. (Sample assortment approximately 9¾¢). Covering designing, planning, printing, 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, Taprint, Union, Miss.

QSLS. Plain and fancy samples 10¢. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

QSL-SWL samples free. Bartinoski W2CVE Press, Williamstown, New Jersey.

QSLS of Distinction! Three colors and up: 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Penna.

QSLS-SWLS. Samples free. Spicer, 4615 Rosedale, Austin, Texas.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢ with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLS, Sharp! 200 one color, glossy, $4.75 Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, 4422 Marquette Dr., Ft. Wayne, Ind.

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.

QSLS. High gloss, 3 colors, samples 10¢ (refunded). K2VOB Press, 62 Midland Boulevard, Maplewood, N. J.

QSLS: 4 colors, glossy, 100, $3.00. Samples 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Mich.

QSLS 3-color glossy, 100 for $4.50. Rutgers Vari-Typing Service, 7 Fairfield Rd., New Brunswick, N. J.

QSLS, $4.65 gpt 500. Send 3¢ stamp for free brochure. K9EUF Print, 1839 46th St., Rock Island, Ill.

QSLS. Outstanding, original, fast service. Reasonable prices. Large assortment. Samples. 10¢. VY8 QSLS, 1704 Hale, Ft. Wayne, Ind.

QSLS. Western Scenics. Samples 20¢. John Cox, Box 8217, Denver 19, Colorado. Landline WEst 4-4739.

QSLS Samples dime. Sims, 3227 Missouri Ave., St. Louis 18, Mo.

DIFFERENT QSLS, 100 Kromekote, $2.50, plain, $2.00. Sample free. Grossenbacher, K5OFS, Box 340, Eagle Pass, Texas.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS for economy-minded hams: $4.65 for 500. Free brochure. Charley Vorderberg, K9EUF, 1839 46th St., Rock Island, Ill.

QSLS, SWLS, Tackards, glossy, colors, 100, $2.75 up. Samples 10¢ refunded. W1GKH Press, 27 Liberty St., Danbury, Conn.

YOUR QSL made into a laminated plywood plaque, $3.00. Satisfaction guaranteed. Solomson, 46 Cornhill, Boston 8, Mass.

QSLS Neat, Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

FREE! 100 "Thingloss" Anglecall QSLS. Order 100 "Hevigloss" red, blue, green (black back), Radoprint, Ojai, Calif.

QSLS. Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

ORIGINAL QSLS — Extra heavy cards; your call letters visible 30 ft., 2-colors, 100, $2; 200, $3.50. Free samples. K2YFQ, Vazquez, 522 West 136th St., New York 31, N. Y.

QSLS-SWLS that are different! Colored embossed card stock, an "Kromekote". Samples 10¢. Turner, K8AIA, Box 953, Hamilton, Ohio.

FREE Samples. QSLS-SWLS. Backus, 703 Cumberland St., Richmond, Va.

COLOR Glamor, scenic & nature. Custom sketch and photo. Samples 25¢ refunded. K4LFZ QSLS, Summerfield, Fla.

QSLS-SWLS. 100, $2.50. Samples 10¢. QSO file cards, $1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS, Plain or fancy, samples dime. QSL printing, Box 12351, Houston 17, Texas.

QSLS. Samples, dime. Printer, Corwith, Iowa.

RUBBER Stamps! Highest quality, all types, sizes. Write for prices and sample impressions. John Driscoll, W2SSC, 50 Howard, Buffalo 21, N. Y.

RUBBER Stamps for hams, sample impressions. W9UNY, Hamm, 542 North 93rd, Milwaukee, Wis.

QSLS: Cartoons, colors, something different! Samples 25¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLS, samples dime. Eddie W. Scott, W3CSX, Fairplay, Maryland.

QSLS, OM-YL, AM-FM-SSB-CW, VHF-UHF, MARS, CAP, BC-SWBC. Special offer, details, samples 10¢. Onondaga Press, Box 22, Onandaga, Mich.

QSLS. Send a card you can be proud of. High quality Photocards. Samples 10¢. Russ Summerville, RR #3, Niles, Michigan.

QSLS! Screen print ur own. Easy. Details, WAT, Box 128, Brecksville, Ohio.

C. FRITZ for better QSLS-SWLS! Samples 25¢ deductible. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS. Reasonable. 3 weeks delivery. Catalog dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

QRR please write, wire, fone collect. Information present QTH VR5GC or PK6CS. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

GLOBE CHAMPION 300A Brand new, see it, operate it. 275 watts phone, 300 watts c.w. Built-in VFO. 160-10 meters, $375 cash & carry. Don Kilgus, 3 High St., Valhalla, N. Y. Tel. W.H. 6-8764.

SELL KWS1, 75A4, model 15 teletype and Allronics-Howard terminal unit. Equipment like new and guaranteed. Cost over $3400. Sacrifice for $2260. Write or call Ralph Barnett, 755 St. Francois St., Florissant, Mo.

COLLINS 30K, excellent condx, complete with 310B exciter and spare tubes. $625. Gilbert Cardwell, 714 First Ave., Parkesburg, Penna.

BARGAINS: Send for list of reconditioned receivers and transmitters with new guarantee. 10% down with up to 24 months to pay. In stock, new Collins, Johnson, Hallicrafters, WRL, National, Hammarlund, Gonset, Elmac, Drake, Central Electronics, B&W, Hy-Gain, Mosley and Gotham beams. Shipped on approval. Write Ken, WØZCN, or Glen, WØZKD, for your best deal. Ken-Els Radio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

CRYSTALS Guaranteed 20 to 80 meters FT-243 holders 3 for $1.00; SSB crystals FT-241A, 10¢ ea. Lists available. Quaker Electronics, 1040 West Main St., Plymouth, Penna.

JOHNSON Valiant, factory wired, on the air less than 10 hours, original carton. Going SSB. Best offer over $300. K7EPD, 3850 E. Elm, Phoenix, Arizona. Tel. CR 9-2824.

DX Radio Coop forwards outgoing QSLS, 2¢ each. Callbook, $5.00; schematics, 50¢. Sam's Information free with schematic. 500 QSO File Cards, $4.00. Free Flyer. "DX Radio Coop", Box 5938, Kansas City 11, Mo.

NEW Repair parts for BC-348 receiver models H, K, L, R. IF transformers, $2.00; CW oscillator assembly, $2.00; dual volume control $2.75; set of four coils, any band, $2.00; front panels, $4.50; main tuning condenser, $3.75; crystal filter assembly $6.50; crystal and holder only, $3.75; diagram, 50¢; spinner knob, 50¢; add postage. Electronicraft, Inc., Box 269, Bronxville 8, N. Y.

GONE SSB. Have 32V3 for $475 also Viking II and VFO for $195. Both in excellent condition. Need model B Slicer. Lewis West, WØAIO, Wichita 12, Kansas.

FOR Sale! January 1954 *QST*, 813 rig 811As, Pl. mod., p/s in cabinet, $150; TCS, xmttr, rcvr, all accessories, 115 AC, 12V DC, spkr, micr., connecting cables, $90; extra TCS dynamotor, 12V, $25. Gary, W1FEU, 109 Mohegan Ave., New London, Conn.

SIX Meters — final amplifier with power supply 500 watts, $200; 1000 watts, $350. Uncle Charlie How Model: W4UCH.

60 FOOT tower, Donner 3-section crank-up, brand new, never used; $115.00. Thomas R. McCullough, W1HRO, 27 Birchwood Road, Springdale, Conn.

SELL Collins 75A-4 serial No. 4746 with speaker, $575.00. Also Hallicrafters HT-32, $550.00. All new and in perfect condx. Packed in original cartons. F.o.b. Plainfield, New Jersey. Larry Pyle, Bell Telephone Labs, Murray Hill, New Jersey.

DUMONT 'scope model 241, $70; Gonset 3-30 shortwave converter $20; Precision E-200 signal generator, $20; RBM-4 Navy receiver 200 Kc-2 Mc., $40. Heath VFO $16. W3IHD, 4905 Roanne Drive, Washington 21, D. C.

PARTNERS, retired hams, electronics investment. R & D Co., W3IVZ.

SELL or trade: Heath DX-100 and Hallicrafters SX-96. Off to college. Want Gonset Communicator III 6-meter. K4HJQ, 1207 Cornwallis Dr., Greensboro, N. C.

61-Foot Vesto, heavy-duty, self-supporting tower, with safety platform, never erected, for sale at $450. W2DDB, Tel. COlfax 1-8090.

S.S.B. Transformers identical and exact as used in W2EWL exciter (see *QST* March 1956). Brand new 3 for $4. No C.o.d.s please. S. Tucker, W2HLT, 51-10 Little Neck Parkway, Little Neck 62, N. Y.

COAXIAL-CABLE — 53 ohms — 100 ft., $3.95, postpaid. Satisfaction guaranteed. Van Dick, Riverlawn Drive, Wayne, N. J.

ANTENNA 80-40-20-15-10, $21.95. Patented. Lattin, W4JRW, Box 44, Owensboro, Ky.

OPPORTUNITY knocks but once — Read carefully and compare: Gonsets Mobile Twins, five months old, like new and in perf. condx. Immediate band switching 75/40/20/15/10 meters; Gonsets G66B receiver, new Universal 3-way power supply, Gonsets G-77 transmitter, matching power supply and modulator. $450.00 buys all. In addition, including Electro-Voice Mod. #600D mobile mike, all cables, plugs, wiring, and manuals, as a complete package. Go mobile, but go first class — hurry — first come, first served. All communications answered. You can pay more but you can't buy better . . . or more, at this price. R. R. Andrews, K4KBT, 316 Pine St., (Roebuck), Birmingham 6, Ala.

WANTED: Unused electronics tubes, commercial gear, lab test equipment and components. Will pay cash or swap for choice ham gear, etc. Write for Barry's "Green Sheet", chock full of bargains in ham gear, tubes, relay racks, transformers, etc. Barry Electronics Corp., 512 Broadway, New York 12 N. Y.

WANTED: Receivers, Transmitters and accessories. Nehf Enterprises, 118 S. Clinton, Chicago 6, Ill.

