

QST

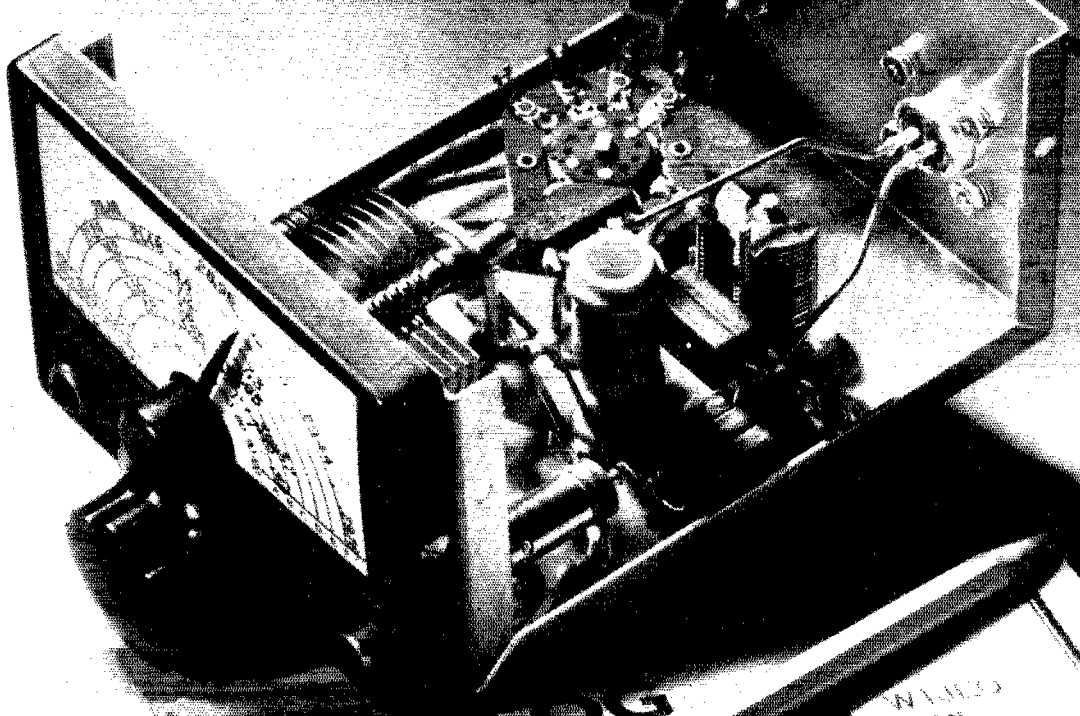
August 1957

50 Cents

55c in Canada

devoted entirely to

amateur radio



MINILOG
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... TO
... AUGUST 1, 1957
AMERICAN RADIO-RELAY LEAGUE
WEST HARTFORD, CT



it's **NEW!**

**HAS DUAL
CONVERSION!**

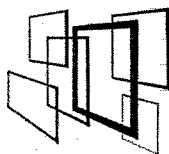
only \$ **229⁰⁰**

AMATEUR NET

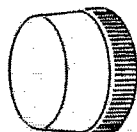
A Ham's Best Friend is His
RME 4350 RECEIVER
with
DUAL CONVERSION

All the features you want and need are here in the RME 4350 dual conversion receiver. Designed by radio amateurs, laboratory-engineered for maximum performance, it is equal to the best, yet it's yours for just \$229 Amateur Net!

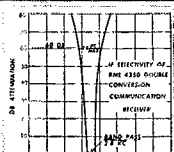
Important RME 4350 Characteristics



• **Dual Conversion.** The images on all amateur bands are down 54 db. or more. Crystal controlled, this is a highly desirable feature in areas of strong local signals. 1st IF—2195KC and 2nd IF—455KC.



• **Two-Speed Tuning for easy, smooth operation.** You tune your receiver to any particular part of the band, then micro-scan the area, or the whole dial range by means of a velvet-smooth 75 to 1 differential planetary reduction mechanism which is an integral part of the heavy tuning knob. *No other receiver, at any price, has this feature!*



• **High Selectivity and Rejectivity.** Selectivity favors the reception of a desired signal; rejectivity denies reception to unwanted signals and noise. You tune precisely the signal you want—even at high frequencies.

Fact-Filled booklet gives you all the details, describes related RME and Electro-Voice equipment exclusively for hams. Write for Bulletin No. 244.

Compare with other receivers for SSB, CW, phone, DX, contests, traffic ... you'll buy the RME 4350!

RME

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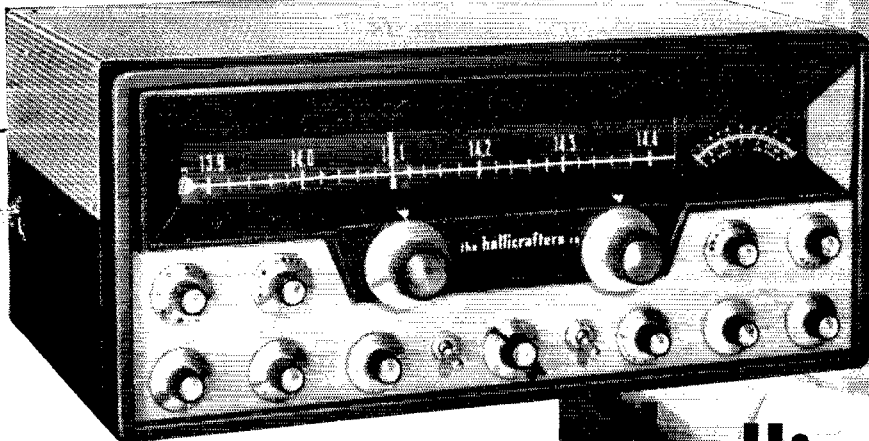
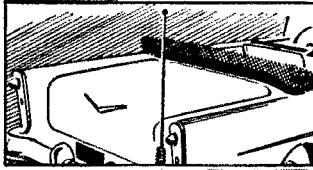
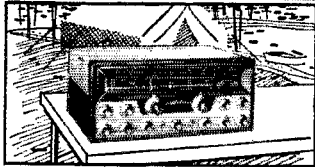
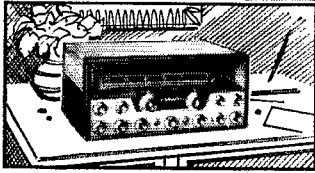
RME RADIO MANUFACTURING ENGINEERS, INC.
Division of ELECTRO-VOICE, INC.,
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Coming from Hallicrafters laboratories

... First transistorized all-band, single sideband fixed-portable-mobile transmitter-receiver!

Again from Hallicrafters comes another first . . . a transistorized transmitter and receiver in one compact package. The FPM-200 possesses the same clean signal and crispness of the HT-32 . . . sparkling performance from a new transistorized receiver. Watch for the revolutionary *new* FPM-200 . . . coming from Hallicrafters laboratories.

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- Dual VFO—not a transceiver.
- Upper and lower sideband; CW, AM, SSB.
- Performance comparable to HT-32.



FPM-200

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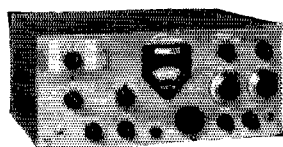
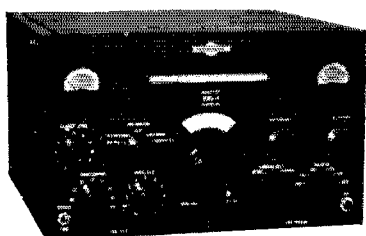
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the basis for a great reputation!

From the first Collins Amateur equipment to the present SSB station, Collins performance has been the standard for comparison. See your Collins distributor. You can own the finest for a few pennies a day.



KWS-1

POWER AMPLIFIER INPUT — 1 kw peak envelope power SSB, 1 kw CW operation. **R-F OUTPUT IMPEDANCE** — 52 ohms.

FREQUENCY BANDS — 80, 40, 20, 15, 11, 10 meters.

EMISSION — SSB, AM carrier plus one sideband, CW.

HARMONIC AND SPURIOUS RADIATION — (Other than 3rd order distortion products.) Intra-channel radiation is at least 50 db down. All spurious radiation at least 40 db down at output of exciter. Second harmonic at least 40 db down; all other harmonics at least 60 db down.

DISTORTION — SSB, 3rd order products 35 db down or better at 1 kw PEP.

FREQUENCY STABILITY — After 15 minutes warmup, within 300 cps of starting frequency. Dial accuracy: 350 cps after calibration.

AUDIO CHARACTERISTICS — Response ± 3 db, 200 to 3,000 cps. Noise and hum: 40 db or more below reference output level. Input: .01 volts for rated power output.

MICROPHONE INPUT — Will match high impedance dynamic or crystal.

WEIGHT — 210 pounds. Both units.

SIZE — KWS-1 — 10-15/32" high, Power Supply 30" high, 17 1/2" wide, 15 1/2" deep.

RELAY RACK MOUNTING — Mounting brackets kits available for RF Unit and power supply.

Net Price.....\$2,095.00

75A-4

FREQUENCY BANDS — 160, 80, 40, 20, 15, 11, 10 meters.

SIZE — 10-15/32" high, 17 1/2" wide, 15 1/2" deep.

WEIGHT — 35 pounds.

RELAY RACK MOUNTING — Mounting brackets kits available.

NUMBER OF TUBES — 22, including rectifiers.

SENSITIVITY — 1.0 microvolt for 6 db signal-to-noise ratio with 3 kc bandwidth.

AVC CHARACTERISTICS — Audio rise less than 3 db for inputs of 5 to 200,000 uv.

IMAGE AND IF REJECTION — Image ratio at center of each band 50 db or better. IF rejection at center of each band 70 db or better.

AUDIO CHARACTERISTICS — Output — .75 watts with a 3.0 uv signal, 30% modulated. Output impedance — 500 ohms, 4 ohms. Response of audio circuits — ± 3 db 100 cps to 5,000 cps. Distortion — Less than 10%.

MUTING — Provisions for muting the Receiver during key-down operation are provided. A muting voltage of +20 volts must be supplied by transmitter.

FREQUENCY STABILITY (at 14 mc) — Temperature — Less than 1200 cycles drift from 0° to 60°C. Warmup drift — Less than 300 cycles after 15 minute operation. Line voltage — Less than 100 cycles for $\pm 10\%$ change. Dial accuracy — 350 cycles after calibration.

Net Price.....\$695.00

KWM-1

RF POWER INPUT — 175 watts SSB PEP, 16w CW.

OUTPUT IMPEDANCE — 50 ohms with more than 2.5 SWR.

POWER SOURCE — 115 vac 50-60 cps 320w max, 12 vdc, or 28 vdc, 25a max.

SIZE — Transceiver — 6 1/4" high, 14" wide, 10" deep. AC Power Supply — 6 1/4" high, 7 3/4" wide, 10" deep. DC Power Supply — 4 1/4" high, 9" wide, 5" deep. Speaker cabinet — 6 1/4" high, 7 3/4" wide, 10" deep.

WEIGHT — Transceiver, 15 lbs.; AC Power Supply, 25 lbs.; DC Power Supply, 15 lbs. Speaker Cabinet, 5 lbs.

FREQUENCY — 14-30 mc continuous. Choice of any ten 100 kc bands by crystal switch. Standard complement of crystals — 14.0-14.1 mc CW, 14.2-14.3 mc SSB, 14.4-14.5 mc CW, 14.6-14.7 mc CW, 14.8-14.9 mc CW, 15.0 mc calibration with WWV, 21.0-21.1 mc CW, 21.3-21.4 mc SSB, 21.4-21.5 mc SSB, 28.0-28.1 mc CW, 28.1-28.2 mc CW, 28.5-28.6 mc SSB, 28.6-28.7 mc SSB.

FREQUENCY CONTROL — 70K-1 Permanent Tuned VFO.

HARMONIC AND SPURIOUS RADIATION — Carrier suppression — 50 db, unwanted sideband — 50 db, oscillators and mixer products — 50 db, second harmonic — 50 db, 3rd order products — 30 db.

FREQUENCY STABILITY — After 10-minute warmup, within 100 cps. Reset with 1 kc throughout range.

RECEIVER SENSITIVITY — 1.0 uv for 6 db S/N ratio with 3 kc bandwidth.

Net Price.....\$770.00

Collins

CREATIVE LEADER IN COMMUNICATION



QST

AUGUST 1957
VOLUME XLI • NUMBER 7

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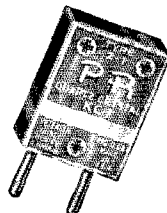
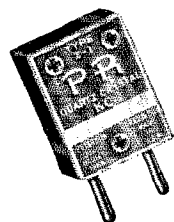
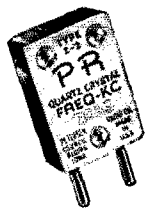
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Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed.....\$2.95 Net

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

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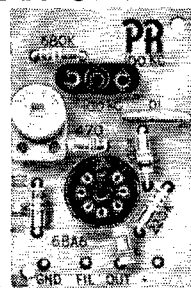
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Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (or preceding month) direct to the SCAM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCAMs for inclusion in QST. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members. These include ORS, OES, OPS, OO and OBS. SCAMs also desire applications for SEC, EC, RM and PAM where vacancies exist. *All amateurs in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).*

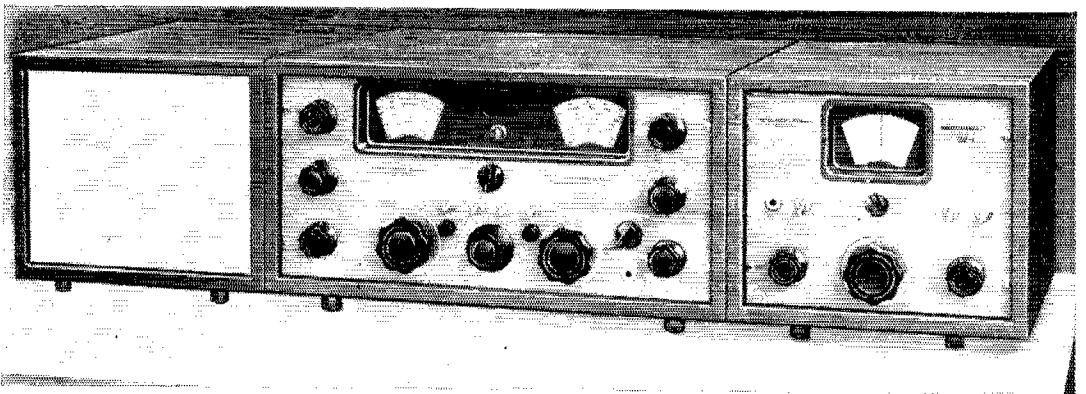
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a feeble pitch and tell you the GPR-90 and GSB-1
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THE AMERICAN RADIO RELAY LEAGUE, INC.,

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

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

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

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

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



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"It Seems to Us..."

PUBLIC RELATIONS

The instances are fortunately rare, but every now and then an item in a newspaper will carry an account of amateur radio which can be classified as uncomplimentary. The subject is usually amateur interference. Occasionally the item is directly antagonistic; more often the disparagement is implied, or conveyed by an inaccurate headline.

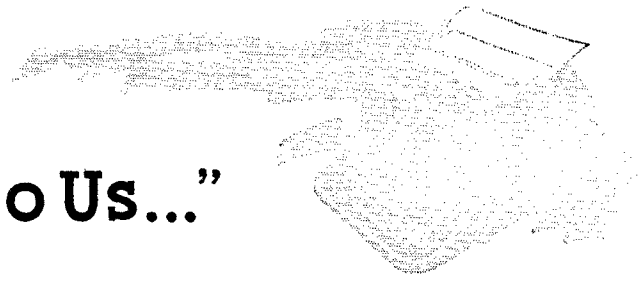
In some of these few cases amateurs will write the League asking that a retraction be demanded. In our experience, this is entirely the wrong approach, for two reasons: Too much time is wasted (any effective action must be immediate); and generally speaking the editor is more impressed with a protest from his local readers than one from a distant organization. Usually, an alert local ham or club will take immediate action by contacting the paper or writing a letter to the editor in an attempt to obtain clarification and set the record straight. While this is the preferable procedure, it still has the disadvantage of again mentioning interference and amateurs in the same breath, and thus tends to accentuate the association of ideas.

There's a much better basic approach.

What is needed is full, complete and accurate accounts of all *other* amateur doings, so that any localized interference problems will seem minor in comparison to the good that can be and is being accomplished by public-spirited hams. In other words, a good long-range public relations program. To paraphrase the song title, you eliminate or neutralize the negative by accentuating the positive.

Naturally, any emergency activities of amateurs should be promptly and fully reported to the newspapers and radio stations. But in any one community emergencies are few and far between. You can't create a disaster, but you can be alert to participation in civic projects, or to initiation of some of your own, to maintain and improve the local standing of your amateur group. We'd like to mention here several such special projects, simply to suggest angles which you might use.

"Must" reading for those concerned with the state of our public relations is the article in November 1954 *QST*, describing Maryland Amateur Radio Week activities of the Baltimore Amateur Radio Club. It's full of project ideas.



A number of clubs have cooperated in fund-raising drives. One helped out in an all-night Telethon on behalf of the March of Dimes. Persons wishing to contribute called the TV station, whereupon an amateur net control installation directed a mobile to the address, where civic club members performed the leg-work of actually calling on the donors. Another amateur club undertook a similar project in a cerebral palsy drive, enriching it to the tune of \$50,000 — and doing themselves a world of good in public relations.

In a city famous for its huge parades, hams offered their services to the grand marshal. The marshal reluctantly accepted, and ended up immensely pleased — the parade started on schedule for the first time in the city's history! Needless to say, hams are now a fixture whenever they "strike up the band."

But you don't need to wait for fund drives or parades; except in the larger cities, a great many amateur occurrences are considered newsworthy. The local club receiving its charter of ARRL affiliation; a local amateur making DXCC; an emergency coordinator being appointed; participation by the club members in a contest, Field Day, or hamfest; delivery of a message from a serviceman in Alaska to his mother — all these and a host of other activities, however common they seem to us, can mean an inch or two in the Daily Bugle or 30 seconds on "The Voice of Podunk."

What else? Well, is your PTA putting on a hobby show? Be in it! Kiwanis looking for a speaker? Volunteer! Does your company have a "house organ"? Its editor would probably be delighted to have a feature story on the hams in the company.

Publicity helps are available at League Headquarters to make it easier for you, too. A sample speech, interview, radio broadcast program, and TVI script with slides are available. So are reprints of outstanding amateur stories, which have appeared in nationally-known magazines, to explain our hobby to interested BCLs.

Good public relations are important to nearly every society, corporation, or charity, but especially important to us — our very licenses depend on our activities being "in the public interest, convenience, or necessity." We must leave no doubt in the minds of the public that we meet this requirement.

HAMFEST CALENDAR

Alabama — The North Alabama Hamfest will be held on Aug. 17 and 18 at the high school in Decatur. It begins on Saturday evening with an informal "Dutch Treat" supper and will be followed by a planned program during the remainder of the evening. Sunday's program includes "Dutch Treat" breakfast, contests, and the main banquet. Further information from Philip Lawrence, jr., W4DCN, P. O. Box 9, Decatur.

Alberta — The Alberta Hamfest will be held in the Stampeded Hotel, Calgary, on Aug. 3 and 4, with registration commencing at 9:00 A.M. Aug. 3. Registration fee is \$5.00. Entertainment, banquet, dance, contests, mobile features, group discussion and good fellowship. Further details from the Calgary ARA, Box 196, Calgary.

Arizona — The annual Southern Arizona Hamfest will be held at Fort Huachuca, Aug. 31-Sept. 2, in the picnic area of Garden Canyon. Exact directions will be available at the entrances to the Fort. There will be three days of contests, guest speakers, and entertainment, with a big feed. Camping facilities and power will be available. A swap and shop booth will be in operation, and on Sunday a seafood and chicken dinner will be served at reasonable prices. A mobile snack bar will be in operation throughout the hamfest. Ticket prices are \$1.00 before Aug. 21, \$1.50 after that date. Children under 12 admitted free. Advance reservations from the Secretary, Huachuca Amateur Radio Club, P. O. Box 902, Fort Huachuca.

Idaho — The annual WTMU Hamfest will be held Aug. 3 and 4, at Big Springs, Idaho, 20 miles south of West Yellowstone, Mont. Cabins and good camp grounds are available.

Illinois — The annual Egyptian-St. Louis area hamboeze is to be held Sunday, Aug. 25, at the Egyptian Radio Club grounds. The club is located one block south of the Chain of Rocks Canal bridge (U. S. Highway 66) on the east bank of the Mississippi Chain of Rocks Navigation Canal. W9QMG will do his circus clown act, other well-known hams will be present, and contests galore. These will include code speed, hidden transmitter, phone-c-w, tug-of-war, CQ whistling, famous voices, etc. No admission charge for out-of-town hams. Mobile watch on 29,640 kc. and 3940 kc. Write W9WPS for further details, at 317 No. Meramec Ave., Clayton 5, Mo.

Illinois — The Shawnee Amateur Radio Ass'n will sponsor a hamfest known as SARA's First Family Reunion at Giant City State Park, Sunday, Aug. 11. It will be a basket-dinner family picnic, and will include some prominent speakers. Mobile watch on 8875 kc. and 29,640 kc., and on two meters.

Illinois — The Hamfesters Radio Club is holding its 22nd annual picnic on Sunday, Aug. 11, at Santa Fe Park, 9100 South Wolf Road. The site can be reached from the east by taking Route 1A (Archer Ave.) to 87th St. in Willow Springs and turning west to the Grove. From the west, take Route 66 to 79th St., east to Wolf Road. Kiddie rides, convenient parking right at one of the many tables, modern facilities, and plenty of shade are some of the Park features. Radio displays, food and refreshments. Bring gear for sale or trade. Events for both kiddies and grown-ups. Advance donations \$1.00; \$1.50 at the gate. Contact W9IGC for further info and tickets.

Indiana — The Big Bull Hamfest will be sponsored by the Kokomo Amateur Radio Club at Highland Park in Kokomo on Sunday, Aug. 11. Registration begins at 9 A.M., fee is \$1.50. Activities for the whole family.

Indiana — The annual hamfest of the Tri-State Amateur Radio Society will be held at Bauer's Grove, north of Evansville, on Sunday, Aug. 25. Plan for a day of contests, prizes and games for the entire family, beginning about 10 A.M. Directions will be furnished by signs on U. S. Highway 41 and by radio on 75, 10 and 6 meters. Advance registration prior to Aug. 17 is \$2.00, from Paul Wurtz, 810 South Governor St., Evansville. At the gate \$2.50.

Minnesota — The Saint Cloud Radio Club is holding its annual family picnic on Aug. 11 at Waite Park Village Park, two miles west of Saint Cloud on Highway 52. All modern facilities, shelter house, picnic tables, playground. Free coffee served all day. Large signs will be posted on all major highways. Activities will include hidden transmitter hunt on 10 and 75, mobile field strength contest, oldest ham, ham from the greatest distance, and games for the wives and kiddies. Bring the family and your lunch. Registration starts

at 10 A.M. Fee of \$1.00 per call includes the family. For further info contact Bob Molitor, W9RVO, 315 7th Ave. North, Saint Cloud, Minn.

New York — The Radio Amateurs of Greater Syracuse will sponsor a "Ham-nie" at the Longbranch area of Onondaga Lake Park on Saturday, Aug. 24, from noon 'til nine. Exit at Thruway Interchange No. 39, turn left, and follow signs. Mobileers check 75, 10 and 2 meters, \$2.00 per family. Contact K2UIT, H. Warren Middleton, 241 Fairmount Ave., Liverpool.

Ohio — The Buckeye Shortwave Radio Ass'n is sponsoring its 11th annual ham outing on Aug. 25, at the Happy Days Camp of Virginia Kendall Park in Akron. Rain or shine, there's plenty of shelter in the big lodge. Lots of events for OMs and XYLs, with games and free pop for the kiddies. Mobileers call in on 10 meters, and everyone bring gear for the Swap-Shop. Bring your elow and your appetite. Donation is \$2.00. For tickets and info, contact Arnold Farkas, W8UPG, 804 Garson Drive, Akron 19.

Pennsylvania — The Mt. Airy V.H.F. Radio Club is holding its annual picnic on Sunday, Aug. 11, at Fort Washington State Park, Flourtown. The club is planning on an attendance of 300. For further information, contact W3SAO, Francis Brick, 829 W. Fishers Ave., Philadelphia 41.

Pennsylvania — The second annual hamfest sponsored jointly by the Pen Mar Radio Club, the Hilltop Transmitting Ass'n, the York Amateur Radio Club, and the Keystone V.H.F. Club will be held Aug. 18 at Pine Grove Park, two miles south of York. (Same location as last year.) There will be two-, six- and ten-meter rigs to guide you in. Free soda, and games for all the family. Bring your extra gear for swap or auction. Registration begins at 10 A.M. Advance tickets are \$1.00 per family, \$1.25 at the gate. For tickets and information contact W3OC1, Art Hafer, 2477 Crystal Lane, York.

Texas — The Central Texas Amateur Radio Club is holding its annual hamfest on Sunday, Aug. 25, at the Cameron Park Clubhouse in Waco, beginning at 10 A.M. There will be transmitter hunts, equipment displays and various entertainment both for the OM and XYL. For further information, contact Bill Wittman, K5C10, P.O. Box 1032, Waco.

Virginia — The Shenandoah Valley ARC will hold its annual hamfest at Dickey Ridge picnic area on the Skyline Drive, four miles south of Front Royal on Sunday, Aug. 1. Registration starts at 10 A.M. Lunch will be served, or bring your own elow. Plenty of activities for the whole family, and bring along your surplus gear for auction. For more information, contact W4RKC, P. O. Box 139, Winchester, Va.

OPERATION SMOKE-PUFF

W6QYT advises that the Operation Smoke-Puff rocket firing originally scheduled for July is now most unlikely but that two very important firings are scheduled for September. Over 600 persons have volunteered to participate, but still more are needed, particularly in southern Nevada, southern Utah, northern Arizona, New Mexico and Colorado. Dig out your May QST for full information on this fascinating project.

Incidentally, the reference in that May article should have been the *Journal of Chemical Physics*.

FEEDBACK

Several errors in component values appeared in the schematic of the Crosby receiver last month (pages 12 and 13). In the first mixer, the cathode resistor should be 10K instead of 7.5K and the screen resistor should be 120K instead of 33K. In the second oscillator, the small capacitor from plate to chassis should be 5 μf ., not 15 μf .

N.B.S. Equatorial Region V.H.F. Scatter Research Program for the I.G.Y.

EARLY IN 1951 amateurs throughout the eastern half of the United States began hearing a station operated by the Collins Radio Company at a frequency just below the 50-Mc. band. The amazing thing was that the station could be heard practically all of the time even when the band could not be described as "open."

More recently, articles published in the October, 1955, "scatter issue" of the *Proceedings of the IRE* and elsewhere have revealed that the mysterious station was and is a part of a large program of research investigating a new form of long distance transmission. It had been found that practical communications over paths from 700 to 1400 miles in length could be carried on with complete reliability at frequencies as high as 60 Mc. The term "v.h.f. ionospheric forward scatter" is applied to this type of propagation. The word scatter describes the fact that very small but useful amounts of radio energy in this frequency range are returned toward the earth when high-powered transmissions are beamed at the ionosphere. It is now known that this kind of propagation is due to a combination of the effects of turbulence and meteors in the lower ionosphere. Small irregular changes in the normal variation of atmospheric density with height, called "irregularities" or "blobs," cause the scattering.

Experiments performed at various locations have shown that there is a definite variation in ionospheric scatter effects with latitude. At arctic and subarctic latitudes, such as in Alaska, the median power transmitted over a standard path is some ten times stronger than that propagated over a comparable path at temperate latitudes, such as in the United States. Other aspects of the scatter phenomenon, including the way the signal varies with time of day and time of year, also change with latitude. Up to the present time, no thorough experiments of a similar nature have been performed near the equator.

In the study of the ionosphere, as in other fields of geophysics, much of what is learned depends upon the observation of two or more effects which take place simultaneously. For instance, when a sudden ionosphere disturbance (SID) occurs, bringing severe absorption of signals over standard h.f. circuits, the power transmitted over a 50-Mc. scatter circuit generally increases slightly! Because the h.f. absorption is

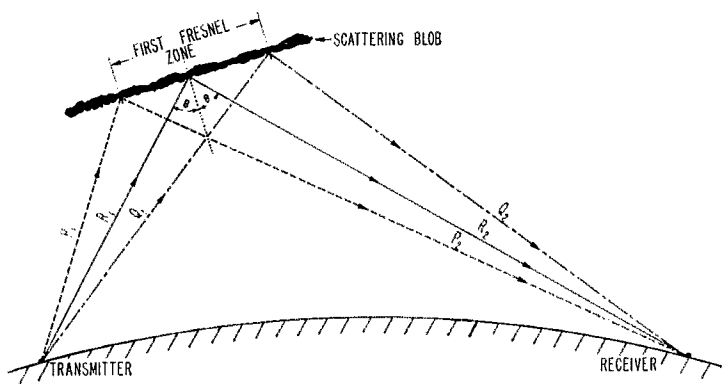
50-Mc. Men To Have South American Beacon Stations for DX Monitoring

BY KENNETH BOWLES,* KØCIQ,
AND ROBERT COHEN*

* National Bureau of Standards, Boulder, Colorado.

A cooperative program of research on ionospheric scattering will be conducted by scientists and radio amateurs in the United States and the other Americas during the International Geophysical Year. Transmitting and receiving stations are soon to be installed in South America by the National Bureau of Standards. The transmissions will be beamed northward toward Central and North America and eastward across South America. Radio amateurs are asked to provide reports of their reception of signals from these stations. This article traces the background leading to the design of this project and outlines the experimental arrangement.

Fig. 1—Blob orientation for maximum forward scattering.



known to be due to an increase of ionization in the lowest region of the ionosphere, the *D* region, this effect tends to show that scatter is also partly present in that region. Another example is the occurrence, at arctic latitudes, of scatter signals that are somewhat stronger during periods of magnetic storms and auroral displays. The need for information of all sorts which may correlate with other data taken simultaneously, even in other parts of the world, is the underlying reason for the International Geophysical Year.

By reverse reasoning, the experiment to complete the latitude information on regular ionosphere scatter was included in the United States IGY effort because so much other data will be taken at the same time. Another justification was that it was expected that the transmissions used in such a scatter project could be received in other parts of the world as a means of increasing propagation information.

It is hoped that one of the long-unexplained effects in v.h.f. propagation may be better understood in this way. This is the transequatorial transmission observed during the equinox months over such paths as Buenos Aires to Mexico City. Amateurs in these places communicate amazingly often on the 50-Mc. band during March, April, September, and October in years of sunspot maximum. They do so generally at hours in the evening after the regular *H*-layer transmission should have subsided. The distinguishing feature of the signals propagated in this way is their rapid flutter-fade which may make speech only partially intelligible. A similar effect can also be observed over paths between the United States and Argentina on the 28-Mc. band. Some form of ionospheric scattering may play a part in this type of propagation.

Propagation Ideas Leading to Design of Experiment

1) Elongated Blobs and Spread-*F*.

The IGY experiment explained in detail in later paragraphs is not merely a repetition, at a different latitude, of the original test over the Cedar Rapids, Iowa, to Sterling, Virginia, path. In addition, an attempt will be made to observe regular scatter via the *F* layer at a frequency

near 50 Mc. Another investigation is designed to study the unique localized effects which occur within about two degrees of latitude of the magnetic equator — the line along which the earth's magnetic field is exactly horizontal.

One concept, that of elongated scattering centers or blobs, has emerged in recent thinking as an important feature of practically all ionospheric scatter phenomena.¹ Except for the obvious example of meteor trails, the earth's magnetic field is responsible for the irregularities being cigar-shaped rather than spherical, as they would be in the absence of a field. This is because the free electrons, which cause most ionospheric radio effects, tend to move more easily parallel to the magnetic lines of force of the earth's field than they do transverse to the field. This effect is

more pronounced at elevations in and above the *H* layer (about 100 kilometers above the earth's surface) since collisions of the electrons with other larger atmospheric particles tend to suppress the directional effects of the earth's field at lower elevations.

Amateurs can most easily observe the effects of elongated blobs in the scatter phenomenon that accompanies auroral displays, often called simply "auroral propagation." The fact that antennas at both ends of a circuit must be pointed in a northerly direction in the northern hemisphere during an auroral opening is the result of the directional pattern, called "aspect sensitivity," of the elongated blobs. The best scattering is observed when

the blobs lie in the same geometrical plane in which a large mirror would have to lie to allow reflections from the same point.

Most present-day theories accept the idea that small sections along the length of elongated scattering centers reflect radio waves independently of the others. The amount of energy reflected by any one small section depends upon the number of free electrons it contains in comparison to the surrounding volume. The amount of energy scattered from any given blob is approximately proportional to the square of its length contained in what is called the "first Fresnel zone." The first Fresnel zone is defined by that part of the blob within which the total

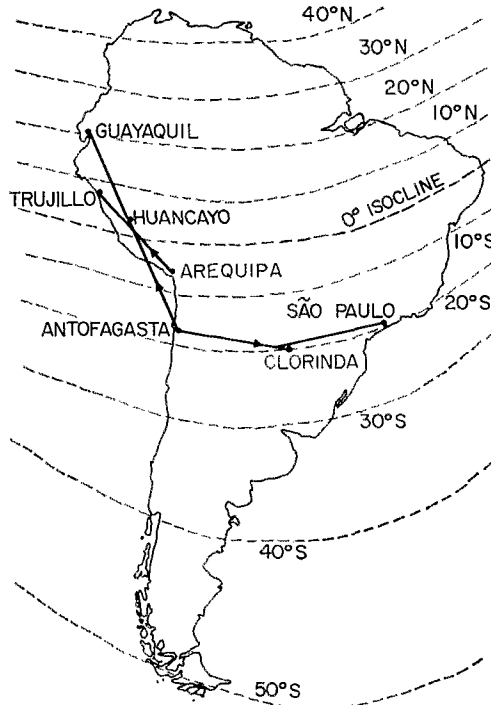


Fig. 2 — Locations of experimental stations with respect to geomagnetic latitude.

¹ Booker, *Jour. At. & Terr. Phys.* 8, 201 (1956); *Jour. Geophysical Res.* 61, 673 (1956).

length of the path from transmitter to receiver is limited to being less than one-half wave length longer than its minimum value for the blob. This is illustrated in Fig. 1.

Outside the first Fresnel zone the phase of the transmitted signal changes so rapidly that contributions from adjacent parts of the blob tend to cancel, leaving the contribution of the first Fresnel zone predominant. Although the illustration of Fig. 1 shows the blob in the same plane as the transmitter and receiver and the two ray paths, a similar picture also holds for the axis of the blob lying in other directions, including the one perpendicular to that plane. The only requirement is that the blob lie in the plane which is perpendicular to the bisector of the angle between R_1 and R_2 , shown in the figure as a dotted line.

same midpoint, would allow one to determine just how important the effect of elongation is.

Within recent years, the radio propagation group at Stanford University has been observing radar echoes in the h.f. band which appear to be due to elongated blobs.² These echoes are similar to auroral echoes in that they fade rapidly, but they are observed at times when there is no auroral disturbance, and at latitudes at which auroral effects do not usually occur. They observe echoes from the E region — about 100 km. high and the height at which most v.h.f. auroral echoes occur — and also from the higher F region. This evidence is a good reason for believing that significant amounts of elongated irregularities in the F region should be observable at the equator.

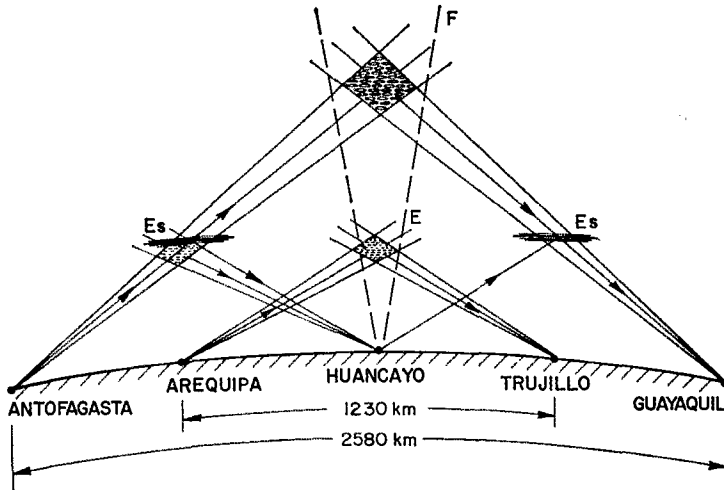


Fig. 3 — Schematic arrangement of the stations showing expected scattering media at the midpoints

Geometry now allows one to formulate rules for describing the length of the first Fresnel zone for any elongated scattering center. If the angle between R_1 and R_2 is held constant and the direction of the blob in the plane perpendicular to the bisector is varied, the longest reflecting zone occurs when the blob is in the plane of R_1 and R_2 , as in the illustration. The shortest occurs when the blob is perpendicular to this plane. Intermediate lengths occur at intermediate angles. Likewise, the smaller the angle between R_1 and R_2 , the shorter is the reflecting zone, except when the blob is perpendicular to the R_1R_2 plane, as in east-west auroral communication.

It may now be seen that the magnetic equator of the earth is an ideal place to study the effects of elongated scattering centers parallel to the lines of force of the earth's magnetic field. There the lines of force are horizontal and are oriented north-south. A north-south forward scatter path, in which the angle between the R_1 and R_2 of Fig. 1 is as large as possible, should make the best use of the blobs existing at any given height. A comparison between an east-west path and a north-south path, in which the scattering occurs at the

Another reason is that the phenomenon known as "spread- F " is very prevalent in equatorial regions. Spread- F is a term applied to a phenomenon giving rise to a special kind of record found using vertically-pointing "ionosphere sounders," which sweep the frequency range from 2 to 25 Mc. Normally these radar-type equipments receive one, two or more echoes from the F region which are "clean" — that is, the echo pulse is about as wide as the transmitted pulse and the height of the echo is easily measured. During spread- F conditions, the echo pulse is broadened out, with various parts of the echo fading in and out with respect to the others. This has long been thought to be due to the presence of some kind of scattering. The prevalence of spread- F near the equator suggests that the conditions necessary for forward scattering in the F region should be particularly good in that area.

2) Sporadic- E .

One of the interesting by-products of an experimental forward scatter circuit is the ability

² Leadabrand, *Stanford Univ. Radio Propagation Laboratory Technical Report No. 93*, Dec. 9, 1955.