TRANSFORMERS (3) W2EWL Special, $3.00 postpaid. SSB latest diagram, template, 3xfrmrs. disc ceramic Emica condensers, coils L1 thru L7 for W2EWL Special (Mar. 1956 *QST*), $10.95 postpaid. Vitale, W2EWL, Denville, N. J

1928 to 1946 inclusive, *QSTs*. Best cash offer or transistor radio. F.o.b. Michigan, L. R. Zepka, 2236 Gulf to Bay Blvd., Clearwater, Fla.

NEW Heathkit DX-100 transmitter. Excellent, $165. Never made general. Very hot Super Pro BC779 rcvr and pwr supp., $115; kilowatt parallel 4-125s with power supply multiband 10-80, $130; B&W lo pass, $9.00; Novice 70 watt transmitter, $10. Use money order F.o.b. Tallahassee, Fla. Paul Weiss, 2808 Old St. Augustine Rd.

MEISSNER Deluxe Signal Shifter 5 sets of coils and complete instructions, excellent condx, best offer. KØLGT, Philip Shearer, Patterson, Mo.

20A Exciter, multi-band BC458 VFO, and QT-1, $178; still in factory sealed carton: 4X250B and socket, $29; Johnson Mobile VFO, $18. All items perfect. K6JNW, 2124 Via Rancho, San Lorenzo, Calif. Tel. BR 6-6792.

DX-100, $150; Johnson Matchbox (brand new), $35; Heath VFO, $15; Ken Hookanson, K9IDM, 337 Elm St., Glenview, Ill.

KW PA PP813s, 80-10 M shielded and filtered, with power supplies, meter panel and TVI suppressed; 6 ft. rack, $200; LM-13 freq. meter with book, $60; TBY-7 transceiver, mic, headset, $20. Harry Burhans, W3HUS, 5849 Hadfield St., Philadelphia 43, Penna.

SELL Globe-Scout 680, 755 VFO, factory-wired; excellent condx. Best offer over $140. Wendell Caruthers, Jasperson, Dr., Madison, Tenn.

SELL New 10-meter Telrex Super Minibeam, $29.50. Carl W. Hines, 1309 Fikewood Dr., Wilson, N. C.

FOR Sale: HT-32, $500; HT-33, $650; SX-101, $300; Telrex Tribander $100; will include pad for pad for xmitters; also AC Dow-Key TR switch. Can be had single or in any combination. Xmittr's used only 30 days. James R. Howerton, M.D., P. O. Box 86, Columbia, North Carolina. Phone 2051.

FOR Sale: Collins F455 J-31 mechanical filter (brand n w), $25; new RCA 4-65A, $10; National MB-150 tuning unit, like new, $15; Electro-Voice model 950 mike, $15. Elvin Miller, Albany, Ind.

COLLINS 75A-4, best over $500; Supreme AF-100 modified final will give 250 W AM or 500 CW W. Optional AM, FM, CW or ICW operation with VFO or xtal. Best over $150. Both for $625. Price F.o.b. sellers QTH if outside Iowa. C. H. Sprague, 2905 14th Ave., Marion, Iowa.

FOR Sale: Harvey-Wells xmittr T90, $120; AC P.S., $40; Z Matcher ant. coupler, $50.00 or 3 units with ant. coaxial relay P-T carbon mike, connecting cables, manuals, all set up and ready to go: $200. All of this eqpt. is in brand new condx and appearance. Used very little. Also 6-12V DC P.S. for mobile, wid spare tube and dual vibrators, $40. Will ans. all replies. Albert J. Bertolisi, W2ALT, 6 E. Smith St., Amityville, L. I., N. Y.

SELL: KWM-1, $600; Communicator III 2M, $220; 2M Long John Beam, $15; BC-221 and A.C. Supply, $80; Millen SWR Bridge; Mosley 4-band vertical; Mosley 15 and 20 Minibeam; Hy-Gain Triband with gammas; E-V mobile mike; Midgetape pocket recorder, pr. field phones. Make offers. W3VDE, 1219 Yardley Rd., Morrisville, Penna.

HALLICRAFTERS S-76 receiver for sale. Excellent condx, newly aligned plus speaker, $125; BC348 and Q multiplier, $70. Wm. Stein, 315 Carroll Ave., Mamaroneck, N. Y. Tel. OWens 8-5489.

SELL Heath Grid Dipper $17. Want small 'scope, National 1-10 rcvr, RME 152A. Kuhnemund, Yardmouth Rd., White Plains, N. Y.

FOR Sale: Hammarlund Super Pro SP-400X w/ps and spkr. First class condx. Joe McCormick, Pacific, Mo.

FOR Sale: Pacemaker A-1 condx, price $325. No time for SSB. W3GHS, Box 468, Royersford, Penna.

HALLICRAFTERS SX28A with matching speaker. Both in gud condx: $135.00. C. Gerst, 2674 West 25th St., Cleveland 13, Ohio.

CANADIANS! New DX100 wired and tested, Hallicrafters HT-9, xmittr for sale or trade with rcvr or Viking Ranger. VE2OU, P. O. Box 355, Riviere du Loup, Quebec P., Canada.

CRYSTALS For 2, 6, and 40 meters. FT-243 holders. 25¢ each. Send for frequency list. W6IMC, White, 210 Alden Road, Hayward, Calif.

CANADIANS: New SX-101 in original carton — $450. New Johnson Matchbox. Heath reflected power meter and SWR bridge; DX-35 and Heath VFO. Phone H. Abraham, Re 2-2424, Welland, Ont.

LOOK! Condensers, plugs, mikes, cable, etc. send stamped envelope for free list. K5IOE, 4042 Iroquois St., New Orleans 26, La.

WANTED: Good used receiver. Must be reasonably priced. K9GSL, 134 Merrie Lane, Racine, Wis.

FOR Sale: Complete SSB, AM and CW station. 458 VFO, 80 thru 15M, 20A with anti-trip, Lakeshore 400W GG amplifier with extra set final tubes, $375; Collins 75A4 Serial 3481, $550. All in A-1 condition. Will sell complete transmitter or receiver separately. E. M. Branchfield, W9SRJ, 521 Linden Ave., Wilmette, Ill.

BRAND New condition — 6 months old. Guaranteed VM stereophonic 750A tape recorder and matching speaker amplifier, Mod 1-65. Blond wood cabinets with black wrought iron legs. Worth $400 with 3 tapes. Will sacrifice for $275 cash. Lafferty, J-2 100 Western Ave., Kalamazoo, Mich.

ELMAC AF-67, excellent condx, never mobilized, $120. W. Pfaff, K2GNC, Rte. 5, Huntington, N. Y.

SX-28, in mint condition. Built-in xtal calibrator, $125. W6AEW, 29 Hawthorne Ave., Los Altos, Calif.

FOR Sale: In San Diego area: Deluxe Central Electronics 10B, tuning eye QT, coils, VFO, $150. Marriner, W6BLZ, 528 Colima St., La Jolla, Calif.

FOR Sale: BC-610-C with speech amplifier, tuning units, coils, manual, and base mount. TVI-suppressed. $350. Shipped F.o.b. Lincoln. Charles R. Mills, KØMAF, 2201 "O" St., Lincoln 8, Nebraska.

SELL: 3μfd/4kv. Sprague 46B008, $10; 2 μfd/4Kc., G. E. 23F47, $7; 6-21 Hy. 600 Ma 5kv., ins. sw. choke Keny. T505, $5. All 3 for $20; VC 50-32, $5; VC-12, $5; two new 211 tubes, both $4. Merit P2959-117VAC sec. 12.6v @ 2A. c.t., 2.5kv ins., $2; Stan. P3060 sec. 2.5v. c.t. @ 10A. 19kv ins., $2; B&W 20HDVL, $3; Master Mobile 232XSSC, $9. Stanley Egelberg, W2WQK, 3029 Matthews Ave., Bronx 67, N. Y. All F.o.b. N. Y.

S.S.B. xfrmrs, exact set for W2EWL exciter (hermetically-sealed) set of 3 brand new $4 postpaid. New compact Stancor bias or screen supply xfrmrs 55v to 550v @ 600 Ma. to 60 Ma. tapped pri (12 lbs.) $6.50. New compact G.E. 100-watt modulation xfrmrs, multi-impedance (10 lbs), $6.25; new Elmac vacuum condensers 12 μμfd @ 32 kilovolts, $5.50. Please include postage. No. c.o.d. S. Tucker, W2HLT, 51-10 Little Neck Parkway, Little Neck 62, L. I., N. Y.

WØCVU Gold Cup given for 100th country verified Two Way SSB. Airmail your QSL. Don't delay. Announcing winner soon in *QST*. Charles Boegel, 1500 Center Point Road, N.E., Cedar Rapids, Iowa, U. S. A.

PREMAX RB-6309 10 meter 3-element rotary beam, like new, $20. Albert Lenny, W7IBC, 343 Bannock St., Malad City, Idaho.

SELL: Viking 2 and VFO, instructions and antenna relay, excellent condx; pair of Brush xtal headphones; AC Instructograph with 10 tapes and instruction book. W4BLX, 8907 Tolman, Richmond 29, Va.

SALE: B&W 5100B and 51SB-B package factory new August 1957. Cash and carry deal only: $399. Gardiner, 39–20 220th St., Bayside, L. I., N. Y. Tel. BA 9-3260.

WANTED: Any kind of ham gear to enable us to work our Fathers in Haiti and other foreign missions. Grateful for any help. W1EPA, Brother John Henault, O.M.I. Oblate Seminary, Natick, Mass.

SELL: RME-69 rcvr w/spkr and Q multip., $50; Heath AT-1, $20; Gonset Super-Six mobile converter, $20; S-27 rcvr, 28 to 140 Mc., $20. All f.o.b. Walter Creuz, W2CIY, Mt. View Rd., Chatham, N. J.

NC-109 For sale. Call AT-8-2272. Portland, Oregon.

FOR Sale: Elmac VVC60–20 dual variable vacuum condensers and gear drive; UTC MultiMatch kilowatt modulation transformer; National MB40-SL grid tuner; four 4–250A's and two Elmac sockets; all guaranteed excellent condition. Will sell separately or assembled in present kilowatt amplifier. R. Rothman, W1TQW, 710 Elmgrove Ave., Providence, R. I.

AMERTRAN plate transformer, 3,100 each side c.t. 700 mills, $50; 805s, $3; 813, $6; mill filter choke, $6. D. Mitchell, R 1, Box 59, Winnebago, Ill.

WANTED: Circuit diagrams, tuning units, etc., for Navy GP-6 or GP-7 transmitter. W5JXM, Box 2155, Norman, Okla.

CODE Practice tapes for tape recorders, 7" reel, $3.75; 5" reel, $2.65. Excellent quality, machine recorded. State speed range you desire and recorder speed. Robert L. Holmes, W4BJN, 931 Maple Ave., Dayton, Ky.

NEED Reasonably priced 12.v. mobile rig for hurricane prone QTH. No haggling, please, so send description and best price to Bob Cates, K5ISS, 132 Daisy, Lake Jackson, Texas.

SALE: S-38, nice, $26; AR-3, $22.00. Please inquire. K4QXE, 220 Luckie, Carterseville, Ga.

LOOK! Mosley TA-33 beam, $50; Globe Spire 30 ft. self-supporting tower with earth-anchor base, $40; AR-22 rotator, $15. Elmac PMR-6A receiver with 6-volt DC power supply, $50; Collins 3 kc. mechanical filter type F455J-31, $30. Frank Yat , W1ZLI, 28 Neillian Way, Bedford, Mass.

FOR Sale: Tubes, brand new, 3AP1, 3E29, 829B, 3C24, 2E22, RK25, RK32, RK34, 394A, 802, 811, 813, 814, 837, 872A. Guaranteed. W. Miller, W2HSV, 64 Morris, Haworth, N. J.

FOR Sale: 75A4, $495; 32V2 factory TVI suppressed, $350; HT-30, new in sealed carton, $350; Ranger, $150; NC 183D, $295; Mosley 20 meter Shortbeam, $44; Simpson sig. gen., Mod. 479, new, $185; Precise oscilloscope, Mod. 300, $89; Communicator III 2-meters, $185; Bell stereo amplifier, $125; Johnson Kilowatt with desk, $1185; Morrow mobile, REC MBR5, $175; Trans. MB560A, $165; RVP pwr supp., $25; MLV-50 tuner, $18; DM-35, $15; RTS-600 AC supply, $85. All equipment listed above guaranteed. Sidney Gozel, W2FUr, 1096 Laux Place, No. Bellmore, L. I., N. Y. Laurelton 8-2407 9–6 P.M., 6–10 P.M., SUnset 5-6876.

WANTED: Receiver and other gear for school club station. Reasonable price or donation. W1IPN, Mount Herman, Mass.

SALE: Like-nu Hy-Gain 14av vertical antenna. 40 thru 10 meters, very little use. All accessories, a steal at $25 or will trade for Hy-Gain 3-el. 15 meter beam. KNØPFF, 1511 Lark Ave., Kirkwood, Mo.

JOHNSON 275 Matchbox $37.50; Heath VX-L, $20 postpaid to first m.o. here. K4GAX, P. O. Box 266, Franklin, Ky.

SELL 75A3, excellent condx, cabinet perfect, will ship in original container, $350 f.o.b. Also BC348Q, built-in AC supply, $50.00 f.o.b. Opalka, W8WBG, 501 Nawaka, Rochester, Michigan. Tel. OL 6-0516.

SELL 32V2 converted to 32V3, $399.50; 120 feet of triangular aluminum tower in eight foot sections, brand new, at one dollar a foot. Ideal vertical radiator. Mosley 40–20–15 meter beam, with coax feedline, $75. W9ERU, Box 273, RR #4, Rockford, Ill.

SALE: New RME-4350 receiver (used 8 hrs.) with attached speaker, only $150. Robert Gardner, 52 Little Hall, Princeton University, Princeton, N. J.

SELL: Linear amplifier, GG 375 watts, 4–6AG7s, TVI suppressed self-contained 1200 volt 300 mil power supply, 500 mil G-E meter; coils for 10–15–20–40 80 meter available. $75. Sorry, no trades. Will be glad to deliver within 100 miles. Shipping extra. Prop pitch motor, never used: $25. Crating & shipping extra. Walt Clevenstine, W3-CUO, Spring City, Penna.

NATIONAL 183 rack and panel speaker. W2JSM, 316 George St., Islip, L. I., N. Y. Tel. MO 9-4452. $100.00.

BARGAINS: with new guarantee: Collins 32V-2 $349.00; Johnson KW and desk $1,195.00; SX-71 $159.00; Hallicrafters HT-30 $349.00; HT-31 $299.00; HT-4 with speech amplifier & antenna tuner $695.-00; NC-98 $119.00; NC183D $319.00; NC-300 $319.0 ; DX-35 $49.50; Eldico SSB-100 $395.00; 51-SR $195.00; 51-SB-R $185.00; Phasemaster II $239.00; Lysco 600 $69.00; Lysco 600 $89.00; Gonset Linears (2M) $99.00; (6M) $99.00; Globe King 500 $425.00; Globe King 500A $455.00; TB8-50 (Hi or Low Z Mike) $69.50; APS-50 Pow. Supply $29.50; audio and test equipment, inquire. Trial, terms, write Leo, W0GFQ for best deals. World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

WANTED: 15 XP Hammarlund, low loss coil form 5 or 6 prong; new or used (good). Dr. Hugh Stevenson III, Box 188, Waymart, Penna.

ALMOST New 20A, expertly wired, in perf. condx inside and out: $200, includes BC457. Mosley 3-el. 20 mtr. and Gotham 2-el. 10-mtr. beams for $50 or will sell separately. Bill Hughes, W5PYU, Tech Station, Ruston, La.

FOR Sale: DX100 Heath 1 year old, worked DX with folded dipole, $189.50; Hallicrafters Mod. SP-44 Panadaptor, $40; Bud model FCC90B 100 Kc. calibrator $15; Morrow 5BR2 converter, $50, Stancor ST203A mobile 25 watt transmitter, $30. Bill Thompson, WA2AAZ, 192–50R 71st Crescent, Fresh Meadows 65, L. I., N. Y. Phone JAmaica 3-5808.

FOR Sale: Attention Hams in the Rochester, N. Y. area! BC610D, $200 plus the storage charges. W5DCK, 3922 Cambridge, Jackson, Miss.

COMPLETE Station, $725; all items like new condx: 75A4, DX-100, Hy-Gain Tri-Banderantenna; Roto-Brake, Jones MicroMatch, B&W low pass filter, etc. W1WJO, Joe Misenti, Longview Ave., Bristol, Conn. Tel. LUdlow 3-0128.

FOR Sale: HT32, $575; HT31, $275, both like new, F-V mod. 950 mike, $20; Hy-Lite 10-meter beam in original carton, $20. W7EIH, Rte. 2, South, Great Falls, Montana.

FOR Sale: DX-100, $170; SX96, $190; SW-54, $35. All in vy gud condx, F.o.b. my QTH. Larry Langdon, W9MHQ, 201 Broadway, Wilmette, Ill.

BARGAIN: HQ-150 and fb DX-40, original owner, in A-1 condx. Operated on air only 6 months. First check $225 takes both. Will ship express collect. Raymond Reynaud, Box 65, Lutcher, Louisiana.

FOR Sale: HQ-160 receiver and speaker, $325; Eldico Electronic Key, $55, both perfect. M. R. Wright, 222 24th St., Drive, S.E. Cedar Rapids, Iowa. Tel. EMpire 2-3355.

FOR Sale: Gonset Communicator II, 6 volt, with 148.14 Mc. xtal and Electro-Voice xtal lc; $150; Also Gonset 2-meter linear amplifier, 60 watts carrier, with co-ax connectors, $75; both in finest physical and electronic condx; first check for $225 takes both. Also: Aerotron 2-meter transceiver, operates on 148.14 Mc., CAP use, 6V DC, 12V DC or 115V AC; mobile mounting bracket, H-22A/U mic; push-to-talk; commercial quality with 10 watts carrier and super-sensitive receiver; mobile or standby; this unit sold for $325.70 six months ago; must sell for $180. Will ship prepaid. E. D. Clements, L'anse, Mich.

NEED DXCC or WAS confirmations? International Reply-Paid QSLS will help! 25, $1.00. Sample free. Hart Industries, 467 Parke, Birmingham, Michigan.

SELL: Buying new home. Collins KWM-1, $590; 516F-1 AC pwr supp, $90; 516E-1 12 volt pwr supply, $190; 312B-2 speaker console, directional wattmeter, $135. Less than six months' old. F.o.b. Phoenix. Allan Moser, W7DEI, 3102 N. 32nd St., Phoenix, Ariz.

CANADIANS! Collins 75A4 receiver with vernier gear reduction dial in brand new condition: $530. Technical Materiel Corp. GPR-90 rcvr, rack mounting with GSB-1 SSB adaptor and matching spkr, $500; Johnson "Pacemaker" SSB/AM/CW xmitter, five months new, $525. Will ship any or all of the above, in original packing, F.o.b. Toronto, upon receipt of payment. VE3GD, 53 Mallory Crescent, Toronto 17, Ont., Canada.

SWAP Complete mobile rig: Elmac A-54, mike, 6 or 12V Vibrapack, new, Super Six, Master Mobile ant. complete, 6v. Leece-Neville 100 amp. alternator, regulator and rectifier. Want: A.M. fone final, modulator and power supplies to meet following specs: minimum of 500 watts outp., prefer band-switching, fully TVI-suppressed; Rack panel construction, well metered. Pi-net loading A-1 workmanship. Capable of drive from DX-100. No junk! Other trades considered. Gene Blake, 21 South 16th St., Wilmington, N. C.

COLLINS KW-1 transmitter, in excellent condx: $2295.00. Curie Radio Supply, 439 Broad St., Chattanooga, Tenn.

HEATH DX-100, $150; shipped collect; W-4AM amplifier, $25; XO-1 crossover, $10. First check gets these. K3BJM, 2140 Wisconsin Ave., Washington, D. C.

FOR Sale: Perfect complete station, Viking Ranger, SX-99 with spkr, QF-1, mike and coax antenna relay, $325. F.o.b. St. Louis, Mo. KØKVY, Ralph Todd, 2148 69th St., St. Louis 20, Mo.