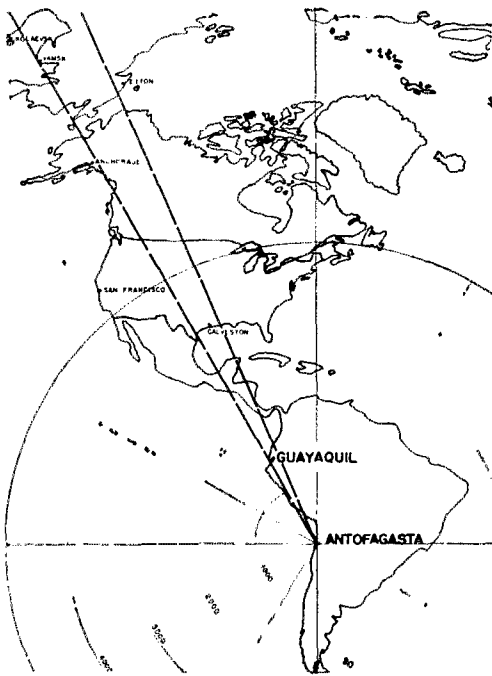


Fig. 1—Coverage of the Antofagasta station includes most of Central America, the Gulf and Plains States.

to observe the occurrence of sporadic- E ionization. Sporadic- E has long been known by amateurs as the source of "short skip" openings on the 10- and 6-meter bands. On a scatter recording, sporadic- E (or E_s) appears as a rapid increase in signal strength, some 20 to 80 db. above the scatter level, which is maintained over a period of ten minutes to as much as hours. Shorter enhancements having this appearance are usually due to exceptionally large meteor trails. E_s can also be observed on ionosphere sounders of the kind mentioned in the section above. From the maximum frequency at which the sounder observes echoes, it is possible to estimate the maximum frequency at which strong transmission will be found on an oblique path, such as a scatter circuit.

Amateurs in North America well know the statistical characteristics of sporadic- E . It occurs most often there during the months of May, June, and July, and is most prevalent around noon and during the evening. A secondary peak in activity occurs in December and January. At the magnetic equator—for example, at the Huancayo, Peru, sounder station— E_s is extremely prevalent year round. The maximum echo frequencies suggest that short skip on a 50-Mc. circuit should be possible during much of the same time. At Huancayo, the maximum in E_s activity occurs during the daylight hours, with hardly any occurring at night. The activity is spread much more evenly over the entire year than in North America.

The E_s observed at Huancayo and other equatorial stations must be of a peculiar variety, since

it is found to be so prevalent only very near the magnetic equator. The sounder station at Talara, Peru, only 8 degrees of latitude north of Huancayo, shows hardly any trace of this unusual activity. In fact, there are strong indications that the Huancayo variety of E_s is confined to a very narrow band of latitude near the magnetic equator. There is a strong likelihood that the high E_s activity is associated with a dense stream of current, called the "equatorial electrojet," which circles the earth near the magnetic equator at E -region levels. Because of these interesting equatorial effects, a special experiment involving the cooperation of several countries, including the United States, will be performed during the IGY. It will utilize data obtained from a close chain of four ionospheric sounding stations extending from Huancayo to Talara.

Evidently there is a good possibility that the special conditions which cause the E_s at Huancayo may also make the phenomena of v.h.f. forward scatter there rather special, and not necessarily typical of the equatorial region. A second scatter path, with the same orientation, but having a midpoint some six degrees of latitude separated from Huancayo, would permit the observers to separate those effects which are peculiar to a band of latitude enclosing the magnetic equator from those which are common to the entire low-latitude region.

The Experimental Arrangement

An experimental program with v.h.f. scatter, organized for the United States IGY effort by the National Bureau of Standards, will be carried out in South America. The seven stations planned and the paths involved are shown on the map of Fig. 2. The dashed lines describe regions with the magnetic dip angles indicated, and are called "isoclines." The station at Clo-

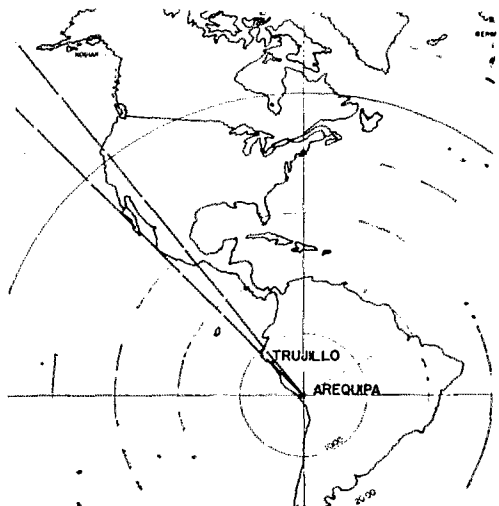


Fig. 5—The main lobe of the Arequipa antenna will cover most of Mexico and California. The signals will undoubtedly be heard over much of the United States under certain conditions.

rinda, Argentina, will be equipped by NBS and operated by the Argentine Navy as part of the IGY participation of Argentina. Likewise, the station at São Paulo, Brazil, will be equipped by NBS and operated by the University of São Paulo as part of the Brazilian IGY program. The station at Huancayo, Peru, will be operated by the Instituto Geofísico de Huancayo as part of their work supported by the U. S. The other stations will be operated by the National Bureau of Standards.

A schematic illustration of the experimental

compared with the ionosphere sounder records of the Huancayo sounder, thereby aiding interpretation of both.

Transmission from all three stations will be simply an unmodulated carrier most of the time. On the hour and half hour, the transmission will be interrupted for approximately 2 minutes so that the receiving stations can measure background noise levels and detect any possible interference. Identification in code will be made just before the transmitter goes off for the two-minute break. A short period of pulse transmis-

Table I

<i>Station Location</i>	<i>Call</i>	<i>Power Radiated*</i>	<i>Frequency</i>
Antofagasta, Chile	CE8AE	3 kw. or 20 kw.	49.960 Mc.
Arequipa, Peru	OA3AAE	3 kw. or 20 kw.	49.920 Mc.
Huancayo, Peru	OA3AAF	50 watts	49.880 Mc.

* Transmitters for both 3 kw. and 20 kw. are being taken to Antofagasta and Arequipa. One or the other will be used depending upon experimental requirements.

arrangement of the paths on the west coast of South America is shown in Fig. 3. The east-west path across the continent has similar but more limited objectives.

High-power transmissions will originate at points near Antofagasta, Chile, and Arequipa, Peru. Both stations will use rhombic antennas, 1000 feet long, pointed northwestward along the west coast of South America. The Antofagasta transmitter will simultaneously feed a pair of stacked five-element Yagi antennas pointed eastward toward Clorinda and São Paulo. Regular v.h.f. scatter signals from the lower *E* layer will be received by the Trujillo station from Arequipa, and by the Huancayo station from Antofagasta, thus providing the latitude comparison mentioned earlier. The receiving station near Guayaquil will receive signals from the Antofagasta transmitter, it is hoped, by *F*-layer scatter. A small transmitter placed at Huancayo, using a Yagi antenna, will also be monitored at Guayaquil. By checking for the presence of strong *E_s* transmissions over the Antofagasta-Huancayo path and the Huancayo-Guayaquil path it will be possible to tell when strong signals from Antofagasta received at Guayaquil are really due to double-hop *E*-layer effects such as double-hop *E_s* or one-hop *E_s* and one-hop lower *E*-layer scatter. The Antofagasta-Guayaquil circuit and the one from Arequipa to Trujillo will have the advantage that observations can be

sion will at times follow the two-minute break, during a period about three minutes long. The pulses will primarily be used to check whether high signal levels at the receiver are due to scattering at the mid-point of the great circle path, or due to *F*-layer-propagated ground back scatter.³ Table I gives the frequencies, call signs, and powers to be used.

Coverage of the antenna beams beyond the area of the experimental paths is shown in Figs. 4 and 5. These indicate that the beams of the transmitters are aimed at points in North and Central America where amateurs in Canada, the United States, and Mexico may from time to time be able to hear the transmissions. The frequencies were chosen specifically with this possibility in mind. Amateurs receiving any of these transmissions are urged to include reports of such reception with their regular reports to the ARRL IGY Propagation Research Project.

Acknowledgements

The success of this experimental program depends greatly upon the excellent cooperation and aid given to the NBS personnel by the IGY National Committees of Argentina, Brazil, Chile, Ecuador, and Peru. It would be impossible to acknowledge separately the help of the many individuals in those countries, and in the United States, which has made this program possible.

³ Villard and Peterson, *QST*, March, 1952, p. 11.

Stays

Heard by W9FAW — K4EBZ and W5EBZ QRMing each other on 15 meters, neither hearing the other.

One would-be Novice wrote in to say that he had been studying so hard for the exam that he was slowly becoming a psycho-schematic.

The Norberg Crud-O-Ject

A Simple Electronic Audio Filter for the C.W. Man

BY G. R. NORBERG,* WØRZ

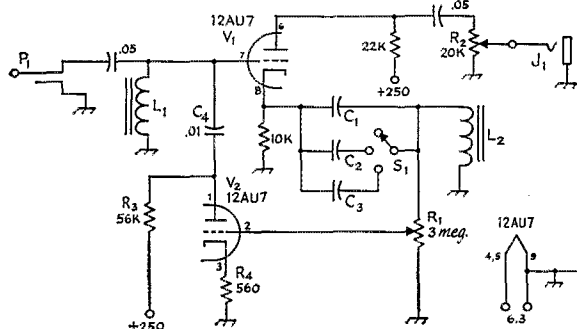
HERE is a simple device which will reduce the audio band width of your receiver to less than 50 c.p.s. at any medium audio frequency and will noticeably improve receiver signal-to-noise ratio. It does just what its name implies: rejects the crud and saves the signal. The gadget is a simple application of a principle used in many popular selectivity-increasing devices and will give a broad communications receiver many of the advantages of a crystal filter without reducing its over-all gain. The author's model cost him just one buck. Anyone who can't duplicate it for \$3.50 just doesn't have a respectable junk box.

After several months of battling QRM, QRN and ITV with his broad (but extremely stable and wonderfully inexpensive) BC-455, the author decided something had to be done. It was a matter of moving to the exciting, peaceful region above 100 Mc. or improving the receiver. The situation became indeed serious after the 1954 Sweepstakes when other hams began referring to the author as "the one with the shredded eardrums."

WØRZ was already a familiar call on 220 and 420 Mc., but a steady A3 diet makes a true-blue e.w. man lonesome. One look at the inside of the BC-455 made it obvious that to mess up such beautifully planned wiring would be nothing short of sacrilege. The course was clear: an external audio filter.

Theory

The end result is shown schematically in Fig. 1. The basic filter circuit is a triode amplifier with



a series-resonant LC circuit in the cathode lead; it will be very degenerative except at the resonant frequency.

So far, everything is fine except that at audio frequencies high Q is hard to come by and, after all, the Q of the tuned circuit determines

*1432 Northeast 5th St., Minneapolis, Minn.

• The device described here is a means for obtaining variable audio selectivity, to be used with a receiver that is inadequate in the selectivity department. The selectivity can be varied from no peak to the point where the device breaks into oscillation.

the sharpness of the filter. The solution to this problem is to connect a negative resistance across the tuned circuit to counteract its losses and raise its Q ; feed-back amplifier V_2 does just that. The voltage across L_2 is 90 degrees out of phase with the filter amplifier cathode voltage at the resonant frequency. V_2 amplifies part of this voltage and shifts it another 180 degrees. L_1 and C_4 give at least another 90-degree phase shift so that the feed-back voltage is in phase with the input signal at the one resonant frequency. R_1 controls the gain of V_2 , making the selectivity continuously controllable. S_1 allows the operator to choose one of three resonant frequencies, to avoid boredom.

Design

The only designing the builder must do is in figuring out the correct constants for the tuned circuit in the cathode of V_1 . If the inductance of the choke L_2 is known, the approximate value for C_1 is given by

$$C_1 = \frac{1}{39.4 f^2 L_2}$$

Fig. 1 — Circuit diagram of the selective audio amplifier. See Fig. 2 for the circuit modification when the receiver output is low-impedance (taken from secondary of output transformer). Capacitances are in $\mu\text{f.}$, resistors are $\frac{1}{2}$ watt.

C_1, C_2, C_3 — See text.

J_1 — Phone jack.

L_1, L_2 — See text.

P_1 — Phone plug.

where the capacitance is in $\mu\text{f.}$, the frequency in kc., and the inductance in henrys.

Lacking a definite knowledge of the coil's inductance, one may use a small filter choke of 1 or 2 henrys. The exact resonant frequency can be set to any desired value by changing the air gap between the U and I laminations. A 2-henry

inductor will resonate at around 1000 cycles with about 0.01 μ f. Adding capacitors C_2 and C_3 will lower the frequency.

L_1 and C_4 in series should resonate at a frequency about $1\frac{1}{2}$ or 2 times higher than the resonant frequency of L_2C_1 .

Construction Details

Because most of the components used in the Crud-O-Ject will be found in the average junk box, and because the circuit layout is not at all critical, the best way to construct the gadget will be to make it as compact as the components will permit. The author's model was built on an inverted-U 16-gauge aluminum chassis 4 inches long, $2\frac{1}{2}$ inches wide and $1\frac{1}{2}$ inches deep, with a $2\frac{1}{2} \times 4$ -inch aluminum plate serving as a panel. R_1 and J_1 hold the front panel on the chassis, and R_2 and S_1 are mounted above them. The 12AU7 is mounted about in the center of the chassis.

R_1 should be at least 3 megohms, in whatever taper is cheapest. The original component came from the bargain box of a local distributor and cost 10 cents. L_1 and L_2 can be any inductors such as audio output transformer primaries, 10-ma. chokes, etc., as explained earlier. The author used a 2-henry toroid from the junk box. S_1 was swiped from a surplus control box BC-450A; the whole box cost two bits at the Minneapolis Radio Club annual rummage sale.

The remaining components are not critical, although it would be a good idea to keep them within 20 per cent of the listed values.

Possible Modifications

If the builder plans to use this unit with a receiver having a low impedance output transformer at the phone jack, he can eliminate L_1 and the 0.05- μ f. capacitor. If the receiver headphone output impedance is below 2000 ohms, as many of them are, the input circuit shown in Fig. 2 should be used.

If he doesn't mind listening to the same note frequency all the time, the builder can eliminate S_1 completely, along with C_2 and C_3 .

Since the Crud-O-Ject will operate between any two high-impedance audio stages and will have some gain, a stripped-down version may be inserted permanently between the first and second audio stages (or out of the phone jack) of any present or planned receiver. Merely twisting R_1 to the low feedback position effectively removes the device from the circuit for (phooey) phone reception. However, a Crud-O-Ject peaking at 1 kc. will reduce phone QRM considerably.

If R_1 is advanced far enough, the device will slide into a very sinusoidal oscillation that can be used for test purposes or as a code practice tone.

Operation

As with many selectivity-increasing devices, your appreciation for the Crud-O-Ject will increase the better you learn to operate it. After no small amount of trial and error, the author

discovered the following operating conditions and procedure to be most fruitful.

Plug in the input and connect the power from the receiver to the filter. After the 12AU7 is warm, advance R_1 until you hear the device go into oscillation. Turn down the receiver audio gain control to well below the point where it no longer affects the position of R_1 where oscillation begins. If the circuit will not oscillate, increase R_3 or bypass R_4 with a 1- μ f. capacitor.

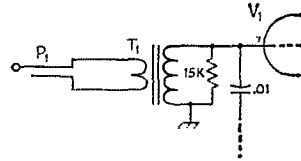


Fig. 2—If the receiver output is at low impedance, L_1 and the associated 0.05- μ f. capacitor should be replaced by this circuit.

T_1 —Small tube-to-voice-coil output transformer.

Then adjust R_1 to the region just below oscillation. The exact point of going into oscillation should be very smooth and almost impossible to detect. If it is not, increasing R_3 or R_4 or changing C_4 slightly should correct this. The selective region will sound like a bunch of marbles dropping into a tin can; this is random atmospheric noise "ringing" the selective circuit and is a normal result of using a very high- Q device. Since only the components of atmospheric noise that fall within the filter pass band are heard, the over-all signal-to-noise ratio is improved.

Tuning across a signal will result in a very pronounced sharp response peak where the beat note is just equal to the resonant frequency, so the operator will need to practice tuning in signals accurately. The final tuning may be done either with the main receiver dial, or with the b.f.o. pitch control. However, if your receiver is unstable, the signal will not stay on the peak.

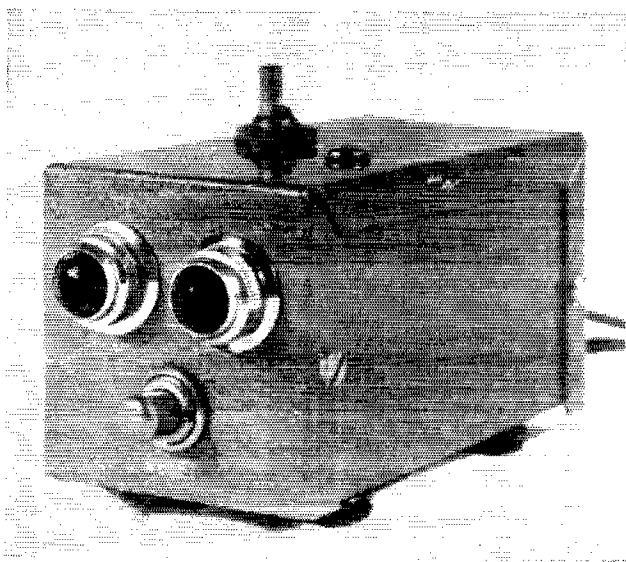
To sum it all up, the Norberg Crud-O-Ject cannot substitute for a crystal filter, but it tries. It will make any stable receiver very sharp at very low cost. It will double as an audio oscillator and, if there are no signals in the band, you can set it into oscillation, sit back and play a tune with S_1 !

Strays

W3LNZ sent us an A&P sales bulletin which pointed out the advisability of setting up a ham station for the Easter week, with special instructions to order plenty of butcher paper!

W6USY and his wife have sponsored a family of refugees from Indonesia. With the help of many of his ham friends, W6USY has provided the new "Americans" with gifts, friendship, and aid in learning the new language. All concerned have found it a most stimulating experience.

The Alert Alarm is assembled in a $2\frac{1}{4} \times 2\frac{1}{4} \times 1$ -inch aluminum box. The sensitivity control, R_2 , is mounted on the top cover.



The Alert Alarm

Another Simple Unit for Conelrad

BY JOHN R. AMEND,* W7UIY

• With a simple connection to the broadcast receiver, this automatic conelrad alarm operates from the change in i.f. amplifier current on the removal of a signal. The relay controls warning lamps and power to the transmitter.

THIS IS A SIMPLE and foolproof conelrad alarm system that is easy and inexpensive to build.

It is similar to other conelrad alarms in that a relay controls the transmitter and/or an alarm. However, unlike most other systems, this alarm does not use any tubes. It requires a minimum of parts — just one resistor, one relay, one variable resistor, two pilot-light assemblies, and a power socket. No special power supply is required; the 115-volt a.c. line provides power for the pilot lights and the equipment controlled by the alarm. It requires only two wires to connect it to any broadcast receiver having an i.f. amplifier stage and a.v.c. This alarm will provide positive automatic monitoring. While the radio station is on the air, the alarm will signal all-clear with a green light. When the radio station signals a conelrad alert by leaving the air, it will turn on a red light and remove the transmitter from the air. The system is completely foolproof; if anything fails, the relay opens and the transmitter leaves the air.

The Circuit

This alarm operates on the principle that when

* 11205 Third Ave. South, Seattle 88, Wash.

the current through a resistor is increased, the voltage drop across it also increases ($E_R = IR$), and the voltage available on the far side of the resistor is decreased ($E = E_t - E_R$). Now, this voltage drop may be used to control a relay. If the relay is adjusted to hold in at the higher voltage (low current through the resistor), the relay will open when the voltage is lowered (high current through the resistor).

Now let's see how this is applied to make a practical alarm. Suppose we put a 3.3K resistor in the plate lead of the i.f. amplifier tube (between the i.f. transformer and B+) of our BC set. Don't worry — it won't affect the operation of your BC set. When a signal is tuned in, the set develops a negative a.v.c. voltage. This negative voltage is applied to the grid of the i.f. amplifier, increasing the grid bias and lowering the plate current of the tube. Now, since less current is running through the resistor in the plate circuit, there will be less voltage drop across it and more voltage available on the plate side. The relay is connected from this point to ground through a 100K variable resistor which is adjusted so that the relay just remains closed.

While the relay is closed, the socket at the rear of the unit is energized and the green pilot light is on. If the signal is removed, no a.v.c. voltage will be developed and the grid bias will drop to a relatively low value, increasing the plate current. With more plate current, the voltage drop across the resistor will increase and less voltage will be available to operate the relay. The relay will then open, turning off the equipment plugged in the

socket and turning on the red pilot light.

A word might be said at this time about the reset switch S_1 . As you probably know, it takes

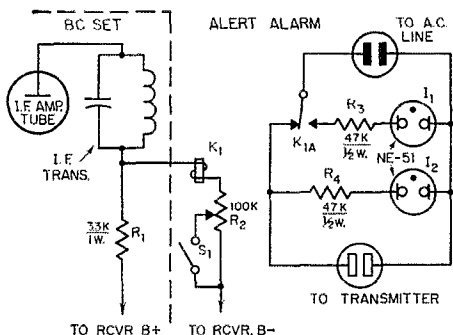


Fig. 1 — Circuit of the Alert Alarm and connections to the broadcast receiver. K_1 is a 10,000-ohm r.p.d.t. relay (Potter & Brumfield L.B5). K_{1A} is shown in the energized position. S_1 is a momentary-contact push-button switch. I_1 should be red; I_2 , green.

more voltage to pull a relay in than it takes to hold it in. With the relay operating as close to the critical fall-out point as possible, it is much more sensitive to slight changes in voltage. However, after it has fallen out, it will take a comparatively large voltage to close it again — more voltage than is available across the relay and variable resistor. By putting a momentary-contact switch in to short out the variable resistor, we can momentarily put the entire voltage across the relay, closing it and setting it up for another alarm.

Construction

Construction of this unit is so easy that it takes more time to tell about it than to build it. The first thing to do is to make the connections to the BC set. The B+ lead from the second i.f. transformer is broken and a 3.3K 1-watt resistor is inserted. (Incidentally, there is nothing sacred about the value 3.3K. It was just a handy one and is within the range that will provide proper

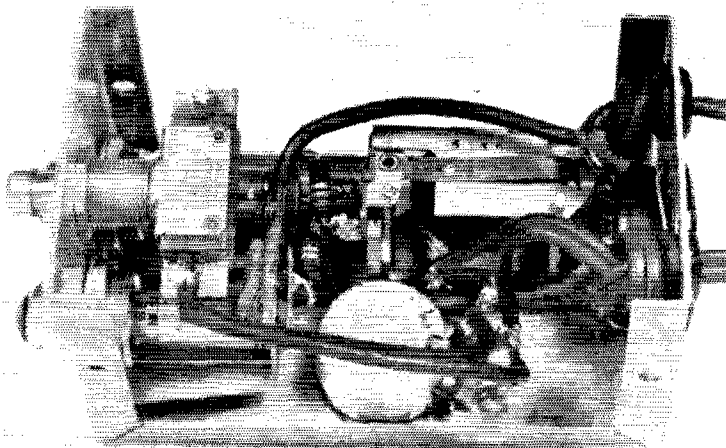
operation of the relay without hurting the operation of the BC set.) Wires to this resistor are run from the plate side of the alarm unit and the common ground of the receiver. (A good place to find the common ground is the cathode of the detector-first audio tube, usually a 12SQ7 or similar.) Wiring of the unit is completely straightforward. Be sure to use adequate insulation so that there will be no false alarms due to shorts. Any practical mechanical layout can be used; I used a $2\frac{1}{4} \times 2\frac{1}{4} \times 4$ -inch ICA "Flexi-mount" box with four rubber grommets in the bottom for feet. The mechanical construction is apparent from the pictures.

Adjustment

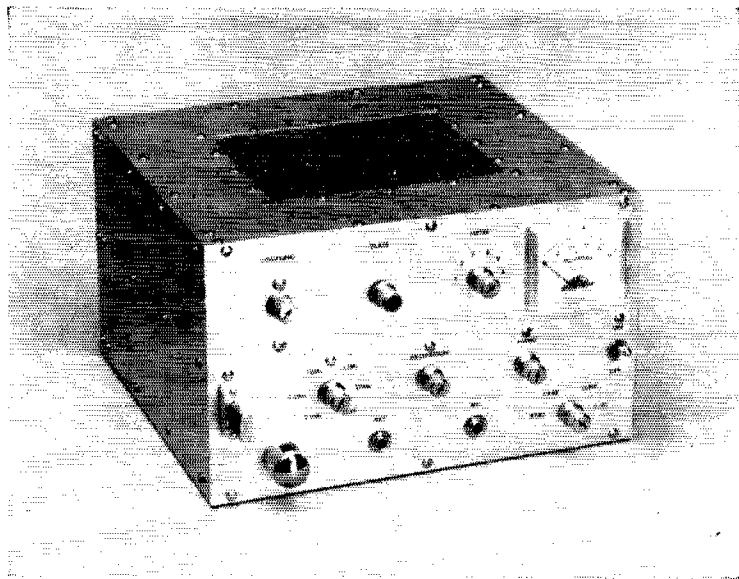
When the construction has been completed and the wiring checked, it is time to adjust the beast. The radio and alarm unit are plugged in, the radio turned on and set to a station, and the variable resistor on the alarm unit turned to zero resistance. The relay will close, turning on the green pilot light. The variable resistor is then turned toward maximum resistance until the relay just falls out, turning off the green light and turning on the red one. It is then turned back just a hair. Pushing the reset button will close the relay, turning the green light back on. The relay should remain closed when the reset button is released. If not, there is too much resistance in the relay circuit and compensation should be made. If the relay stays closed when the reset button is released, try tuning the radio away from the station. The relay should open, turning off the green light and turning on the red light. The operating conditions can be defined in this manner: with a BC station tuned in and the reset button having been pressed, the relay will be closed and the green light and power socket will be on. With no station tuned in, the relay will open, turning off the socket and green light and turning on the red light. The variable resistor should be adjusted to meet these conditions.

(Continued on page 144)

◆
Inside view of the Alert Alarm. Cords to the broadcast receiver and a.c. line, and the transmitter power receptacle, are at the right-hand end.
◆



BY C. VERNON CHAMBERS,* WIJEQ



The ARRL Model 6-60-90 is 6½ inches high, 11 inches wide and 10 inches deep. Controls are identified in Fig. 2. The control knobs and the plastic-front meter are softly illuminated by the hooded pilot lamp in the lower left-hand corner. Perforated aluminum, fastened over cutouts in the cover and bottom plate (latter not shown), provide ventilation. Tuning knobs are National type HRM.

The A.R.R.L. Model 6-60-90 Mobile Transmitter

INQUIRIES ADDRESSED to the League's Technical Information Service indicate that many mobile fans want their *next* transmitters to be somewhat more advanced than the one- or two-band 10-watters that they are now using. Not that the run-of-the-mill low-power phone rig does not do a good job in a car; it's just that we often tire of limited frequency coverage, real low power and the general lack of flexibility necessitated by simple design.

In the Model 6-60-90 we have included a number of refinements or operating conveniences that add to the pleasure of mobile operation. Band-switching throughout the 3.5- to 28-Mc. range is accomplished by the throw of a single switch, and the circuitry that permits this rapid band changing involves no ganged r.f. tuning capacitors or similarly complicated methods. The use of an external tubeless-type v.f.o. is provided for and there are only two tuning controls to manipulate in moving around within a band when crystal control is used. An excitation control, meter switching and a convenient means for adjusting and measuring the amplifier-tube screen voltage offer obvious advantages.

Also included is push-to-talk control of a built-in antenna change-over relay having spare contacts that may be used for power-supply switching and receiver muting. A 30-watt modulator, complete with speech amplifier, is an integral part

* Technical Assistant, QST.

of the transmitter, and a key jack and clamper tube permit c.w. operation. A switch sets up the rig for either carbon- or crystal-microphone input, for frequency spotting of the oscillator signal without putting the entire rig on the air and, in the fourth position, shorts the secondary of the modulation transformer during c.w. work.

The transmitter as described is wired with a 12-volt heater circuit. It may be connected for use with a 6-volt car system by making a few simple modifications (see data to follow). Incidentally, either the 6- or 12-volt version may be used as a fixed-station unit with an a.c. supply, providing that d.c. is available for the change-over relay. An a.c. relay could be installed — or the relay eliminated completely — if the transmitter is not to be used mobile.

Power Requirements

Power requirements for the transmitter are as follows: The heaters and relay need 6.3 volts at approximately 7 amperes or 12.6 volts at 3.5 amperes for the heaters and relay. The exciter-speech-amplifier supply should deliver 275 to 300 volts at 80 or more milliamperes (including the modulator screen-grid drain). A 300-volt 150-ma. supply will handle the modulator tubes (plate-current drain) and either a 2E26 or a 6893 final. The supply ratings should be increased to 600 volts at 160 ma. if either type of r.f. tube is to be operated at maximum IMS (Intermittent Mobile Service) ratings. A 400-volt 200-ma. supply may be used with the modulator and r.f. amplifier when the output tube is either a 6146 or a 6883. A 600-volt supply at a minimum of 200 ma. is required if either of the latter r.f. tubes is to be operated at maximum ICAS phone ratings. Anyone interested in using the 6146 or its 12-volt counterpart at maximum ICAS c.w. ratings will need a supply delivering 750 volts at 130 ma. If the 750-volt supply is used, it is advisable to provide means for removing plate and screen voltage from the modulator tubes.

R.F. Circuit

The circuit diagram of the transmitter is shown in Fig. 1. The grid-plate type oscillator uses 3.5-Mc. crystals, or the input may be connected to a remotely-tuned v.f.o. tuning unit¹ by means of RG-22/U coaxial cable terminated at J_1 . The grid-to-cathode excitation-control capacitance for V_1 is provided by a 9 $\frac{1}{4}$ -inch length of RG-22/U (effective capacitance approximately 15 μf . between conductors) used to connect the tube to the crystal socket, J_2 . The plate circuit of the oscillator is resonated at 3.5 Mc. by the slug-tuned coil L_1 . Regulator tubes V_9 and V_{10} stabilize the plate and screen voltage for the oscillator and need be installed only if v.f.o. operation is contemplated. R_1 may be eliminated if the regulators

NOTE: A combined full-scale enlargement of Figs. 2, 3 and 4, and 8 \times 10-inch prints of the photographs illustrating this article, are available at cost from Headquarters. The drawing is 50c while prints are \$1.50 each, postpaid. To avoid confusion and delay, identify the photo desired by page and view, and address to the attention of ARRL Technical Department.

¹ See ARRL Handbook.

are not used. In the latter case, feed power-supply voltage (275 to 300 volts) directly to the "B" terminal of the 100-ohm meter shunt, and to the screen of V_1 through a 22K, $\frac{1}{2}$ -watt resistor.

Capacitive coupling is used between the oscillator and the buffer-doubler tube. V_2 operates straight through with the transmitter tuned for output at 3.5 and 7 Mc. and is used as a frequency doubler when the amplifier is tuned to 14 Mc. and above. It should be noticed that the band switch S_{1A} connects the output of the buffer-doubler directly to the 560- μf . grid-circuit by-pass capacitor when the switch is set at the 80-meter position.² This arrangement cured a "round-robin" sort of instability that occurred when all four r.f. stages were working at the same frequency and, at the same time, allows the transfer of sufficient excitation for driving V_3 at 3.5 Mc.

L_2 , resonant at 3.5 Mc., is connected to the buffer-doubler when S_{1A} is thrown to the 40-meter position. Without the coil, there is insufficient drive for V_3 when V_2 is doubling and, with the coil, there is more than enough drive. R_2 is therefore used as a loading resistor to reduce excitation for the driver-multiplier tube.

Coil Table

Coil	Freq. Mc.	Ind. Range, μh .	Type No. ¹
L_1, L_2, L_5	3.5	36-64	120-F
V_3, L_6	7	9-18	120-D
L_4	6.7	18-36	120-E
L_7	14	2.7-4.5	1000-C
L_8	21	1-1.6	1000-A
L_9	27	1-1.6	1000-A
L_{10}	28	0.7-1.2	1000-A ²

¹ North Hills Electric Co. Inc., Type number.

² Type indicated with 2 turns removed

L_{11} — 3.5-28 Mc.: 15.4 μh .; 31 turns No. 14 wire, 1 $\frac{1}{2}$ inches diam., 3 $\frac{1}{4}$ inches long; 23 turns spaced 12 t.p.i., 8 turns spaced 6 t.p.i. (P4 Air Dux No. 1212D6 with 2 and 3 turns removed at the 6-t.p.i. and 12-t.p.i. ends, respectively. Taps counted from 12-t.p.i. end of coil: 7 Mc., 11 $\frac{1}{2}$ turns; 14 Mc., 18 $\frac{3}{4}$ turns; 21 Mc., 23 $\frac{1}{4}$ turns; 27-28 Mc., 26 $\frac{1}{2}$ turns. Approximate active inductance (μh .) at 3.5, 7, 14, 21 and 27-28 Mc. is 15.4, 7.5, 3.75, 2.5 and 1.65, respectively.

L_{12} — 5 turns No. 16 tinned, $\frac{1}{4}$ -inch diam., turns spaced wire diam.

The 7-Mc. plate coil, L_3 , becomes active in the 10-, 15- and 20-meter positions of the band switch. A separate coil, L_4 , is resonant at 6.74 Mc. and is used when the rig is switched to 27 Mc. Because of the somewhat reduced efficiency of V_2 when operated as a doubler, it is not necessary to use resistive loading across either L_3 or L_4 . Capacitive coupling is used between V_2 and V_3 .

The driver-multiplier tube, V_3 , works straight through at 3.5 Mc. and as a doubler to 7 and 14 Mc.; it triples to 21 Mc., and quadruples to 28 Mc. S_{1B} is the driver plate-circuit band switch, and inductors L_5 through L_{10} are individually resonated in the 3.5-, 7-, 14-, 21-, 27- and 28-Mc.

² The grid is actually tapped onto a capacitive divider formed by the 560- μf . capacitor in series with the 100- μf . interstage coupling capacitor.

DRIVER-MULTIPLIER

BUFFER-DCUBLER

OSCILLATOR

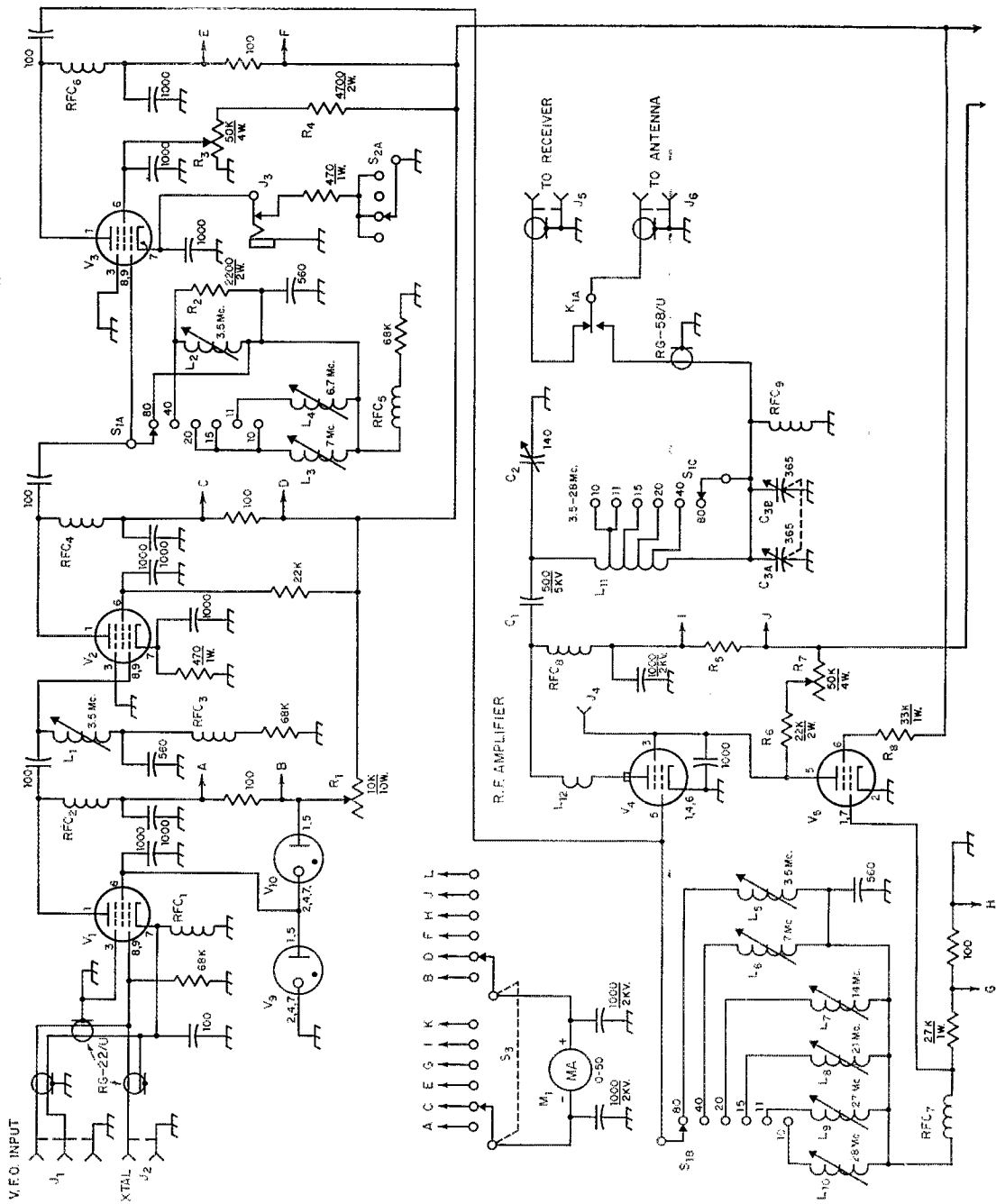
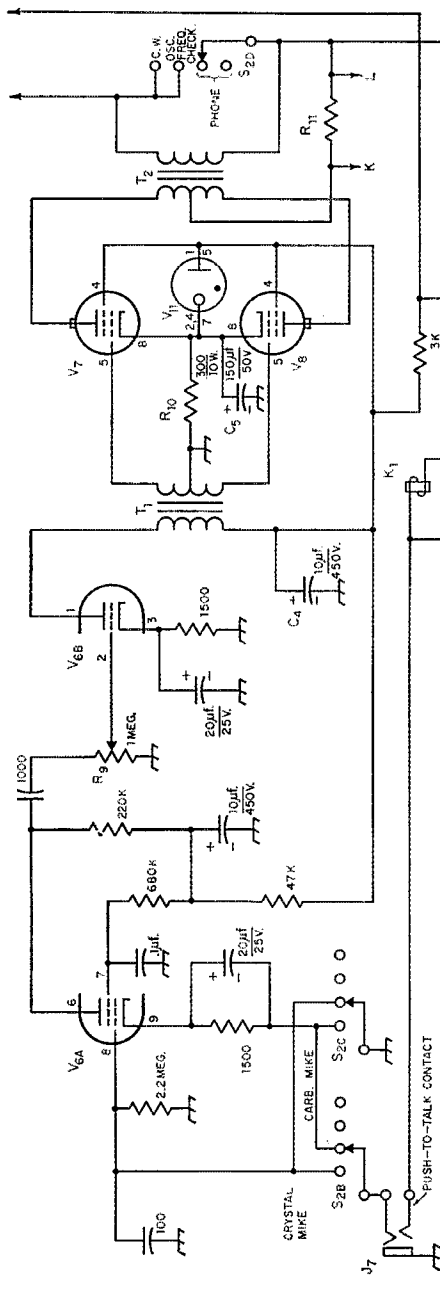


Fig. 1—Circuit diagram of the six-band mobile transmitter. Unless otherwise indicated, capacitances are in $\mu\text{f.}$, resistances are in ohms, resistors are $\frac{1}{2}$ watt. Capacitors marked with polarity are electrolytic. All 1000- $\mu\text{f.}$ capacitors are disk ceramic; all 100- $\mu\text{f.}$ and 500- $\mu\text{f.}$ unit- are tubular ceramic. S₂ is the function switch.