SELL HQ-110C, $150; 6 months old. H. Raamat, K2AYC, 132 North Arlington, East Orange, N. J.

WANTED: 800 cycle filter for 75A4; sell perfect PE-103, $20 and Heath Q Multip., $7. Harry Taubin, W2GCW, 731 Gerard Ave., Bronx 51, N. Y.

QST and CQ Magazines, runs 1946–1956. Sell or swap. R. Boorse, W3PSV, 5311 Akron St., Phila. 24, Penna.

FOR Sale: Home station of W9AKU (now mostly in N. Y. using KWM-1 portable). Equipment in exc condx in both operating and appearance, all factory wired. Offered for cash, local Chicago pickup only, in following combinations: 75A2, GC-1, and Model B Slicer for $335; also 20A, 458VFO and 600L for $475. Will separate at higher unit prices. Also available LM-10 freq. meter with modulation, book, power supply, complete $75; Dumont Mod. 163E oscilloscope, $35. For appointment, phone RO 3-2436. Ken Law, W9KIV, 5873 No. Overhill, Chicago, Ill.

RECENTLY I bid at Navy Surplus sales for communications gear and bought several of each to get ham equipment. I am now selling the excess equipment at my cost price. All standard voltages and useable by hams as is condx. Real bargains. Examples: 9-band 115/60 rcvrs, $18; Collins 6-meter transceivers, $18; 'scopes, $19; VOM's, $12. Complete descriptive listing, stamp appreciated. Al Pratt, 114 West Lake View Ave., Milwaukee 17, Wis.

VIBROPLEX Original Deluxe key, $17; CTC-LS3 coil forms, 4 for $1; 6 meter xtals, 79¢; Model A slicer and API, $28; WRL 680, $79; Gonset II 2 meters, $129; Gonset 2-meter final, $89; Viking VFO, $23; Hallicrafters S39, $47; SX96, $177 Guaranteed like new, F.o.b. Chicago 35, Treger W9IVJ, 2023 N. Harlem Ave.

WANT, Want: Collins 51J1 or 51J2. Must be in gud shape. N. K. Thompson, W1LWV, 99 Water, Millinocket, Me.

NEW Mercury outboards and boats. Will take ham gear in trade. Write: Boyd Reter, KØIMO, Boyd's Marine Shop, Clinton, Iowa.

SELL: HQ-129X. With speaker and 100 Kc xtal calibrator, in perfect working condition, $140 cash. F.o.b. Fairfax, Virginia. Karsten Route 4, Box 166.

WESTINGHOUSE 1% acc. 4½" sq. meters; types KC-24 and KX-24. 1 Ma, 100 and 200 microamp movements. New condx, $8 to $10 each; Johnson Matchbox, $35; Collins 75A1, $225 — 250W, transmitter, $175. Joe Whisnant, W9EBI/W6, 329 Schroeder Ave., Sunnyvale, Calif.

FOR Sale: Excellent NC183D, $279; Elmac mobile gear; A54H, $75, PMR6A, $85; PE103, $20. Misc. parts, list, K4LFR, Box 1700, Valparaiso, Fla.

DX-100, A-1 condx, $175; Viking Adventurer, $40; Heathkit "Q" multiplier, $10; BC348P with AC pwr supp., $40; SCR522, complete with control box and RA-62 pwr supp., $100. Dottie J. Anderson, W8OVV, c/o Airport, Bluffton, Ohio.

2-2E25Hs, $2.00 each and 2-832As with sockets, $10.50 each. "Bugs" W7JBV, 2045 Stratford Dr., Salt Lake City 9, Utah.

SELL: New parts for high voltage pwr supp; 2000v. center tap 300 Ma. xfrmr, two 300 Ma. chokes (swinging and smoothing); 2.5V. rectifier fila. xfrmr, two 8 μfd 1500v. filter condnsrs, bleeder resistors, rectifier sockets, switches, fuses. Everything $25. Stanley Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

FOR Sale: Hallicrafters S-85 receiver, in perfect condx, with built-in speaker and "Q" multiplier jack; $89. Fred White, K4QX8, 6415 Patterson Ave., Richmond 26, Va.

ALUMINUM for every ham need! Before you decide on that next beam or shielding your rig, why not write to Dick's, Cherry Ave., Rout #1, Tiffin, Ohio, for list of tubing, angle, channel, castings, plain and perforated sheet, complete beam kits, and VHF collinear arrays.

SELL: 32V3, $460 or best offer. Will deliver reasonable distance. W2BHZ, George Hudson, RD #2, Pine City, N. Y. Phone ELmira 3-6984.

HAM equipment of the late W3HXA. Perfect reproduction of the popular Handbook 500 watt multiband 813 VFO transmitter, Monimatch SWR bridge, complete power supplies with Variac, $295. Beautiful P.P. 6146 120 watt input 2 meter transmitter and modulator, $125; Triumph 131 signal generator, 100 Kc to 96 Mc., in excellent condx, $20. Price f.o.b. Mrs. Norman Tulp, 12 Bradley Lane, Rt 4, Ellicott City, Md.

DELUXE Kilowatt Collins 310B with bandswitching, $198; 75A3 factory rebuilt with latest modifications 6 and 3 Kc filter calibrator, $398 including speaker. Transmitter has 27 tube speech amplifier 8003s plate modulator individual power supplies for each custom built chassis; Variac; engraved panels 3" illuminated meters P.P. 4-250As final with coils changed through hinged front panel TVI suppressed, spare tubes except 4-250s which are new. In a Bud Deluxe 42" dual rack, $875; new 4-250A final SSB-A-M Pi network variable vacuum condenser single knob band-switching, $275. Manufactured by Electronics Research Labs. Sell individually. Crate extra. W1PST, Martha's Lane, Chestnut Hill, Mass.

JOHNSON 500 factory-wired transmitter, $700; Collins 75A-4 rcvr, vernier tuning knob, .8 Kc 3.1 Kc, and 6 Kc mechanical filters, speaker, $500. In A-1 condition with manuals. You pay freight. Jim Munroe, W1MSA, 74 High St., North Attleboro, Mass.

VIKING II for sale, tubes checked, unmodified, in fine condition, with instruction books, $195 F.o.b. W3PBO, 1400 Owens Road, S.E., Washington 21, D. C.

SELL: Barker & Williamson 5100 transmitter, $250; Matchbox, $40, Mon-Key, $19. Gordon Crowe, 4935 N. Cleveland, Kansas City, Mo.

CRYSTALS Airmailed. Novice, Net, General, FT-243, any kilocycle. .01% tolerance, 3500 to 8700, $1.00; 1700 to 3499, $1.75; 8701 to 21,500, $1.95. New crystals guaranteed. Marine CAP, MARS, etc. Write for frequency listings and brochure. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

FOR The best deal in new and used Ham Gear, try Bob Graham, W1KTJ, 505 Main Street, Reading, Mass. Reading 2-4000 (Graham Co.).

SELL: National receiver, NC-109, condition perfect. Will deliver in metropolitan area, $150. Ulrich, 25 Ida St., Haledon, N. J.

SALE: Heathkit SS1, S81B Hi-Fi speakers. Unfinished, like new, cheap. Storch, 5 Winfield Terrace, Great Neck, L. I., N. Y.

CLEANING House! New tubes 4-400A, $23; 4-250A, $20; 4X150A, $10; 4D32, $20; capacitors 3 and 4 μfd at 4000V, $5; 10 μfd 1500 V, $2; 24 μfd at 1500 V, $3; transformers 950 V CT at 400 Ma, $3.50; BC-610 plate, $30; BC-610 modulation $25; variacs 115V at 18 amps, $15; 230V at 9 amps., $15. F.o.b. K4YON, 1912 Rawood Dr., Hampton, Va.

SALE: High power equipment; 2500 volt power supply with separate screen and bias supplies; 2000 volt power supply; 0-10 Class B modulation Class C kilowatt amplifier; TPI-band beam; pair S10s; 4-250A; Precision E-200 signal generator; Millen 90711 VFO; 7 ft. relay rack; transformers including UTC S-51, Stancor P6314, chokes, etc. Write for details. G. Landfield, 821 Waveland Rd., Lake Forest Ill.

GOING high power, sell factory-wired Globe Scout 680; Knight VFO, best offer. F.o.b. K2YGN, Leonard Friedman, 108-43 63rd Road, Forest Hills 75, L. I., N. Y.

CLEANING House! 1 KW rig, ½ KW rig, 6 and 11 meter converters, modulator, xtal calibrator, 20 meter beam, dynamotor. All items cheap! Local sale (Chicago area) only. Call A. R. Martin, HI 6-4506.

RECONDITIONED and guaranteed: Satisfaction guaranteed. Terms financed by us. Hallicrafters S38, $29.00; S85, $89.00; SX99, $119.00; SX96; SX100; SX101; HQ100, $139.00; HQ110, $189.00; HQ140; HQ150; National NC98, $99; NC125, $129; NC300, $279.00; HRO50T; HRO60; NC183D, Globe Scout, $69.00; Viking II; Ranger; Valiant; Pacemaker; Thunderbolt; Heath DX35; DX100; Collins 32V; 75A2; 75A3; 75A4; etc. Many other items. Write for free list. Henry Radio, Butler, Mo.

SELL: Viking Ranger, $190; HQ140X, $185; BC-221, $75; Tecraft, 2-meter converter, $18; new RCA VTVM, $40.00; ARC-5 equipments, etc. Want HT-30 or 10B. I. Seidman, W2GNZ, 1535 Longfellow Ave., Bronx 60, N. Y.

EQUIPMENT for sale: like new condx. power supplies, complete or components, 600 and 1500 volt, RDP Panadaptor, Hickok tube multitester. Need 40-50 ft. tower, 300 watt Multi-Match modulation xfrmr. W7HNV, 3113 Rocky Point Road, Bremerton, Wash.

CRYSTALS, Meters, Transformers, Tubes. Wide selection, reasonable. Free catalog. RIJor Products, Box 81, Rego Park 74, N. Y.

SELLING Out! Giving up hamming. SX-25, used 100 hours; Millen 90801 transmitter, brand new. Reasonable offer. 274N transmitter, 2 power supplies; excellent meters; 1000 and 2000 V. condensers; S8B xtals; small rack; lots more. W2OHV, Ed Leonard, 1035 Boynton Ave., Bronx, N. Y. Phone TI 2-3521.

HALLICRAFTERS: SX-101 Mark I receiver, just like new and without a scratch on it. First $250 takes it. Joe Luneke, W8WRI, 1039 Truxton Dr., N. E., Grand Rapids, Mich.

I Am a member. Are you? W1ZPG.

100 Watts fone or c.w. for $125. Sonar SRT-120 with AC power supply. Six thru eighty. W2IYR.

NC-125 Receiver, matching speaker, new condition, used 6 months, then got drafted, $135. Astatic VHF UHF TV booster-converter, $15; Heath FM-3A tuner, $19; Heath A7-E amplifier, $15. Edward Gamret, 28-D Longfellow Drive, Homestead, Penna.

FOR Sale: 1 Drake 1A SSB receiver, new Sept. 13th in orig. carton, Serial #654; Gonset Communicator II, gud condx; W2EWL sideband rig; PR81la3 in west coast Handbook rig; 2.1 Kc mech. filter 455J21 (new, for 75A4). Best offer takes each or all. Reply guaranteed. Buying home need money. Robert Moffitt, W9JZU, R. 1, Dunreith, Indiana.

ALMOST new Hammarlund HQ-100. Used only two months. Also DX-35 in gud condx. $200 takes all. Al Grossman, 77 Duffield Dr., South Orange, N. J.

KWM-1 with 516F-1 AC supply, new Feb. 58. Still in like-new condx: $700. 75A-1, Model A slicer and Collins speaker, in gud condx, $240. Ed Hinsdale, 63 Knoll Drive, Princeton, N. J.

FOR Sale: Collins KWM1 and AC pwr supply, lates model, like new, in original cartons, $700; Collins 75A4, exc. condx, Serial #1981, guaranteed perfect, $475. K2DZT, 1725 Andrews Ave., Bronx 53, N. Y.

WANTED: NC300, SX101 or RME 4350A. Sell RME70, $85; NC120, $100. Both in exc. condx. Kirkman, 2444 "D", Lincoln, Nebraska.

FOR Sale: Four BC-611 handie-talkies, 3885 Kc., three Exc. at $50; one needs spkr at $40; one G66 with James xmttr/rcvr supply $125; Viking mobile VFO, $25; Leece-Neville 12 Volt 100 amp. system, 65. Fritz Thurstone, W4UXI, 5228 Melbourne, Raleigh, N. C.

DX-100 A-1 condx, $175. Need college money. K8HXQ, 3941 Warwick Ave., Cincinnati 29, Ohio.

WILL Swap Starrett 9" and 12" vernier calipers, model 122 — perfect. Want 'scope and bug. Carroll Thayer, W3BZP, RD #4, Latrobe, Penna.

ANTENNA: Unused Hy-Gain traps and antenna kit for five-band doublet with Heathkit baluns, $25. Free defunct 17" TV if pickup deal. K2IUV, 19 Standish Ave., Yonkers, N. Y. Tel. SPencer 9-6425.

SELL: Johnson 2 meter VFO built from kit. Operating condx and appearance, excellent. $25. Write only. Fred Bailey, W2KUZ, 10 Midwood St., Brooklyn 25, N. Y.

SELL: Hallicrafters HT-30, SSB exciter, $300; General Electric YRS1 slicer, $50; UTC VM4 Varimatch 300 watt modulation transformer, $20. A. L. Hammerschmidt, 206 Oakwood Dr., RFD 2, Westwood, N. J.

32V2 modified to V3, (including $40 low pass filter); AR88-D rec., Globe Chief 90A, Knight mod., freq. standard, balun coils, Hy-Gain traps, spare tubes. In exc. operating condx, $550 or best offer. Will ship. W5SZZ, John Drummond, 323 Redwood Ave., Jackson, Miss.

SELL: Hallicrafters S-40A receiver, in exc. condx, $50. Also TBY-2 transceiver, 6 and 10 meters, with power supply, $25. Will not ship, sorry, but will deliver if within 100 miles from Philadelphia. Philip Kantz, 2101 W. Venango St., Philadelphia 40, Penna.

SELLING: 1500V 500 Ma. pwr supply, most parts for 500 watt linear, 807 final AT1, BC453, 6V portable amplifier, 1000V 350 Ma. dynamotor. Offers? K4LXT, Conetoe, N. C.

SALE: Few new surplus dynamotors: 12 volt inp. 440 volt 200 Ma. outp., $6.95 F.o.b. Also send stamp for dope on F.B. antenna traps. Guy E. Pigford, W4EC, Wilmington, N. C.

FOR Sale: Globe King 275 10, 20, 40, 80 meter coils, instructions. RF section needs repair. Modulator power supply OK. Best offer over $100 F.o.b. Roger Wolfe, K8EYI, Rte. #3, Athens, Ohio.

CALL Plates make fine holiday gifts. Deluxe 8" x 1½" black phenolic laminate with engraved white letters. Only $1.00 PP polished plexiglas base, $1.00 extra 10" x 3" call plate in black or red for license plate mounting, $2.00. L & J Products Co., P.O. Box 122, Downers Grove, Ill.

WANTED Hallicrafters HT-9, complete with coils. State condition and price. Norman Stines, 97 Columbia Heights, Brooklyn 1, N. Y.

FOR Sale: Stancor plate xfrmr 5000 VCT @ 330 Ma., $35; Merit plate xfrmr 4000 VCT @ 300 Ma., $30; Stancor MultiMatch 300 watt modulation xfrmr like new, $35; Heathkit audio freq. meter, $25; DX-100 with factory wired Ultra-Modulation, $195; LM freq. meter less calibration book, $20; 5 to 35 hy choke, $7.50. Gordon L. Wright, K5EHX, 4515 Gloster Rd., Dallas, Texas.

COLLINS KW-1, Deluxe AM-CW kilowatt transmitter. In excellent condx, $2450. Will not ship. Possibly will accept in part payment a commercial appearing homebrew tetrode KW amplifier and power supplies. Bob Dick, W6OBF, 1633 Mandeville Canyon Road, Los Angeles 49, Calif. Tel. GR 2-3921.

FOR Sale: Almost new Hammarlund HQ-110 with clock $200. A. Verne Roberts, 5520 Porter, Wichita, Kans.

SELL: 8ix or 10M phone transmitter, 100 watts complete with mike, crystal, power supply, TVI suppressed; new, beautiful cabinet, $99.95. Have ten, guaranteed 1 year. Free catalog sheet. K9KJX, L. P. Jackson, 645-A Marshall, St. Louis 19, Mo.

CABINET identical to Collins 32-V-3 available. Grey or black wrinkle 10½" x 19" panel space. Limited quantity available at $21.95 each. Grallen Electronics, Morristown, N. J.

2-Meter Gonset Communicator III, two months old, with 3 xtals cables, whip, instruction manual and schematics. Condition and appearance new. First $195 money-order takes it. I will pay shipping and insurance. Nelson C. Denison, W1VCU/KH6, 3772 Flaherty Circle, Honolulu 18, T. H.

SELL: Best offer any or all — HRO-50R1, A, B, C, D, E, F, coils, calibrator, Collins 3 Kc filter adaptor, spkr/coil cabinet; Collins 32V2 extra 4D32, ART-13A unmodified, original calibration, instrux books, shockmount; AC power supply for ART-13A mounted in 42" cabinet. All above in excellent electrical and physical condx. New Elmac AF-67, mobile rack, new DM-35 dynamotor mounted with filter and relay control. Write to Adkins, Box 1542, Cedar Rapids, Iowa.

NATIONAL NC-98, excellent condition, newly aligned and calibrated. First check for $110 gets it! 10M mobile ST-203A, excellent operating condx, includes installed meter, $25; 96" stainless steel whip, $2.50. All F.o.b. NYC, Budd Meyer, 105-10 65th Ave., Forest Hills 75, L. I., N. Y.

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SELL: SCR-522 2-meter transceiver, paneled, rack-mounted, metered, and power supplies. With all knobs and switches. Unconverted, $70. Dan Dooley, Box 556, West Lafayette, Ind.

FOR Sale: Link 25 UPSX fixed frequency 30 watt 10 meter xmittr, complete with power supply, line amplifier, 2 meters speaker, crystals in locked cabinet, $75. TCS transmitter rack mount, modified for 6 volts, differential keyer, fak unit for rtt, added bias, external modulator complete with T17 mike, rack mount, power supply for TCS with additional low voltage and bias supplies, 6 and 12 volt filament, 15 volts DC for relay rack mount. $125.00 both F.o.b. Gainesville, Fla. Bert McNamara, W4EAS, Box 2138 Univ. Station.

KW Transmitter with pr. of 4-125 and pr. of 810 modulators with T21M65 modulation transformer complete with 3000V, 1 amp. pwr supply. Sell for $225.00 or trade for 2-meter commercial gear. Sell 20A, 458 VFO and QT1 for $215.00. DX-100 for $175. Terms. K9CAZ, Bunker Hill, Ill.

FOR Sale: PE-103 dynamotor — $15 (with cables); PSA-500 power supply (500V DC, 200 Ma., 6 fil. winding). $20.00. D. L. Cabaniss, W1TUW, 77 Goodwin St., Bristol, Conn.

DX-40 and VF-1, new in July, unused, extra 6DE7, 12AX7, 6CL6. All for $80. Want DX-100. Don R. Beer, K5MGG, 906 W. 26th St., Austin, Texas.

75A-1, NC101XA rcvr, Millen 90711 VFO, TA-12C, VHF 152A, 10-100-1000 Kc freq. standard; 1000V power supply, 15 meter converter w/ps, new 4-125A, 4E27, 15M 3-el. beam, BW lo-pass. All cheap! Cheap! Chuck Jaeger, K7BBD, Burma Road, Lake Grove, Oregon.

SELL: Model 15 teletype with AC motor and table perfect condition, $175. WØFMK.

FOR Sale: National 183D receiver with matching speaker. Like new! $225.00 plus freight. KN2SCO, 37 Roxton Rd., Plainview, L. I., N. Y.