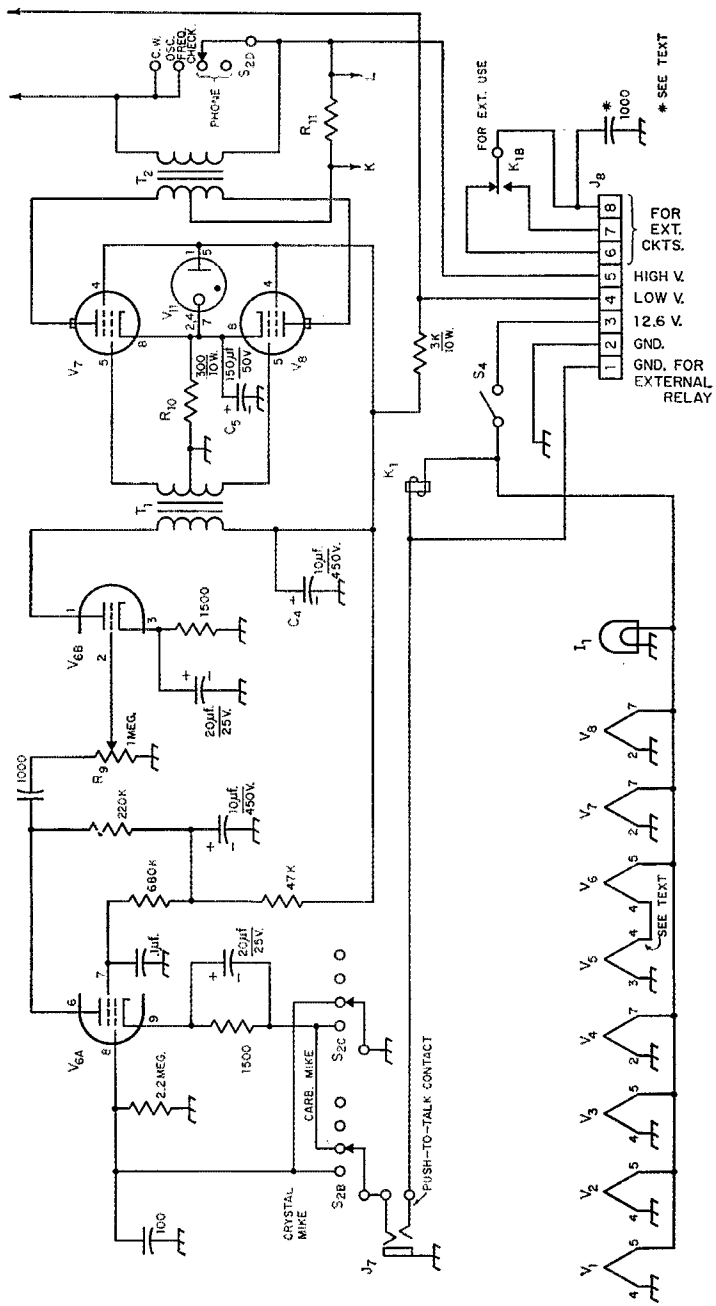
SPEECH AMPLIFIER



- V₁, V₂, V₃ — 5763 (0 v.); 6417 (12 v.).
- V₄ — 2E26 or 6146 (6 v.); 6893 or 6883 (12 v.).
- V₅ — 6AO5 (see text).
- V₆ — 6AN6 (see text).
- V₇, V₈ — 6BQ6/TB/6CL6 (6 v.); 12BQ6/TB/12CL6 (12 v.).
- V₉, V₁₀ — 0A2.
- V₁₁ — 0A2.

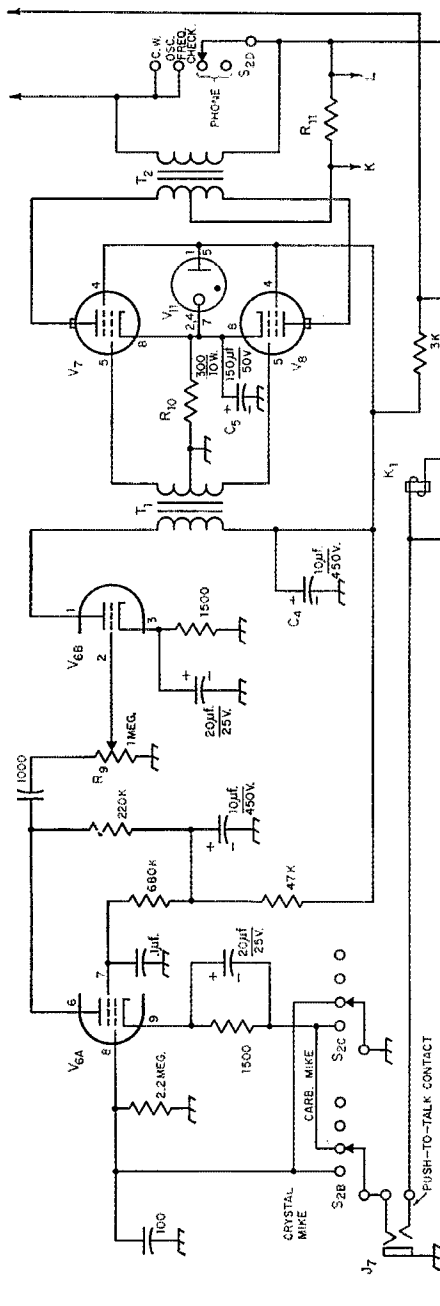
Note: D.c. voltages in parentheses above indicate heater voltages of tubes.

MODULATOR



- RFC₁ through RFC₇ — 750 μh. r.f. choke (National R33-750).
- RFC₈ — 2.5 mh. r.f. choke (National R-300S).
- RFC₉ — 2.5-mh. r.f. choke (National R-64).
- S₁ — 3-pole 6-position non-shorting selector switch (3 Centralab type PA-17 steatite wafers mounted on Centralab PA-302 index assembly; see text).
- S₂ — 4-pole 5-position (4 used) non-shorting phenolic selector switch (Centralab type PA-1013).
- S₃ — 2-pole 6-position non-shorting phenolic selector switch (2 Centralab type PA-31 wafers mounted on Centralab PA-300 index assembly).
- S₄ — S.p.s.t. toggle switch.
- T₁ — Interstage audio, single plate to p-p grids; pri. to total sec. ratio 1 to 3 (Thorlarsen 20A22).
- T₂ — Universal 30-watt modulation transformer (UTC S19).

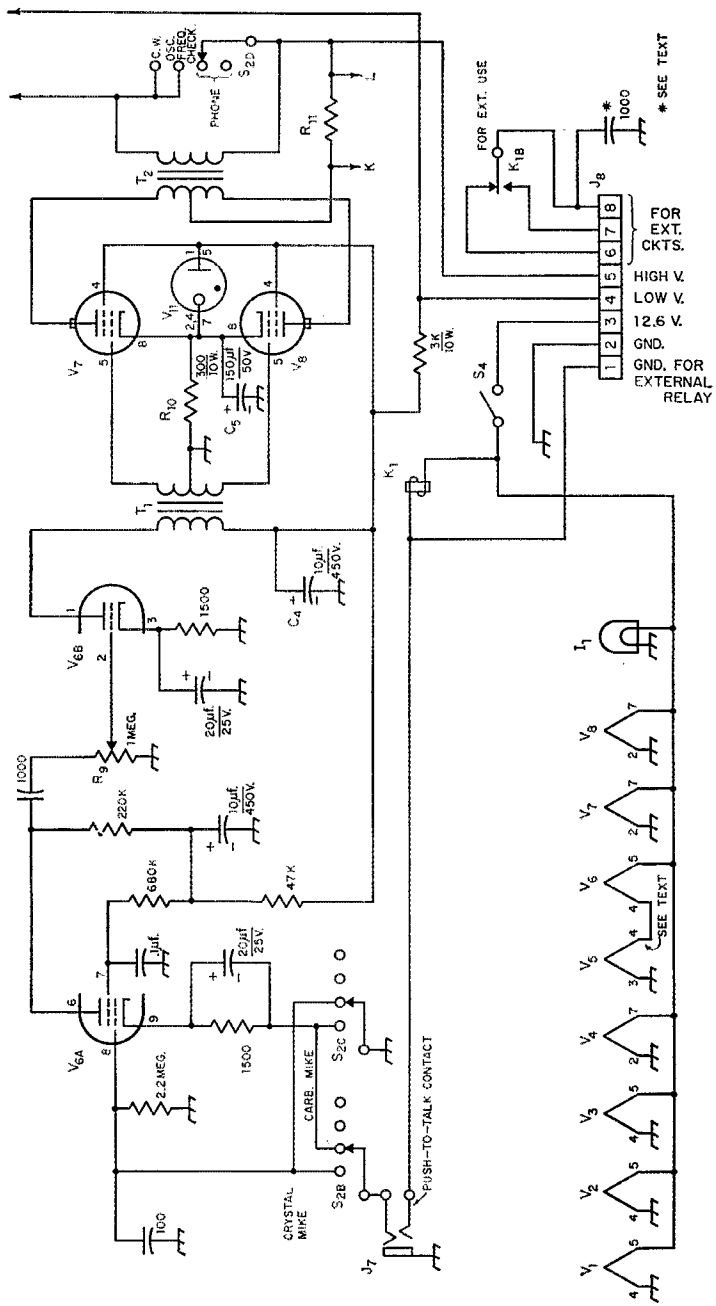
SPEECH AMPLIFIER



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- T₁ — Interstage audio, single plate to p-p grids; pri. to total sec. ratio 1 to 3 (Thorlarsen 20A22).
- T₂ — Universal 30-watt modulation transformer (UTC S19).

- K₁ — D.p.d.t. relay (Potter & Brumfield KAL1D 6- or 12-volt coil).
- L₁ through L₁₂ — See coil table.
- M₁ — 0-50 d.c. milliammeter (Triplett 227-PL, 2 ohms).
- R₁ — 10,000-ohm 10-watt adjustable.
- R₂ — 2500 ohms, 2 watts.
- R₃, R₇ — 50,000-ohm 4-watt potentiometer (Mallory M50MPK).
- R₄ — 4700 ohms, 2 watts.
- R₅, R₁₀ — 4-times meter shunt; approx. 56 inches No. watt resistor.
- R₆ — 22,000 ohms, 2 watts.
- R₈ — 33,000 ohms, 1 watt.
- R₉ — 1-megohm potentiometer.
- R₁₀ — 300 ohms 10 watts.

bands. R_4 is a limiting resistor that prevents the screen voltage for V_3 from exceeding 250 volts when the excitation control R_3 is advanced to the maximum-output position. J_3 is the key jack and S_{2A} has an open position which disables the driver-multiplier during oscillator-frequency spotting on the mobile receiver.

The r.f. amplifier is capacitively-coupled to the driver and uses a pi-section plate tank. C_2 and C_3 are the plate tuning and output-loading capacitors, respectively. R_6 is a fixed screen-dropping resistor and K_7 provides a convenient means for adjusting screen voltage during initial tune-up or when otherwise necessary. A tip jack, J_4 , facilitates screen-voltage measurements with an external test meter. L_{12} is a v.h.f. parasitic suppressor and RFC_8 is the plate-circuit parallel-feed choke. Receptacles J_5 and J_6 accommodate coaxial feed lines to the receiver and the whip antenna, respectively. Contacts K_{1A} of the change-over relay connect the antenna to the amplifier tank when the relay is activated by the push-to-talk switch on the microphone.

A screen-clamper tube, V_5 , prevents excessive plate dissipation when excitation is removed from the amplifier tube by keying, oscillator-frequency checking (S_{2A} in the open position) or failure within the exciter. The effectiveness of the 6AQ5 as a clamper is improved by taking its screen voltage from the exciter supply rather than from the screen dropping resistor R_6 .³

Modulator

The Class AB modulator uses TV sweep-type tubes and is driven by a 6AN8 speech amplifier. It differs from the unit described previously by WICUT⁴ only in that it has an input circuit designed for either carbon or crystal microphones.⁵ J_7 is the microphone jack, and switch sections S_{2B} and S_{2C} connect the input stage either as a grounded-grid amplifier for use with a carbon microphone, or as a pentode amplifier for a crystal microphone. R_9 is the audio gain control and S_{2D} shorts the secondary of the modulation transformer during oscillator-frequency spotting or c.w. operation.

Meter Circuit

A 0-50 d.c. milliammeter may be switched by S_3 to read plate current of each r.f. stage, the modulator tubes, or the grid current of the r.f. amplifier. R_5 and R_{11} in the amplifier and modulator plate-voltage leads are homemade shunts that multiply the meter reading by 4 (full scale 200 milliamperes). They are made with approximately 56 inches of No. 30 enameled wire scramble-wound on $\frac{1}{2}$ -watt resistors.

Heater Circuit

The lower left-hand corner of Fig. 1 shows the 12-volt heater circuit for the transmitter. Notice

that V_5 and V_6 are connected in series across the d.c. input line. This is permissible because the 6AN8 and the 6AQ5 draw identical values of heater current. Little would be gained by substituting a 12AQ5 for the 6-volt model because it would then be necessary to add a series dropping resistor for V_6 . When wiring the heater circuit for 6-volt operation, it is, of course, necessary to connect *all* of the tubes in parallel. And don't forget to install a 6-volt relay with 6-volt supply.

Control Circuit

Battery voltage is applied, through S_4 , to the heater string, the pilot lamp and K_1 . The relay does not close (contacts are shown in the normally-open position) until the push-to-talk contacts of a microphone switch ground the relay winding through J_7 . The relay-control contact of J_7 is also returned to Prong 1 of the power receptacle, J_8 , in order that an external power or control relay may be activated by the microphone switch. Contacts K_{1B} of the change-over relay are connected to Prongs 6, 7 and 8 of J_8 for remote control and receiver muting.

Construction

Four types of aluminum — plain sheet, perforated sheet, angle stock, and square rod — are used in the construction of the transmitter and its cabinet. The specifications for the material used are as follows:

Plain sheet, 0.040 inch thick:

Panel — 6 $\frac{1}{2}$ by 11 inches

Chassis plate — 10 $\frac{1}{4}$ by 10 $\frac{7}{8}$ inches

Rear panel — 5 $\frac{5}{8}$ by 10 $\frac{1}{8}$ inches

Partitions (5) — 1 pc. 3 $\frac{1}{16}$ by 10 $\frac{7}{8}$ inches:

1 pc. 3 $\frac{1}{4}$ by 4 $\frac{3}{8}$ inches; 2 pcs. 2 $\frac{3}{4}$ by 3 $\frac{1}{4}$ inches; 1 pc. 2 by 2 $\frac{1}{4}$ inches.

Cabinet

2 pcs. (top and bottom) — 10 by 11 inches

2 pcs. (sides) — 6 $\frac{1}{16}$ by 10 inches

Plain sheet, 0.091 inch thick:

Deck for V_4 — 2 $\frac{3}{4}$ by 2 $\frac{3}{4}$ inches

Deck for V_7 and V_8 — 2 by 3 inches

Perforated aluminum sheet for top and bottom cover; (Reynolds do-it-yourself-type):

2 pcs. — 6 by 7 inches

Angle stock: Approximately 7 feet, $\frac{1}{2}$ by $\frac{1}{2}$ by $\frac{1}{16}$ inch

Square rod: Approximately 4 feet, $\frac{1}{4}$ by $\frac{1}{4}$ inch

Note: Dimensions given for plain sheet include material for the mounting lips where required.

The photographs along with Figs. 2, 3 and 4 identify all major components and furnish critical dimensions used in construction of the transmitter. Holes for the mounting screws for such items as tube sockets, transformers, etc., are not shown because these parts may be used as templates for marking purposes.

As indicated in Figs. 2, 3 and 4, the chassis has a $\frac{3}{8}$ -inch lip at the front for fastening to the panel and, at the rear, it is attached to the $\frac{1}{2}$ × $\frac{1}{2}$ -inch angle that runs the width of the rear panel. If dimensions for the chassis and the rear panel are closely followed, the transmitter will slip into the cabinet without binding and the

³ Haner, "Tetrode Circuit for Clamper Tubes," *QST*, Jan., 1953 (Hints & Kinks).

⁴ "6AN8-6BQ6 Modulator," *A.R.R.L. Handbook*.

⁵ Phillips, "Input Circuit for Either Crystal or Carbon Microphones," *QST*, July, 1955 (Hints & Kinks).

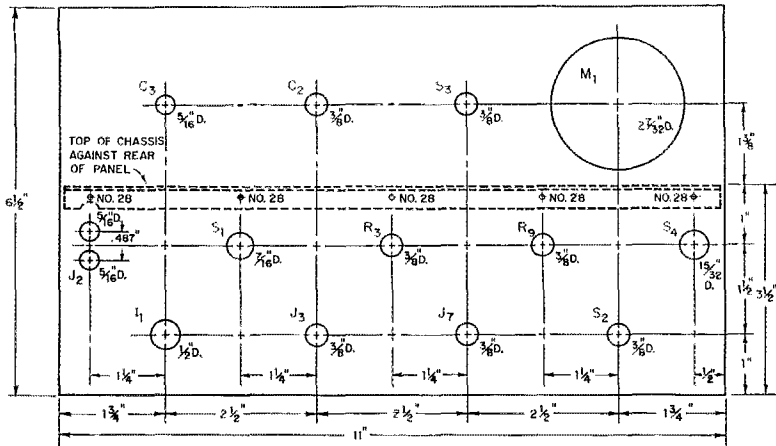


Fig. 2 — Layout drawing of the panel (front view) for the mobile transmitter.

panel edges will line up flush with the outer edges of the cover as illustrated in the front view. The rear panel is purposely made smaller than the control panel to prevent binding when the unit is being inserted in the case. Although not shown in the photographs, the gap between rear panel and cabinet is tightly sealed by lengths of $1\frac{1}{2} \times \frac{1}{2}$ -inch angle fastened against the inside rear edges of the cabinet.

Most of the broadcast-type variable capacitors, such as C_3 , are not designed for panel mounting. They do have holes in the front frame that may be enlarged a bit and then tapped for 8-32 machine screws. The collar at the frame end of the control shaft prevents flush mounting against the panel, so spacers must be used in between the panel and the capacitor.

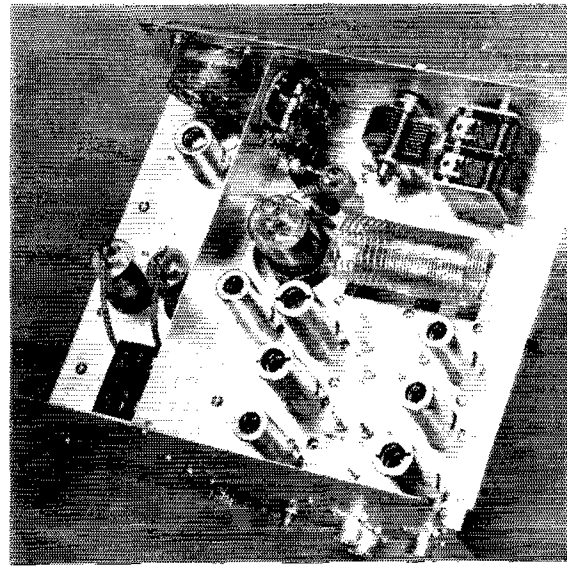
The top view of the transmitter shows L_{11} mounted above deck on $\frac{3}{8}$ -inch spacers. The plastic mounting strip that supports the coil is supplied with the Pi Air Dux unit. Holes made with a No. 10 drill will accommodate the mounting bushings for the slug-tuned coils, L_1 through L_{10} , but it is advisable to mark and drill these holes only after the band switch and partitions (see bottom views) have been mounted. A feed-through insulator above and to the right of L_{11} permits connection between C_3 , L_{11} and the tank

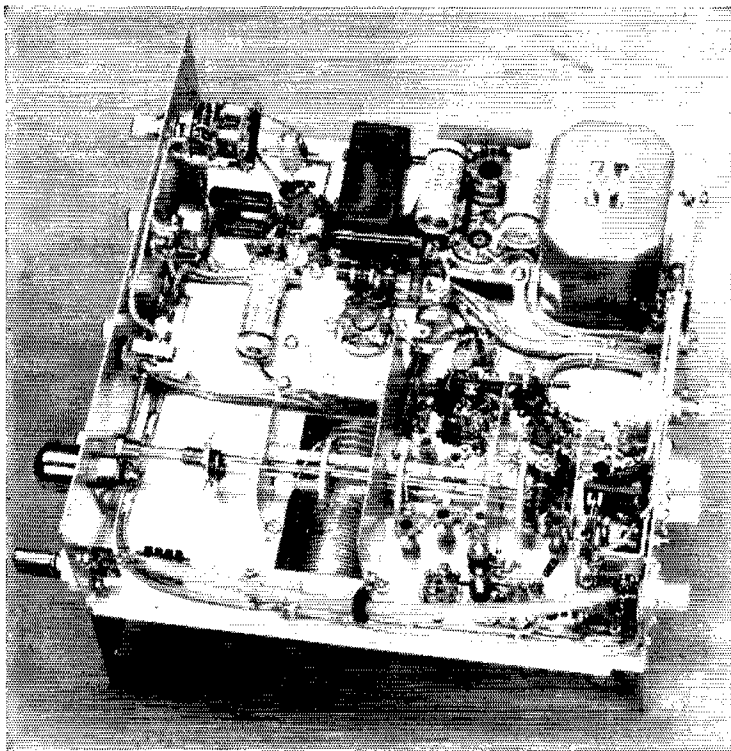
components located below. The sockets for V_4 , V_7 and V_8 are mounted on flat plates fastened to the bottom side of the chassis with the result that a reduction of $\frac{3}{4}$ inch is obtained in the over-all height of the transmitter.

The platform that supports V_7 and V_8 (seen in the full bottom view) is 2 inches wide and 3 inches high. The wedge-shaped shelf for V_4 is $2\frac{3}{4}$ inches wide at one end and tapers down to $1\frac{1}{2}$ inches at the other. Both this shelf and the one for V_7 and V_8 are mounted on $\frac{3}{4}$ -inch spacers. Along the bottom side of the photograph may be seen the length of RC-22/U used as the excitation-control capacitor for the oscillator tube and also as the lead between V_1 and the crystal socket. At the front-panel end, one of the coaxial conductors floats free (electrically) as indicated in Fig. 1. A rubber grommet, clamped to the partition to the right of L_{11} by means of a soldering lug, supports the coax at the center of its length.

An enlarged bottom view of the r.f. section shows clearly how the band switch is supported on the shields or partitions between r.f. stages. The partition at the left is 2 inches wide, the one to the right of the chassis cutout is $4\frac{5}{8}$ inches wide, and the two at the right are $2\frac{3}{4}$ inches wide. Each partition has a $\frac{1}{4}$ -inch mounting lip at the

This view of the mobile transmitter shows the audio section at the left, separated from the r.f. compartment by a partition ($2\frac{1}{8}$ inches high) that runs between the front and rear panels. Meter shunts are mounted on the terminals of S_3 , and C_1 is supported by a $1\frac{1}{2}$ -inch cone insulator at the right of RFCs. Components mounted on the chassis and rear panel are identified in Figs. 3 and 4, respectively. This view shows a type 6883 (12-volt version of the type 6L46) inserted in the submounted amplifier-tube socket.





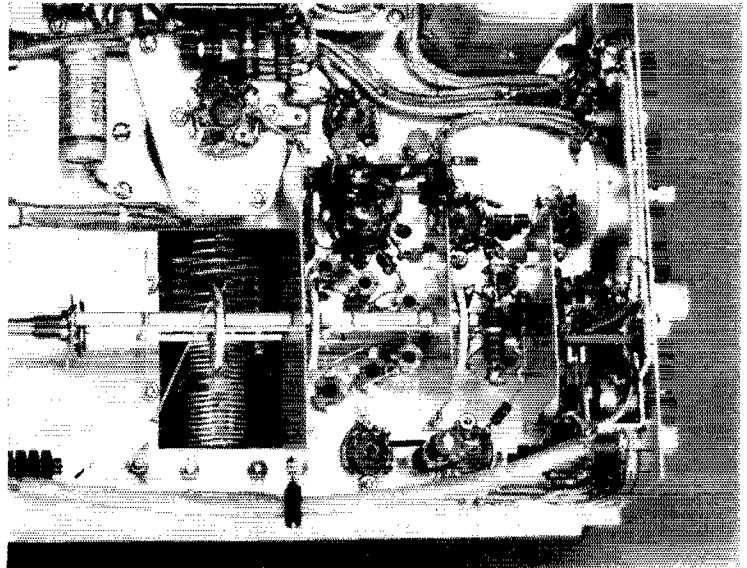
The phone-c.w. switch and the audio-gain control are located on the panel at the upper left as seen in this bottom view of the mobile transmitter. The socket for the 6AN8 is between the panel and T_1 in the upper left-hand corner. C_4 , C_5 , R_{10} and the tube sockets for I_7 and I_8 are mounted on the platform to the left of the modulation transformer. The plate below T_1 supports I_4 as well as tie-point strips for R_4 , R_6 , R_8 , the 3K 10-watt resistor and associated B-plus wiring. The shaft of the band switch, S_1 , passes through a panel bushing at the lower left and the main part of the switch is supported by aluminum partitions to the left and right of the cutout for L_{11} , and by the partition that separates L_2 , L_3 and L_4 (right side) from L_5 through L_{10} .

bottom for fastening to the chassis, and each one is drilled to clear the tie rods and the control shaft for the band switch. To provide room for the slug-tuned coils, be sure to locate the holes in a manner which will place one tie rod above the other as seen when looking straight down into the chassis. Also, make sure that the holes in the partitions allow the switch shaft to line up with

the bearing in the front panel. One way to assure proper alignment is to bend the shields to shape and then hold them firmly, one by one, against the rear side of the front panel while the control-shaft clearance holes are marked.

Before assembling the band switch, mount a feed-through bushing in the walls that separate the two r.f. stages at the right end of the chassis

In this bottom view of the r.f. section, S_{1C} is centered over L_{11} at the left end of the assembly. S_{1B} is in the driver-multiplier section (the one with 6 coils), and S_{1A} (buffer-doubler stage) is to the left of L_2 , L_3 , L_4 , R_2 and RFC_5 . The oscillator components at the right end of the chassis are partially hidden by K_1 . RG-22/U, with the outer insulation and braid removed, is connected between I_1 and the panel-mounted crystal socket. Tie-point strips above and to the left of the socket for I_3 (driver tube) facilitate the mounting of RFC_4 , RFC_6 , RFC_7 , their associated by-pass capacitors, and the screen resistor for I_2 . R_1 is mounted between the sockets for I_9 (left) and I_{10} at the bottom of the chassis.



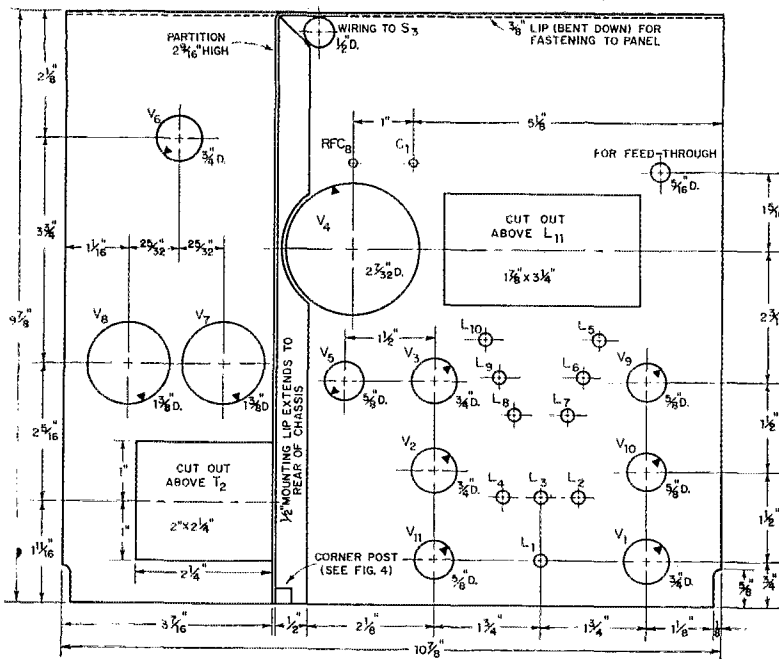


Fig. 3—The plan for the top side of the chassis. The lip at the front of the chassis is for fastening to the panel as illustrated in Fig. 2. The partition that separates the audio and the r.f. sections has a 1-inch lip that is clamped to the panel by the meter switch, S_3 . At the rear of the chassis the partition is fastened to a $1/4 \times 1/4$ -inch corner post (see Fig. 4). The triangle in each socket hole indicates the position of Prong 1 of the socket (as seen from the top). T_1 should be mounted between J_3 and L_7 - J_8 on the bottom side of the chassis. The $1/8 \times 1/2$ -inch notches at the lower corners provide clearance for the $1/2 \times 1/2$ -inch angle located inside the rear end of the cabinet.

(see bottom view of the r.f. section). The National type TPB bushings shown set in the two right-hand partitions in the photograph carry the plate-to-grid leads for V_1 , V_2 and V_3 .

In giving instructions for assembling the band switch, we shall refer to the three partitions starting at the left (bottom view), as A, B and C. Spacers used in assembling the switch and the partitions provide the following separations between members: Index to A, A to S_{1C} , and S_{1C} to B, each 1 inch; B to S_{1B} , $1/4$ inch; S_{1B} to C, $1 1/16$ inches; C to S_{1A} , $2 1/16$ inch. Dimensions listed include a fiber washer (supplied with the index) placed at each end of each ceramic spacer.

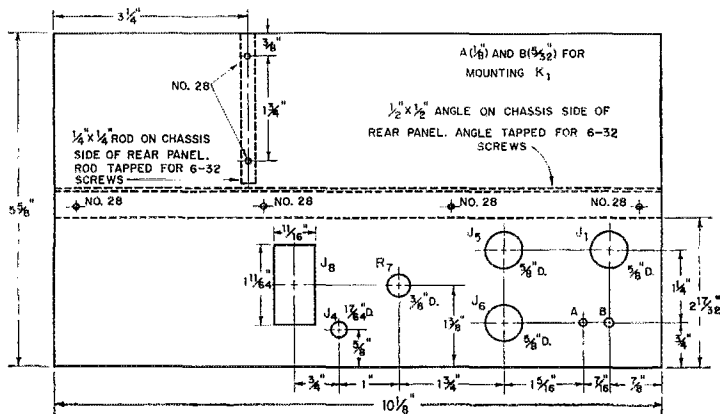
After the band switch has been assembled, position it on the chassis, mark and drill mounting holes for the three partitions, and then fasten the assembly in place. Now, mount the fourth

partition—the one in between L_1 and L_2 / J_3 / L_4 — $1 1/2$ inches to the right (as seen in the bottom views) of partition C. Locations of the mounting holes for L_1 through L_{10} may now be determined by referring to the photographs and Fig. 3.

R.F. leads are made with No. 16 tinned wire wherever practical. Belden type 8885 shielded wire is used for the d.c. and the audio leads. For simplicity in the diagram, a 0.001- μ f. TV1 bypass is shown only at Terminal 8 of J_8 . All other terminals of J_8 (except Terminal 2) should be similarly bypassed. The capacitor at Terminal 5 should have a rating of 2000 volts.

Connections to the primary and secondary windings of the modulation transformer, T_2 , will be determined by the modulating impedance or load resistance presented to the modulator by the r.f. amplifier. This value is in turn determined

Fig. 4—Layout drawing for the rear panel (outside view) for the mobile transmitter. The rear of the chassis should be bolted to the top side of the $1/2 \times 1/2$ -inch angle that runs the width of the panel. The $1/4 \times 1/4$ -inch rod at the upper left serves as the corner post for the main-chassis partition.



by the plate voltage applied to the r.f. stage and by the current that the stage draws. After these values are established, use the simple formula given in Chapter 10 of the *Handbook* (look under Amplitude Modulation Methods), and the data sheet supplied with the transformer to determine proper connections. The plate-to-plate load required for the modulator tubes is approximately 4000 ohms.

Enclosure

The cabinet for the transmitter should be built "around the transmitter." Remove material from the top and bottom plates to provide ventilation openings that will be covered (on the inside) with the perforated stock, and then use strips of $\frac{1}{2} \times \frac{1}{2}$ -inch angle to fasten the top, bottom and sides together. Lengths of $\frac{1}{4} \times \frac{1}{4}$ -inch square rod should be fastened across the front inside surfaces of the top and bottom plates. These rods should be drilled and tapped to accommodate screws that will pass through the panel when the transmitter is slipped into the finished case. A $\frac{1}{4} \times \frac{1}{4}$ -inch runner should also extend down the inside length of each side member. Place these so that the under side of the transmitter chassis will have supports to rest on. Encircle the opening at the rear of the cabinet with lengths of $\frac{1}{2} \times \frac{1}{2}$ -inch angle; the rear panel of the transmitter will butt against these angles and close the gaps that would otherwise exist.

Testing

An a.c. heater supply may be used during bench testing of the transmitter. If a filament transformer is used, it is advisable to disconnect temporarily the input lead to the relay winding. Also, wedge the relay contacts in the transmit position with a wad of paper or a block of wood. Low- and high-voltage power supplies (or a single supply capable of handling the entire transmitter) must be available, as well as crystals, microphone, and a dummy load, preferably one offering a pure resistance of 50 ohms throughout the tuning range of the transmitter.

The ideal selection of crystals would provide frequencies for the low and high ends of each band (3.5 through 28 Mc.). A more reasonable selection is one including frequencies for the high and low ends of 80 meters as well as harmonics at the approximate centers of the 7- and 28-Mc. bands. Of course, if you contemplate no c.w. operation, "band centers" at 7 Mc. and above may be considered as the middle of each phone segment.

To test the exciter stages proceed as follows: Insert a crystal cut for one end of the 80-meter band, set S_2 and S_3 at the c.w., and amplifier grid-current positions, respectively; set R_3 at the maximum excitation position, and remove the 6AQ5 clamper and the modulator tubes from their sockets. The high-voltage supply should not be connected until the exciter section has been adjusted.

If the regulator tubes, V_9 and V_{10} , have been included in the oscillator circuit, it is necessary

to adjust the tap on R_1 . Use the maximum resistance between the tap and the B-plus line that will allow the tubes to continue to glow after the crystal has been removed from J_2 . Remember to switch-to-safety while adjusting the resistor.

Next, switch S_1 to the 80-meter position and apply power to the exciter. Now, tune L_1 and L_5 for maximum amplifier grid current. If you've been using a crystal cut for the low end of the band, replace it with one for the high end and recheck the current reading. If it is the same as before, no further adjustment of L_1 and L_5 is necessary. If the current does differ appreciably, alternately swap crystals while tuning the coils until approximately 5 milliamperes is obtained at both ends of the band.

Some will wonder why the two-crystal method of alignment is preferred to just plain peaking at a mid-band frequency. The answer is quite simple: If you have to go out and buy a 3750-ke. crystal, you end up with a rock that can be used for alignment of the rig, 80-meter c.w. work — and nothing else.

The band switch may now be set successively to the 7- and 28-Mc. positions, and the doubler- and multiplier-stage coils resonated. L_2 must resonate around 3.6 Mc. even though S_1 is set for 7-Mc. operation. L_3 is connected into the doubler plate circuit in the 14-, 21- and 28-Mc. positions of the band switch and the coil should resonate at approximately 7.2 Mc. Crystals in the 3370- to 3403-ke. range are used in 27-Mc. operation and L_4 should therefore resonate at 6.7 Mc.

It will probably be found that excitation for the final is considerably higher at 7 Mc. and above than it is at 3.5 Mc. This is because V_3 is driven by a tuned stage at frequencies above 3.5 Mc. In fact, the grid current for the amplifier may run as high as 10 ma. in the 7- and 21-Mc. range and, of course, it is a good idea to back off on the excitation control whenever the current exceeds 4 or 5 ma.

There is a possibility that initial tuning of the exciter stages will result in inadequate drive for the final at 28 Mc. Should this be the case, detune L_6 to the low-inductance side of the previous adjustment (the peaked setting for maximum 7-Mc. excitation). Even though the diagram shows L_6 to be floating free with S_{1B} set for 28 Mc., the coil and the stray capacitance of the switch may form a 28-Mc. series trap shunting the grid circuit of the amplifier. Because of the abundance of drive available at 7 Mc., it should be possible to detune L_6 enough to break up the 28-Mc. series resonance without reducing the 7-Mc. drive below an acceptable level — around 5 ma.

Plate-current readings for the exciter tubes will be dependent on the power-supply output voltage, the setting of the excitation control, and the band of operation. With a power-supply output of 300 volts and with the regulator tubes in use, the plate current for V_1 should be approximately 10 ma. and the current for V_2 and V_3 should not run much over 25 ma., even when the tubes are doubling and quadrupling, respectively.

(Continued on page 140)

A Simple Halo for 2-Meter Mobile Use

Making the Car-Radio Whip Serve as a Single-Wire Transmission Line

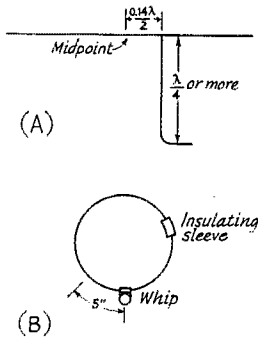
BY LOUIS D. BREETZ, * W3KZDZ/W8QLP

AFTER READING Tilton's article on v.h.f. mobile antennas in December *QST*, I wanted to try a halo antenna on 2 meters. I had been having many fine mobile contacts on 2 using a Gonset Communicator, on the car-radio whip adjusted to a length of nineteen inches. However, it seemed that, where horizontal antennas were in use at the home stations, the mobiles using various horizontal systems were covering greater distances.

One of the problems of the ham who wants to operate mobile is how to install an effective antenna without disturbing the car's normal furnishings. I wanted to use the existing feed-through arrangements for the broadcast antenna, and it occurred to me that perhaps the whip could serve as a combined support and feedline.

If a half-wave resonant antenna is fed at a point fourteen per cent from its midpoint, a single-wire feed may be used, as shown in Fig. 1A.

Fig. 1 — The principle of the single-wire feed system is shown at A. The feeder should run perpendicular to the antenna for at least a quarter wave length. The dipole is folded around to make a halo. B, and the car broadcast whip is used as a combined support and feedline, mounting the halo on the whip at five inches off center.



The characteristic impedances of the antenna and transmission are approximately equal at this point, so the feedline will not be the principal radiator. The line must run at right angles to the antenna for about a quarter wave length or more, so that the field from the antenna will not couple energy back into the feeder and disturb the impedance relationship.

To use the broadcast whip as part of the feedline, a resonant antenna was attached to the top of the whip and bent in a circle, as shown in Fig. 1B. The halo was made of $\frac{3}{32}$ -inch brass tubing, though stiff wire or $\frac{1}{8}$ -inch brass rod will do. The dipole was 34 inches long for resonance in the 2-meter band, and the optimum point for feeding was found to be five inches from the center. A heavy lug was soldered to the halo at this point. The ends of the dipole were inserted in an insulating sleeve and cemented for rigidity. Care should be taken to see that the ends do not touch each other.