SELL: Heath AT-1 with built-in modulator; Heath AC-1 coupler; Heath VFO; National SW54. KØHCY, Rte. 1, Box 41, Dickinson, N. D.

COLLINS ART-13 transmitter, real clean, perf. condx, $95; 2-meter gear, SCR-522, control box, antenna, $25; ARC-4 transceiver, $25; RA-63E rectifier for BC-610, $25; brand new G-E #61G112, 220V or 110V inpt-outpts, 5 KVA, isolation xfrmr. $50; Meissner #91090 all band VFO, no drift, $38; ART-13 modulation xfrmr, $8.50, also other plate, modulation, filament xfrmrs, chokes, condensers, tubes, brand new 813s, $7.50; 810s, $8.50; 832A, $4.50; 811A, $3.50, 450TL, $35; 4-65A, $9.50; 4-125A, $12.50; 80D1, $6.50; 416B, $8; 304TL, $3.75; 3B29, $4.00; 5933/807W, $1.00; 4X150A, $12.50; 250TH, $17.50. All guaranteed, c.o.d's OK. Bill Siep, W4PHY, Box 178, Ellenton, Fla.

FOR Sale: Johnson Kilowatt amplifier with Ranger exciter; exciter has built-in relay for push-to-talk. $750, cash F.o.b. Chicago. W9EZN, 6647 Kenton Ave., Lincolnwood, Ill.

DX35, BC312, enclosed desk cabinet, #115; TA12 xmttr, MB28 modulator, $25; 4 new 304TLs, $30. 400V power supply, $12; modulator and power supply, $20. W2CE, FR 9-0415. 55 E. Bedell, Freeport, N. Y.

FOR Sale: AT-1 Heathkit xmttr and AC-1 antenna coupler to match, in gud condx, $20 for both. W2RFC, 525 East 72nd St., New York City. Phone RE 7-7296.

SALE: 2-meter National VFO-62 with calibrating xtal, $57; Instructograph with oscillator and tapes, $28; RCA VOM 20,000 Ω volt, $25; will ship any item prepaid insured upon receipt of your check. H. Baynon, 21 Return Lane, Levittown, L. I., N. Y.

WANTED: Vibroplex "Bug." Prefer Original model. Also Knight VFO. Both items must be like-new in appearance. State price, condition and age of item. R. L. Wildman, 505 7th St., Phillipsburg, Kans.

URGENTLY need complete instructions for Eldico VFO-2 or copy of same. Will return with compensation. W9BOA, 1209 Alabama Ave., Sheyboygan, Wis.

SELL Viking Valiant, factory wired, and tested, in excellent operating condition. Looks like new, $325. W7OOG, Box 367, Great Falls, Montana.

FOR Sale: Heathkit AR-3 receiver with cabinet, three bands, in gud condx; 10-15-20 meters, needs alignment. $20.00. Walt Deemer, 450 Edgehill, Ardsley, Penna.

DX100, new condition, very little use. First $175 takes it. W1WKZ, 8 Allard Ave., Cranston, R. I.

COMMUNICATOR III, 6 meters. Used one month, $230. Jim, 2096 Randolph, St. Paul, Minnesota.

WANTED: All types receivers, transmitters, test equipment, especially Collins 51J, 75A, R-388/URR, R-390/URR; BC-221, BC-348, BC-610, etc. Teletype equipment, printers, reperforators, etc. Cash or trade for new amateur receivers, transmitters such as Valiant, Thunderbolt, 100V, HT-32, NC-300, SX-101, HQ-170, Fisher Hi-Fi, Bell, televue towers, CDR rotators, etc. Write Tom, W1AFN, Alltronics-Howard Co. Box 19, Boston, 1, Mass. (Richmond 2-0048). Stores: 278 Friend St., Boston, 60 Spring St., Newport, R. I.

FOR Sale: 840-A rebuilt, has tuning eye. Best offer over $35. KØAUV, RFD #4, Seymour, Mo.

FOR Sale: DX-35 and VF-1, $50; I now have the DX-100; Heath GD-1B and Q mult., $20; Gonset c.w. osc. and monitor, $15. All in exc. condition. W2EPZ, 80-44 259 St., Floral Park, Long Island, N. Y.

WANTED: Transmitter, DX100 or larger. Tom Moore, W7FVE, 491 Claypool St., Prineville, Oregon.

SSB For sale: 80 & 20 EWL xmttr with supply, $100; 10-meter quad, $10; 20 meter Cushcraft ground plane, $10. W2MHL.

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WANTED: Aircraft, Airline, Military Electronics gear and test equipment, Collins, Bendix ARC, Airforce, Narco, BC348, ARN6, ARN14, ART13, 51R3, 1884, 51V2. Many others. We pay C.O.D. Advise price, condition. Ritco, Box 156, Annandale, Va. Phone JEfferson 2-5805.

W8JS House cleaning! Collins R-388-URR (51J2); NC-100XA, Elmac A-54, Morrow 5BR, Gonset 20M, Telrex (original cartons) 503, 153A and 10M156 separate 3- el. 10-15-20, Dumont 221-A, Heath O-5 'scopes, GE YGS-3 Precision generator, Heath T-2 tracer, VI-VOM, P-14 perforator, assorted TU RTTY units, new 4-400A, 810, 812 and large list regular, SSB and RTTY units, new equipment, sell or trade. Write Rich at 3425 Middleton, Cincinnati 20, Ohio.

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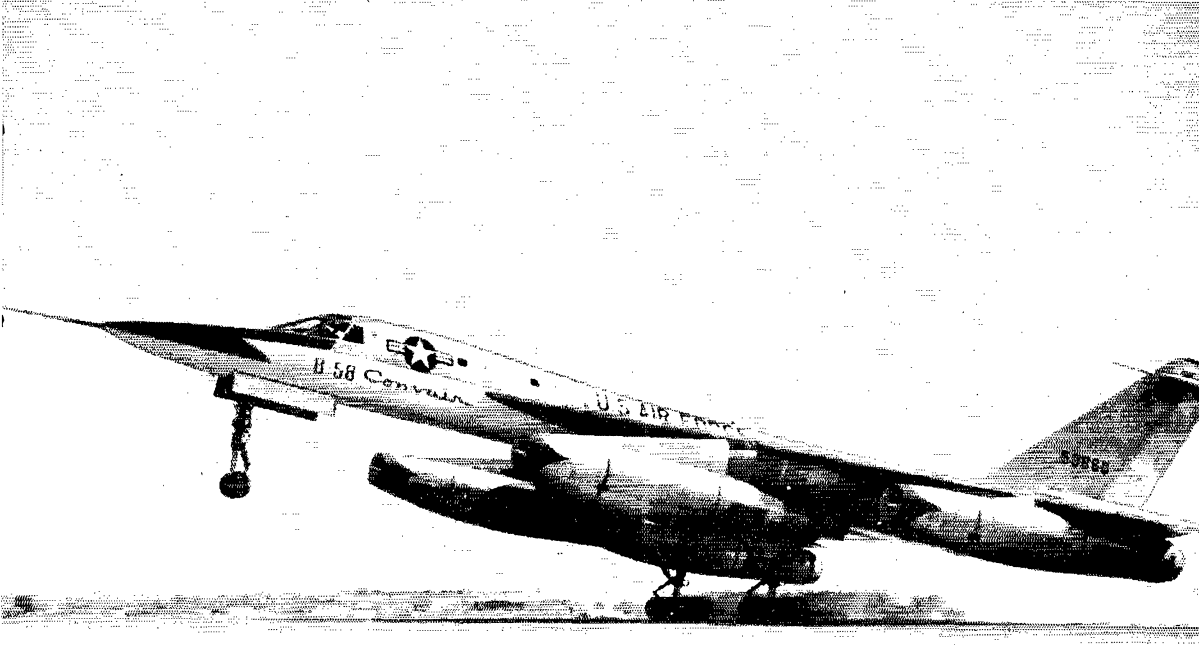

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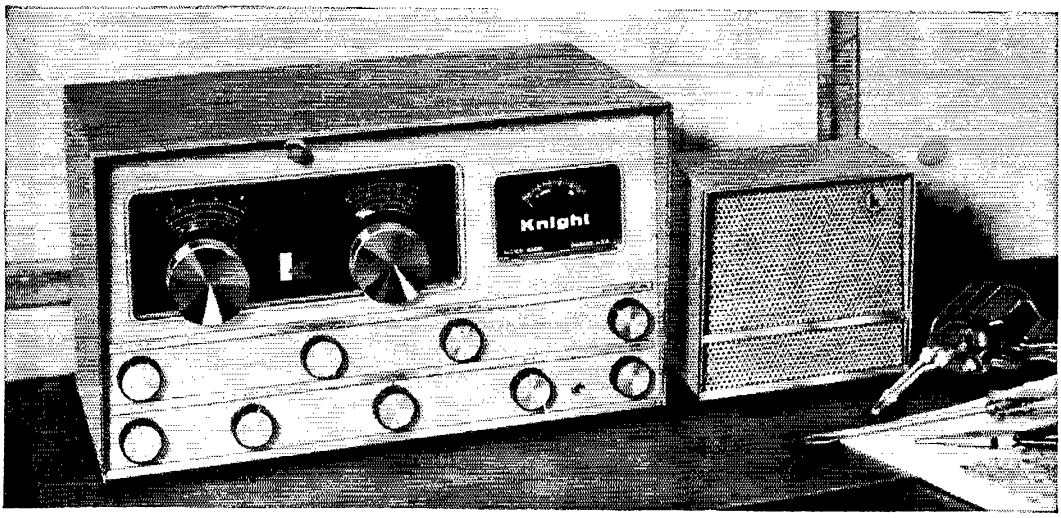

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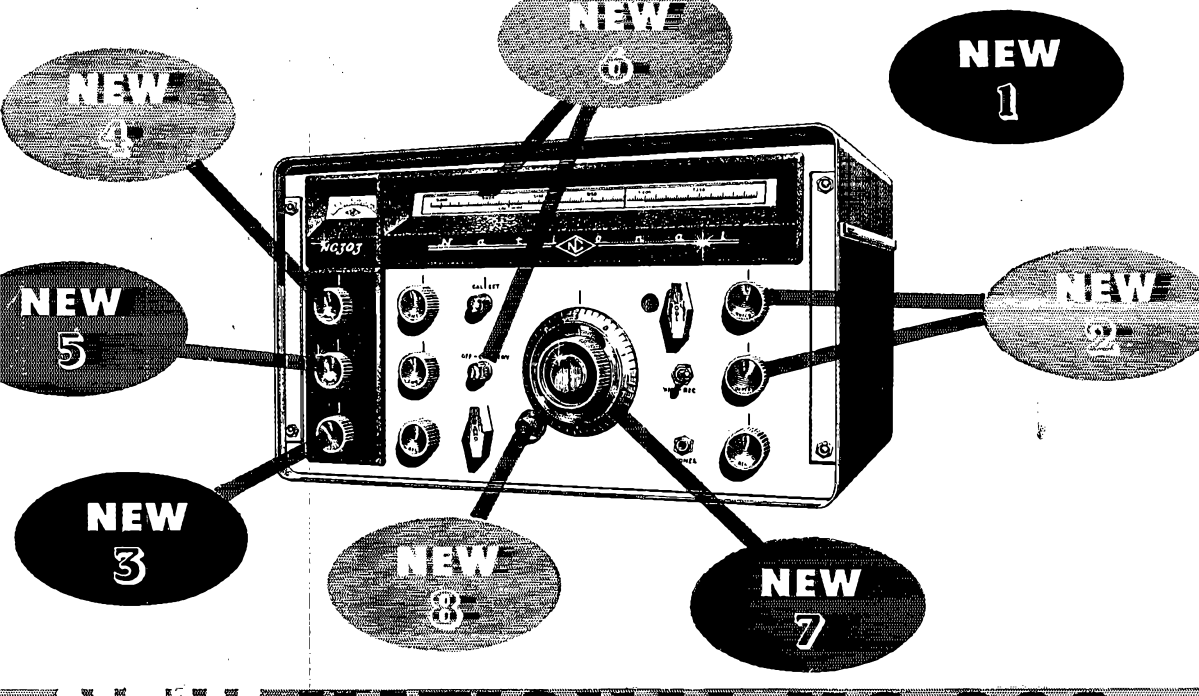

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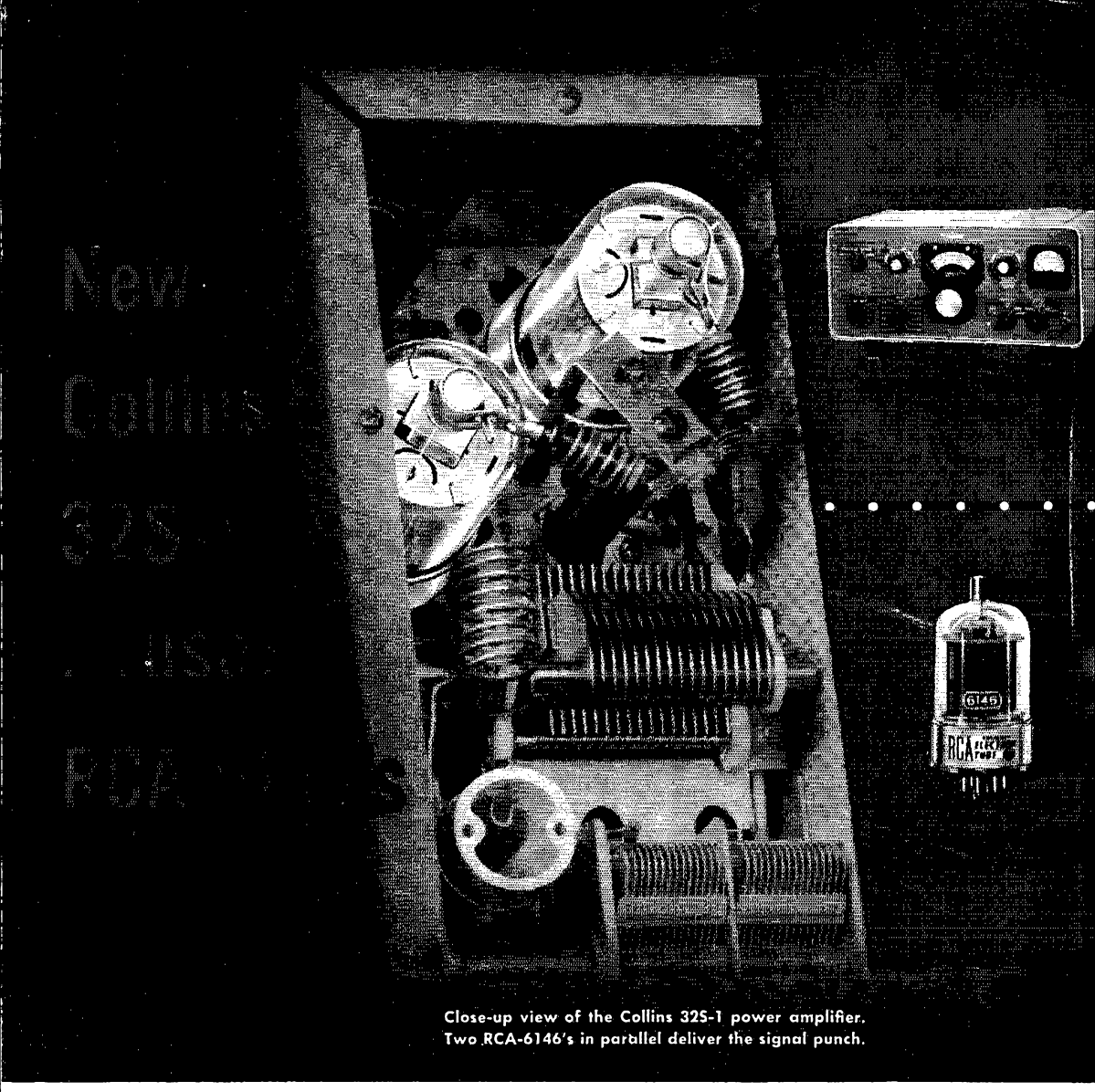

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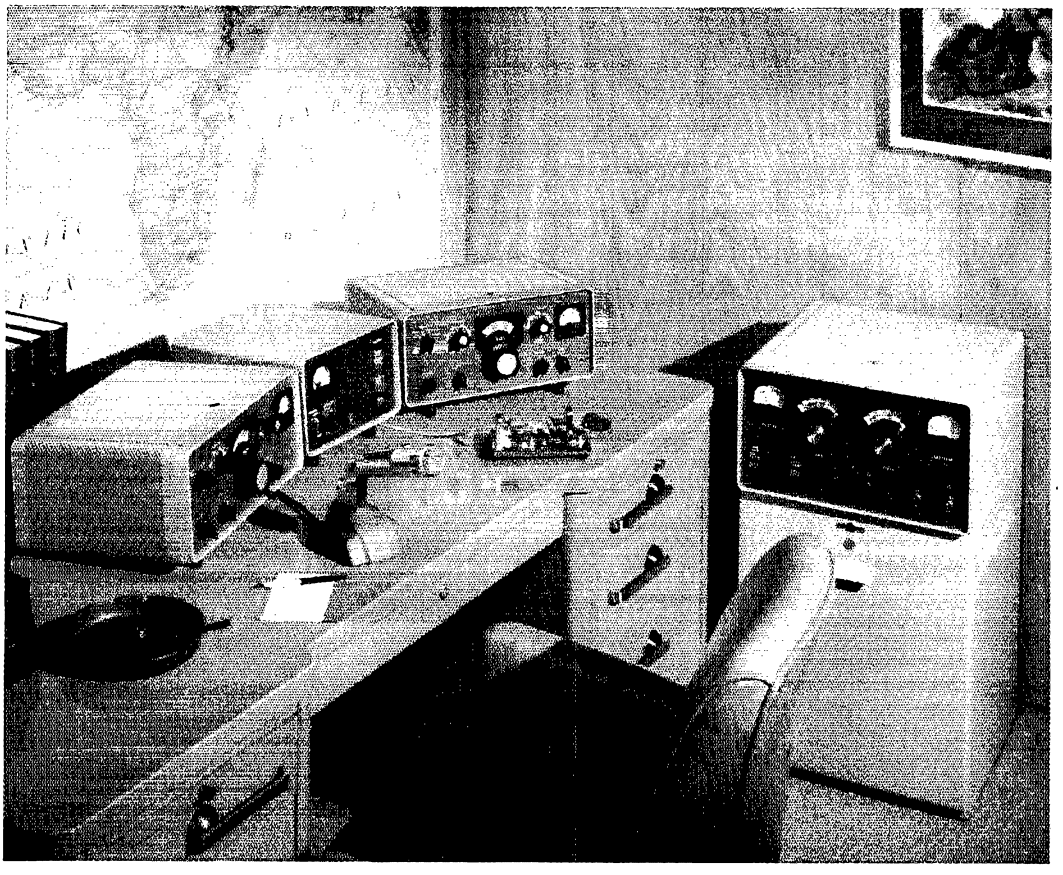