The bead at the top of the whip was drilled out and a 4-40 brass bolt soldered into it. The head of the bolt was cut off, so that the halo lug could be slipped over it, and tightened in place with a nut. The proper length for the dipole can be determined with a grid-dip meter, and it will depend on the spacing between the element ends. The length of 34 inches is about right if the ends are close together. If the ends are well apart, and not held together by an insulator (as in the W1HDQ halo, page 11 of December *QST*), the length will be more nearly that of a normal half-wave dipole. The larger the diameter of the halo, the less critical will be the element length.

In the absence of a grid-dipper, the optimum element length and tap position may be found by experiment, juggling these until a combination is found that allows the length of the line (telescoping whip) to be varied without affecting the transmitter loading appreciably. At the proper tap position a neon lamp will glow at either element end and will extinguish at the middle of the dipole.

Obviously, there will be an appreciable mismatch between the coaxial line and the whip portion of the feed system, but very little power is lost in so short a line as the few feet necessary to run from the rig to the whip. Also, the impedance of the whip (serving as the transmission line) will be considerably lower than the nominal value of 500 to 600 ohms for the usual single-wire transmission line. Thus the s.w.r. may not be as high as expected, though the ultimate value will vary considerably with differing installations.

The main objective is to get as good a match as possible between the line (whip) and the antenna, so that the vertical portion of the system does not radiate too greatly. Some radiation from the whip may not be too harmful, as the polarization of the signals encountered in v.h.f. mobile work is likely to be far from pure horizontal.

Many tests under varying terrain conditions have demonstrated the value of this antenna, particularly in work with horizontally-polarized fixed stations. A contact was made by W3KZDZ/8, Youngstown, with W8WEN, Alliance, Ohio, over about a thirty-mile distance. Here the halo showed about 8 db. gain over the quarter-wave whip, vertical. Later, the author had a QSO with W8BTK, Hubbard, Ohio, over forty miles of the Ohio and Pennsylvania Turnpike. Farther east, W3BNC, Hagerstown, Md., was worked as far south as Gaithersburg, Md., about fifty miles over mountainous terrain. For the balance of the trip home contact was maintained with W3GKP, Spencerville, Md.

* 183 Joliet St. S.W., Washington 24, D. C.

High Performance on 6

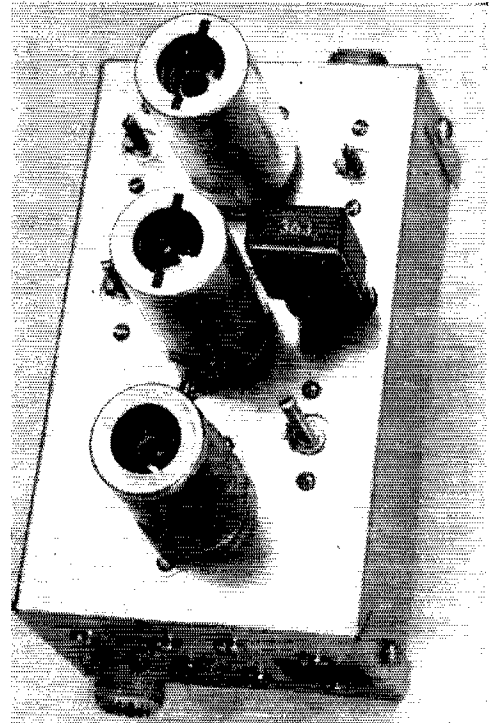
With 26-Mc. I.F.

A 50-Mc. Converter for the 75A- Series Receivers

BY LOUIS GERBERT,* W8NOH

MOST CONVERTERS described for home construction, and nearly all those available commercially, are designed for either 7 to 11 Mc. or 14 to 18 Mc. as the tunable i.f. range. There are good reasons for this, as far as most two-dial general-coverage receivers are concerned, but it leaves the owners of Collins 75A-series receivers out in the cold. Changing the intermediate frequency in a converter design is no great problem for the experienced v.h.f. constructor, but there may be quite a few fellows who would like explicit details on a 50-Mc. converter design, where the tuning range is 26 to 30

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The W8NOH 50-Mc. converter is a compact package, built in a $2\frac{1}{2} \times 3 \times 5\frac{1}{4}$ -inch box. Tubes, top to bottom, are 6BS8, 6U8 and 6AM4.

Mc., or some similar frequency spread near the 10-meter band.

Sometime ago the writer built and described a small 2-meter converter for use with a 75A

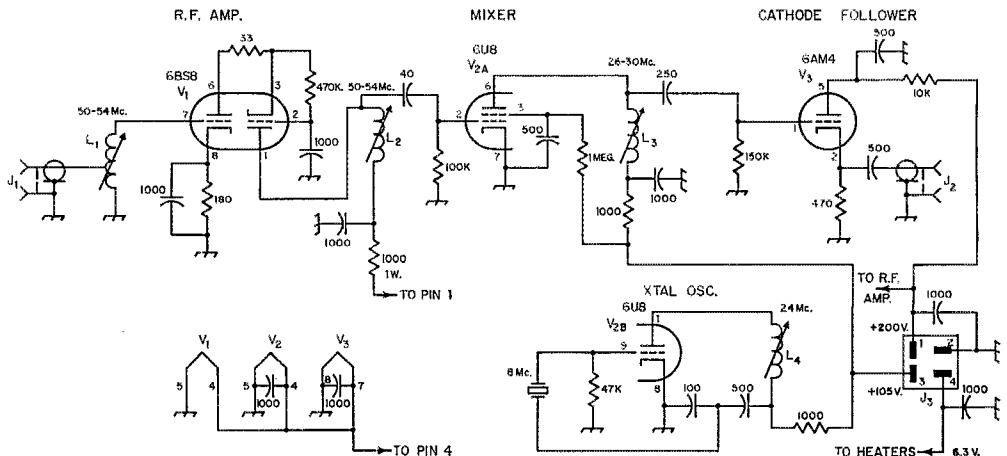


Fig. 1—Circuit diagram of the W8NOH 50-Mc. converter. Capacitor values are in $\mu\text{mf.}$, resistances in ohms. Resistors are $\frac{1}{2}$ -watt unless specified. Capacitors are ceramic. Coils are close-wound on $\frac{3}{8}$ -inch iron-slug forms (National NR-91 or NR-93).

J1, J2—Coaxial receptacle, female.
J3—4-pin power receptacle, male. (Female shown in photograph, but male type preferable.)

L1—12 t. No. 22 enamel. Tap at 4 t. up from cold end.
L2—10 t. No. 22 enamel.
L3—17 t. No. 30 enamel.
L4—20 t. No. 30 enamel.

receiver. It was compact and easy to get going, and it did a fine job. Since the description of it appeared in *QST*¹ I have received many requests for something along the same lines for 50 Mc.

A look through *QST* and the *Handbook* showed many good circuits and mechanical layouts, but none that quite fitted what I had in mind. By stealing a circuit idea in one place and a layout trick in another, the converter shown herewith evolved.

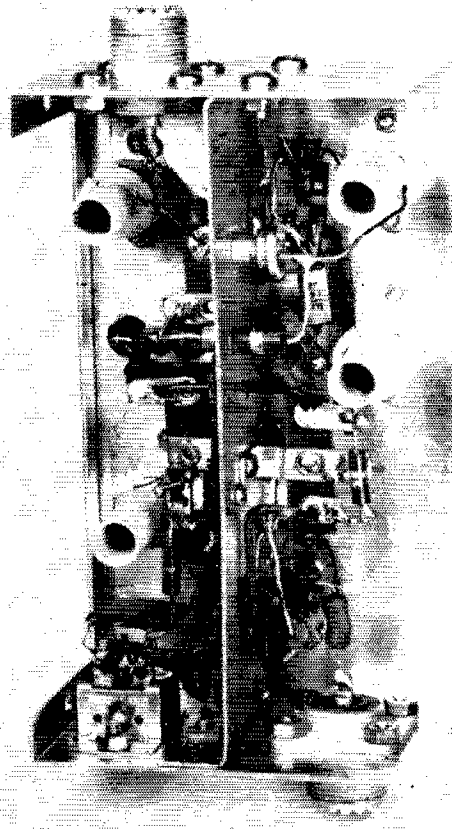
The first stage is a modified cascode, using a 6B8S. This tube does very well, both as to gain and noise figure. A 6U8 serves as combined mixer and crystal oscillator. The latter uses an 8000-ke. crystal, its third overtone supplying the injection on 24 Mc. A 24-Mc. overtone crystal could also be used. This is suitable for the 75A-1, 2, or 3, as 26 to 30 Mc. is obtainable with one movement of the band switch. With the 75A-4 two crystals are required if the entire 6-meter band is to be covered, as the 10-meter dial ranges are 28 to 29 and 29 to 30 Mc. The frequency difference in the oscillator is so slight that the same circuit constants shown here will work satisfactorily. Only the crystal frequencies need be different. A 22-Mc. injection frequency will allow you to tune 50 to 52 Mc. on the two band-switch positions of the 75A-4. If you want the top two megacycles of the band, change the crystal to 24 Mc.

The stage following the mixer could be almost any tube, as the function is that of cathode follower. I used a 6AM4, as I happened to have one around that was not doing anything. There are differences of opinion over the need for a cathode follower, but to me it seems a simple means of coupling from the mixer into the receiver in an uncritical manner. The coaxial line from the converter to the receiver can be any length without affecting the performance, and the cathode follower acts as an isolation stage, reducing interaction between the converter and receiver. It is well worth its small additional cost.

Now let's look at the layout of the converter. It is built on a standard Minibox, 2 $\frac{1}{4}$ by 3 by 5 $\frac{1}{4}$ inches in size. The three tube sockets are mounted along the center line of the top portion. Nothing is mounted on the bottom portion of the box. The assembly is divided along the middle by a shield of brass. (Copper would also be suitable, but the brass was on hand.) The center posts are all removed from the sockets, and the shield is cut to fit closely around each socket. Grounding is done to the shield throughout.

The tuned circuits use iron-slug forms. The input circuit, L_1 , is seen adjacent to the coaxial fitting for the antenna connection. The r.f. plate coil, L_2 , is on the opposite side of the shield. The other two coils are the oscillator tuned circuit, L_3 , and the mixer plate winding, L_4 . This is the other coil on the same side of the shield as the antenna input circuit. The power and coaxial output connectors are on the rear end of the box.

The parts layout and wiring are not particu-



Interior view of the 50-Mc. converter, showing the shield running down through the center of the box. All grounding is done to this shield. Coils on the left side are L_1 and L_2 , the latter at the bottom of the picture.

larly critical, and placement of minor parts falls into place naturally as the wiring proceeds. The crystal socket is on the left side of the shield, as viewed from the bottom front, adjacent to the triode section of the 6U8. Holes are drilled in the shield to pass the B-plus and heater wiring. Three tie-point strips are used for mounting small parts. R.f. leads should be kept as short as possible, and power leads are run close to the shield in every case. Ceramic or "toadstool" by-passes are used throughout.

It will be seen that the usual "neutralizing coil" is omitted from the cascode stage, and a 33-ohm resistor substituted. This makes the adjustment of the converter extremely simple, and the noise figure is more than adequate. No difference in actual reception can be observed when the resistor replaces a properly-adjusted neutralizing coil. The measured noise figure is lower with the coil, but even with the resistor it is well below the point at which any improvement can be observed in signal-to-noise ratio by a further decrease in noise figure. This is the result of the considerable outside noise that is

(Continued on page 146)

¹ Gerbert, "A Crystal-Controlled 144-Mc. Converter for the 75A-Series Receivers," *QST*, Feb., 1955, p. 15.

Converting the BC-929A Oscilloscope

A Low-Cost Scope for Station Monitoring

BY STEPHEN POPP,* W9JFX

• If you don't require some of the extras that are furnished with the oscilloscope kits these days, and need only a basic scope for your ham station, here is the way to do it for a very small cash outlay. With a scope like this you can monitor your own transmitter and the incoming signals at all times.

A OSCILLOSCOPE is a valuable station accessory that can be very useful in the adjustment and monitoring of a.m. or s.s.b. signals. I have had good success in converting the BC-929A, a surplus unit that was originally used in radar work. The over-all dimensions are 14 inches long, 8 inches wide and 9 inches high, and a 3-inch oscilloscope tube is used. The BC-929A was delivered "demilitarized," and showed quite a bit of wear and tear, had no cover or carrying case, a few parts missing and no schematic. About this time the Sept.-Oct., 1956, issue of *G-E Ham News* came along with its description of the "Hamscope." A feature of the circuit was the negative high-voltage power supply that permitted operating the deflection plates at ground d.c. potential, and this and many other Hamscope circuit ideas were used in the conversion of the BC-929A.

The Circuit

Referring to the circuit in Fig. 1, the switch S_1 turns on the unit and selects the sweep voltage. This can be a 60-cycle sine wave (S_1 at INT.) or an external sawtooth or audio signal introduced at J_1 (switch at EXT.). The transmitter r.f. is introduced at J_3 , coupled through a suitable coil, L_1 , plugged in at J_2 . This coil is link-coupled to the r.f. source and tuned by C_1 . The receiver signals (i.f.) are applied to the vertical plates through the 6J5-6SN7 amplifier; they are introduced at J_6 and the amplitude varied by the setting of the vertical gain control. When not in use, the amplifier can be turned off at S_2 . Plate and heater voltages for the amplifier are obtained from another power supply and brought in at J_5 .

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Originally the scope was built with a switch at K_1 , which permitted switching the vertical plates to r.f. or i.f. The relay K_1 is currently used; it is controlled in parallel with the antenna relay through a voltage introduced at J_4 . When the transmitter is on, the r.f. envelope is presented on the scope, and when the transmitter is off the receiver i.f. output is displayed.

Construction

The first step was to strip the chassis. The cathode-ray tube socket and the dual 1- μ f. filter capacitor were left in place, along with all tube sockets except the three at the front of the chassis. The two rear socket holes were covered by a thin metal sheet held in place by a few machine screws and painted to match the chassis. The photographs show the locations of the various parts on the chassis; needless to say, other constructors will have slightly different ideas depending upon the parts they use. The third tube socket on the right-hand side was removed and a ceramic five-pin tube socket was substituted. This is socket J_2 in Fig. 1; the tuning capacitor C_1 was mounted nearby and its shaft brought out to the panel via a flexible and insulated shaft. The old 6X5 rectifier socket was used as a tie point for the 100K filter resistor connected between the two 1- μ f. filter capacitors. The wire to the cap of the 2X2 rectifier was fed through the hole of this socket.

The new transformers were mounted in approximately the same positions as the old 400-cycle units but a few new mounting holes were found to be necessary. If the old intensity and focus potentiometers are in good condition they can be used again in their old mounting holes. If new ones are required, be sure to get good 2-watt ones. They are best mounted on small sheets of insulating material, to avoid the possibility of leakage to chassis, and insulated shaft extensions should be brought out to the panel.

The 6X5 socket mentioned above can be used if one wants to build in the 250-volt vertical-amplifier power supply, but in my case I borrowed the extra power from the receiver. It might also be borrowed from a Signal Slicer, if one is used.

The oscilloscope at W9JFX is a revamped BC-929A. It is used to monitor incoming and outgoing signals; the changeover is automatic.

Controls along the bottom, from left to right, are sweep switch, horizontal gain, intensity, tuning and focus. The vertical gain control (screwdriver adjustment) and the vertical amplifier pilot lamp are on the right-hand side, alongside the scope face.

QST for



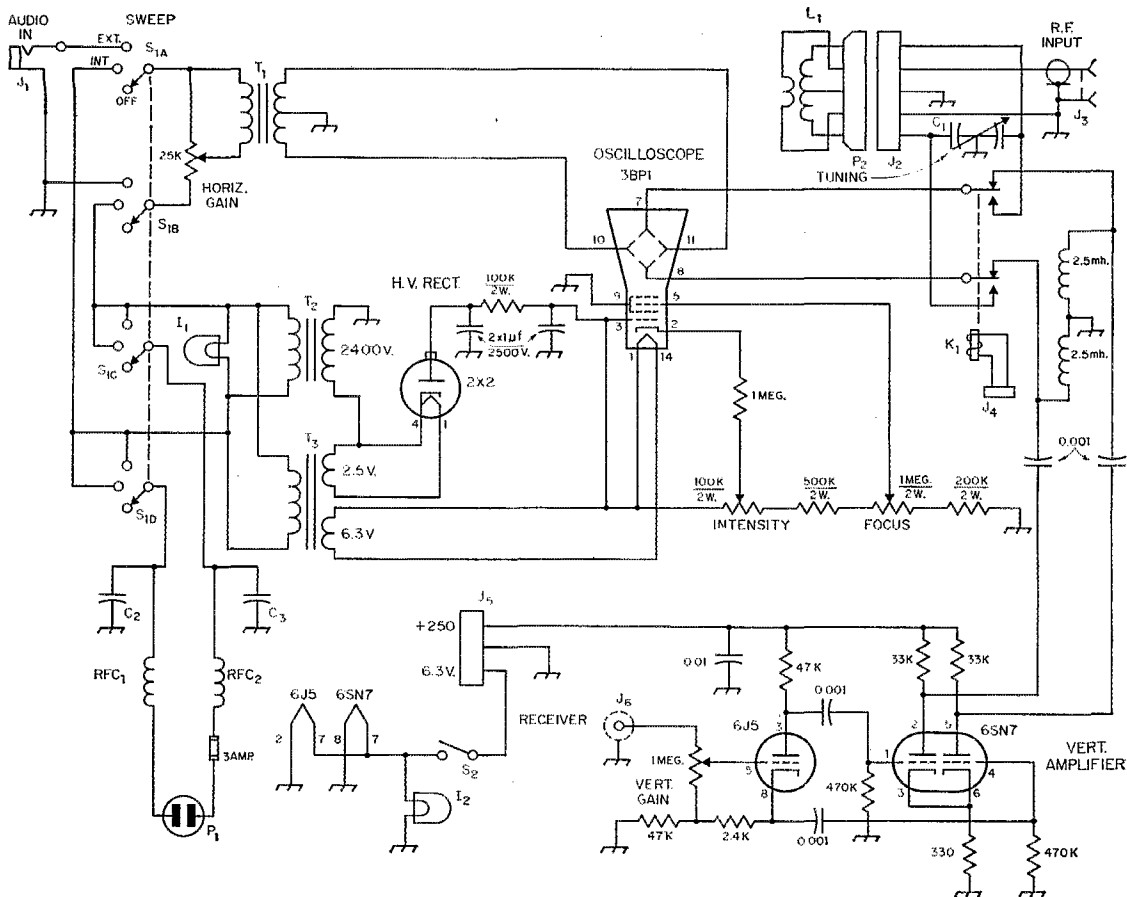


Fig. 1 — Schematic diagram of the converted BC-929A oscilloscope. Resistors are $\frac{1}{2}$ -watt unless specified otherwise; capacitances are in μ f.

C_1 — 150- μ f.-per-section "t.r.f." type variable.

C_2, C_3 — Line filter capacitors in original unit.

L_1 — 115-volt pilot lamp.

L_2 — 6-volt pilot lamp.

J_1 — Open-circuit phone jack.

J_2 — 5-prong ceramic tube socket.

J_3 — Coaxial jack, type SO-239.

J_4 — Two-terminal socket, or can be combined with J_5 .

J_5 — Three-terminal socket — see J_4 above.

J_6 — Phono jack.

K_1 — 115-volt a.c. d.p.d.t. relay.

L_1 — 1.8-7.5 Mc.; 32 turns No. 24 enam., center-tapped, turns spaced to occupy $1\frac{1}{2}$ inches with $\frac{1}{4}$ -inch spacing between 16th and 17th turns; $1\frac{1}{2}$ -inch diam. form. Link is 3 turns No. 20 insulated hookup wire wound in center space.

7.5-30 Mc.; 8 turns No. 24 enam., center-tapped, turns spaced to occupy 3.4 inches with $\frac{1}{4}$ -inch spacing between 4th and 5th turns; $1\frac{1}{2}$ -inch diam. form. Link is 2 turns No. 20 insulated, wound at center space.

P_1 — Line plug.

P_2 — Plug-in coil form. See L_1 .

RFC $_1$, RFC $_2$ — Line-filter chokes in original unit.

S_1 — 4-pole 3-position nonshorting rotary switch.

S_2 — S.p.s.t. toggle.

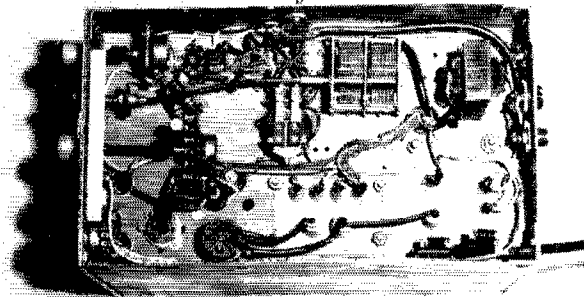
T_1 — Single plate to push-pull grids audio transformer (Stancor A-53-C).

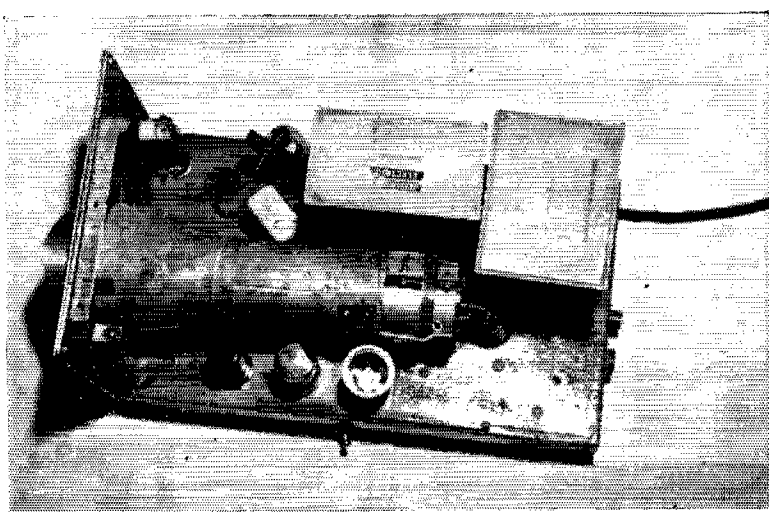
T_2 — 2400-volt at 4 ma. scope transformer (Chicago or Jefferson D161913, surplus).

T_3 — 2.5- and 6.3-volt filament transformer, h.v. insulation (Jefferson D161916, surplus).

The front panel was made from a piece of 8 × 9-inch aluminum sheet, with the lower right-hand portion cut out to clear the three controls (intensity, tuning and focus). The toggle switch S_2 , used for turning off the vertical amplifier heaters, was mounted on the side of the chassis because it is used only rarely. The associated indicator lamp, L_2 , was mounted on the front panel. A bottom plate of perforated aluminum was installed, and the new panel was decorated by using standard decals to mark the controls. The cover for the scope was originally a BC-375 antenna tuning unit cover. A $1\frac{1}{2}$ -inch strip was trimmed from each side to make it fit the more compact oscilloscope.

The tuning capacitor is coupled to its panel knob through a flexible and insulated shaft, and the change-over relay is mounted nearby. To provide better insulation to ground, the focus and intensity potentiometers are mounted on insulating material and insulated shaft extensions are used.





Most of the old sockets are used in the new arrangement, but 60-cycle transformers have to replace the former 100-cycle units. The plug-in coil and vertical amplifier tubes are on the right-hand side of the chassis (viewed from the front).

Using the Oscilloscope

After the connections have been made and checked, apply power via P_1 and turn S_1 to INT. The pilot lamp I_1 should light. Adjust the FOCUS and INTENSITY controls for a sharp spot or line, and set the HORIZONTAL GAIN control so that this line is a suitable length. If now S_2 is closed and you feed receiver i.f. into J_6 , you should see the incoming noise and signals on the screen. The amplitude of these signals can be controlled by the setting of the VERTICAL GAIN control.

To monitor r.f. from the transmitter, couple the r.f. through a small loop and shielded cable to J_3 , and plug in a suitable coil at J_2 . The relay K_1 must be closed to switch this signal to the oscilloscope plates, and the amplitude of the r.f. can then be controlled by the setting of C_1 or by the distance of the loop from the r.f. tank circuit in the transmitter. An envelope picture will be

obtained with S_1 set at INT.; with audio from the modulator introduced at J_1 and S_1 set to EXT. a trapezoid will show on the scope.¹

This scope has been in operation for over six months now. I use it every day to monitor received signals, checking for "flat-topping" (overload) in my receiver or at the transmitter end. My own transmitter is monitored continuously, and it gives me a feeling of security to be able to look at the scope and see that the signal level is kept high but below the overload point. The scope is often used to check the signals of other stations (upon request), and it has even been used to check a 6-meter rig (by winding a smaller coil for L_1). Concord Radio of New York still advertises the BC-929A and transformers T_2 and T_3 , and there are also other sources of supply.

¹ For details on interpreting envelope and trapezoid patterns, see *The Radio Amateur's Handbook*, or other texts on oscilloscope use.

Strays

The Navy Department has announced that it has authorized amateur operation aboard eight ships operating in the Arctic area. All of the ships are on isolated duty in connection with DEW Line re-supply operations and departed from the States during July. The list of ships and the amateur call signs to be used are as follows:

USS Eldorado — W4CMF
 USS Elkhorn — W6EOV
 USS Burton Island — W4VEI
 USCGC Spar — W1WLN
 USCGC Bramble — K9ACD
 USCGC Westwind — W3VDN
 USNS Chelan County — W7RM
 USNS Lindenwald — K2JCK

Enroute to the Arctic these ships will operate maritime-mobile. After arriving at their area of operations, the Navy reports that the KL7 indicator will be used.



Three generations of hams in this family! From left to right — W9KX, KN9DCF, and W9PNE. All three are active on the air, and 1957 marks the 51st year of ham radio for W9KX!

RECENTLY, the writer visited the station of a newly-licensed Novice. It was of particular interest to see how the operator controlled his station. The procedure in going from receive to transmit went something like this: First, the receiver r.f. gain was turned down to zero, then the antenna lead was unclipped from the receiver and clipped to the transmitter output terminal; next the transmitter was turned on and a call was made. After the call, the entire process was reversed so the operator could listen for an answer. Incidentally, it should be mentioned that the key was not screwed down to the operating desk and consequently did a lot of "traveling." During the QSO that followed, the operator exhibited a thorough knowledge of the code and considerable adroitness and dexterity, but he would have done even better with a third arm to hold down the key.

In a short discussion after the QSO it was pointed out that for a few dollars (for a relay, a switch and a few screws to hold the key down), all the transmit-receive functions could be carried out with a single switch. In talking to other newcomers it was apparent that they experienced similar problems in setting up their stations for maximum operating convenience. This article will show how to make the necessary connections to put your station on a one-switch basis.

For the Novice who operates c.w., the switching circuit for the antenna, transmitter and receiver is a fairly simple matter and can be installed in an hour or so. Let's take the three items one by one and see how it can be done.

Probably most of the transmitters used by Novices are keyed in all of the r.f. stages, so that when the key is closed the transmitter sends out a signal and when the key is open there is no signal from the transmitter. These same transmitters, if they are not homemade from a *Handbook* or *QST* design, have a switch labeled "Transmit-Receive" or "Transmit-Standby." This switch turns on the plate and screen voltages of the r.f. stages, but the stages won't draw current unless the key is closed. Therefore, even though you are receiving and not transmitting, all the switches can be left on and the key used to operate the rig.

There are amateurs who use some types of keying where the oscillator is allowed to run all the time they are transmitting. When they receive, the oscillator must be turned off to avoid blocking the receiver by the signal generated in this stage. A little later we'll show you how to shut this stage off with our system.

When receiving, the common practice is to adjust the r.f. gain control to the best setting for copying the signals being heard. When the transmitter is keyed the control is usually turned down to zero or the receiver is switched to standby, to prevent "blocking" the receiver. The system to be described reduces the need for adjustment of the receiver when going from receive to transmit.

Improving Operating Convenience in the Shack

Controlling Your Station With One Switch

BY LEWIS G. McCOY,* W1ICP

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*Many newcomers to ham radio reduce their operating enjoyment by making a major task out of switching from "receive" to "send" and back again. This is a perfectly natural result of getting on the air by the most direct methods and not giving any thought to tying the station together as an operating unit. In this article W1ICP shows how to connect the station together in a way that makes the transition from receive to send a simple matter.*  
~~~~~

An important part of putting the station on a one-switch basis is changing the antenna from receive to transmit and back again. Many amateurs get around this problem by using separate antennas for receiving and transmitting. This type of operation is all right but leaves something to be desired. Any antenna will have certain directional characteristics. Your transmitted signal will be stronger in some directions than in others, depending on the type of antenna used, and the best directions for transmitting will be the best for receiving. It is quite possible that a separate receiving antenna will enable you to hear signals that you cannot work because your transmitting antenna and receiving antenna have different patterns.

Another important point to remember is that the amateur will try to put his transmitting antenna in the best possible location and as high as possible. On the other hand, the receiving antenna is usually a random length of wire that is just strung out a window. So our rule No. 1 is

* Technical Assistant, QST.

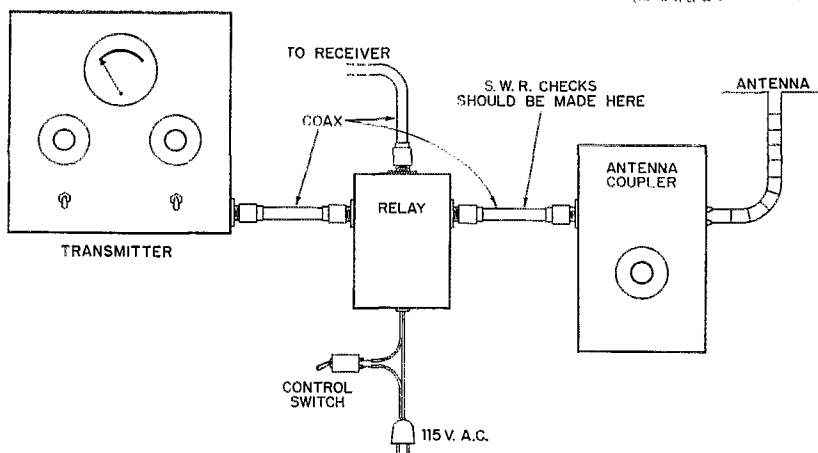


Fig. 1—The antenna change-over relay is installed in coax line between transmitter and antenna coupler. The coax line between the relay and transmitter should be kept as short as possible, unless a special coaxial relay is used.

"Always use the same antenna for receiving and transmitting." This brings us up to the "how to" part of this article.

Relays and Switches

A sketch of a "one-switch" arrangement is shown at Fig. 1. The antenna change-over relay is inserted in the coax line between the transmitter and antenna coupler or balun. A toggle switch is used to control the relay (and the station). The toggle switch can be mounted on a metal plate or bracket which is placed within easy reach. At WIICP, the receiver is tuned with the left hand so the station switch is mounted close by. Only a slight movement of the hand is required to turn the station on and off. A system preferred by many amateurs is to control the station with a foot switch, leaving both hands free. If the reader is interested in constructing such a switch complete details for an inexpensive unit are given in a back issue of *QST*.¹ It should be pointed out that everything discussed so far is for c.w. operation. When operating phone, the station control switch can be part of the microphone assembly so the operator will have "push-to-talk."

It is common practice these days to use coaxial line to connect the transmitter to the antenna coupler or balun coils or directly to the antenna. The system shown at Fig. 1 has the antenna relay mounted between the rig and the coupler. Many amateurs believe that if they use coax line they must also use a coaxial relay. A coax relay is designed to have approximately the same impedance as the coax line it is used with. In addition, it is well shielded to prevent any r.f. leakage from the line. However, contrary to popular belief, it isn't necessary to use a coax relay with coax line. Any mismatch that a relay introduces in the feed line exists only between the relay and the transmitter. Usually this is a very short length of line and the mismatch is of no real importance. In

fact, the relay can be mounted inside the transmitter and it will have no effect on the feed line at all. If a relay is mounted in the feed line and a standing-wave ratio bridge is used to make s.w.r. measurements, the measurements should always be made between the relay and antenna, never between the relay and the transmitter. If the bridge is installed at the latter point misleading readings can result.

The important point to remember is that inexpensive relays can be used for antenna change-over. If the relay must be shielded it can be mounted in a metal box or can.

Installation Information

There are several methods of installing the change-over relay and switching circuit, but one of the neatest and simplest setups is to mount the antenna relay inside the transmitter case. The relay should be mounted close to the r.f. output terminal. If one of the midget antenna relays is used, mounting space should be no problem. This type relay is designed for use with 300-ohm Twin-Lead and is quite small, measuring approximately 1¼ by 1 by 2 inches. These relays are capable of handling r.f. power up to several hundred watts.

The circuit for the relay and control switch is shown in Fig. 2. Relay K_1 is a double-pole, double-throw type; one pole is used to switch the antenna and the other pole to short the receiver antenna terminals.

In the circuit diagram, J_2 is the output terminal in your transmitter. Another coax fitting, J_1 , should be installed close to J_2 and this new fitting will be for the coax lead to the receiver. The fitting can be either a standard coax unit (SO-239) or one of the inexpensive RCA-type phono jacks.

When the relay and J_1 are mounted in place the wiring changes can be made. Unsolder the normal output lead from J_2 and connect it to a normally-open contact on the relay. Connect the corresponding arm of the relay to J_2 . Run a short

¹ Goodman, "Cheap and Dirty Footswitch," *QST*, Sept., 1951, or *Hints and Kinks*, Vol. 5.

length of wire from the one normally-closed contact to the other. To minimize transmitter pickup by the receiver, a short length of shielded wire is run from J_1 to the remaining relay arm and normally-open contact. As can be seen in the photograph, the shield braid of this shielded wire should run closely parallel to the relay arm, to minimize the area of the resulting loop.

The last step is the installation of S_1 , the transmit-receive switch. As mentioned earlier, the switch can be mounted on a bracket and placed at a convenient point. Power for the relay can be obtained from inside the transmitter, and the two leads for the relay control are brought out to S_1 . If desired, the switch can be mounted on the panel of the transmitter. Also, many transmitters use a single-pole, single-throw switch for the transmit-receive functions. This can be changed to a double-pole, double-throw unit and the extra pole used to control the relay. This eliminates the drilling of an additional panel hole.

If amplifier keying is used, then a switch with an additional pole can be used at S_1 , the extra pole being used to turn the oscillator on when going from receive to transmit.

If TVI is a problem in your area, all switch leads that leave the transmitter case should be filtered to prevent harmonic radiation. Usually a .001- μ f. disk ceramic connected from the lead to chassis ground will be sufficient. The capacitor leads should be kept as short as possible.

Controlling Other Circuits

In the system shown in Fig. 2 the relay shorts the antenna terminals on the receiver to ground when the transmitter is turned on. This serves the dual purpose of protecting the receiver from possible damage due to overload from the rig and reducing receiver "blocking" by the transmitter.

Most receivers have terminals on the rear apron that are connected in parallel with the receive-standby switch. If the operator desires to control the receiver remotely he can use a multipole switch for S_1 and control the receiver with it. A look through any parts catalogue will show that switches are available that will control a multitude of circuits.

A good example of the use of additional switch

An antenna changeover relay installed in a Heath AT-1 transmitter. Holes must be drilled to mount the phono jack (connection to receiver) and the relay. Note that shielded wire is run from the phono jack to the relay; the photograph doesn't show the perspective, but the shield braid is run very close to the relay arm, to minimize the size of the loop and consequently reduce the signal picked up from the transmitter.

contacts is to cure a trouble many phone operators encounter. This is the problem of feedback or "squawks" when they go from receive to transmit or vice versa. This happens because when the transmitter is switched off the power

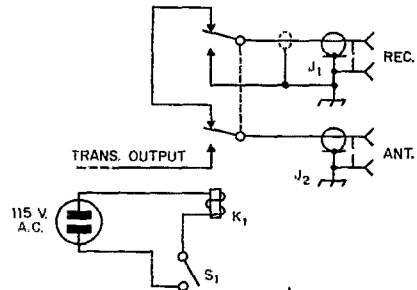


Fig. 2 — Circuit diagram for antenna switching and receiver muting.

J_1, J_2 — See text.

K_1 — Double-pole double-throw 115-volt a.c. relay (Advance AM2C/115 V.A., Leach 327, Potter & Brumfield KT11-115 AC.).

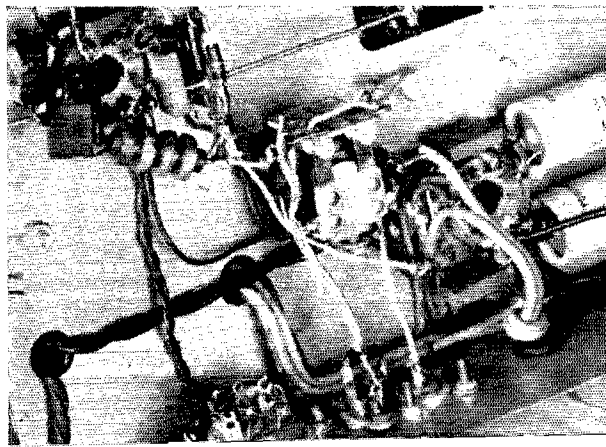
S_1 — See text.

supply output doesn't shut off instantaneously and the r.f. output takes a few seconds to fall to zero. A simple way to correct this trouble is to open the cathode of the oscillator stage. When this is done the r.f. shuts off instantly, regardless of how long it takes the power supply to bleed off. Extra contacts on S_1 can be used to open and close the cathode connection.

No Switch Operation

All that we have discussed above describes a single switch control. It is possible to control a station without the use of switches — at least mechanical ones. Many c.w. and s.s.b. operators use electronic t.r. (transmit-receive) switches. Antenna switching is taken care of when the operator speaks in the microphone (voice control) or when he closes the key. If the reader is interested in constructing a simple t.r. switch, a one-tube unit was described by W9LSK in May 1956, *QST*.²

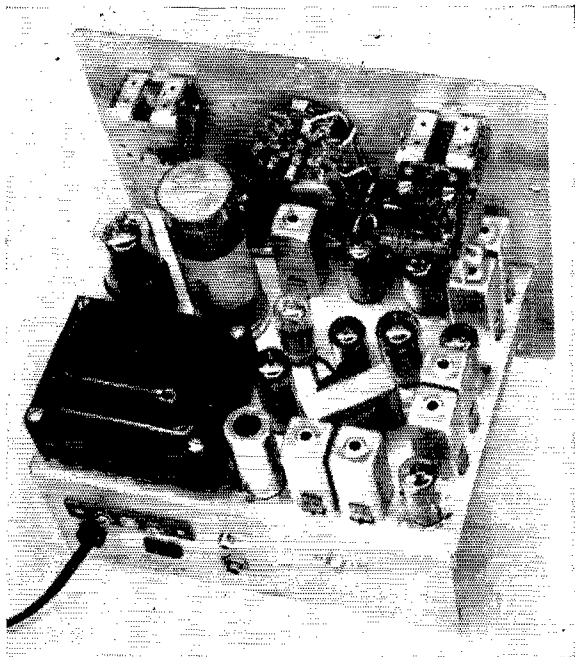
² Herzog, "The Cathode-Follower T-R Switch," *QST*, May, 1956.



• Recent Equipment —

The Hammarlund HC-10 Converter

The HC-10 converter with its case removed. This converter is connected to the last i.f. stage of a receiver to provide variable selectivity, pass-band tuning, a variable rejection notch, product detector and other features the receiver may lack. The variable capacitor at the right controls the rejection-notch frequency; the associated inductor is adjustable through a hole in the side of the case. The other variable capacitor controls the pass-band tuning.



WHEN MOST of us see the word "converter" we think of a device that is connected between antenna and receiver and is used to extend the frequency range of the receiver. While it is quite true that such a device is called a "converter," the HC-10 is no such animal. Instead, it is a device that is connected near the tail end of a receiver, to provide selectivity and detection features that weren't incorporated in the receiver. As such, it will probably find its major market among the owners of inexpensive or older receivers. Used with a receiver of decent stability, the HC-10 will provide operating features found only in some of the top receivers on the market.

The HC-10 can be used with any receiver that has an i.f. of 450 to 500 kc. To connect it to the receiver, you locate the last i.f. stage of the receiver (a not-impossible task if you haven't lost the instruction book) and pull out the tube from its socket. You then plug an adapter plug (both octal- and miniature-tube adapters are supplied) into the i.f. tube socket and then put the tube back in the top of the plug. A cable from the plug runs out the back of the receiver and over to the HC-10. Since the HC-10 has its own power supply, the i.f.-tube operation is all you have to perform on the receiver.

A block diagram of the HC-10 is shown in Fig. 1. The signal from the receiver first passes through

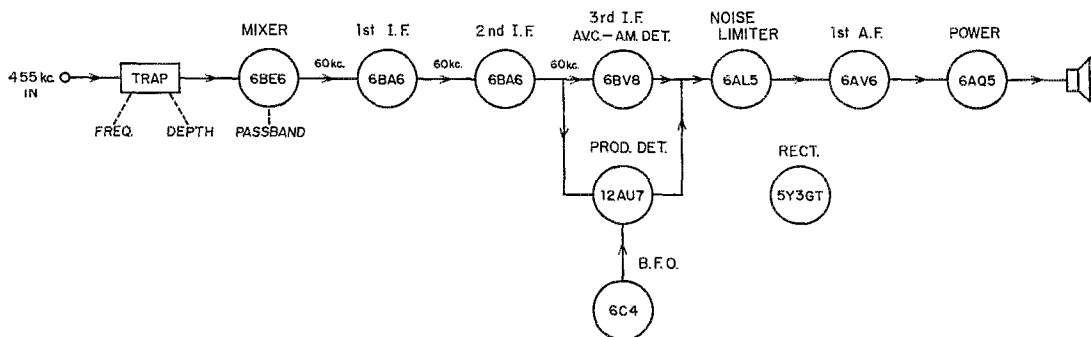


Fig. 1 — Block diagram of the HC-10 converter, a self-contained receiver adjunct for increased selectivity and greater operating convenience.

a trap circuit that provides a rejection notch similar to a Q Multiplier or T-notch filter. This circuit will be described in detail later. The signal then goes to a 6BE6 mixer, where it is heterodyned to 60 kc. The oscillator section of the mixer is tunable from the front panel, at a very slow tuning rate, and this passband-tuning control permits setting the signal accurately with respect to the 60-kc. i.f. amplifier characteristic. After three stages of 60-kc. amplification (six tuned circuits) the signal reaches a product or a diode detector, depending upon whether the b.f.o. is switched on or off. One of the diode sections of the 6BV8 is used for delayed a.v.c. (delay bias obtained from a tap on the 6AQ5 cathode bias resistor), and an a.v.c. selector switch offers a choice of off and three a.v.c. speeds. The a.v.c. bus is brought out to a terminal at the rear of the unit, for those who might wish to connect the HC-10 a.v.c. into the receiver used ahead of the converter. We didn't do this in our tests, since the a.v.c. in the receiver and the HC-10 a.v.c. worked well independently, but some owners might want to give it a try.

A noise limiter follows the detector circuits; this uses a 6AL5 in a twin-diode series-limiter circuit. A panel control sets the clipping threshold level.

The audio amplifier uses a 6AV6 triode followed by the 6AQ5 output stage; speaker terminals and a headphone jack are provided.

Getting back to some of the details of the circuitry, the 60-kc. stages provide four different nominal bandwidths: 3 kc., 2 kc., 1 kc., and 0.5 kc. at 6 db. down. The sharp 0.5-kc. condition is only 3.3 kc. wide at 60 db. down, and the nominal 2-kc. bandwidth is 6 kc. wide at -60 db. The variety of bandwidths is obtained by using high- Q circuits in which the coupling capacitors are switched, but there is a little more to it than that. The circuits are "stagger-tuned" for best skirt selectivity in the broader positions, and no resistance loading (for killing the Q) is used except in the broadest condition. But there's still more to it than that. Suppose the b.f.o. panel control is set at its midpoint (marked "0") and the b.f.o. is therefore right on 60 kc. A panel switch marked **SIDE BANDS** can be set at **UPPER**, **LOWER** or **BOTH**. When set to **UPPER** the i.f. characteristic is tuned so that the passband is slightly to one side of 60 kc., and when it is set to **LOWER** the passband is tuned slightly to the other side. Thus when a side-band signal is properly tuned in, with the b.f.o. set at 0, the "suppressed side band" can be quickly examined by a flick of a switch. On a.m., with the signal tuned in so that the carrier is heterodyned to 60 kc., one or the other side band can be listened to by flicking the sideband switch. In the **BOTH** position, the passband is symmetrical about 60 kc. and

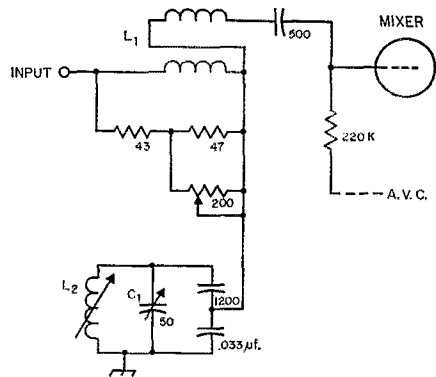
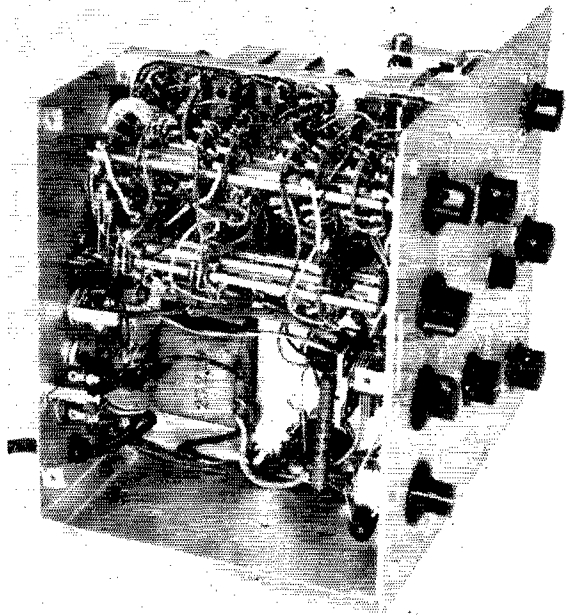


Fig. 2 - Schematic diagram of the bifilar T trap. The action of this circuit is similar to that of a bridged-T; a rejection notch appears at a narrow band of frequencies determined by the setting of C_1 , and the notch depth is controlled by the setting of the 200-ohm variable resistor. At 450 kc. it will give a narrow rejection notch that formerly could be obtained only with a Q Multiplier or a crystal filter.

its nominal band width is doubled. For example, with the selectivity set at 3 kc. and the sideband switch set at **UPPER** (or **LOWER**), a 3-kc. band width is in effect. Switching to **BOTH** gives a 6-kc. band width. (The 0.5-kc. bandwidth does not jump either side of 60 kc., since it is used only on c.w. and the b.f.o. can be offset to either side of the passband for single-signal reception.)

The Bifilar Trap Circuit

A brand-new circuit for many hams (at least it was to us) can be found in the 455-kc. trap circuit mentioned earlier. It is shown in the



It takes a few switches to arrive at the many modes of operation provided by the HC-10.

schematic in Fig. 2; its effect is the same as a T-notch filter or *Q* Multiplier in rejecting a narrow band of frequencies. Unlike the *Q* Multiplier, however, it requires no tube or tubes to obtain good rejection at 450 to 500 kc. The inductor L_1 is a bifilar winding in a circuit that is very broadly resonant in the i.f. range. The main reason for its broadness is the heavy loading (less than 100 ohms). The inductor L_2 has a *Q* of around 200 at 450 kc., and the shunting capacitors provide a tap that is effectively far down on the circuit. As a consequence of the good *Q* and the low tap, looking in at the tap the reactance changes rapidly with frequency. The slug of L_2 sets the tuned circuit to the nominal i.f. of the receiver, and the 50- μ mf. capacitor (panel control) is a fine adjustment for the frequency. The combined action of the circuits around L_1 and L_2 is similar to the bridged-T notch filter; the total circuit looks like a short circuit to ground at a narrow band of frequencies where the residual reactance in the L_1 circuit is equal and opposite to the reactance looking in at the tap of the L_2 circuit. In operation, the frequency of the notch is changed by adjusting the 50- μ mf. capacitor, C_1 , and the notch depth is maximized by proper

setting of the 200-ohm variable resistor (panel control marked depth). The circuit handles just like a bridged-T or *Q* Multiplier circuit, so far as the operator is concerned.

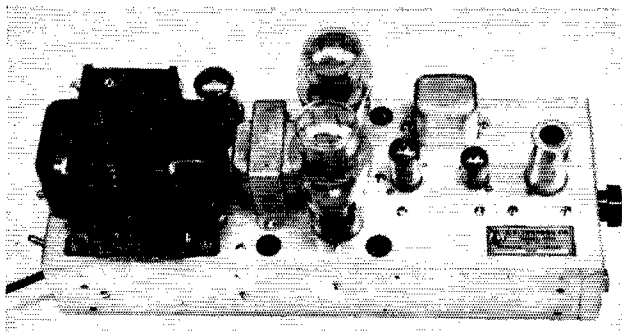
General

Stability becomes more and more important as one goes to higher selectivity or side-band reception, and this fact was not overlooked in the design of the HC-10. The 6BE5 oscillator circuit (passband adjustment) uses a high-*C* Hartley circuit, and the b.f.o. uses the series-tuned Colpitts (Clapp) circuit. During our lab tests we could notice no serious drift in either oscillator. The adjustment of the slot frequency and pass-band tuning circuits is made easier by 7 $\frac{1}{2}$ -to-1 planetary reduction movements built into the associated variable capacitors.

Anyone looking for a package of selectivity tricks might do well to consider the HC-10, since it contains a notch filter, passband tuning, variable-bandwidth i.f., selectable side band, and choice of a.v.c. time constants and detectors. This represents just about everything to date in the outrigger-selectivity line.

— B. G.

Viking 10-Watt Audio Amplifier



ODDLY ENOUGH, until the introduction of the Viking 10-Watt Amplifier it has been possible to buy almost anything you might want in the way of equipment and accessories for amateur use except a speech amplifier suitable for driving a high-power modulator. And even this Johnson unit was brought out primarily to fill a need in the Viking transmitter line — to serve as a speech amplifier and driver when the Pacemaker (which has only a very small amount of audio power available for external purposes) is used as an exciter for the Viking Kilowatt on a.m. Nevertheless, it is a real general-purpose unit, with ample gain for any microphone an amateur is likely to use, frequency-response curve shaped for optimum speech use, and a clipper-filter for increasing the average side-band power within the limits of 100 per cent modulation.

The tube line-up is shown in Fig. 1. The two sections of a 12AX7 are used as the first and second speech amplifiers. A 6AL5 series-type

The Viking 10-Watt Amplifier is on a 5 $\frac{1}{4}$ × 11 × 3-inch chassis. The input tube, a 12AX7, is in the tube shield at the right in this photograph. Next to it is the 6AL5 clipper and then the 12AT7 phase inverter, with the low-pass filter choke just beyond them. Continuing to the left are the 6B4G output tubes, the output transformer with the 6AX5GT rectifier in back and the power transformer. The 6AL5 bias rectifier is out of sight behind the power transformer. The microphone connector and gain control are on the right-hand end of the chassis. The power switch, clipping level control and remaining connectors are on the left-hand end.

clipper follows, with its output fed through a low-pass filter cutting off at approximately 3500 cycles. The filtered output then goes through a 12AT7 phase inverter to get push-pull excitation for the 6B4Gs in the power stage. The plate power supply uses a 6AX5GT rectifier and a choke-input filter. The bias supply, using a 6AL5 rectifier and an RC filter, furnishes fixed negative voltage for the grids of the 6B4Gs, which are operated as Class AB₁ amplifiers.

Three separate inputs are provided, one for a

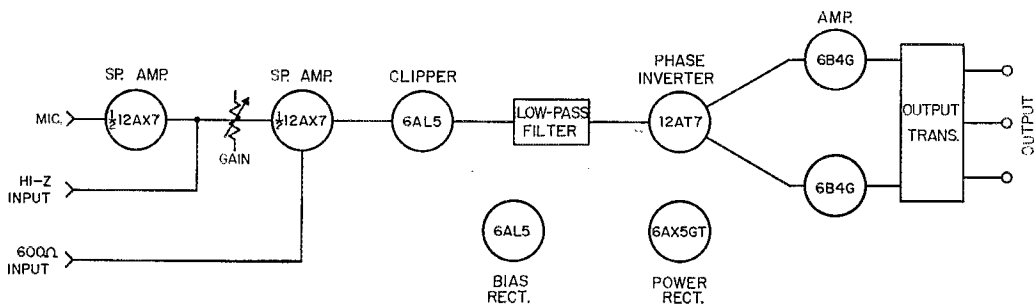


Fig. 1—Block diagram of the Viking Audio Amplifier.

crystal or similar low-level microphone, a second for a high-impedance audio source at somewhat higher level, and a third for 600-ohm input. The first works directly into the grid of the first stage through a simple *RC* filter which will attenuate any r.f. that might be picked up on the microphone. The second input goes to the high side of the gain control, thus bypassing the first stage but permitting use of the gain control in the unit. The third input is to the cathode of the second speech stage (applied across the unbypassed cathode resistor) and is not affected by the gain control. Input voltages required for full output are 1.4 millivolts on the microphone input, 85 millivolts on the high-Z input, and 150 millivolts on the 600-ohm input.

The output transformer has two secondaries which, when connected in series, are at the appropriate impedance level for driving the grids of modulator tubes such as 810s. When the two secondaries are connected in parallel, the amplifier can be used with 500- or 600-ohm loads.

The microphone jack is the three-wire type for handling a push-to-talk circuit, with the extra wire brought out to a phono connector for controlling an external relay. No push-to-talk circuit is incorporated in the unit itself.

With the cane-metal cover (not shown in the accompanying photograph) in place the unit measures 5¼ by 11 by 8 inches. It is available either as a kit or completely wired.

— G. G.

Strays

Are you new to ham radio? Do you wonder what some of these abbreviations are? Then read over the following, which we are borrowing from the *Rags Review*, published by the Radio Amateurs of Greater Syracuse.

A.m. — An old-fashioned system of adding and subtracting intelligence to and from a carrier

which really isn't needed in the first place.

S.s.b. — An expensive method of getting all a.m. operators mad.

D.s.b. — A less-expensive method of getting all a.m. and s.s.b. operators twice as mad.

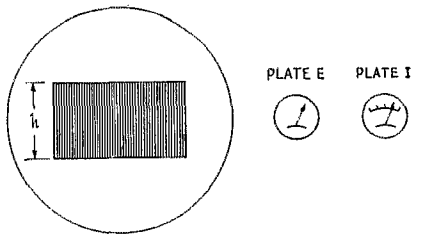
C.w. — A still-less-expensive method of getting yourself mad.

»

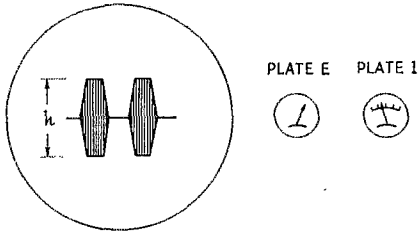
Hugo Gernsback, well-known publisher and inventor, presents a model of his 1905 Telimco wireless set, reported to be the first home radio marketed in the world, to Dr. Shelley of the Henry Ford Museum.

»





(A) KEY-DOWN C.W.



(B) STRING OF DOTS

Fig. 1 — (A) An unmodulated carrier looks like this on an oscilloscope. (B) Sending a string of dots, the peak amplitude of the signal remains the same, but the plate power input will show half the steady key-down value.

power, and the peak envelope output power is the key-down output power. We can get the peak envelope input power easily from the product of plate voltage times plate current with the key held down, or we can get it the hard way by reading the input power when running a string of dots and dividing the indicated input power by 0.5. (Both answers will be the same when the bug is adjusted to give correct dots; "heavy" dots would require dividing by something greater than 0.5, and "light" dots would call for a divisor smaller than 0.5.) The string-of-dots case is a simple one; we divide by 0.5 because correct dots have a *duty factor* (pulse duration times pulse frequency) of 0.5. Dividing the indicated input power by the duty factor gives the actual power input during the "on" time.

Linear Amplifiers and Voice

Anyone should be able to see that it is easy to measure the input on c.w. with the key down, and not extremely difficult when running a steady string of dots (or dashes). But how would you like to be held responsible for knowing the input when all you were permitted to send was straight text? What would you use for a plate milliammeter reading? What divisor would you use?

The side-band linear case is in the same class. A typical side-band signal might show up on a scope as the sketch in Fig. 2. Most of the time the signal amplitude is at a relatively low level, but it rises to peaks during the loud syllables. If h represents the maximum amplitude the amplifier will handle without distortion (and conse-

quent splatter), the savvy side-band operator will hold his voice at a level where these peaks are hit occasionally but never exceeded. The plate milliammeter will kick around a bit, so how do you correlate its reading with the peak envelope power (the power during that maximum peak)?

The FCC recognizes the problem, of course, and consequently they give us a simple requirement to meet: the d.c. input shall not at any time exceed 1 kw. as indicated by meters with time constants not exceeding 0.25 second. (Time constant relates to the time it takes a meter to rise to the true value of current; a longer time constant means a more sluggish meter.)

But how do you tune up an amplifier that runs the legal limit? If a linear capable of handling

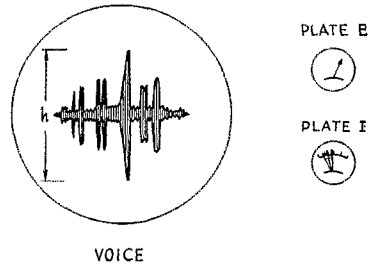


Fig. 2 — Voice-modulated side-band signals look something like this on a scope. Here the height h represents the maximum amplitude that the amplifier can handle without distortion. Since the signal hits these high peaks only occasionally, the indicated power input will be low. The syllabic nature of the signal is indicated by the jumpy plate milliammeter; it bears a rather indefinite relation to the peak power input.

the legal limit on side band is driven by a single r.f. signal to its full capability, the d.c. input will be more than a kilowatt. And, of course, while a big linear can be resonated with a single r.f. signal it can't be loaded correctly except under special circumstances (having prior knowledge of the plate current for a given level of signal).

Perhaps you have heard of the "two-tone test" and you suggest that next. No go. The two-tone test is a good method for checking the linearity of an amplifier²; it involves using two equal-amplitude r.f. signals through the amplifier, which gives a pattern on the scope as in Fig. 3. If the pattern just starts to flatten at an amplitude of h , indicating that this is the maximum signal the amplifier can handle without generating unwanted spurious signals, the peak envelope input is the indicated d.c. power input divided by 0.636. (The two-tone signal is used because it is

² Ehrlich, "How To Test and Align a Linear Amplifier," *QST*, May, 1952. Also in *Single Side-Band for the Radio Amateur*. If you don't understand the two-tone test, this is "must" reading. Briefly, the two-tone test involves using a single audio tone fed to a balanced modulator. The output of the balanced modulator is two side frequencies and no carrier; the two side frequencies are the two equal-amplitude r.f. signals fed to the amplifier.

The two-tone test signal is easy to obtain from any phasing-type exciter; two audio tones or one tone and reinserted carrier are required with a filter-type exciter.

easy to generate and the relationship between peak envelope input and indicated d.c. power input is accurately known.) But an amplifier that runs up to the legal input on voice will run about 2 kw. p.e.p. input, and an amplifier indicating 1 kw. input with a two-tone test signal has a p.e.p.

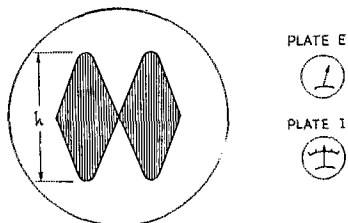


Fig. 3 — The two-tone test signal applied to the linear of Fig. 2. The maximum permissible amplitude k is the same, but now the indicated power input bears a definite relationship to the peak envelope input.

input of less than 1.6 kw. ($1 \div 0.636$). The two-tone test is fine for amplifiers that indicate up to 750 watts input on voice peaks, but beyond that the two-tone test *on the air* will result in a d.c. input of more than a kilowatt.

Tuning a Big Amplifier

Obviously one way to adjust a big linear is to use a dummy load and the two-tone test signal. This is certainly the only way to work with the amplifier in the early testing stages. It will enable you to find the proper loading for good linearity and efficiency, and you can then substitute the antenna for the dummy load at reduced signal levels. But suppose you want to make a quick check on the air, or suppose you hanker to see how much you can crowd your amplifier without distortion. (Since the long-time duty factor of voice signals is perhaps 0.25 or so, and the p.e.p. input is only required occasionally, you can run the tubes harder on peaks than you might expect. But always bear in mind that you can't crowd them beyond the limits of linearity without causing distortion which generates spurious signals.)

We can't use the two-tone test continuously, so the obvious solution is to key it. This is a cinch for anyone with an electronic bug key; all he has to do is to lock the key in the dot position and key the audio tone being fed to the side-band generator. Anyone with such a bug key available can forget about the electronic pulser to be described. For those without an electronic bug, the circuit in Fig. 4 can be used to key the audio tone. It is a simple method (although the electronic bug key is even simpler, if you have one) for testing an amplifier where the ordinary two-tone test would result in exceeding the legal d.c. input limit or possible failure of the tubes.

The gadget in Fig. 4 and the photograph is not offered as a refined device for exact measurement but merely a very simple means for testing a side-band system in which the final runs at the legal limit or where the tubes are run too hard on peaks for a sustained two-tone test. It consists of a

cathode follower with a.c. instead of d.c. on the plate. A single tone (1000 cycles or so) is fed from an audio oscillator to J_1 and the output is run from J_2 to the microphone jack of the transmitter under test. The follower conducts during the positive half cycles of the plate voltage and not during the negative half cycles, resulting in a test signal that is on about half the time. Since there is a 60-cycle component in the plate current, the output is taken off through a small ($15\text{-}\mu\text{f.}$) capacitor to reduce the 60-cycle component reaching the output. Most side-band transmitters will, or should, have poor 60-cycle response in their audio amplifiers, and a further reduction in 60-cycle component will be obtained.

Using the pulser with a typical side-band exciter and amplifier, about 2 volts of 1000-cycle audio at the input gave sufficient signal at the microphone jack to operate the transmitter. The amplifier ran 175 ma. when properly loaded for maximum p.e.p. with the two-tone test signal and 120 ma. with the keyed two-tone test. The

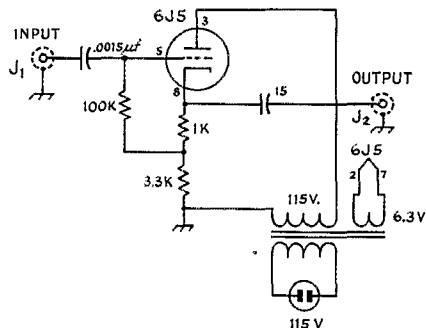


Fig. 4 — Schematic diagram of a simple "pulser" for keying the audio tone used in the two-tone test. The capacitances are in $\mu\text{f.}$ and the resistors are $\frac{1}{2}$ -watt. T_1 is a small TV-booster transformer (Merit P-3045 or equiv.)

plate voltage on the amplifier was 1000 for the tests, so the maximum p.e.p., as indicated by the two-tone test, was 275 watts [$1000 (0.175 \div 0.636)$]. With the pulsed two-tone test the indicated power input was 120 watts, and the divisor works out to be 0.44 ($120 \div 275$). This is low enough to give less than a kilowatt d.c. input when you're hitting 2-kilowatt input peaks.

We make no claims that this is a highly-refined way to check a linear. Actually it is the simplest way we could think of (other than the bug key), and anyone who wants to derive the factor 0.44 mathematically is welcome to try it. We do claim that this is a simple gadget for pulsing the two-tone test through your amplifier and permitting maximum peaks with little strain on the tube. When you try a slow sweep on the scope, the pattern will be as in Fig. 5-A, which shows the keyed character of the signal. Some audio leaks through the pulser even when the plate voltage is negative, and that's why a small signal appears between the large ones. When a fast sweep is used, synchronized with the audio input tone, the familiar two-tone test pattern is obtained. The "garbage" around the base line is

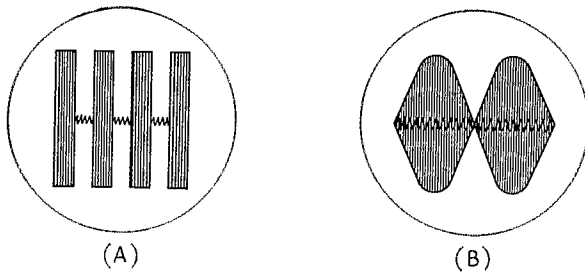


Fig. 5—(A) Pulsed two-tone test observed with slow sweep and 60-cycle sync signal (B) Pulsed two-tone test observed with fast sweep and audio-tone sync signal.

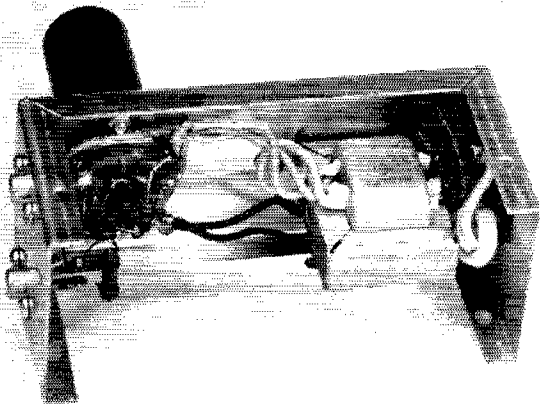
merely the signal that leaks through during the "off" time of the pulser: it wouldn't be there if the electronic bug key were used for pulsing the audio tone.

"Crowding" a Small Amplifier

The fact that a speech side-band signal has a rather low duty factor permits running tubes at a peak envelope power that would burn them up under steady operation at this power. To visualize it, think of the c.w. case. You might have a tube rated at 50 watts plate dissipation, and under c.w. conditions you might run 200 watts input in Class C and never have any trouble. The tube could be operated to handle perhaps 300 watts or so, if you confined yourself to sending a short "dit" every second or so. This is obviously impractical in c.w. work, but it is closely parallel to the case we have in side-band linear operation. We can "pour the coal" to an amplifier for short

periods of time if these periods are so short that the tube doesn't get a chance to overheat. The problem in side-band work is to tune up the amplifier. You have to check the peak inputs to be sure the amplifier isn't going out of linearity, and you have to hold the long-time d.c. input down to avoid overheating and tube failure. Pulsing is the answer. Using the technique described earlier, either with an electronic bug or the simple tube pulser to key the audio tone input, will enable you to get the most out of any given amplifier. Obviously an oscilloscope and a source of audio tone are required, but you really need these anyway if you are to be sure of what's happening. With small tubes and higher plate (and screen) voltage than the book says, pulse tuning of the tubes will allow the maximum output to be obtained on voice peaks without distortion. Just don't forget and whistle or sustain a tone into the mike, unless you're prepared to replace the tubes!

This simple "pulser" can be used to "key" an audio tone being used in the two-tone testing of linear amplifiers. A triode, small power transformer and a few capacitors and resistors are all the circuit requires.



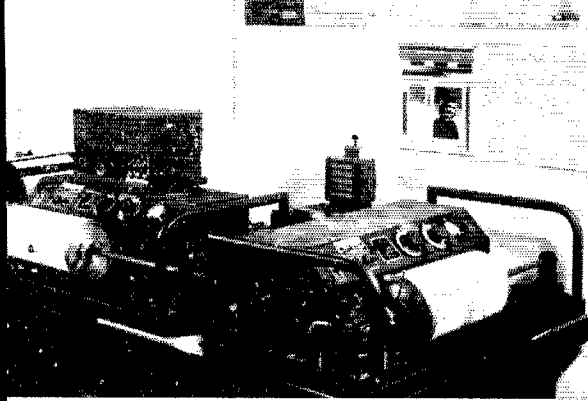
Strays

Just too late for July *QST* we learned that amateurs in Maryland were successful again this year in having the week preceding Field Day designated as Amateur Radio Week in that state. Governor McKeldin's proclamation praises amateur contributions to communications, performance in times of emergency and disaster, and participation in civil defense activities.

Loyola University recently presented an honorary degree of Doctor of Laws to Paul M. Segal, ARRL General Counsel. The citation reads, in part, "As dean of attorneys practising before the Federal Communications Commission, he has been an important legal influence in shaping and interpreting laws governing aural and visual communication in the public interest."

Facsimile Transmissions on the Ham Bands

A Brief Progress Report on the Activities of Two Separate Groups



W6CZ has two of the facsimile machines set up in his shack. On top of the machine at the left is an f.s.k. converter which enables him to copy the commercials. The 2-meter net uses a.f.s.k.

THE FIELD of amateur radio facsimile is still relatively uncluttered and unreported, but there are a few scattered groups who are working with this means of transmission and who are having some fun with it.

The Radio Amateurs of Greater Syracuse (RAGS), using the station of W2KCR, have (in addition to their regular traffic load) been sending radio facsimile to the Navy's outposts in the Antarctic on twice-weekly schedules. All sorts of printed matter has been transmitted, from sports articles to comics, but perhaps the most interesting item recently handled by W2KCR was the transmission of the photo of a 3-hour-old baby, which was received by the proud and excited Marine Corps father in the Antarctic only eleven hours after the birth. The Syracuse group is using a facsimile machine loaned to them by the Times Facsimile Corporation in New York City, and has been transmitting in the 14.3-14.35 Mc. region by special authority of the FCC, using a.f.s.k. W2KCR told us that one of the outstanding features insofar as RAGS was concerned was the splendid cooperation they have received from the newspapers in preparing material for facsimile transmission and from the Times Facsimile Corp. in providing the machine.

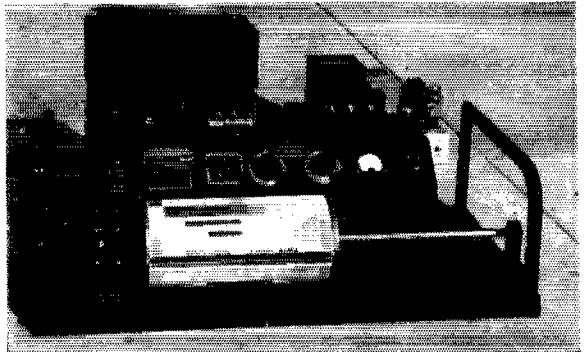
Out on the West Coast, at least nine of the fellows in the Los Angeles area are on the air

with facsimile equipment, operating on 147.60 Mc. All of their machines are Times machines, purchased in the local surplus market. Some were in operative condition when received, others were not, and so a considerable amount of reconditioning had to be done by various of the gang before they were on the air.

The machines themselves are the same basic unit used by the newspapers for wire-photo service and by the military for weather maps and the like. Each machine contains a precision 1800-cycle, vacuum-driven tuning fork. The 1800-cycle output of the fork amplifier string feeds three things: (1) a regulated amplifier whose output, constant at six volts, lights the exciter lamp used to illuminate the copy for transmission; (2) a power amplifier that drives an 1800-cycle synchronous motor that turns the picture drum; and (3) a Wheatstone bridge circuit, one arm of which is a photoelectric cell. The amplified output of the bridge becomes the facsimile signal. At the receiver, the 1800-cycle amplitude-modulated signal is further amplified and applied to a stylus riding on the recording paper. The higher the voltage applied to the stylus, the hotter the arc from the stylus to the paper and the more of the white outer coating is burned away, exposing the black under-color.