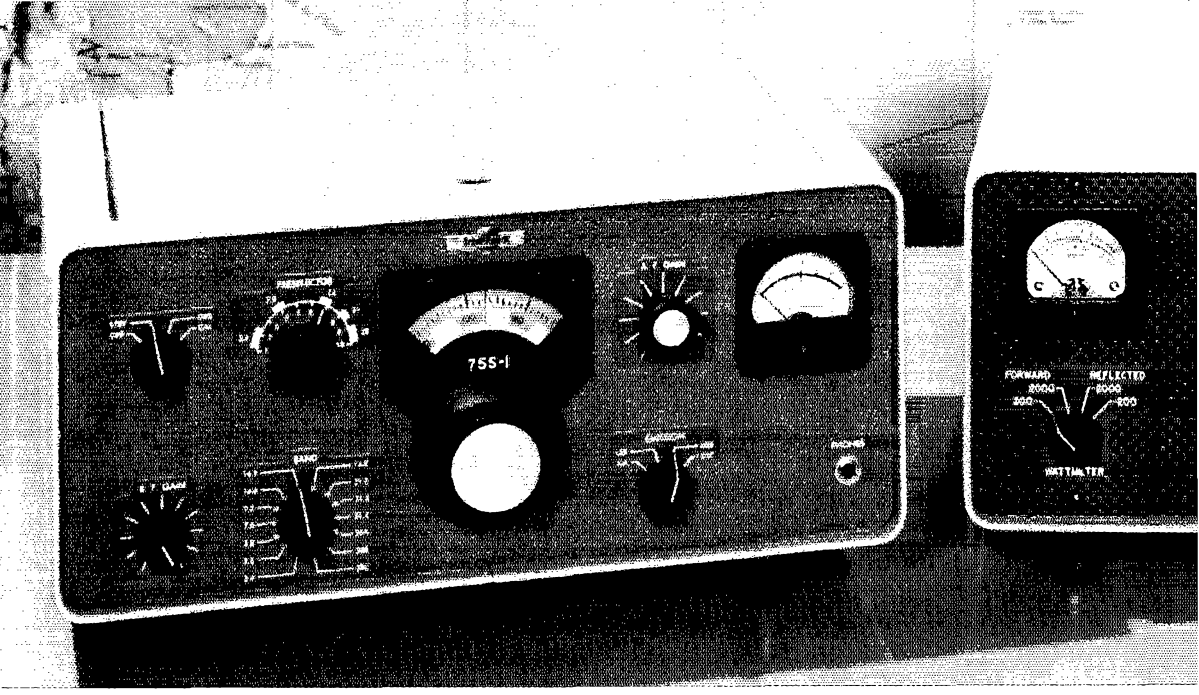

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32S-1 TRANSMITTER

The 32S-1 Transmitter has a nominal output of 100 watts for SSB or CW operation on all amateur bands between 3.5 and 29.7 mc; input power is 175 watts PEP on SSB or 160 watts on CW. The 32S-1 may also be used without modification to excite the 30S-1 Linear Amplifier.

The transmitter covers the entire spectrum from 3.5 to 30 mc except for the 5.0 to 6.5 mc range. Crystal sockets, crystals and band switch positions are provided for 10 200 kc bands, with the standard amateur configuration equipped for: 3.4-3.6, 3.6-3.8, 3.8-4.0; 7.0-7.2, 7.2-7.4; 14.0-14.2, 14.2-14.4; 21.0-21.2, 21.2-21.4, 21.4-21.6. Crystal sockets and band switch positions also are provided for three 200 kc bands between 28 and 29.7 mc, with a crystal supplied for 28.5-28.7 mc. A fourteenth position, corresponding to the WWV position on the receiver, can be used for one additional 200 kc band in the 9.5-15.0 mc range, if desired.

The 32S-1 features: Mechanical Filter type of sideband generation; stable, permeability tuned VFO; crystal controlled high frequency oscillator; RF inverse feedback for improved linearity; automatic load control for higher average talk power, and provision for switching to transceiver operation with the 75S-1 Receiver controlling the transmitter frequency.

The associated 516F-2 Power Supply is housed separately in a matching cabinet with ample room for additional station accessories. Power supplies for 115 v ac and 12 or 28 v dc employed with the KWM-1 Mobile Transceiver may also be used for the 32S-1.

32S-1 Price $590.00
(Less Power Supply)

75S-1 RECEIVER

The 75S-1 provides SSB, CW and AM reception on all amateur bands between 3.5 and 29.7 mc. It is capable of coverage of the entire HF spectrum between 3.5 and 30 mc by selection of the appropriate high frequency beating crystals.

The standard amateur configuration includes crystal sockets, crystals and band switch positions for: 3.4-3.6, 3.6-3.8, 3.8-4.0; 7.0-7.2, 7.2-7.4; 14.0-14.2, 14.2-14.4; 21.0-21.2, 21.2-21.4, 21.4-21.6. Crystal sockets and band switch positions are also provided for three 200 kc bands between

28 and 29.7 mc with one of the sockets equipped with a crystal for 28.5 to 28.7 mc. A crystal and band switch position is also provided for 14.8-15 mc for reception of WWV and WWVH for time and frequency calibration data.

Features incorporated in the new receiver include: dual conversion with crystal controlled first beating oscillator; bandpass first IF; stable, permeability tuned VFO; RF amplifier designed to minimize cross modulation products; Mechanical Filter; product detector; excellent AVC characteristics for SSB reception with full RF gain; 150 volt B+ for vacuum tube plates; silicon diodes instead of a conventional high vacuum rectifier; selection of three degrees of selectivity — Mechanical Filters for 2.1 or 0.5 kc, or conventional IF transformers for AM.

The VFO and HF crystal oscillator in the 75S-1 may be used to control transmitter frequency through the use of two plug-in patch cords. The ac power supply for the 75S-1 is self-contained. However, the 12 or 28 v dc supplies for the KWM-1 may be utilized, as with the transmitter, and a power connector at the rear of the 75S-1 disables the internal supply when the external supply is used.

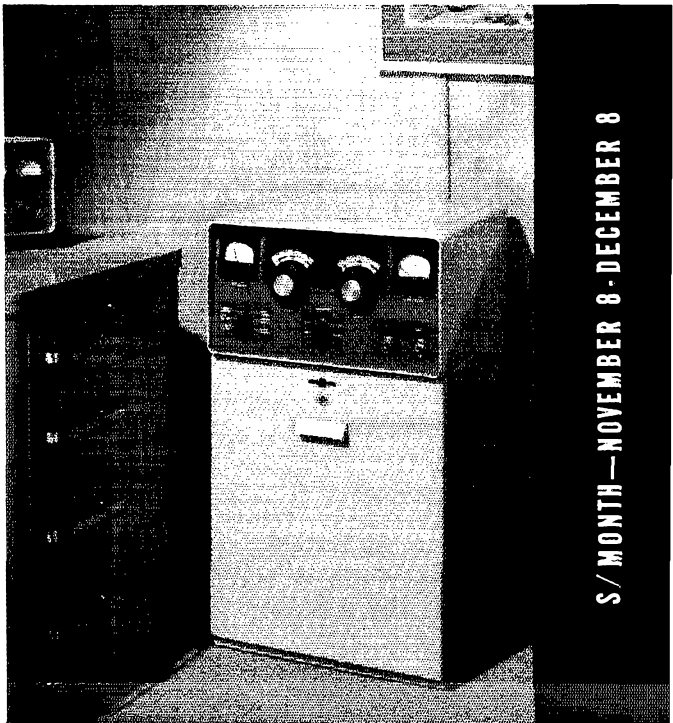
75S-1 Price (2.1 kc Filter only) . . $495.00

30S-1 LINEAR AMPLIFIER

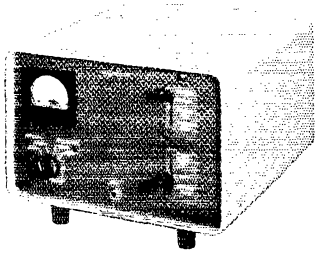
The 30S-1 is a single tube, grounded grid linear amplifier with frequency coverage consistent with the 32S-1 and 75S-1. It provides the full legal power input for SSB (1 kw average) or 1 kw input for CW, requiring 70 to 100 watts excitation (from the 32S-1 or KWM-1, for example). The amplifier tube is the Eimac 4CX1000A.

RF inverse feedback is employed for better linearity, and automatic load control voltage is fed back to the 32S-1 or KWM-1.

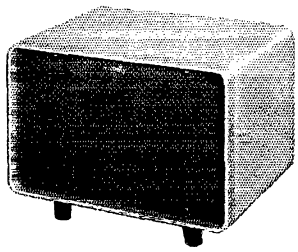
The power supply for the 30S-1 is located in the lower portion of the cabinet. There is also a compartment for the 516F-2 Power Supply used with the 32S-1.



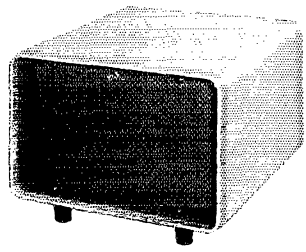
FULL LEGAL INPUT ON SSB, 1 KW ON CW



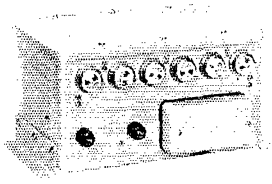
312B-4



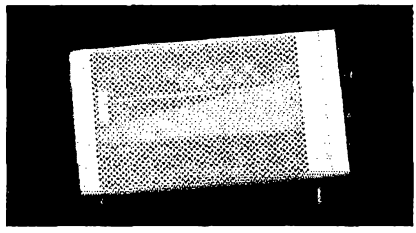
312B-3



516F-2



516E-1



S/Line Tilted Mounting

ACCESSORIES

312B-4 SPEAKER CONSOLE

This unit integrates system control of the 32S-1, 75S-1 and accessories.

It contains a speaker; an RF directional wattmeter with 200 and 2000 watt scales for measuring antenna and transmission line performance, and several station control functions.

A FUNCTION switch provides selection of: NORMAL station operation; RECEIVE ONLY, with transmitter audio circuits disabled, and TRANSMIT ONLY, with receiver disabled and transmitter VOX actuated. Another switch enables the operator to mute transmitter and receiver audio quickly.

312B-4 Price $185.00

312B-3 SPEAKER

The 312B-3 includes a 5" x 7" speaker and connecting cable, housed in a cabinet attractively styled to match receiver and transmitter.

312B-3 Price $27.50

516F-2 AC POWER SUPPLY

Providing all voltages for the 32S-1, this unit operates from 115 v, 50-60 cps. It is housed in a matching cabinet and may be mounted on the desk top or in an out-of-the-way location. Space is available behind the front panel grill for custom mounted station accessories.

516F-2 Price $105.00

516E-1 DC POWER SUPPLY

Operating from 12 v dc, the 516E-1 provides all required voltages for the 32S-1 and 75S-1 for mobile or portable operation. Circuits are completely transistorized for maximum efficiency and minimum maintenance. A 28 v dc supply, the 516E-2, may also be used with both units.

516E-1 Price $262.00

COMPLETE DETAILS IN S/LINE BROCHURE

see the S/line at your Collins dealer during S/month Nov. 8 — Dec. 8

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