(Continued on page 148)

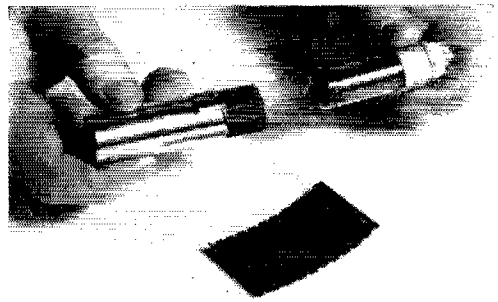
A close-up view of one of the FAX machines. This is the same type used by military and press associations. The f.s.k. converter is mounted on top, and on the drum is seen a resolution test chart.



• New Apparatus

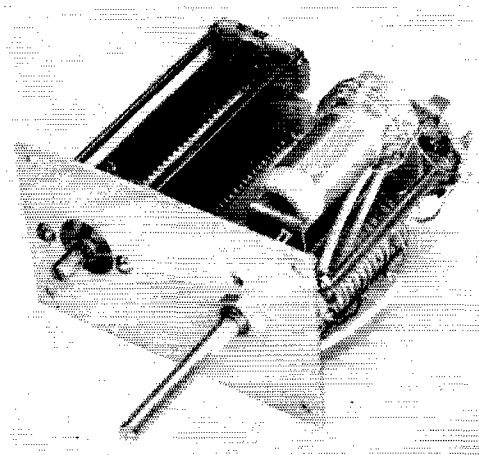
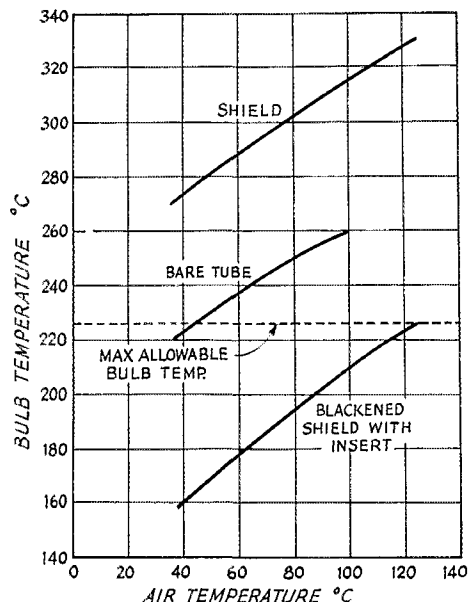
Corrugated Shield Insert

The photo at the right shows a tube shield with the corrugated insert being slipped over a tube. Below is one of the inserts before being formed into a cylinder and slid into the tube shield. The hands are those of a well-known c.w. operator.



IT HAS been found that the tube shields normally used with miniature tubes invariably raise the bulb temperature above the bare-bulb operating temperature, and one of the main causes of tube failures is excessive heat. The Birtcher Corrugated Heat-Reducing Insert, shown in the photograph, is used between the tube and the shield to improve the heat transmission between the envelope and the shield (and chassis). By using the tube insert in conjunction with a blackened tube shield, the bulb temperature is lowered to a point below the bare bulb temperature. The graph shows a typical example and the resultant improvement. The units might find application in knotty amateur problems where high temperatures are encountered through "typical" amateur operation. The inserts are not stocked by mail-order houses yet, but any of the houses can order from the Birtcher Corp., 4371 Valley Blvd., Los Angeles 32, Calif. The inserts are available for the small, medium and large shields for both 7- and 9-pin miniatures. Blackened shields are made by a number of companies, including Cinch and Eleco.

— B. G.



New Multiband Tank Circuit

THE TYPE GP-50 Tank is a compact band-switching (3.5 through 30 Mc.) circuit designed for use at power levels up to 50 watts on a.m. phone or 100 watts in c.w. or s.s.b. service. The five bands in the range are covered by means of two tapped coils with switchable output links, one coil covering 3.5 and 7 Mc. and the second taking in the 14-, 21- and 28-Mc. bands. Although the tank is normally wired as a parallel-type tuned circuit with an inductively-coupled link, a minor change in the wiring, plus the addition of the necessary output capacitance, converts

(Continued on page 150)



— Photo courtesy Life Magazine — Howard Sochurik

African Field Day

BY ARTHUR M. GODFREY,* K4LIB

ONE OF MY HOBBIES is big game hunting, another is ham radio, and I combined the two this spring when I went to French Equatorial Africa. On my morning and evening radio and TV shows I've recounted some of the excitement of the trip, but now let me tell you a little about the ham angle. In a nutshell, ham radio was a most important and successful part of the operation.

The accompanying map shows the general area in which we hunted. This spot was chosen through the cooperation of the International Hunting Club because of its remoteness and the fact that no white man had ever hunted it before. There were two ways to reach this wilderness camping ground. One was by truck from Fort Archambault, the other was to fly in by helicopter. I liked the second way better, but all our supplies had to be trucked in through the brush.

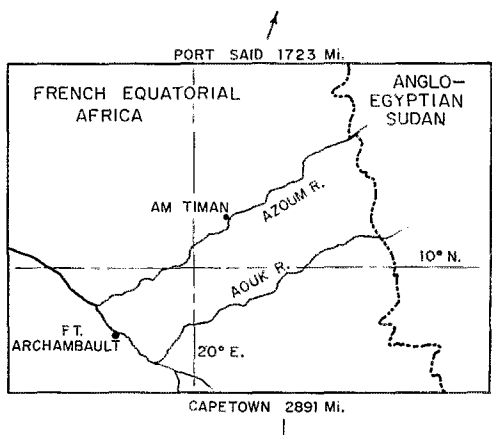
*c/o CBS, New York, N. Y.

This country along the Aouk River is really a game paradise. The river winds back and forth through grassy plains which are underwater during the wet season. But with the coming of the dry season the river narrows, leaving waterholes around which the game animals congregate. However, beautiful though the country is, the lack of roads make navigation somewhat of a problem.

I can't give too much praise to Oscar Presnell, W2HC, who was the CBS technician on the trip. Ozzie left New York City by Air France on Feb. 13, with 2250 lbs. of radio gear loaded on the same flight. Going by way of Paris and Marseilles, he arrived in Fort Archambault on Feb. 19. There he took a few days to set up all the gear and make sure that none of it had been damaged in the transatlantic crossing. Then, assembling all the other supplies which had been routed to Fort Archambault by various means, he formed a caravan of seven trucks and started out for the pre-arranged hunting area. Leaving Fort Archambault at six o'clock the morning of March 1, he headed north to Am Timan, where he arrived at 10 p.m. At five the next morning the caravan was on its way again. Up to this point there had been roads of a sort, but from here on Ozzie literally had to chop his way through the brush. The caravan slept in the brush the night of the Mar. 2, and arrived at the destination the evening of the third. Ozzie set up his camp and radio equipment on the fourth, and the next day I flew in with the rest of the hunting party.

Besides the numerous natives and the excellent guide furnished by the French government, our hunting party consisted of three hams (Gen. Curtis LeMay, K0GRL; Presnell, W2HC; and Godfrey, K4LIB), Mr. Richard Boutelle, president of the Fairchild Aviation Corp., and Mr. James Shepley, head of the Washington office of *Time-Life*.

Our radio gear consisted of an Eldico s.s.b. transmitter, a Collins receiver, three Comet Communicators, Telrex beams for 14, 21, and 28



We hunted along the northern bank of the Aouk River.

Mc., and two Onan 2½-kw. a.c. generators. The latter not only kept the radio gear running but also kept the beer cold. The Eldico gear was used both on the ham bands and on some adjacent RCA frequencies. The RCA frequencies were used for live broadcasts on my CBS shows and for transacting business which could not properly be handled on the ham bands. For instance, I had many items of business concerning my various shows which were continuing in my absence from the States, and both Shepley and Boutelle needed to keep in touch with their home offices. Also, Gen. LeMay had to be available for messages from the headquarters of SAC.

The ham band work was great! Conditions were ideal during our entire stay, and we worked a pile of stations on 14, 21, and 28 Mc. Most of the operation was on s.s.b., with about 10% being on c.w. We made some 600 contacts on five continents, for a total of 30 countries. We worked all WAVE districts, but I'm still not sure if we worked all states. One contact that I got a real kick out of was working K4LIB back home at the farm. My old friend Johnny Gill, W4JCV, put K4LIB on the air a couple of times a week so that I could talk with my family.

There were several State-side stations who performed a real service for us by their handling of phone-patch traffic. Prominent among these was W4ERK, who handled more traffic for us than any other individual station. We heard many outstanding signals on the bands, but I particularly recall W2KR and W6TT. Of course, we also worked all the gang back at CBS, including W2QZ, W2BED, W2OQU and W2BKU. One evening we had a phone patch to Dr. Stanton of CBS, who was much interested to find that it was ham radio linking him with Godfrey in Africa. Everyone in the hunting party had an opportunity to talk with friends and family back home by means of ham radio, and you can well imagine what this did for morale.

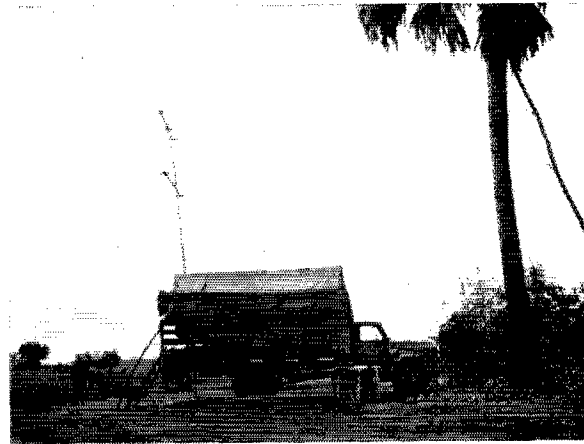
I haven't mentioned those Gonset Communicators yet, but they also came in for some consistent use. We set up one at the base station, another in a jeep in which Gen. LeMay toured around, and the third one in the helicopter. We hunted a 50-mile radius from the camp, and the 2-meter gear enabled us to maintain reliable communications over almost the entire area.

The whole trip was one of great satisfaction for me. The hunting was excellent and everyone in the party enjoyed that phase of the trip. I also enjoyed the hamming immensely and spent as much time as I could in the communications truck. I am much indebted to the French officials who arranged for the necessary amateur and commercial licenses. I was also pleased to be able to work so many of the gang back in the States. Sometimes it seemed that we could have worked a few more of the boys if there hadn't been so much breaking-in by some of the eager beavers, but in general it all worked out pretty well.

I am having some special QSLs printed for this year's QSOs, and am beginning to think about another trip next year!



Ozzie Presnell, W2HC, surrounded by radio gear and spare parts.



Our communications center!



That ladder was *not* flown in from the States!

ARRL 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 4 1/4 by 9 1/2 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 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
 W2, K2 — E. F. Huberman, W2JIL, Box 716, GPO Brooklyn 1, New York.
 W3, K3 — Jesse Bieberman, W3KT, P.O. Box 100, Bala-Cynwyd, Pa.
 W4, K4 — Thomas M. Moss, W4HYW, Box 614, Municipal Airport Branch, Atlanta, Ga.
 W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.
 W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
 W7, K7 — Joseph P. Vogt, W7ASG, P.O. Box 88, John Day, Oregon.
 W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
 W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wisc.
 W0, K0 — Alva A. Smith, W0DMA, 238 East Main St., Caledonia, Minn.
 VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
 VE2 — Harry J. Mabson, VE2API, 122 Regent Ave., Beaconsfield West, 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, 883 10th St. N., North Lethbridge, Alta.
 VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.
 VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
 VO — Ernest Ash, VO1A, P.O. Box 8, St. John's, Newfoundland.
 KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
 KH6 — Andy H. Fuchikami, KH6BA, 2563 Naniou Dr., Honolulu, T. H.
 KL7 — KL7CP, 310—10th Ave., Anchorage, Alaska.
 KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

COMING A.R.R.L. CONVENTIONS

- August 16-17-18 — Southwestern Division, Long Beach, California
 August 30-31-Sept. 1 — ARRL National Convention, Chicago, Illinois
 August 31-Sept. 1-2 — Maritime Provinces, Charlottetown, Prince Edward Island
 September 21-22 — Midwest Division, Kansas City, Kansas
 September 21-22 — South Dakota State, Huron, South Dakota
 October 18-19 — Ontario Province, Toronto, Ontario
 November 8-11 — Far East Pacific Division, Guam

A.R.R.L. MARITIME PROVINCES

Charlottetown, P.E.I. —
 August 31-September 2

The Keith Rogers Memorial Radio Club is sponsoring the 1957 ARRL Maritime Provinces Convention to be held at the Charlottetown Hotel, Charlottetown, P.E.I., from August 31 to September 2.

Charlottetown is located in the central part of Prince Edward Island, reached by the Trans-Canada Highway and a delightful ferry trip from Cape Tormentine, N. B., or Caribou, N. S. Prince Edward Island, commonly known as the "Garden of the Gulf," is noted world over for its potato industry, its rural charm, and some of the finest beaches in eastern Canada.

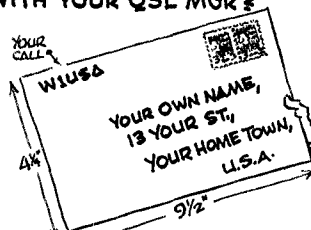
Activities will include a transmitter hunt, mobile-judging contest, technical talks, equipment demonstrations, banquets, entertainment for the ladies and the junior operators, swimming and scenic drives. The emphasis is on fun for all, and the opportunity of a grand holiday in the "land of rare DX." Registration fee is \$3.50 for the OM, and \$3.00 for YL and NYL. Reasonable hotel rates. Send your request for information and registration to C. D. Gillis, VE1PE, P. O. Box 321, Charlottetown, P.E.I.

A.R.R.L. SOUTHWESTERN DIVISION

Long Beach, California —
 August 16-18

The Associated Radio Amateurs of Long Beach, Inc., are sponsoring the 1957 ARRL Southwestern Division Convention at the Lafayette Hotel, Long Beach, August 16, 17, and 18. There will be an exhibition of transmitters and rotary beams in action as if a field day were being conducted on top of the hotel. Amateurs are invited to display homemade equipment in a contest for prizes. The program includes speakers on technical subjects, forums, contests, and a Wouff-Hong Initiation. Entertainment includes a boat ride, a dance to the music of Hollywood's famous Fire House Five Plus 2, and a vaudeville show. Banquet at 3 p.m. Sunday. Seats are reserved according to sequence of numbers on convention tickets. A first-class meal is guaranteed.

IS YOURS ON FILE
 WITH YOUR QSL MGR?



National CONVENTION News

All About the Chicago Labor Day Meeting

GEN. GRISWOLD TO SPEAK AT GRAND BANQUET

CHICAGO, Ill.—A special treat is in store for hams attending the ninth national ARRL convention in Chicago on Labor Day week end.

Maj. Gen. Francis Griswold, of the United States Strategic Air Command, has accepted an invitation to be the principal speaker at the Grand Banquet, climax of the three-day get-together, according to an announcement by Phil Haller, W9HPG, and Jordan Kaplan, W9QKE.

Haller is chairman of the Chicago Area Radio Club Council, Inc., sponsors of the affair, and Kaplan is general chairman of convention planning. Haller also is serving as program chairman.

General Griswold, K0DWC, who is known to thousands of hams as "Butch," will address the banquet on the subject, "SAC and World-Wide Communications." In his speech he will describe the communications network of SAC, especially relating to the assistance given to SAC by amateur operators all over the country.

The General will tell of experimentation with single sideband equipment from air to ground and from ground stations to ground stations and of the part played in these experiments by hams.

Also on the program will be short talks by other leading figures in amateur radio and an interlude of organ music by Leo Meyerson, W0GFQ.

The banquet will close the three-day program on Sunday night in the Grand Ballroom of the Palmer House. The big show opens Friday morning, Aug. 30, and the entire affair will be held in the Palmer House, where three floors have been reserved for exhibitions, meetings, banquets and forums dealing with all facets of amateur radio. The entire hotel, public rooms and private, is air conditioned.

The event will mark the first time in 19 years that Chicago has been the host city to a national ham convention and the Chicago crowd is bending every effort to make the occasion a memorable one.

The emphasis this year is on an old-style family get-together, which means that Mom and the kids—whether they hold amateur licenses or not—are invited, and special plans are being made for their entertainment and comfort.

Families with baby-sitting problems will find them solved by a playroom which will be set up by the hotel management. The hotel also will have a children's restaurant just for the convention, with menus and prices specially planned for the kids and their parents.

Treasurer of the convention is Bill Traxler, W9FUJ; committee chairmen include: Exhibits, Fritz Franke; Hotel, Bud Balaste, W9CQR; YLRL, Cris Bowlin,

W9LOY; Food, Ed McMullin, K9AXK; Legal, Bill Peterson, W9VTV; Awards, Don DeJong, W9KUJ; Novice exams, Bill Harper, W9BWM; Registration, Sam Niles, W9FBP; Contests, Wayne E. Douglas, W9HWN & Howard L. Wood, W9PCB; Publicity, John Stokely, K9APQ and Bob Seals, K9AHK; Radio & TV, Betty Sandberg, W9STR.

First National SSB Dinner

Single Side Banders will hold their first national dinner during the convention. The dinner will be held in the Red Lancer Room of the Palmer House at 7 P.M. Saturday.

Fred H. Schnell, W4CF (ex-W9UZ), will be master of ceremonies and has arranged an interesting program. Several prominent speakers will address the group, including Adm. H. C. Bruton, W4IH, Director of Naval Communications, Washington, D. C. Herbert Hoover, Jr., K6EV, has accepted an invitation to speak, contingent upon completion of State Department commitments.

A large attendance is expected and the committee has urged that reservations be sent in early; price of tickets will be \$7.50. Reservations and check should be sent to W. L. Runzel, Jr., W9OGA, dinner chairman, 4727 Montrose Ave., Chicago 41.

Novice Program

Several features have been planned for persons interested in getting started in ham radio, as well as those who already have Novice tickets.

High light of the Novice program will be a forum on "Opportunities for the Beginner in Ham Radio," conducted by A. L. Budlong, WIBUD, ARRL General Manager; F. E. Handy, W1BD1, ARRL Vice-President; and John Huntoon, W1LVQ, Assistant General Manager.

Lew McCoy, W1ICP, Technical Assistant for QST, also will give talks of interest to beginners.

There will be several contests and awards set up especially for Novices.

Rare DX to Attend

Mike Hexter, W9FKC, chairman of the W9 DXCC group that is sponsoring the DX activities, has promised one thing about the Saturday evening DX dinner—there will be no speeches.

However, this will have to be qualified to the extent that anybody present who has ever been a member of a DXpedition will be allowed to talk for 5 minutes.

At the dinner meeting there will be an open forum with W9FKC as moderator and Bob White, of the ARRL headquarters DX section, to answer questions.

Tickets to the dinner will be \$6 and there will only be room for 100 persons. Send your money to Douglas Pavak, W9FDX, dinner chairman, 5776 N. 24th St., Milwaukee 9, Wis.

Another feature of the DX program will be a filmed presentation of "The Story of DX," presented by the Antique Wireless Association of Rochester, N. Y., under the direction of Bruce Kelley, W2ICE, historian-secretary.

Just at press time somebody whispered in the editor's ear that YA1AM (something of a mystery man) has registered for the convention and will be there to tell how operating conditions are in YA-land.

Program Hi-lites

Experts in all fields of amateur radio will appear before general gatherings and special meetings during the convention. Some of the speakers and their topics follow:

"New Types of Trap Antennas" by Andy Andros, W8LTE, engineer for the Hy-Gain Antenna Products Co., Lincoln, Neb.

"Problems Encountered in Kit Design" by Thomas Pickering, W9LRA, Allied Radio Corp., Chicago.

"Safety in the Amateur Station" by George MacDonald, National Safety Council, Chicago.

"Modernizing Receivers with Adapters" by Byron Goodman, W1DX, assistant technical editor, *QST*.

"Project Vanguard" by Naval Research Labs personnel, Washington, D. C.

"VHF DX—How and When" by Edward P. Tilton, W1HDQ, VHF editor of *QST*.

"The How and Why of Beam Antennas" by George Ashton, W9PNV, Diversey Corp., Chicago.

"The Amateur Radio Operator and the IGY Program" by Mason Southworth, W1VLH, IGY project supervisor for the ARRL.

"Harmonic Elimination and TWT" by Lewis G. McCoy, W1ICP, technical assistant of *QST*.

"The Story of DX" and "Pioneers of Wireless," two tape recorded and filmed presentations, by Bruce Kelley, W2ICE, secretary-historian of the Antique Wireless Association, Rochester, N. Y.

"The Ionosphere and DX" by George Grammer, W1DF, technical editor of *QST*.

"Opportunities for the Beginner in Ham Radio," a novice forum to be conducted by A. L. Budlong, W1BUD, ARRL General Manager; F. E. Handy, W1BDI, ARRL Vice-President, and John Huntoon, W1LVQ, Assistant General Manager of the ARRL.

"Antenna and Feeder Wave Patterns Visualized" by Richard Howe, W8CBN, chairman of the department of physics, Denison University, Granville, O.

"RACES and Defensive Planning" by J. A. McGregor, W8DUA, Battle Creek, Mich., RACES Coordinator, Communications Division, FCDA.

"Design and Operation of Linear Amplifiers" by Albert M. Pichitino, W8EDX, chief engineer, E. F. Johnson Co., Waseca, Minn.

"Construction Practices" by Lewis G. McCoy, W1ICP.

"New Developments in Mobile SSB" by Preston W. Simms, W8RT, manager amateur sales, Collins Radio Co., Cedar Rapids, Iowa.

Registration Information

Cooperating with the sponsors on the family-style convention idea, the Palmer House is offering special rates to families. Here are the prices: family room, up to four members of the same family, \$16 per room per day; twin bedroom, two persons, \$15 per day; double bed, two persons, \$14 per day; single, one person, \$9 per day, and dormitory, four or more persons per room, \$3 each per day.

All requests for room reservations should be sent to: ARRL Convention, Palmer House, State and Monroe Sts., Chicago, Ill., Attention: Reservations.

Pre-registration fee, including banquet, is \$10.50; without banquet, \$6.50. Registration on arrival is \$12 with banquet and \$8 without banquet. Send registration fees to Chicago Area Radio Club Council, Inc., Post Office Box 6797, Chicago 80, Ill. The registration fee covers all convention program activities except special events such as the Saturday evening group dinners.

Convention Contests

There will be awards and contests galore thruout the convention, including awards for the best QSL, the best operating aids, best home-brew transmitter, receiver, and test equipment, best converter, best Hints and Kinks and the best photo showing amateur radio activities; and a crystal frequency judging contest, a CW contest, a contest for the best decorated hat with radio motif, and an award for the oldest and youngest hams attending.



Phil Haller, W9HPG (seated), program chairman, going over the master program book with Jordan Kaplan, W9QKE, general manager of the convention.

Wouff-Hong Initiation

Newcomers to ham radio (old-timers, too) will be interested in the goings-on at the stroke of midnight Saturday in the Red Lacquer Room of the Palmer House.

That's where and when George H. Graue, W9BKJ, and his famous initiation team will perform the ritual for the induction of hams into the Royal Order of the Wouff-Hong.

This will be a costume affair, similar to a lodge ceremony, with special scenery, lighting and sound effects. This ritual (as those who have seen it will tell you) will be something to remember.

TRAFFIC

A panel discussion by eight prominent traffic men, to be announced later by special bulletins to the various traffic nets. Moderator will be Arthur Swinfin, W9DO, Manager of the Central Area Net (CAN).

Specific subjects to be discussed by the panel will be: Improving liaison between state, regional and area nets.

How to recruit more operators for traffic work.

How best to train new recruits.

Routing of overseas traffic.

How to avoid delays in transfer of MARS traffic to

"Ham" nets.

Use of VHF nets for metropolitan area deliveries.

Improving liaison between phone and CW nets.

Improving public relations to encourage more healthy organizations.

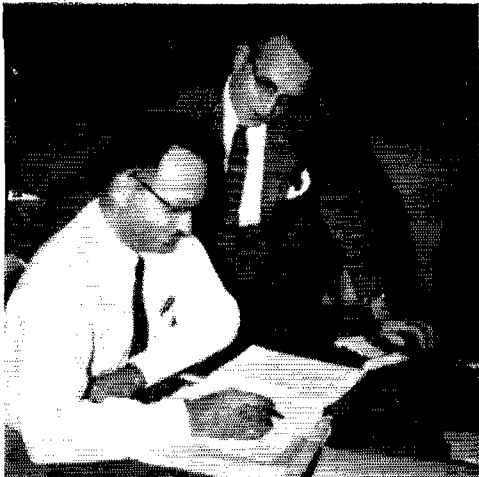
Wisdom of "Show" traffic.

Telephone deliveries.

Convention Tours

Principal activity on the first day of the convention, Friday, will center in guided tours of plants of some of the nation's leading electronics manufacturers.

Chartered buses will be leaving from the hotel all day for the various plants where visitors will be shown the latest in gear, research and manufacturing techniques. Included in the itinerary will be a tour of the world's largest research environmental testing lab, at the new Cook Technological Center.



John Landeck, W9WOK, VHF chairman, goes over his plans while John Stokely, K9APQ (standing), publicity chairman, kibitzes.

“Chi-RTTY”

The third annual “Chi-RTTY” meeting will be held during the convention, replacing the usual October meeting of midwest RTTY enthusiasts.

Boyd (Beep) Phelps, W8BP, will be in charge of the technical session which will be held at 2 P.M. Saturday in Dining Room 11 of the Palmer House.

Among the well-known RTTY amateurs expected to be present are Merrill Swan, W6AEE; Byron Kretzman, W2JTP, and the “wizard of Wisconsin,” Bob Weibrecht, W9TCJ.

Equipment, including a Model 28 machine with several unique features, will be displayed. The Model 28 prints backward or forward and has an automatic end-of-line carriage return and line feed to prevent overlining. Also to be demonstrated will be a duplex system whereby two messages can be printed on the same line at the same time.

Other demonstrations and discussions will concern audio-frequency shift keying, auto-start and -stop and narrow shift standards.

The RTTY dinner will be held at 7 P.M. Saturday and a capacity attendance of 50 is expected. The RTTY committee recommends that reservations be made early to avoid disappointment. Price of the dinner is \$6.50 and checks should be sent to Ray E. Morrison, W9GRW, 8029 Keeler Ave, Skokie, Ill.

Mobile Judging

Biggest feature of the mobile section of the convention will be a mobile rig contest, which will be judged at 1330 hours Sunday in the Moore Street parking lot, three blocks east of the hotel.

The judging will be handled in these three classes:

Class A: Wholly home-built and/or surplus units.

Class B: Commercial units, wholly or part.

(Apparatus in first two classes to be installed in the usual personal vehicle.)

Class C: Unusual mobile installations not fitting in Classes A or B. These would include such things as trailer-mounted units.

There will be a special mobile display room where mobile gear will be exhibited, and a mobile troubleshooting clinic conducted thruout the convention.

Discussions will be held on transistors in mobile equipment, mobile antennas, and a forum on transmitter hunts will be held. Mobileers are urged to bring along their mobile QSLs and photos.

The 10-meter band will be monitored for mobiles coming into the city. Calling frequency will be 29.640.

50 Mc. and Up

The VHF section of the convention is to be sponsored by the Midwest VHF Club and John Landeck, W9WOK, Chairman, says it promises to be the largest gathering in VHF history. “Talk-in” facilities will be available for mobiles on both 6 and 2 meters.

High light of the VHF program will be the open forum to be conducted by Sam Harris, W1FZJ, VHF editor of *CQ*. Among the speakers will be Paul Wilson, W4HHK, of Collierville, Tenn., a pioneer in VHF propagation experimentation. There will be a VHF banquet on Saturday night at which 175 persons can be accommodated. Tickets for the banquet will be \$6 on a first-come, first-served basis. Contact the Club Secretary, Ralph Miller, W9BOZ, 928 W. Diversey Pkwy., Chicago 14, Ill.

There will be a hidden transmitter hunt for those interested. The transmitter will operate on a frequency of 432 Mc.; it will be vertically polarized and the signal will be tone modulated. Suggested equipment for the hunt is a portable receiver with a diode and at least one audio stage with headphones. The diode should be coupled to a beam of at least two elements through a tuned circuit to eliminate ambient interference in the downtown area. Other features will include technical discussions, a meteor demonstration at the Planetarium, a meteor propagation talk by W4LTU, a movie by the South Jersey Radio Club on some of the special phases of VHF activity and several awards. The awards will include selection of the “VHF Man of the Year” and an award to the individual or group submitting the most constructive suggestion, program, circuit or equipment designed to promote VHF activity.

There will be a special VHF room at convention headquarters where visitors can display QSL cards, photos, bulletins of interest to other VHF men, non-commercial displays of gear. Special identification badges will be available for VHF amateurs.

Assisting W9WOK on the VHF committee are John Stokely, K9APO, Club President; Ron Vaceluke, W9SEK, Vice-President; Ralph Miller, W9BOZ, Secretary; Mel Mendelsohn, W9OBW; Ignaz (Brownie) Schwinn, W9ROS; Walt Dian, W9REM; Jim Stubner, W9QKM; H. J. Swanson, W9DRN; Paul Watkins, K9ANC; Wendell Gallup, W9HXI; Richard Gillette, W9RSU; Larry Gleason, K9HOY; Dorothy Petersen, KN9ESB, and Vergne Petersen, K9BBK.



George Lindemann, W9QQS, Mobile section chairman, practices on the finer points of mobile judging for the Convention.

Second International YLRL CONVENTION NEWS

The Young Ladies Radio League is holding its 2nd International Convention in conjunction with the ARRL convention and many of the girls are expected to attend from all over the United States and Canada, plus some representing real DX.

Main attraction at the YLRL get-together will be the luncheon and forum at noon Saturday in the Crystal Ballroom of the Palmer House. Guest of honor and principal speaker will be Mary Burke, W3CUL, 1956 winner of the Edison Public Service Award. Other speakers will include Betty Frederick, W3PVH, Acme, Pa., YLRL president, and Eleanor Wilson, W1QON, YL editor of *QST*.

Another feature of the general program will be an illustrated talk on "Beauties of the Southwest," including pictures of Indian life, by Louisa Sando, W5RZJ, Santa Fe, N. M., YL editor of *CQ*.

YL activities will get started Friday night with a spaghetti supper and general get-acquainted session. Saturday night there will be a trip to Chicago's Chinatown for dinner, and on Sunday afternoon a sight-seeing boat trip along the lakefront.

Cris Bowlin, W9LOY, YLRL Convention Chairman and former President, issued a reminder to the gals that there will be playroom facilities where small fry can be parked while mom and dad are out hamming. Trained personnel will be in attendance and there will be plenty of things to keep the little ones happy.

YLRL officers not previously mentioned are Mildred Wright, W3YTM/5, Pasadena, Tex., Vice-President; Lolly Keller, W3VLX, Hatfield Pa., Secretary, and Ethel Smith, K4LMB, Arlington, Va., Treasurer.

Air Force-Army MARS Represented

The first national meeting of members of the Military Affiliate Radio Service of the Army will be held on the first night of the convention at 7:30 o'clock, according to Byron Lindholm, W9OA, chairman.

Principal speakers at the meeting will be Maj. Warren Robson, W4ADZ, chief of the Army's MARS program, and his aide, Ed Liscombe, K4KNV.

All MARS directors, both Army and state, will be presented at the meeting, giving members a chance to get acquainted and exchange ideas for future programs. Lindholm urges that all MARS members register at the booth in Dining Room 18 so they can keep fully informed.

Capt. S. A. Aurelio, MARS director of the 5th Army in Chicago, will head the welcoming committee.

Air Force MARS will also be represented at the National Convention with a special display. A complete program of meetings and talks is planned by Chief MARS Air Force.

RACES-AREC Activities

Radio Amateur Civil Emergency Service and Amateur Radio Emergency Corps activities on Saturday will be under the direction of the Chicago LARKS (Ladies Amateur Radio Klub), an affiliate of the YLRL.

The LARKS, under the direction of Gladys Jones, W9MYC, and Adeline Weiland, W9LDK, will man one of Chicago's mobile civil defense communications centers parked outside the convention hotel. This is a self-contained bus with facilities for maintaining complete defense communications for the entire city.

Principal speakers will include J. A. McGregor, W8-DUA, of Battle Creek, Mich., RACES Coordinator of Communications Division FCDA; F. E. Handy, W1BDI, ARRL Communications Manager; George Hart, W1NJM, National Emergency Coordinator of the ARRL; A. D. Swanson, Communications Chief of the

Chicago Civil Defense Corps; Bill Brinkert, W9BYO, State Civil Defense Officer.

William Reed, W9PAS, will show movies of the catastrophic Whiting, Ind., gasoline refinery fire in 1956 and the part played by amateur radio operators.

Uniformed Explorer Scouts who are integrated into the Chicago RACES program will act as official hosts at RACES headquarters.

LADIES PROGRAM

Even if the XYL doesn't care a whoop for ham radio, there will be plenty for her to do and see in Chicago.

Arrangements have been made for a tour of WNBO, the world's first all-color TV station, including attendance at the coast-to-coast show "Club 60." There will also be a tour through Marshall Field's famous department store, followed by a luncheon in the store's Wedgewood Room and an initiation into the SWOOOPs, an organization open only to unlicensed XYLS.

Other features on the agenda for the ladies will be a visit to the observation tower of the Prudential building, the highest point in the mid-west, and an afternoon at Chicago's famous Museum of Science and Industry.

F. C. C. Exams

Exams for Novice and Technician class tickets will be given under the direction of the Society of Radio Operators, W. O. Harper, W9BWM, chairman. Exams for General and Extra Class tickets will be conducted under the supervision of the district office. Persons planning to take an examination should register for it immediately upon arrival at convention headquarters. The exam registration desk will be near the main registration desk on the main ballroom floor.

Schedule of examinations at the Palmer House is as follows: Novice, Saturday and Sunday, 9:15 to 10:15 A.M.; Technician, Saturday and Sunday, 10:30 A.M. to noon; General, Saturday and Sunday, 1:30 A.M. to 3 P.M.; Extra Class, Saturday only, 3:15 to 5 P.M.

Electronic Torch Bearers

ONE of the more interesting and colorful ceremonies which has become a tradition of the Olympic Games is the use of thousands of runners in a relay to carry a torch from the site of the original Games in Greece to the site of the modern Games, wherever it may be. The torch relay inspired the organization of an amateur radio counterpart in connection with the 16th of the modern series, held in Melbourne, Australia, November 22-December 8, 1956.

The idea for the relaying of a radiogram of greeting originated with the Tasmanian Division of the Wireless Institute of Australia. They proposed that a message be relayed from Olympia, Greece, to Mount Olympus, Tasmania, and thence to the Games in Melbourne. The Secretary of the Division, VK7MH, wrote the League for assistance in setting up the relay. Through W6NS/SV0WT, contact was made with the Attica Amateur Radio Club, and its Secretary, SV1AD, proceeded to make arrangements with the Aussies. Schedules were arranged for a direct contact, but alternate routes were provided through the U. S. and the Union of South Africa in the event a direct QSO was washed out by poor conditions. The U. S., Australian, and South African administrations gave their blessing to the project by waiving the prohibition against third-party traffic for the Olympic message.

On November 17, 1956, SV1SV succeeded in contacting VK7WI/7, and after two earlier QSOs had faded out, passed the following message at 1530 GMT:

From: Attica Amateur Radio Club SV1SV

To: Wireless Institute of Australia
Tasmanian Division VK7WI/7

On the occasion of the beginning of 16th Olympiad in Melbourne we the Greek radio amateurs address our warmest greetings to our Australian colleagues and ask you to transmit the following message to the Committee organizing the Olympic Games in Australia stop this message is communicated from the town of Olympia where the holy light remains burning since three thousand years ago symbolizing the idea of courteous competition in peaceful achievements stop We wish that the knightly spirit and the faith in ideals which expresses

the meaning of Olympiad prevail in this magnificent gathering in Melbourne and in the conscience of world-wide athletic youth stop

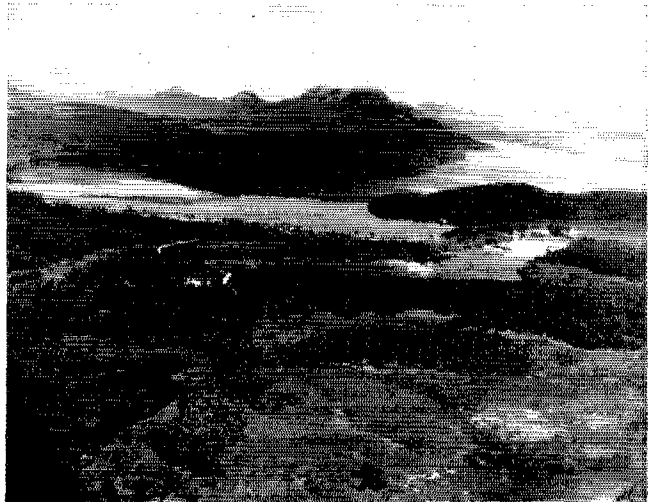
At 2000 GMT another sked was kept, and the return message was filed:

To: Attica Amateur Radio Club SV1SV

From: VK7WI/7 portable Mount Olympus Tasmania Party of 15 cordially acknowledge your message of greeting and will forward to the Olympic Games Committee in Melbourne end.

Although the messages were passed directly, a great many amateurs were on deck to help as needed — some by helping to set up the relay, some by transmitting fills during the early skeds, others by clearing the frequencies in use, still others standing by silently, ready to help if needed. Amateurs reported as participating in some way were: DL7CW, G3APN, G3DQO, KH6LJ, MP4KAC, SV1AB, SV1AD, SV1AE, SV1SM, SV1SP, SV0WT, VK2AGW, VK2FA, VK2ID, VK3AMR, VK7KA, VK7LJ, VK7MH, VK7UW, VK7YY, W1YNP, W4AT, W4FU, W4NQM, W6AM, W6GIZ, W6DZZ, W8NBK, and W0NWX. Undoubtedly there were others whose calls have not been made known to us.

QST salutes these "Electronic Torch Bearers" for a job well done. — P. W.



Mount Olympus, Australia

Strays

Here's an odd one. W7BQV put up a vertical that was made from 4" pipe. All went well until he began to hear some weird noises from the back yard. Investigation finally revealed that an owl had fallen down inside the vertical and was lodged at the bottom. Guess it proves that verticals are for the birds.

KN8EJX and her OM, W8BHC, mount their certificates on heavy cardboard, using colored "mystic" tape and Saran Wrap. The use of two different colors of tape serves to identify which member of the team earned the certificate, in addition to being an attractive framing, and the Saran Wrap protects the certificates.

C. W.

CY W. WAYNE is a dyed-in-the-wool code man. He has never used phone operation in all his 13 years of hamming. (Oddly enough, he has never been able to completely neutralize and eliminate the parasitics in his rig and has always had feed-back in the speech amplifiers he has tinkered with. Of course, he has never really contemplated phone operation.)

To look at Cy you would never guess he limited his hamming to one method of communication. He's of average height, slightly hunched over, two flattened cauliflower ears, acute hearing from 800 to 1200 c.p.s., (60 db. down at 500 and 2000 c.p.s.), has an over-developed right arm with a hardly noticeable wrist twitch, shows considerable difficulty in understanding any spoken language but is quick at charades or bird calls.

I just visited Cy and he is coming along fine. They unstrapped his ankles last week and today they removed the long-sleeved jacket for a full two hours. He should be perfect in a couple of months and will go home a new ham.

You are probably interested in what happened, so here goes.

Three weeks ago Cy heard that the hard-to-get DX was rolling in on 40. So comes early Saturday morning he was really giving the band the once over.

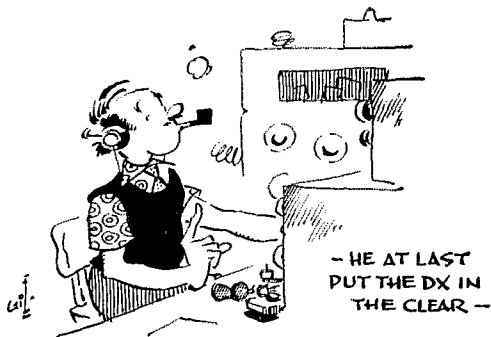
About 10:15 A.M. Cy almost fell out of his swivel chair. There on the low end of the band was GXEUA/50L6GT.

Cy kicked on the v.f.o., set down on GXEUA/50L6GT's frequency and waited. Comes the stand by, he lets out a 1 kw. shout ($\pm 20\%$) and sure enough, hooks GXEUA/50L6GT right off the bat.

Everything went fine until the second time around. All the heterodynes started piling on top of GXEUA/50L6GT just as he was trying to pass along the confirmation dope. But that didn't bother Ceedub. He slowly clicked the crystal switch on the Hammer-International Essex 42U2 receiver from position 3 to position 17. This motion removed seven of the heterodynes but still left two. By carefully tuning his voltage-regulated, temperature-compensated, oven-controlled, Clapp-circuit b.f.o., he zero beat one of the heterodynes to oblivion. Asking GXEUA/50L6GT for a repeat, he started to work again.

A flick of the switch threw in his low-pass filter which was flat to 1300 c.p.s. and was 113 db. down at 1500 c.p.s. Another motion quickly cut in the high-pass filter taking out everything below 800 c.p.s. But the remaining heterodyne persisted. Ceedub requested another repeat and pulled the trump card from up his sleeve.

A sharp click and into operation came the Selectable-Turbo-Jet Audio filter. With swift precise motions developed only through years of practice he attenuated the heterodyning signal 39 db. with one knob and simultaneously amplified GXEUA 50L6GT 47 db. with the other. Working with a 9 cycle band width he had at last put the DX in the clear!



Asking once again for a repeat transmission he prepared for a solid copy. At that moment the refrigerator motor cut in, the NYL turned on the vacuum cleaner switch, the line voltage momentarily dropped 1.3 volts, and the 900 cycle note emanating from the loud speaker climbed through the audio spectrum in a split second — disappearing forever.

The NYL heard an ear-piercing scream, ran into the shack and saw Cy lying on the floor, frothing at the mouth, the bug still clenched between his teeth.

Well, you fellows know the rest. Ceedub would have been home last week except for that relapse — you remember, when he received the QSL card from GXEUA/50L6GT portable 6. — W7HED

Strays

We hear through the grapevine that KH6AGB had a little interference trouble with his neighbors. It seems that one of those neighbors phoned him one evening and said, "Turn off that ham radio set. You're getting into my wife's electric blanket, and I won't have it!" (The only thing that puzzles us about this story is how come electric blankets are needed in Hawaii?)

Submarine veterans of World War II, with W9ZZU at the helm, are now making plans for a third annual reunion to be held Sept. 13-15 in New London, Conn. An effort is being made to contact every man who served on board a U. S. submarine during WW II. For further information, contact Ernst T. Rosing, W9ZZU, 1409 S. East Ave., Berwyn, Ill.

and Phone

MIKE R. FONAY is a real dyed-in-the-wool phone man. Sharp as they come too. Had his class B ticket exactly one year to the day when he went down to take the class A exam. His main reason for taking the exam was to work DX on 20 and 75 phone.

Mike is real hep technically. Knows how to neutralize the most stubborn c.w. rig and modulate it with plate, cathode, grid, absorption and even a dozen other modulating methods. Helps all the c.w. boys get on phone. A real pal and enthusiastic ham.

He took the class B exam four times. Flunked the code test the first three times, passed on the fourth after he got his speed up to a fantastic 16 w.p.m. Of course he got 100 per cent on the written part of the exam.

Mike builds all his own rigs. Real desk top beauties. Never includes a key jack, however. In fact, Mike R. has never made a c.w. contact in all his hamming years. His code speed dropped to 10 w.p.m. right after he passed the exam and now hovers between three and five w.p.m.

I suppose you fellows are wondering when he'll be back on 40 phone. Well, I just visited him and his wife. They gave him massive doses of sedatives after that horrible Sunday affair. The doctor said it was safe for him to convalesce at home if sounds were confined to soft music or whispered voices. The middle of last week he suffered a severe setback when his youngest daughter, Nokodey, practiced the piano. She started with Beethoven's 5th Symphony and Mike went into a state of complete shock when she played the first four notes — dit, dit, dit, da-a-ah.

Anyway, three Sundays ago the DX was rolling in on 40. Mike listened around (on phone) when suddenly he heard 35Z5/GT4U2 coming in RS59. Mike cut loose with a three repeat shout and got an immediate reply from 35Z5/GT4U2. Man, here was WAC in the making.

Gleefully he passed along station and the usual weather information. Everything was working like a charm. He took a big satisfied puff on his cigar (El no Corrodes, 3 for 25¢) and laid it on the edge of the ash tray. Unnoticed by Mike, it rolled off and under the edge of the transmitter cabinet.

On the third time around, he started to ask for the QSL confirmation. At that instant a puff of grayish-blue smoke poured through the left side vent of the transmitter. Mike quickly lifted the cover, saw the smoke curling around the modulator filter capacitors and after a hasty sniff as-

sumed that they had just departed for the happy filtering grounds.



Not to be thwarted in his WAC effort, now just a single short transmission away, Mike thrashed about mentally for a method of completing the contact. Suddenly he was struck with a novel idea. He would use (ugh!) c.w. But how? He had no key jack, no provision for c.w. 35Z5/GT etc., repeated the standby — the tension could be cut with a knife! Then Mike's eye stopped upon the send-receive press-to-talk switch on the mike.

He blued the air with a long string of harsh adjectives (since he was off the air phonewise) as he realized the (ugh!) c.w. job that layed before him. He rolled the mike stand on its side and started sending "PSE QSL CONFIRMATION" with the switch, still muttering the string of harsh adjectives, now interspersed with a few harsh adverbs.

Instantly the code came back to him. A, dit-dah, B, dit-dit-dit-dah, etc. Mike pressed out "PSE YXL CO ——" but on the second dash of the N, the mike rolled abruptly off the desk and shattered on the floor. The switch wire shorted to the mike stand, the transmitter primary fuse blew, and Mike R. was off the air — finished.

Hearing the commotion, his OW rushed in to find Mike green as chlorophyll toothpaste, staring at the loudspeaker. As she entered the room she heard these words — just as Mike R. twitched and slumped to the floor. "—— can hear you cussing intermittently and carrier finally disappeared. Guess you're having trouble. Sorry OM, see you later. 35Z5/GT4U2 off and clear."

Anyway, fellows, I delivered your get-well gift to Mike. He isn't too coherent yet but I could tell by the color of red that he changed to that he thought it very novel and useful — a microphone shaped like a key. — W6WED

Strays

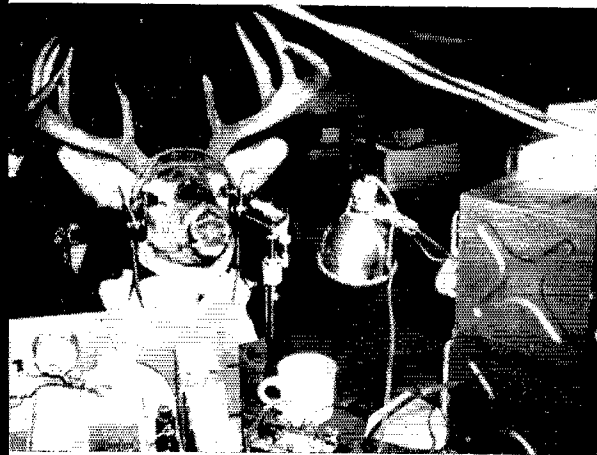
The United Press recently decided that it was news that an amateur radio outing was going to be called a "hamfest."

Both K5ELS and GM3EFS live in the city of Alexandria — but in different countries! — K5ELP

Strays



Buddy Alyernaz, W6DMN, of San Jose, was recently awarded a "Single Side Band Susie." There are two such awards each year by the Sliced Ham Fraternity of Oregon. The Sliced Hams are more generally located in the Pacific Northwest, but when their awards to outstanding amateurs in the s.s.b. field are given, they reach out for what they feel is an outstanding contribution. Buddy has been operating for over 30 years, and has been blind the entire period. The "Susie" was presented by W6JAT.



Flash! One of the recent Field Day participants! We have been given very little information concerning this fellow's identity. We do note with interest, however, that he is one of those who favor wearing the headphones "way down on the cheekbones."



Having trouble getting permission from that good wife of yours to put the rig in the living room? Then build yourself a console along the lines of the one pictured here. This one, built by W3TSE, is constructed of $\frac{3}{4}$ " white oak plywood, with the control panel and the edge molding made of solid white oak. It is 42" wide, 30 $\frac{1}{2}$ " deep and 31 $\frac{1}{2}$ " high. The operating shelf extends out 15" and is covered with green formica. You can see from the photo how W3TSE has his equipment arranged, and you could vary the partition dimensions to suit your own circumstances. W3TSE has all the leads in the back neatly cabled, and the entire arrangement makes it a thing of beauty.

QST for

DX Operating Tactics

As Seen From the DX Operator's Point of View

THE ART of working DX is a subject about which much has been written, and surely every club has at least one "expert" on the subject who can always be counted on for some advice. WIDX has covered the subject in *QST*¹, and there have been many tips and pointers both in the Operating News section of *QST* and in the "How's DX" column. As a little change of pace we thought that the candid opinions of some of those who have operated from some rare DX spots would be of interest. We wrote to a number of hams who have gone on DXpeditions and asked them some specific questions concerning their operating experiences and opinions. In the paragraphs that follow we'll summarize some of this material, with the hope that you will benefit therefrom. If you do, then you owe thanks to W2SKE, W3LEZ, W3VKD, W6SAI, W0AIW, W0ELA, DLICR, and ZL2GX, all of whom were most prompt in their replies to our queries.

High Power

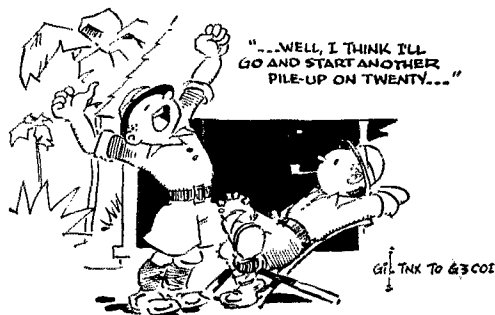
The observations by our panel of experts on the matter of power were interesting, to say the least. These quotations are pertinent: "... during a DX contest with a mass of Ws culling at S8/9 level, an S5 signal will stand out remarkably . . ." "... the number of outstanding (signals) or . . . rockerushers is very small as are also the number of below par (signals) — the percentages would be say 10-80-10. . . ." "The station with the big signal always has the advantage — if his operating procedure is also big!" "The outstanding signals belong to a very few only. About 25% are above average, some 50% are just average, and about 25% are below." "In a bunch of 25 to 50 signals, there will be two or three very good ones, about five or six average, and the rest will be weak but readable in the clear." "I find that the ionosphere usually controls the QRO boys. . . . If the skip is 'agin' you, a lot of power helps. If the skip is right, power is not too important. In a pile-up, one or two signals are outstanding, the rest are on a par, with plenty of weak sigs that never make it. In the long run, the antenna tells the story, *not* the power." "Looking over my last year's log I find in one stretch of an hour I worked 34 stations. Of that number I gave extra good reports to six stations, poorer than average reports to three stations, the rest were about the same. Note, however, I didn't work the extra strong stations first, or even in order."

Thus, in general the consensus seems to be that it is not necessarily power which will turn the trick. There must be some other magic ingredient. Let's see what else our experts say.

¹*QST*, Sept., 1950, p. 40.

The Quality of Your Signal

How about a signal that's got a little hum or chirp on it? Doesn't it attract more attention and thus give the user an advantage in the pile-ups? "NO!" said our DXpeditioners emphatically. Here's what some of them added relative to the question about which type of signal was better: "A clear signal every time." ". . . A clean signal is of the essence." "I would say that the clean signal has the advantage." "A good signal is



always easier to read than one with a chirp or other fault."

There were several other quotes on the subject, but those should convince you!

The above refers, obviously, to c.w., but the same argument relates to phone operation. Almost every one of the fellows pointed out that clean, crisp modulation provided the user with a definite advantage when the competition was keen.

Operating Tactics

Here's where knowledge and skill really pay off. We have seen from the quotes above that high power is not the answer, and that a clean, crisp signal is advantageous, but the replies to our questionnaire indicate that it is in the realm of *operating tactics* where the men are separated from the boys. Let's look at a few quotes, and then summarize the pertinent points. Remember now — we are getting the viewpoints of fellows who have *been* rare DX and who have had an excellent chance to evaluate which operating tactics were most successful.

We asked, "Do you recommend 'tail ending' — the practice of a W station breaking in on the tail end of another's QSO and announcing his presence to the DX station?" The following were some of the replies: "Tail ending is O.K. if it isn't done prior to the SK." "No, I don't recommend tail-ending. I always do it, and it gives me an advantage. If more guys do it, my advantage will be diminished. As a DX station, I never minded it. Helps you to keep track of what 'sharp guys' are around. Like everything else, if

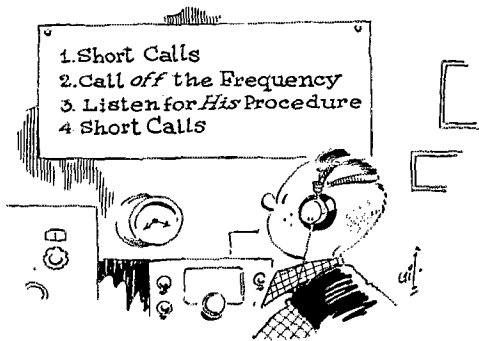
everybody does this, bedlam will result. So, it depends on the situation." "Okay if done briefly and crisply." "O.K. only if it does not break up the existing QSO." ". . . in the case of a DX expedition or some other extremely rare DX operation, I do not recommend the practice of tail ending, primarily because under these circumstances this practice is only the first step in a progression which quickly degenerates into a highly undesirable situation. If the rare DX station answers a tail-end call, this fact is noted by numerous W operators with the result that someone tries to gain a slight time advantage on the next QSO cycle by calling a bit earlier. In just a few cycles the timing of the calls is progressively advanced until some stations start calling during the transmission of the RST report with the result that an orderly operation has deteriorated into chaos. As a matter of information based on actual experience, I did not reply to any station who called (me) prematurely. . . ." "Sure, tail ending is good stuff. . . . Of course, it doesn't mean calling continuously during the whole transmission, but merely putting your call letters in after the working station has started to sign." Analyzing these quotes, we find that tail ending can be a good deal if done intelligently and with due regard for the situation.

Then we asked, "Do you like long calls or short calls. Does the long caller gain an advantage?" Here are some of the comments: "Short calls — enough said!" "The long caller is definitely a nuisance, though he might gain an advantage by rendering the short caller unreadable." ". . . if the DX station replies to the last signer, the long call pays off. Unfortunately, this leads to the 'merry-go-round' effect when everyone calls and nobody listens. In general, short calls are best. . . ." "Short calls, then a quick break, then another call, is best." "Short calls every time. If the Stateside station is going to be heard at all, the short call will get through. If you get no answer, repeat the call, but keep it short." "Short calls forever. That doesn't mean you can't open up again after a short listening period. It speeds things up, and cuts QRM." "I prefer short calls." And if the above doesn't convince you, take a listen yourself and confirm that in the long run the snappy operator using short calls usually makes out best in the pile-ups.

Break-in operation didn't garner much support from our DX panel. We asked, "Do you feel that break-in operation is a real help to DX work?", and got these replies: "A fast-working transmit-receive control seems satisfactory." "No." "Definitely not! The DX station goes 'BK' and ten thousand guys with a good imagination will fire up and go 'BK' and reply to him. The DX station should *always* sign the call of the guy he is working, as lots of the time the DX station is buried in a pile of long-callers when he returns. If he breaks, no one knows who the heck he is working." "Not in the manner it is used in traffic work, but quick comeback to a query is an advantage." "Break-in is probably considerably more important to other phases of amateur radio,

such as traffic handling, than it is to DX work." "I don't think break-in is suitable for DX. For one thing, the QRM is usually heavy, and if several stations would sign 'break' it might be hard to tell who is being broken by the DX station with the resultant problem of trying to read through several stations operating at once. I favor short calls and no break." "I think break-in is over-rated. I think short calls with plenty of listening periods will achieve most of that claimed for break-in." We must record that one fellow did answer "of course" to the query about break-in.

Next we asked a very pertinent question: "Do you like the W stations to call you (when you're operating from the DX spot) right on your frequency. Do you make any attempt to control this?" Look over these replies and be guided accordingly: "Absolutely 'no'. This makes for more confusion than can ever be coped with. . . . this is the first thing that a DX operator must control." "When there seems to be no trouble for my signal to be received I do not make an attempt to move callers off my own frequency. . . . I think this could be enforced easily by answering off-frequency stations only." "Work a bit off the frequency so the gang can have a semi-clear shot at you. . . . If the skip is good and the reports you get are good, it is O.K. to work zero beat, as the Ws can hear you. If you are S2, it's a bad deal." "Okay to call on frequency, but when there is a pile-up the station on the outside of the pile has the best chance of getting an answer." "No, I do not like the W stations to call me right on my own frequency. . . . I started each day's operation by calling 'CQ 10 U' or 'CQ 10 D', and then replied to a station calling in accordance

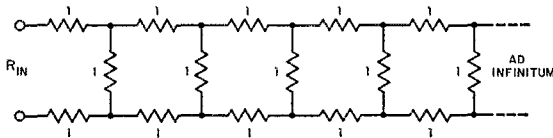


with this request. If I gradually got nearer to my own frequency after numerous QSOs, I would call a short CQ with the '10 U' request included, and the swarm of stations quickly pulled away from my frequency." "I think the DX station should frequently give notice that he is tuning at least 10 kc. high or low — his own (frequency) should then be clear." But to show you that there are two sides to any question, here's one other quote in reply to the query about being called right on frequency: "I like to have stations call me on my frequency because it lets me monitor my own signal. . . . I find that even if you do announce 'up ten' or something, there are al-

(Continued on page 144)

Quist Quiz

Peter Onstad, K0CSV, thinks the experts will have no trouble with this one. Having acquired a carload of 1-ohm resistors, he started to connect them as shown. After the string became several miles long he decided it might be easier to compute the eventual R_{in} . Can you?



For those of you who don't have a gold brick and a suitable ammeter for arriving experimentally at the solution to last month's Quist Quiz, first remember that a 15-ampere current flowing in from the left will divide in the two resistors in inverse proportion to their resistances. Thus 9 amperes flows through the 6-ohm resistors and 6 amperes runs through the 9-ohm resistors. To satisfy this condition, 3 amperes must flow from A to B. The mere fact that an arrow was omitted indicating the direction as left to right confused only a few of our readers.



25 Years Ago

this month

August, 1932

... Twenty-five years ago this month there was considerable discussion concerning rotten notes. The editorial talked about them, an article on receivers talked about them, and so did some of the letters from the members. The consensus seemed to be that the state of the art was progressing more rapidly than some of the amateurs.

... The lead article was one which made history and which revolutionized the design of communications receivers. Jim Lamb, the League's Technical Editor, introduced the quartz filter as an aid to greater selectivity in the I.F. stages. This was a "how to" article which proved to be very popular.

... George Grammer continued his description of a 160-meter transmitter, while W9YAA discussed the practical use of grid-bias modulation in amateur phone transmitters.

... Other technical articles included a high-output amplifier for the battery receiver, a battery-powered transmitter using type 30 and 33 tubes, and a goodly number of tips for the experimenter.

... On the operating side of the ledger, we find the results of the International Goodwill Tests of 1932. The report mentions that hundreds of logs were received from all over the world, and that over 70 countries were logged here in the United States. Special mention is made of the fact that W1CJD (he still draws a cartoon or two for us) logged VK3TM on 7 Mc.

EMBLEM DECALS

The League emblem is now available to members in the form of a black-and-gold decal approximately four inches in height. The decal is designed to be used either on the inner surfaces of automobile windshields and windows, or may be affixed to outer surfaces such as bumpers, trunks, etc.; it may also be used to decorate equipment panels or items in the shack. As many copies as desired may be obtained at ten cents each (*no stamps, please*) to cover costs. Send your request to ARRL, West Hartford, Conn.

Silent Keys

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

- W18KI, Charles L. Davis, Hudson, N. H.
- K2DJM, William A. Wheeler, Finghamton, N. Y.
- W2DKF, Raymond Yard, New York, N. Y.
- W2FEZ, Louis A. Kerngood, New York, N. Y.
- W2JLZ, Frederick W. Metzger, Rutherford, N. J.
- W2JRO, Emil J. Smith, Camden, N. J.
- W2JWN, Leo Harrison, Cresskill, N. J.
- W3NFC, Esther W. Rushworth, Baltimore, Md.
- W3NYC, Frank R. Martin, Upper Marlboro, Md.
- W3WVY, James K. Horne, Reading, Pa.
- W4AVK, Arthur L. Whitfield, Albermarle, N. C.
- W4BZT, Earl T. Welch, Southgate, Ky.
- W4SFD, Martin G. Wheeler, Louisville, Ky.
- W5AAT, Louis L. Herbert, Plaquemine, La.
- W6BLY, Ira J. Seab, Whittier, Calif.
- W7LER, George Harmon, Butte, Mont.
- W7SJV, Laurence E. Lindsomith, Dayton, Wash.
- W7WXR, Jon A. Rehn, Tacoma, Wash.
- W7ZZS, Paul E. Shingler, Lopez, Wash.
- W8FY, Walter L. Leatherman, Van Wert, Ohio
- W8VCC, Max L. Haas, Cleveland, Ohio
- W9FAO, Kendrell M. Horton, Cloverdale, Ind.
- W9KTA, Ralph A. Styma, Peru, Ill.
- W9TVM, Adrian I. White, Wausau, Wis.
- W0IQD, Philip G. McGinnis, Denver, Colo.
- G6LB, Lawrence J. Fuller, Chelmsford, England
- GW6OK, William Jones, Colwyn Bay, Wales
- H166C, Ernest C. Corrie, Caracas, Venezuela
- KZ5NM, Nelson W. Magner, Margarita, Canal Zone
- P12AJ, Donald W. Kurtz, Aruba, N.W.I.
- VE2CO, Lindsay G. Morris, Pointe Claire, Quebec
- ex-VP5PZ, John Grinan, Jamaica, B.W.I.

OUR COVER

This month's cover shows the v.f.o. which goes with W1JEQ's new mobile rig. The mobile rig was pictured on the cover last month, and the "how-to-build-it" starts on page 20 of this issue. More on the v.f.o. next month.



Hints and Kinks

For the Experimenter



USING THE COAXIAL FEED LINE AS AN A.C. EXTENSION CORD

A HEAVY-DUTY 115-volt extension cord that will reach to the top of a tower or out to the mobile rig is not always readily available when the electric drill, grid-dipper or soldering iron must be used at the outside location. If your next beam or mobile project necessitates outside use of electric tools or instruments, and if you do not have one of the relatively expensive a.c. extension lines on hand, consider using the coaxial feed line for carrying 115 volts to the desired location.

The homemade adapters that permit running 115 volts a.c. through the coax are shown in Fig. 1. A standard dual a.c. outlet is equipped

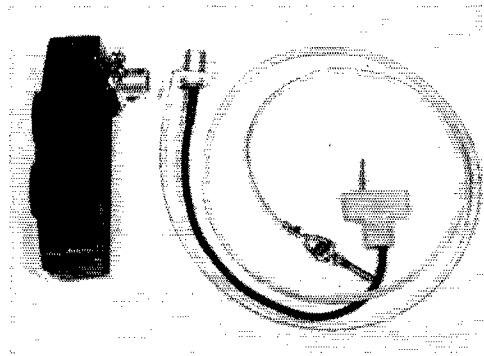


Fig. 1—The assembly at the left is used at the outside end of the coaxial feed line when the latter is used as a 115-volt extension cord. The unit at the right is used to connect the "shack" end of the coax to a 115-volt a.c. outlet.

with a female coaxial chassis receptacle (type SO-239) as shown at the left side of the photograph. This assembly permits connection to a tool or instrument at the "work" end of the line. The unit to the right side of the illustration mates with the "shack" end of the feed line and consists of a type SO-239 receptacle, a pair of leads, a test clip and an a.c. plug. The a.c. plug shown has one of the prongs removed, but this modification is not actually necessary. Notice that the test-clip lead is connected to the outside shell of the coax receptacle. The lead connected to the center terminal of the SO-239 is terminated at one prong in the a.c. plug.

When preparing the feed line for 115-volt use *always make certain* that it is first disconnected from both the antenna and the transmitter (or antenna coupler). This will prevent the inadvertent application of power to the antenna and

will thus prevent shock hazard and blown fuses. Next, connect the dual-outlet block to the outside end of the line. Now connect the test-clip lead to a *known* ground inside the shack, and then insert the one-prong a.c. plug into a 115-volt outlet. Power will now be available at the far end of the coaxial line providing the active prong of the a.c. plug has made contact with the "hot" side of the a.c. line. If power is not available at the outside end of the coax, it indicates that the a.c. plug is in contact with the "cold" side of the power line and, of course, it is necessary to reverse the plug.

If you can't talk the XYL into lending a hand inside the shack while you test for power at the far end of the line, it is a simple matter to make a one-man job out of the entire operation. Merely hang a test lamp at the output end of the line (place it where it may be seen from the shack) and then watch the lamp as you insert the plug. Color code or otherwise identify the correct plug-outlet combination so that future use of the system will necessitate no trial-and-error runs.

— Ken Glanzer, WOLMB

A HANDY CONTROL-TERMINAL PANEL

THE PANEL shown in Fig. 2 may be used for mounting control switches, antenna feed-line terminals, coaxial receptacles and other items. Terminals and jacks located at hard-to-get-at spots at the rear of a receiver or other pieces of equipment may be piped out to the new panel so that the connecting and disconnecting

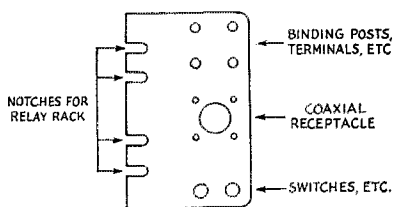


Fig. 2—The auxiliary panel used by W3GKP for mounting feed-line terminals, jacks, control switches, speaker terminals, etc.

of leads and cables can be done with a minimum of effort.

The panel may be made with aluminum, bakelite, Presdwood, etc. It should be notched as shown if it is to be mounted on a relay rack or a rack-type receiver panel. The size, layout and drilling should accommodate individual requirements. Provision for extra jacks and terminals may come in handy at a later date.

— William L. Smith, W3GKP

Happenings of the Month



ELECTION NOTICE

To All Full Members of the American Radio Relay League Residing in the Atlantic, Canadian, Dakota, Delta, Great Lakes, Midwest, Pacific and Southeastern Divisions:

An election is about to be held in each of the above-mentioned divisions to choose both a director and a vice-director for the 1958-1959 term. These elections constitute an important part of the machinery of self-government of ARRL. They provide the constitutional opportunity for members to put the direction of their association in the hands of representatives of their own choosing. The election procedures are specified in the By-Laws. A copy of the Articles of Association and By-Laws will be mailed to any member upon request.

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

Executive Committee

*The American Radio Relay League
West Hartford 7, Conn.*

*We, the undersigned Full Members of the ARRL residing in the.....Division, hereby nominate.....of.....as a candidate for director; and we also nominate.....of.....as a candidate for vice-director; from this division for the 1958-1959 term.
(Signatures and addresses)*

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

All such petitions must be filed at the headquarters office of the League in West Hartford, Conn., by noon EDT of the 20th day of September, 1957. There is no limit to the number of petitions that may be filed on behalf of a given

candidate but no member shall append his signature to more than one petition for the office of director and one petition for the office of vice-director. To be valid, a petition must have the signature of at least ten Full Members in good standing; that is to say, ten or more Full Members must join in executing a single document; a candidate is not nominated by one petition bearing six valid signatures and another bearing four. Petitioners are urged to have an ample number of signatures, since nominators are occasionally found not to be Full Members in good standing. It is not necessary that a petition name candidates both for director and for vice-director but members are urged to interest themselves equally in the two offices.

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

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

Present directors and vice-directors for these divisions are as follows: *Atlantic:* Gilbert L. Crossley, W3YA, and Charles O. Badgett, W3LVF. *Canadian:* Alex Reid, VE2BE, and William R. Savage, VE6EO. *Dakota:* Alfred M. Gowan, W0PHR, and Forrest Bryant, W0FDS. *Delta:* Victor Canfield, W5BSR, and Milton W. Kirkpatrick, W5KYC. *Great Lakes:* John H. Brabb, W8SPF, and Robert L. Davis, W8EYE. *Midwest:* Robert W. Denniston, W0NWX, and Sumner H. Foster, W9GQ. *Pacific:* Harry M. Engwicht, W6HC, and Harold L. Lucero, W6JDN. *South-western:* James P. Born, jr., W4ZD, and Thomas M. Moss, W4HYW.

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

For the Board of Directors:

A. L. HUDLONG
Secretary

July 1, 1957

TV RECEIVER RADIATION

FCC, in Docket 12018, recently proposed a general relaxation of the present limits on radiation, through power lines, of energy from internal circuits in television receivers. The ARRL Board of Directors at its May meeting instructed the Hq. to study this proposal and its effects on amateurs, and file comment as necessary to protect amateur interests. The text follows:

FEDERAL COMMUNICATIONS COMMISSION

In the Matter of
Amendment of Subpart C of Part 15
of the Commission's Rules Governing
Radio Receivers } Docket No. 12018

COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, INC.

Pursant to Paragraph 9 of the Notice of Proposed Rule Making in Docket No. 12018, released May 9, 1957, the American Radio Relay League, Inc., on behalf of more than 60,000 members, submits these comments.

1. The League has no comment on Paragraph 3 of the Proposed Rule Making, since radiation from a television receiver above 260 Mc. does not affect the amateur service.

2. As regards power-line interference in the 3-25 Mc. range, discussed in Paragraph 5-7, inclusive, of the Notice, we must oppose a general relaxation of the limits set in the February, 1956, edition of Part 15 of the Rules. In the present Notice the Commission itself has emphasized the

(Continued on page 146)

YL News and Views

BY ELEANOR WILSON,* W1QON

OUR MAILBAG is generally heavy, never dull. Naturally we've always been very appreciative of all of the letters received and welcome hearing from anyone who cares to pick up a pen. From time to time we like to share some of the mail with you. Here are excerpts from a few letters received recently.

S. S. Santa Monica
Maracaibo, Venezuela

I don't know whether your column welcomes any items of interest from the opposite sex, but you may find the following of interest to you, since the story centers around a prominent YL ham.

I first met Miss Rose Saffron, W2TU, more than 20 years ago when I was a young ham living in the city of New York. Rose was one of the earliest YL hams to hold a general class license in those early days. We had met after having a QSO on the air, and I was active under the call W2CVQ. I lost contact with Miss Saffron after I had enlisted in the U. S. Coast Guard in 1935. The years passed and I never saw or heard from her again.

A month ago I had the pleasure of visiting G3CHW, Mr. Vic Newport, of Bristol, England. I welcomed the opportunity to work his phone station. Unfortunately, conditions on 10 meters were not very good, but I managed

a QSO with a W5 from Dallas, Texas. I introduced myself as a Yank from the States, W1TFT, from Wallingford, Connecticut. I don't think you can visualize the surprise and elation that overcame me when W5TU, Joe Reiffen, upon looking up my call in the book, asked me if I was once a resident of New York City and if I knew a YL by the name of Rose. At this point Rose took the mike and thus began the renewal of a friendship that had its roots more than two decades ago. Rose is now Mrs. Joseph Reiffen, and if my memory serves me, it was he who helped Rose obtain her ticket!

Strange and wonderful are the ways of ham radio.

— Bill Blumenfeld, W1TFT

Iwo Jima

I feel out of place, writing to a YL column, but I believe I have an idea for your monthly QST article.

What do you and the girls think of a section each month devoted to "Lonely Keys" or "Lonely Mikes"? There seem to be plenty of opinions on how to interest the XYL or the OM in the fascinating hobby of amateur radio, but my idea would be to try to get the people with the same outlook together to begin with, and one domestic problem is already eliminated.

As you must have already concluded, I have a problem. Should I give up girls or radio?

My greatest weakness is mobile operation, and the mere sight of an antenna bedecked, equipment-crowded vehicle seems to cause even the stoutest-hearted girl to shudder with apprehension and put a quick end to a promising friendship.

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



The twenty-five YLs above agreed unanimously that they had one fine time the week end of May 21 at the Seventh YL Convention in Flint, Michigan. The affair was sponsored by the Genesee County Radio Club, with Esther Stuewe, W8ATB, chairman, assisted by W8s CQH, KLZ, UAP, and Wanda Bickersteth. High lights of the affair included talks by W8RIR and W9s RUJ and YWH and a YL-OM banquet. Shown in the photo are standing, l. to r.: W8s BJR UAU OTK FPT, VE3AJR, W9AYX, W8QPT, K0BTY, W3LUG, W8SNB, W8s OQY YWL, W9YWH, K9EMS, W9SJR; seated, l. to r.: W8KLZ, KN8CQH, W8UDA, W8ATB, W8RIR, W9RUJ, W8 UAP MBI.

I believe my idea has a practical side as well, for what could be nicer than a long Sunday ride and picnic lunch with your sweetie and your "second-op" along, yet the result is not a threesome.

Oh well, I may just be dreaming, but I can't do much else, for there are no YLs within 1200 miles of this rock.

— Bob Tiffany, KA9IJ/W1GWU

Chicago, Illinois

Recently an article by a columnist appeared in one of Chicago's newspapers that reflected unfavorably on amateur radio. It was in answer to a TVI complaint from irate fans and stated that the "offender" should be reported to the Federal Communications Commission. It was assumed that either the amateur operator was operating without a license or deliberately causing interference. Since the newspaper has large circulation, one can imagine the widespread effects of such unfavorable publicity.

Almost immediately this article began to reap its undesirable harvest. Local hams received clippings of it through the mail, signed and unsigned; some received personal visits, others telephone calls from misinformed readers.

Such misleading articles can do much harm if not counteracted. A number of Chicago's amateurs were sufficiently aroused to write personal letters presenting the amateur's side of the TVI problem. Officers of local clubs urged members to write protesting letters. The local TVI committee also did its part, of course. Many of the letters written were truly gems and evoked a feeling of pride in being a member of this wonderful fraternity.

The avalanche of protest seemed to have its desired effect, and the columnist publicly indicated lack of adequate knowledge on the subject and that she might possibly have spread inadequate information.

— Helen Kennedy, W9MXI

Long Beach, California

Speaking of YLs in Australia—VK2MI, Mrs. J. A. Millen, has a pet spider which prefers to sleep on top of the receiver, where it is nice and warm. There is also a pet crow who has the run of the house. On one occasion the crow got into the radio shack and gobbled up Mister Spider! The successor of this casualty now basks on the receiver and has to be forcibly pushed off if he decides to cling to one of the controls. It is an amusing thing to see this enormous spider lumber clumsily all over the operating desk. Sometimes, if he feels he has been aggravated beyond endurance, he will go off in a huff and hide in the curtain drapes; but call him and he comes lumbering out in hopes of a feed!

— Harold Scott

Calling All Clubs

Your help in preparing our second annual YL club listing would be much appreciated. (The first listing was published on these pages in November 1956.) In order to insure that the information printed about your club is complete and up-to-date, please drop us a card or letter today, giving the following pertinent facts:

1. Full name of club
2. Year organized
3. ARRL affiliated?
4. YLRL affiliated?
5. Name and call of president or executive officer for the 1957-58 term
6. Where and how often does club meet?
7. Dues
8. Requirements for membership
9. If club conducts its own net, give name of net, NCS, day, time, and frequency of meeting
10. What is the purpose of your club?
11. In what special activities or projects does your club participate?

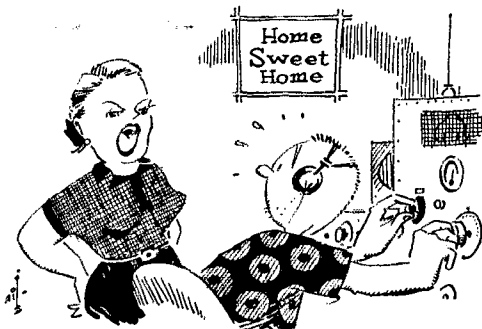
Please, send the desired information to us right away, and then watch for your club to be listed along with some thirty others in a Fall column. By the way, replies to questions 10 and 11 will be especially noted.

Coming YL Get-Togethers

Virginia — The annual Blue Ridge Net Picnic, August 18, at Big Meadows, Skyline Drive. Details may be obtained from NCS Arlie Hager, W4HIF, Box 749, Orange, Va.

Oregon — The Portland Roses invite the YLs of Oregon and Washington to attend their annual picnic August 18 at Mt. Tabor Park. Those planning to attend should notify Dorothy Mallison, W7REU, 3206 S.E. 67th Ave., Portland 6, Oregon.

Illinois — ARRL National Convention, Chicago, Labor Day week end — the big ham get-together for 1957. See details here last month and see you there!



Keeping Up With the Girls

CLUBS:

Texas YL Round-Up Net — A correction on information which appeared earlier: Pres. and NCS is K5BNQ; V.P. W5KEC; Secy-Treas. W5LGY; Pub. Chmn. W5YRT; Alternate NCS W5s DIV and UXW. The Net meets Thursday at 0800 CST on 3880 kc. and at 1000 on 7235 kc. During the summer the net will meet one hour earlier and will revert to regular schedules the first Thursday in September. The net now has 69 certificated members from seven states.

Rhode Island YL Club — Pres. W1CEW announces the "adoption" of EA7EV, Maria, of Spain. Three more R.I. YLs with general class licenses are W1s JDH, JHY, and JJU. W1WED announces ARRL bulletins on six meters.

LARKS — New officers are Pres. W9YWH; V.P. W9TDC; Secy. K9EMS; Treas. W9KFC; Pub. Chmn. K9EMP; Novice Rep. W9SJR; *Pinfeather* Editor W9UON.

Camellia Capital Chirps — K6HOI is NCS of a new c.w. practice net which meets Thursday at 2000 PDST on 3725 kc. Pat will also monitor the same frequency daily at 1000 for those interested in c.w. practice.

MISCELLANY:

Thirty-three YLs attended the annual luncheon of the Women Radio Operators of New England at a restaurant in Shrewsbury, Mass. on June 8. W1RLQ, Chata, was chairman. Ex-PAOULA was guest speaker. . . . Eleven YLs attended the ARRL Oklahoma State Convention at Tahlequah on June 1 and 2. K5BNQ, Doris, presided over the YLRL Roundtable. . . . W6QMO, Jeri, has "retired" from official duties at A6USA to work daily c.w. nets from her home QTH. . . . K4LMB, Ethel, and W4TVT, Claire, attended a May meeting held for the purpose of adopting the charter and by-laws to handle the 1958 ARRL National Convention in Washington, D. C. . . .

On May 21 W9LOY took a bit of time out from her task as Chairman of YL activities for the coming National Convention to produce a second son. All best wishes to Cris, who says she is doubly busy but doubly happy and is hoping to see as many YLs as possible in Chicago on Labor Day week end.



Joyce Sprouse has been on 10, 40, and 75 meters since July 1955 as W1AWK; she was first licensed as a novice in 1953. Besides her radio interests which she shares with her OM W1PNE, Joyce follows politics closely and is an active member of her party in North Carolina.

YLs YOU MAY HAVE WORKED

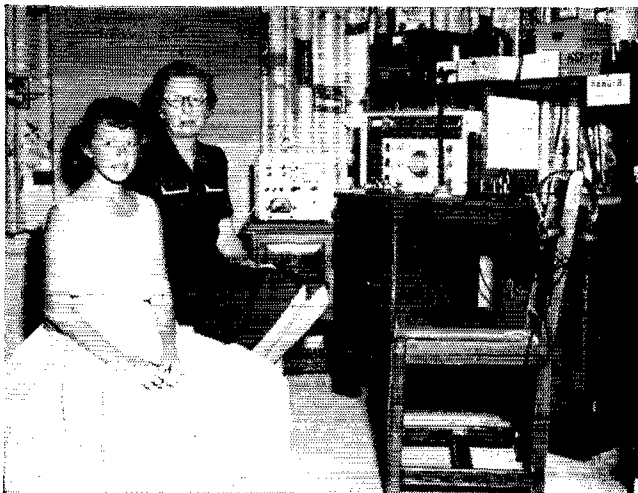
Michelle Herbert, F3YL, is one of very few YL amateurs in France. A member of YLRL and YL Manager of the REF, Michelle operates primarily on twenty phone with 40 watts from her QTH in Authie. Her OM is F8BO.



Doris Anderson, K5BNQ, of Broken Arrow, Oklahoma, found that her net training proved valuable during an emergency in May when her county was inundated by flood waters of the Arkansas River. During the height of the flood, a tornado struck Broken Arrow, causing heavy property damage. Doris and her OM, W5IWL, established emergency communications in the hospital and police station and for a week the two slept little and operated almost continuously. For their unselfish service, Doris and Andy gained the praise of CD authorities and the police. Licensed in 1955, Doris is consistently active on 10, 15, 20, 40, and 75 phone and c.w. For winning second place phone in the 1956 YL-OM Contest, she was awarded the gold YLRL cup shown in the photo. She is currently president and NCS of the Texas YL Round-Up Net. The parents of three jr. ops, ages 13, 11, and 9, Doris and Andy "do enough amateur photography to buy ham gear, go to hamfests, etc. — thus make one hobby support another."



A fiction book for teen-age girls about amateur radio (*Kay Everett Calls CQ* by Amelia Lobsenz, W2OLB) so fired the imaginations of thirteen year old Marilyn Morgan and her mother Jackie of Burbank, California, that amateur licenses for both resulted. Studying the code given at the back of the book, they first practiced with an empty coke bottle and spoon and then graduated to an audio oscillator. In August 1956 they dropped their novice Ns, which they held for three months, and became K6RIHZ (Marilyn) and K6RIJU (Jackie). They are both on 10, 15, and 40 c.w. and two meter phone and are RACES members.



That Georgianna Mezey, W2KEB, spends much of her time helping others is a fact that must be readily concluded after scanning her record of recent activities. Since February 1954 Georgie has made BPL every month, leading all others in traffic totals in the lists published in *QST*, in September, October, November, December of 1956 and March 1957. She is New York State Alternate Radio Officer and NCS of the N. Y. State Civil Defense Radiological Net. For her C-D efforts she received a Civil Defense Commendation, a part of the General Electric Radio Amateur Award for 1956. An A-1 Op and OPS, she is Secretary of the Transcontinental Phone Net and a member of the Early Bird Net and Deep Sea Drag Nets. Georgie, who is also a registered nurse, operates primarily on 40 and 75, phone and c.w.

K1I6BGE, Florence Kumukahi, believes she is the only "wahine ham" at present on the island of Hilo. Florence and her OM, K1I6AFS, are both natives of the Islands. Originally, Florence relates, she wondered why her OM spent so much time in the garage shack. Curiosity led her to her own license and now they both spend most of their time in the shack together with His and Her rigs. Since 1954, operating 10 and 15 meters, Florence has made WAS, WAC, YLCC, and is close to DXCC. She is a nurse and works at a local tuberculosis hospital.



The World Above 50 Mc.

1215-1500

2300-2450

5300-5500 5650-5925

10,000-10,500

21,000-22,000

30,000-?

CONDUCTED BY EDWARD P. TILTON,* W1HDO

IT'S ALMOST an axiom around our Communications Department that once you begin to receive really strong gripes about rules and scoring methods you can be reasonably sure that you've got a good contest setup. If everyone seems happy, they may be merely apathetic. When they start trying to find ways to win, or to keep others from winning, they're getting interested!

This doesn't mean that we should turn a deaf ear to suggestions as to how to improve our contests—and we certainly don't. Contest forms now currently in the ARRL operating activities calendar are the result of reading and listening to thousands upon thousands of gripes and suggestions. All contest rules are gone over regularly, and new ideas are constantly under study.

But we also recognize that experience is a great teacher. ARRL experience with contests goes back to the '20s. Hamming has always been something of a contest in itself, and almost from the first we have had certain rules and recognition of outstanding achievement. It is revealing to look over the reports of early operating activities and to study the evolution of ARRL contests in the thirty years since. In that record almost every conceivable format appears at one time or another.

The history of v.h.f. contests repeats the long process of trial and error. The first ARRL v.h.f. activity was held in 1939, and we've had scores of them since. There have been message-relaying multipliers, multipliers for portable operation, multipliers for low power, multipliers for use of e.w. or m.e.w., multipliers for various distances, multipliers for ARRL Sections. There were year-long marathons with monthly standings, and single-day affairs, and the present week-end form.

Our June-September-January contest series, it can be seen, did not "just happen." The contest forms evolved, as we learned by experience. They may not be perfect—but they are popular, and they are getting more so. To be acceptable to all parties, contests (v.h.f. or otherwise) must satisfy certain basic requirements. First, they must be fun. This means that they must be simple in form, yet they must provide an element of competition. Second, they must be easy to administer. Trick multipliers and complex scoring systems are out; we can't spend all our time checking contest reports! Third, they must be fair. This is where most of the gripes come in, for a contest format that gives everyone an equal chance to win has never been devised. It never will be.

* V.H.F. Editor, QST.

When our contests become really interesting the people and clubs who come in second (or third, or nineteenth) begin to pick the rules apart, rewriting them in the interest of fairness. Long experience with this sort of thing shows that "fairness" is often a short word for "so we can win!"



W0ZJB	1	W6OB	7	W0DZM	13	W3OJU	19
W0BJV	2	W0INI	8	W0HWV	14	W6TMI	20
W0CJS	3	W1HDO	9	W0W6J	15	K6EDX	21
W5AJG	4	W5MDJ	10	W0SMJ	16	W5SPW	22
W9ZHL	5	W2IDZ	11	W00GW	17	W0ORE	23
W9OCA	6	W1LLZ	12	W7ERA	18	W9ALU	24
W1VNH	47	W3TDF	36	W6WNN	48	W9MHP	43
W1C1S	47	W3UQJ	30	W6UXN	48	W9MFP	42
W1CGY	46			W6ANN	45	W9JEP	42
W1LSN	46	W4EQM	47	W6NDP	45	W9CJI	41
W1AEP	46	W4FBH	46	K6GTC	44	W9EPT	41
W1RFU	44	W4LNG	45	W6CGG	43		
W1FOS	44	W4CPZ	45	K6HYJ	43		
W1KHL	42	W4UCH	45	W6ABN	43	W0QIN	47
W1ELP	41	W4JCN	44	W6NIT	42	W0NFM	47
W1SUZ	40	W4EQO	44	W61WS	41	W0TKX	47
W1SPX	36	W4AZC	43	W6CAN	40	W0KYF	47
W1UHE	35	W4FLW	43	W6BVG	39	W0MVG	47
W1LGE	33	W4IKK	42	W6ERG	38	W0JOL	46
W1FTF	31	W4RFR	42	W60JF	31	W0USQ	45
W1WAS	31	W40XC	41			W0PKY	45
W1MFM	30	K1HJO	42	W7FFF	48	W0FPZ	44
W1FVZ	29	W4MS	42	W7HFA	47	W0QVZ	44
W1FMK	31	W4FNR	40	W7BQJ	47	W0CNM	44
		W4AYV	38	W7FDJ	46	W0YJF	44
		W4ZBQ	38	W7DYD	47	W0URQ	44
W2MEU	47	W41UJ	38	W7ACD	45	W0JHS	43
W2RCV	47	K4DNG	37	W7JRG	44	W0PLI	43
W2AMJ	46	W4AKX	36	W7BOC	42	W0PKD	41
W2BYM	46	W4GJO	35	W7JPA	42	W0ZTW	41
W2PLJ	45	W4ZD	35	W7FIV	41	W0VTK	36
K2JNS	42	W4HZG	34	W7CAM	40	K0BPM	35
K2AXQ	42	K4AGM	32	W7UFB	32	W0WNU	34
W2SHV	41	W5VY	48			W0FPZ	30
W2GYV	40	W5LFP	47	W8CMS	47	W0YZZ	30
K2HPN	39	W5GNQ	46	W8OJN	46		
W2ORA	39	W5ONS	45	W8SQU	46	VE3AET	45
W2QVH	38	W5JLY	45	W8NQD	45	VE3AIB	35
K2ITQ	38	W5ML	44	W8UZ	45	VE1EF	35
K2ITP	38	W5FNC	44	W8RFW	45	VE3BBX	33
K2HRB	37	W5JME	42	W8LPD	44	VE1QY	32
K2LTW	35	W5VJ	43	W8HJR	43	VE2AOM	31
		W5CVV	41	W8WPD	43	VE3DER	31
		W5FAL	41	W8YLS	41	XE1GE	27
		W5HEZ	41	W8PCK	38	VE1PQ	23
W3TIP	47	W5BXA	41	W8NOH	34	VE3OJ	22
W3KKN	45	W5FXN	42			VE1VL	21
W3KMY	44	W5EXZ	38	W9BRN	48	CO6WV	21
W3NKM	41	W5EEN	38	W9ZHB	48	VE4HS	20
W3MQU	41	W5EUQ	38	W9JUV	48	CO2ZX	16
W3RUE	41	K5ABW	38	W9VZP	47	LU9MA	16
W3MXW	41	W5HFF	38	W9RQB	47	PZ1AE	15
W30TC	40	W8NSJ	36	W9QKM	47	KL7VT	9
W3FPH	40	W5FRK	36	W9QTA	45	JA1AUH	5
W3LFC	40	W5WZF	33	W9UNS	45	VQ2PL	5
W3AMO	36	W5ZVF	31				

Calls in bold face are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.

The multiplier for ARRL Sections is a prime target here. "Unfair!" contestants scream to high heaven. Where is the unfairness? Competition is within your own ARRL Section only; there is no national competition among individuals. Individual competition on a national scale has been ruled out for many years, because experience has shown that there is no system national in scope that can possibly be fair to all. Results on a national scale are reported in *QST*, of course, because high scores are more interesting than low scores — but every effort is made in compiling the contest story to seek out outstanding work on local levels and give it full publicity in the final results as they appear in *QST*.

Another v.h.f. contest started a year or two ago uses counties as a basis for multipliers. Nothing wrong with that, of course — a fine idea. But does that mean that the ARRL V.H.F. Sweepstakes and the ARRL V.H.F. Parties should change to the county system? Of course not! A county base is just as unequal as an ARRL section base, if you think of scores on a national scale. Why not ARRL Sections in an ARRL contest? We have a field organization set up on a Section basis — why *shouldn't* ARRL Sections be used, so long as awards are made that way?

The gavel award made to the top club each year in the ARRL V.H.F. Sweepstakes (first week end in January) has come in for criticism. It is said that it is unfair to clubs in other than a certain small segment of the East Coast. How unfair? Last January, the Midwest V.H.F. Club, entering the contest with full organization strength for the first time, placed second in the United States — and ran up a total higher than that of any previous winning entry. The writer's own club, the Hartford County Amateur Radio Association, has placed as high as second, and has been in the top five for years. The Dayton Amateur Radio Association, with no pipeline to the supposedly invincible East, has been regularly up among the leaders.

None of these clubs has yet even partially utilized its full potential. If the Midwest V.H.F. Club, for example, had been able to call on the services of about three really good 50-Mc. men they would have won the 1957 gavel hands down. Two good stations capable of working the full potential of F_2 -layer back-scatter and ionospheric forward scatter on 50-Mc. and tropospheric scatter on 144 would have turned the trick for the writer's club — a small group by comparison with those perennial winners, the South Jersey Radio Association.

Conditions change on the v.h.f. bands almost from minute to minute. The individuals or groups who are in the best position to capitalize on the opportunities as they come along are the ones who land in the top-scoring positions. You could rewrite the rules in just about any fashion and you'd find the same fellows and clubs winning. They'd be the ones who have what it takes to do an outstanding job in v.h.f. endeavor, whether it be in a contest or in every-day hamming. The results of the June V.H.F. Party (next *QST*, we

hope) will bear this out. We ask only that you think of this when you feel the urge to rewrite the contest rules in the interest of "fairness." See you in the September Party!

Worldwide 50-Mc. DX Prospects

Bit by bit news is coming in indicating that we should have some real DX to work this fall if the m.u.f. provides us the chance. Special IGY authorization for 50-Mc. work has already been announced in Sweden, Poland, Portugal, the Madeira Islands and the Azores. Now a report published in *Radio ZS*, magazine of the South African Radio League, says that Norway is added to the list. LA7Y is credited as the source of this. A roundabout report also has it that F8ACT (not listed in the latest call book) is due to be on 6. In Poland, SP2DX is already on 6 and is checking on 28 Mc. for skeds almost daily. He is in Gdansk, on the Baltic. Now we hear from SP5AR, Warsaw, that he and SP5BR will be on 6 beginning in September. Others are expected to be on, in areas where interference with established TV assignments is not a factor.

Most European countries are licensing their amateurs for 70-Mc. work, at least for the duration of the IGY. Finland is a recent addition. PA9FM (formerly PK4DA and PA9UM) writes that there is considerable interest in 70 Mc. in the Netherlands. Arie is getting set up for that band, and will be able to listen on 50 Mc. for possible crossband 50-70 DX work. He will also be on 28 Mc. from September on, looking for v.h.f. DX prospects.

This issue of *QST* contains the principal details of the special IGY programs being set up in South America. Several of the men working on these programs are hams, and they will be trying for 50-Mc. DX when working schedules and ionospheric conditions permit. One call already set up is reported by W3MHW. He will be on 50.04 Mc. as OA4IGY.

Several stations will be running continuously on various frequencies close to the 6-meter band during the IGY, not only in South America, but elsewhere. Canada, for example, already has stations running on 38.07 and 49.99 Mc. at Yellowknife, Northwest Territory. The 49.99-Mc. signal should be a valuable source of Es and auroral data, and amateurs are urged to include observations of it in their PRP reports. The antennas are stacked Alford loops, essentially omnidirectional, with power outputs of 700 watts.

The Radio Society of Great Britain has programs for 28, 50, 70, 144 and 420 Mc. Under the guidance of G3EOH, British amateurs will check propagation in schedules with American and Canadian stations. G3FZL will coordinate v.h.f. efforts. This will include crossband work between 50 and 28 Mc., mainly to assist us in our IGY effort, and 50-70 tests, should the m.u.f. go high enough to permit ionospheric DX on 70 Mc. Tropospheric propagation will be studied on frequencies assigned to v.h.f. broadcasting, TV and in the amateur 70-, 144- and 420-Mc. bands. Auroral propagation reports on 28, 70 and 144 Mc. will be collected. A beacon station GB3IGY will run 500 watts input on 145.5 Mc., using an 18-db. gain antenna, aimed north, to aid in auroral studies. Located near Orpington, Kent, GB3IGY will run a test every half hour during World Days and Special World Intervals; and 1700 to 2400 GMT otherwise.

Meteor Tests Pay Off on 144 Mc.

If somebody doesn't make WAS on 144 Mc. one of these days it won't be the fault of meteors. Now that the boys are getting the hang of it, working 2-meter DX via meteor scatter is being done in many quarters. To date the distances covered range from 500 miles (W9KLR, Kentslaer, Ind., to W5DFU, Tulsa, Okla.) to very close to the 2-meter DX record of 1400 miles. The latter is the prize accomplishment of W2NLY, Metuchen, N. J., and W5FSC, Houston, Texas.

Here's the box score on meteor DX in late May and early June: W5DFU, Tulsa, worked VE3DIR, Toronto, June 2 at 0815 CST. Bursts were plentiful and a complete exchange was made readily over the 1020-mile circuit, the first Oklahoma-to-Canada work on 144 Mc. The following morning W5DFU and W4LTU, Orlando, Fla., worked at 0458 CST (you don't get much sleep and make optimum use of meteors!) for the first 2-meter contact between their states.

The Oklahoma-Indiana first with W9KLR came at 0630 on the 3rd. Oklahoma-New York was realized with W2ORI, Lockport, N. Y., at 0804 CST June 8. The first try worked!

W2NLY had a series of meteor skeds with W5FSC in

the latter part of May. Complete information was exchanged during the Pogasids shewer, reputedly a minor one, the morning of May 30. There were many short bursts, none more than 5 seconds duration, at W2NLY. Careful checks on the distance show this one to be almost an exact tie with the existing 1400-Mile 2-meter record, set back in 1950. W2NLY was heard and positively identified in Austin, nearly 100 miles to the west, so a 2-meter DX record via meteors is certainly well within the realm of possibility. We suggest that anyone claiming such a record have complete documentation of the contact, so that it can be checked out completely, as a record of this magnitude should be.

W4LTU, who did so much to promote interest in meteor scatter with his fine article in April QST, got in contacts with W4JCJ, Centerville, Va., and W4DWU, Falls Church, on June 2 at 0730 EST and June 3 at 1530, respectively. Miscellaneous information was received from W2OPQ, W1AMN, W1RFU, W5AJG, W8PT, W8DX and K0EMQ, though none was good enough for a complete exchange.

Here and There on the V.h.f. Bands

Meteor scatter on 144 Mc. has been a major endeavor for W4LTU, almost ever since he moved to Orlando from Ithaca, N. Y., where he was W2WFB. Walt has kept enough early-morning 2-meter schedules to make the reader tired, just thinking about it, and he now is up to 17 states worked on 144 Mc. These weren't all made via meteors, as Walt is gunning for tropospheric DX, too. He worked W4MBR, Augusta, Ga., on the night of June 12-13. This was his first tropospheric DX experience as a W4. K4CTX, W4QFE, K4POP and W4SWT, all of South Carolina, more than 300 miles up the coast, were doing well as far south as Orlando, but W4VTJ, West Palm Beach, was not able to hear them

West Coast to Hawaii on 144 Mc.!

W6NLZ and KH6UK Shatter 2-Meter Record

On July 8, at 2130 PST, W6NLZ listened, as he had nightly for more than 9 months, for the 144-Mc. test by KH6UK, 2600 miles away at Kahuku, on the Island of Oahu. The signal was in there!

The 5-minute transmission seemed hours long. How could a miracle like this be expected to last through 5 minutes? But it did, and much longer. W6NLZ replied at the appointed time, shaking with excitement, and the 7-year 1400-mile record was broken by a margin beyond most 2-meter men's fondest dreams.

Both stations run kilowatt rigs. The antenna at W6NLZ is a 21-foot Yagi, 35 feet above a fine location at Palos Verdes Estates, with a clear view out over the Pacific. KH6UK has a large multiple-Yagi array. Signals were good c.w. copy, and when W6NLZ concluded his telephone call to WHDQ at 0150 EST, KH6UK was still riding through. Tape recordings were made by both participants. More details next month!

Rising activity on 220 and 420 in Southern California is confirmed by W6NIT, Los Angeles. When Clyde was first active two years ago the higher band had most of the stations, but now it's the other way around. Increased Technician interest is largely responsible for this switch, it being somewhat easier to get going on the lower frequency.

K6MBL, Pomona, whose "mighty bad location" is shielded from Los Angeles proper by hills, has worked 41 different stations on 220, 13 of them new since the beginning of 1957. Many of the contacts are made by reflection from Mt. Baldy, and the hills surrounding it. Most of the stations use low power, such as 6360 and 832A finals, and receiving gear ranges all the way from converted TV tuners to 416B front-end converters. W6NLZ confirms the rising state of 220-Mc. activity around Los Angeles, reporting that many newcomers are Technicians who ran into too much TVI trouble on 6 in densely-settled areas.

Firsts between various states have happened so fast in recent months that it is all but impossible to keep track of them. Several are mentioned in our section on meteor scatter work, and here's another: W1TLY, Demopolis, Ala., worked W5DFU, Tulsa, Okla., June 11, at 2140 CST. This is about 520 miles. W510W at Ada, a few miles farther, was worked at 2230. W1TLY normally runs a pair of 826s at 500 watts input, but on this occasion they were out of service and the contacts were made with the 829B driver. Barry has a 64-element array at 60 feet. W5DFU reports working W5RCI, Marks, Miss., and K5APX, Batesville, as well as W4TLY.

Looking for Nevada on 6? W7JLV, Reno, is doing the best he can to help you get it. At last report, Al was hanging out

(Continued on page 152)

2-Meter Standings

States		U. S.		States		U. S.	
Areas	Miles	Areas	Miles	Areas	Miles	Areas	Miles
W1RIZ	24	7	1175	W5VY	7	3	1200
W1FZL	20	6	1120	W6NLZ	6	3	1000
W1RPU	20	7	1150	W6WSQ	5	3	1380
W1HDDQ	20	6	1020	W6DNG	5	3	660
W1KCS	19	6	1080	W6AJE	5	2	640
W1AZK	18	6	850	W6RRZ	4	2	360
W1AJR	17	5	810	W6LOP	4	2	850
W2JLY	17	7	750	W6ZL	3	2	1100
W1UJZ	17	5	680	W6AJE	3	2	640
W1BCN	16	5	650	W6BAZ	3	2	400
W1KTL	16	5	540	W6MMU	3	2	388
W1AMN	15	6	800	W6ORS	3	2	365
W1AFO	15	5	810	W6LSB	2	2	360
W2NTY	29	8	1390	W7VMP	6	4	1280
W2ORI	28	8	1075	W7LEE	6	3	1020
W2AZL	25	8	1050	W7LHL	4	2	1050
W2BVL	23	7	1020	W7ZJF	4	2	355
W2DWT	21	6	720	W7JFE	4	2	850
W2OPQ	20	6	970	W7JFE	3	2	240
W2AMJ	20	6	960	W7YZU	3	2	140
K2CUB	20	7	910	W7JUC	2	2	140
W2PAU	20	6	880	W8WNY	30	8	1200
W2FTT	19	7	890	W8RAM	27	7	850
W2AZP	19	7	650	W8SRW	27	7	850
K2INJ	19	6	925	W8SEF	26	7	850
W2CBB	19	6	740	W8LCC	25	8	800
W2KIR	19	6	—	W8LPD	25	8	750
K3JJE	19	6	785	W8DX	25	8	720
W2AOC	18	6	660	W8JLV	24	8	1300
W2JLY	18	7	620	W8BAX	23	8	675
W2RAG	17	6	675	W8WV	22	8	725
W2RGV	17	6	600	W8JWV	22	8	710
W2SIT	16	6	650	W8PT	22	7	810
W2PCQ	16	5	650	W8WRN	20	8	670
W3BGT	28	8	740	W8JEP	17	7	800
W3RIE	28	5	850	W8ZCV	17	7	970
W3IBH	23	7	650	W8RWV	17	7	630
W3GKP	23	6	800	W8LCY	17	7	610
W3TDF	22	6	880	W9KLR	33	8	950
W3RFL	21	7	—	W9WOK	33	8	800
W3KCA	21	7	—	W9VJ	26	8	850
W3LZD	20	7	—	W9ZLL	25	8	760
W3KWL	19	7	740	W9EQJ	25	8	820
W3NKAL	19	8	660	W9GAB	24	7	1100
W3YHL	19	6	800	W9FHN	24	7	725
W3HGC	18	6	750	W9BPV	23	7	1000
W3LNA	16	7	720	W9UCH	22	8	750
W4HIX	29	9	1280	W9UED	22	7	960
W4HJQ	26	7	750	W9AAG	21	7	850
W4AO	23	7	950	W9KPS	21	7	600
W4CJ	22	6	680	W9ITD	19	7	610
W4OMF	21	6	720	W9REM	19	6	—
W4DWU	20	6	675	W9LF	19	6	—
W4MKJ	20	8	725	W6ALU	18	7	800
W4OLK	19	6	720	W9JGA	18	6	720
W4JY	18	7	830	W9MHL	16	7	660
W4IKZ	18	6	720	W9JY	15	7	860
W4LTU	17	7	1080	W9LEE	15	6	780
W4VLA	17	7	825	W9DSP	15	6	760
W4WNH	17	7	750	W9DDG	16	6	700
W4PLV	16	7	1000	W6EMS	27	8	1175
W4QY	15	2	720	W6IHD	26	7	870
W4ZRU	14	2	800	W6GUD	25	7	1065
W4WCB	14	5	—	W6UOP	18	6	—
W4PCB	14	5	720	W6ONQ	17	6	1000
W4SOP	13	5	680	W6NIB	17	5	830
W4CPZ	12	5	650	W6NFB	17	5	750
W4TDQ	11	5	850	W6USQ	14	6	—
W4MDA	11	5	68	W6IFS	14	5	—
W4GDS	9	2	335	W6SAC	14	5	775
W5RCI	21	7	925	W6OAJ	14	5	725
W5AJG	16	6	1280	W6TJP	13	4	—
W5HBE	15	7	830	W6ZJB	11	4	650
W5DFU	13	5	1225	VE3DIR	26	8	915
W5ARN	12	5	780	VE3AIB	25	8	910
W5QNI	10	5	1400	VE3BQJ	17	7	790
W5CVW	10	5	1180	VE3DRE	16	7	820
W5WJ	10	3	600	VE3BFB	13	6	715
W5MWW	9	4	570	VE3AOK	12	5	550
W5ML	9	3	700	VE2AQG	11	7	800
W5NDE	8	3	520	VE1QY	11	4	900
W5PK	8	3	500	VE1EJ	2	1	365
W5PEZ	8	2	580				



CONDUCTED BY ROD NEWKIRK, * W9BRD

Who?

Our introductory comments for April, those concerning the 1957 DXpeditionary picture, drew forth an interesting question on DX history: Who pulled off the *first* DXpedition? A beaut, eh? We certainly won't undertake a conclusive answer to this one here, but it *is* a gay proposition to boot around.

The word itself, which cropped up around 1950, needs explicit defining. Our dictionary's most applicable definition of *expedition* goes: "A journey for a specific purpose; as, a military or exploring expedition; also, the body of persons making such an excursion." So for our DX reportorial needs (and for *Webster's* "New Words" if they need a filler-diller) we derive:

DXpedition — *n.* A journey for the specific purpose of operating an amateur radio station as DX; . . .

It's difficult to be less general than that because the meaning of *DX* varies so widely. A 14-Mc. DXpedition implies operation in a rare or faraway area but a 420-Mc. DXpedition might venture no farther than the nearest hilltop. Note this key consideration: If W6XXX passes through Nepal on a business or pleasure trip and just happens to get on the air there, it's no DXpedition; but if he gets the itch to operate in Sikkim and steps into AC3 territory for that specific purpose, then he can validly write about his "DXpedition to Sikkim."

We stress that point before suggesting the story of KF6SJJ, "Hamming on Howland Island," an account by W1KFV in April 1941 *QST*, as the full-scale prototype of present-day DXpeditionary journalistic treatments. KF6SJJ went to Howland on military assignment but it is made signally clear that a rare-DX inclination put him up to it. Some seven years and a war later we find new countries once more at a premium and the angle is revived in your July 1948 *QST* with "Expedition 'Gon-Waki'" by W4NNN (now ARRL Midwest Director W0NWX). Next come "DX Holiday in San Marino," "The Story of FP8AA" and "Furlough in Monaco," flavorful yarns by Hs PL and HR, W3BXE (now K2CPR) and DL4FS-W9SRB (now K6AQP), respectively. Not until July of 1951 do we find the lucky word in a formal *QST* title — "DXpedition to Guadeloupe" — and CM9AA-FG7XA rates this "first".

W2QPQ's "How They Planned the First DXpedition," in this year's February issue, possibly settles the whole business. But we understand that daring young Cristobal's QSL cards were filled out in a rare variation of Basque and never have been satisfactorily deciphered.

Anybody ever seen QSLs from Marco. P0LO?

* * *

Fired up now to try your own hand at the DXpeditionary art? Don't know where to go? Well, DXCC Honor Roller W6AM, with 271 countries confirmed, still needs stuff like the Aldabars, Kermadecs, Laccadives, Maldives, Mongolia, Nepal, the Revilla Gigedos, Seychelles, Sikkim, Tromelin, the Vatican and Wrangel Island. All too doggoned *far*? Well, think a moment. A 2-meter lark to Coney Island or Malibu Beach meets our definition of *DXpedition* conveniently — and the water's fine!

What:

There are subtly-differentiated species of DXpedition somewhat beyond the scope of our brief banter. The legendary Godley crossed to Scotland's County Ayr before your conductor was born, just to *hear* DX. (And did he get an earful? Now your "How's" Bandwagon journeys across the megacycles to report and document DX doings here; and there, a sort of typographical DXpedition without mosquito bites, which starts out so:

15 c.w. holds up surprisingly well right into the dog days, by gosh. The latest from W1BDI: SV0WR (21,048) 16 (HNT, B7CTW: IT1AI, LU2ZC of So. Shetlands, SV9s WP WZ, UJ8AG, UO5AA, UQ2AS, ZB1IQ, reached the 132-country mark on 21-Mc. c.w. alone, missed on KG1FA, VQ2RG, ZP9AU, suffered severe QRM from whippoorwills at his WIQD resort QTH. W2GJD: KA8RA, KW6CA, UA0OM, heard 3W8 (still banned) and UJ8, K2TCD: GN2AM (70) 9, GD3FXN (60), OA7I (77) 21, UA1CC, UQ2KAA (70) 15, SV0, W4YY/AM near the Azores, all on 65 watts. W3GR0: numerous Europeans plus OH6QM, LA2O, YU1SH, IT1, W4PRO: CT3AB, EA9AP, FT2RH, KG1KK, VPs 5BH 7NM, W4GJW: OA7, K4DRO: CT1JS, LZ1s KEP WD, OA1Q, PJ2ME, WP4s AHM AIU, YU6NX, ZEBJT to reach 84/87. K4GOZ: 118 on 15 thanks to FF8BZ (111), HB1MX/EL, UA9s: DP KSA, KYB, UD6AL, UO5 UQ2, K4HMS: GR5AC, CT1GE, CX1FB, HC6TG, OK1s ARS KTI, UAs 1AU 9CM, VPs 2AD 5CP 8AI, YO3WL, YU3OS, 4X4BX, LZ, now 81 worked on 15



* 4822 West Berteau Avenue, Chicago 41, Ill.

meters. *K4HNA*: JA2JW, VK9HO, VO4AQ, VS1GX, KW6, *W5KJG*: PJ2AV (20), VP2LU, *K5DGF*: reached No. 32 on HA5AM, OKs 1XQ 31DG, YU2DU, *W6RLP*: CP1AF, VP3YG (86) 2, HA UO5 VP7, *W6ZZ*: JA6RR, LA, opines that "DX is behaving very strangely, not conforming to past patterns or times." *W7DJU*: JA1 IAS 3FT, LA5 5HF 7X, VO2 OAT, *W8BY*: HA5BI, HB1LO, *K8ANX*: EA PY, *W9NDN*: OK3EM, *K0ALL*: UA2AW/MI, UC2KAB, VP7BN, UQ2 VP5, *K0AOU*: No. 52 via UAIKAS, ZC4IP, 4X4FR, *K0ARS*: up to 54 on Sint Maarten, VP2 VP5, *K0CER*: Alander OH3AW 6, OK1FF, VP2LR, YU3BA, HA, *K0DQI*: LZ1AH, OE3VP, VP5, *K0GRS*: KL7s BUS SMC, Euros, *I1ER*: JA5 5A17AD 8AA, KR6AK, VKs 3ZM 7WA, ZLs 3JA 1KD, *KL7BP*: KU5FAV (100) 4, finds South America *awfully* through from Ketchikan, *KL7CAW*: DM2ABB, heard VS1HC (50).

15 Novice notes are few but KN2UPD, awaiting his General, netted FF8Z, HA5AM, OE3FS, OK1AA (t.w. to phone), UAs 1BE 6KOD, WP4AIT, YQ3WL and YU1SH. Pete pursues Swedish call areas One and Two for WARM purposes and awaits QSLs for WAC. . . . KN4KKQ snatched up HC8RL, LX1RB, UC2CB, VO8CB, VS9AI, and somebody signing ZA and ZD7 calls. . . . KN5JCC's Globe Scout and S-85 took the measure of KP4KD, VO2NA, KZ5GH, WP4s AJI AIU, WL7B5, and a G or two. . . . Pretty slow, eh? But just wait till the lads get back from camp!

15 phone finds favor with *K0CER*: BL2D, OA5N, TI3CL, VE8PB, VPs 3HAG 8BF 3BT, ZL3EK, *W9WHJ*: KC4USN (195), VO6SF (265), VS4IT (180) 15 "Finally!" *W9VSA*: MP4BCG (180) 5, VK9DB (214) 14 the aforementioned VQ6, Navassa Isle, missed ET3XY (255) 22, *W8BKP*: GRs 4AD 0, 10AA 11, FB8XX (109) 13, HSIA 16, MP4s BBL 2, BCC 20, KAM 21, OY2V 0, UC2KAB 14-17, VK9AJ of Cocos 15, VO6 3GR 5, 5EK 5, VSs 1FE 17, 2DB 16, 2DO 16, 6CO 16, YU2RC (2, 12) on short and long paths, ZB1s DC 20, LQ 17, ZDRs 6RM 8, 8SC 3, VS4 VQ6, "C.w. nil, too busy on phone!" *W6RLP*: YN1BR (200) 17 to reach 115/90, "Damn those slow QSLs!" *W6ZZ*: KA2YA, KI16s galore, KV4BD, KX6AF, VKs in number, ZLs likewise, VR2s AZ BC, now has 132 countries on fifteen, 167 all told, *W7KGI*: TF2WBU, *K4DRO*: HP1s AL 1B, YL KL7BE, VP4MM, KV1, Papuan VK9, *K4GQZ*: GRs 4AG 5SP, EA8CC, HI7LM, OK1KTI, SP3AK, SV0FR, UB5s PG WF, ZB1DC, MP4 in Bahrain, *K4HMS*: HI17CX-m, K4AN, *K4HNA*: HI7LS, OY4T, SV0VB of Rhodes, VK9BS, Sao Thome, VP4, *K4HQP*: KA2KS (190) 20-22, K6ICG (235) 4, TF2WBV (235) 20, VP5AR (200) 19, ZP5s 5IC (265) 1, MD (265) 2, 5A5TL (235) 3, all on a Knight 50-wattter, homebrew modulator, 2-el. spinner, *W3GRO*: GM2CJR, *ZL2BE*: KA3CY.

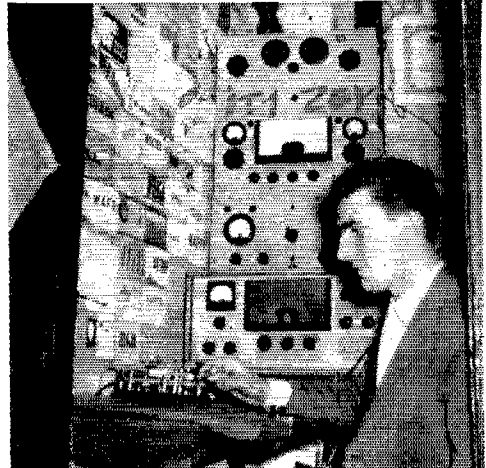
20 c.w. is fruitful for *W1BDI*: TF2WBO (145) 21-23, heard rough and drift *ZP5AY* (75) 2 buzzing along, *W1DBA*: CE3DZ (30) 2, CN8FM (15) 21, DMs 2AGM 3KHN, KG1JA (20) 3, LZ1s AM KRL KNB, OA4s FAI FT both 8-4, OKs a-plenty, SPs 2BA 5GN all 1-3, UAs 1KAC 3FG 4CF 6JB, UB5s KBB KBV, VP3AD (60) 1, YO5LD (40) 2, YVs 3AN 5BC 5HL all 1-3, 4X4s (CJ IV (15) 3, 5A5TH (45) 1-2, "Conditions rather poor during the afternoon and evening hours." *W1TEH*: CN8FQ, DM2AJG, SP8AG, 5A5DU, 9S4CH, *W1RB*: M1H (22) 19-20, VR6TC

(20) 6, 3A2BG, *W2HMM*: CE6AC (90) 3, FE8AH (60) 21, FK8AS (90) 10-11, KC6JC (18) 11, KX6AF (73) 11, UH8KAS (18) 23-0, UJ8AG (45) 3, UL7KKB (29) 23-0, VK0AB (75) 10-11 of Antarctica, Falklands' VP8BJ (62) 1-2, VS1s GL (48) 10-11, HC (75) 11, YAIAM (48) 2, ZAIAA (19) 3-4 of "Box 28, Kerak," ZC5AL (63) 10-11, says "New quad's forward gain compares to wide-spaced 3-element beam, and s.w.r. is just about 1:1 at 14,050 kc.; some day will tune it up!" *K2GJF*: Navassa, Pitcairn, ZA2ACB (see "Whence?"), *K2GJF*: FO8AQ (95), *K2HYI*: HA5AM 1, UQ2KAA 21, on Heath AT-1 and long-wire, *K2QYG*: K2ILQ/KG6 (80) 11, VK6CJ (90) 11, 4S7WP (80) 12, ZC5, ZB1NB (10) 18, *W4LEP*: CX5CO (22) 0, HI2LD (74) 2, VE8PB (16) 3, *W4ERO*: CE9s AQ 5, UAs 88B 910 9VJ, FG7XD, FY7s YE YF, So, Orkneyite LU82M, OA4s AR Q, OQ5EO, OY1R, SUI1M, SV0WR, TG9MR, UA90B, UB5s KKA ND, UC2s CB KAB, UO5KAA, VP6HT, Y08KBC, ZB2W, 3V8s AD AO, 4S7MA, 4X4s BX DR FA, 5A5TH, UH8, *K4DAS*: IS1M1 (100), ITIAG, KH6AK/KG6 (5), PZ1AI (80), EA9 F88 FY7, UB5 3A2 1E, *K4DRO*: Navassa, VKs, *K4HMS*: CE3RE, HK5CR, ZP9AU, *K4HNA*: SP2AP, UAs 2KAA 6KEB, UQ2AB, VR3G, FO8 3A2, *K4EXE*: OA4EY (80), XE1s SZ XX, 4X4H (70), *K4IGD*: CX1BO (46), HK3s JC TH (12), KV4AA (80) 21-23, OA4FM (2), LZ1KA (82), TI2VA, YV5GY, *W6ILM*: UAs KA KCC, now up to 103, *W6AK*: FB8XX (115) 8, HK5BY (30) 7, KG1DL (90) 16, UA1EAE (20) 15 of the far south, ZK1BG (135) 7, FK8 FO8 VR3, *W6RLP*: EA6AM (42) 6, G2CFZC (49) 9, UQ2AS (21) 6, VP3YQ (8) 16, VR3F (29) 8, VS4BA (81) 15, FO8 FX7 ZC5 ZP, *W6RZS*: Deception Island's LU9ZC, OQ5BB, ZK1AV, FO8 ZCS, WZZZ: CN8FW, JAs 1AB 1HP 3U1, KA2KS, KC6US, UA9VB, VS1s GX HJ, VS6RY, *K6KYH*: JA0s BR GG, UA0KKB 15, VR3B 15, VU1 ZC5, *K6QYF*: ZS2CV for 1st Africa, *W7DJU*: DU1RTI, JAs 1AAW 1AL IAZR 1PS 1VE 2AE 2BL 2DA 3AH 3DY 5GZ 6AO 6CS 7BE 7IV 8GK 8GM 9AV, KAs 4JK 8RA, KG1, ZC5, *W7FBD*: Pitcairn, at last! *W8BZY*: HH2OT, *W8IBX*: LZ1AM, 4X4GY for 70/48, *K8ANX*: CE3UC, OA1G, *K8BFF*: back at it after layoff (text-W9ABS), nailed 22 fast countries, ZP5HB, *W9EHW*: FF8AJ, UA0KQB, UC2AR, VK7KM/VK9 11 of T.N.G., 4X4JV, stalked PX1FC (HB9AM), *W9NDN*: DM2ACN (57) 5, HA5BW (30) 5, UA3s DA KHA, YU3TT, 5A1FB (50) 4, *W9ULI*: SP3DG, UAs 1AU 1BA 1CC 1KFA 6LF 9SA, UB5KBU, UQ2AH, *K0ARS*: VO4EO, UA YU, *K0CER*: CE3RE, JA1AG, KR6QV, PJ2ME, VP5BH, *K0DQI*: DU75V, HC1LE, HH2Y, HK1CV, JAs 1KAI 1QI 8AA, KA2NY, KG1AX, UA1DI, YV5HL, CE EA6 KG6 KV4 VQ4 XPs, *HI8BE*: UG6WD, UJ8KAA, KA3CY, UH8KAA, *KL7BUZ*: VQs 4AV 6LQ, ZC5RF, HK UO5 VR3, *ZS4MG*: LA1VC/G of Norway's Queen Maud Land, Antarctica. . . . Not that we hope or expect to start a trend, but several of the brethren report a smattering of c.w. DX above 14,300 kc., with a glorious absence of QRM.

20 phone's cards are stacked against W/Ks. Yanks can't flag down the rare ones unless the latter condescendingly choose to soak their ears in the U.S. subband's unnerving QRM. And much rare A3 DX rarely opts in our favor. Anyway, around the land, first *W1ECH*: VP9HII, *W4LEP*: now 55/41 on W4DQA/KS4 (260) 3, *K4DAS*: ET2US, HI7LMQ, KW6CJ, YS1MS, *K4DRO*: YL KP4YY plus Navassa, *K4HNA*: KG4AA, 487YL (whose picture



In Beira, CR7s LU and hubby DQ are favorite Mozambique objectives whenever African paths swing open on DX bands. (Photo via W1QON)



One of the most DX-minded of Sicily's thirty-odd amateurs, IT1ZGY concentrates mainly on 11-Mc. c.w. action in Palermo. (Photo via K2BKU)

graces last month's "YL News and Views"), **W6IIM**: JA3HD, KC6SP for No. 96 on voice, **K6GLC**: EL5A, HS1A, **VK9YT**, **VRs** 2CV 3F, several **ZSs**, **W9WTH**: **SUIAS** (160) 5, **YAIAM** (250), **VKR**, **W918X**: **HA5AP** (142) 4, that **ZAIKUN** (157) 4, **9S4s** (H 37), **CX** (225), **YA**, narrowly missed **FW8AA** (340) 6 and **3A2BF** (106) 6, **K6CER**: **HL2W**, **VP9L**, **KG1**, **K0DQI**, had his meter pinned by **FO8AD**, **H18BE**: **HZ1AB**, **ET2US**, **HH2KV**, **TC9MQ** and **VP6AL** were volunteered by one who shall be nameless and call-less, at least for this time; forgot to label his report with same.

10 phone is on the ropes but the tide will turn next month. Meanwhile, we note at **W1ECTH**: Jamaican **VP5CP**, **K4DR0**: **CN8FO**, **K4HVA**: **CT3AI**, **FG7XE**, **VQ2AJ**, **VR2BC**, **ZD1EO**, **K4HQD**: heard **CN8JW**, **HC1HJ**, **KV4BD**, **VP2LU**, **ZL1MQ** and **ZP9AY** stirring things up in the 27-Mc. portion of 10 meters, **W6ILM**: **YN1BR**, **W6ZZ**: seven **KHs**, **KX6AF**, **LUs**, **TC9AD**, **VP7BO**, **VR3E**, **ZL1s** BE OF UP, **W9ANDN**: **CN8IZ** (645) 19 using s.s.b., **HH3TJ**, **HP2ER** (220) 22, **VP6YB** (310) 22, **YN4CB** (355) 13, **YU1FC** (445) 14.

10 c.w. dangles over the ring apron but refuses to be counted out. Here and there, **W9ANDN**: **CR7AF** (80) 18, **HP1LO** (52) 22, stray Europeans, **W5KGF**: **CT1CD**, **VP6DJ**, **ZP9AY**, **K4HVA**: **FF8AJ**, **GC3HFE**, **OK1KT**, **W1ECH**: **4X4IP**, **ZL1PE** after dark, **VE3ADV**: **3V8AD**. Anyone for cross-town checkers? Chess?

40 c.w. adherents aren't all fazed out by the summer static. Here's **W1ECH** with a just-in-time **11BNU** Trieste QSO, and **W2JBL**: **KZ5LW** (20) in the A.M. **K2SAR**: **CO5GL** (13), **KZ5BB** (13), **Py's** 4AU1 7AFK, **SM7BAU**, **UB5EF**, **VP6AG**, **YU1FMN**, on DX-100 feeding a 19-ft. piece of wire in the shack, **W3MQF**: nice bunch in **EA9BM** (17), **LZ1KPZ** (28) 1, **UAs** 1 **KAU** (28) 0, **3IZ** (24), **UC2AA** (30), **VPs** 2GJ (8) 2, **3VN** (12), **SCP** (22), **ZS2HI** (18) 23, **3V8BL** (36), **4X4GV** (8), now has 95 countries QSLD on 7 Mc., 101 worked on 40 all told, **W6UQF**: gives us the West Coast slant on forty in summer, **DU7SV** 11, **JAIAEA** 11 c.w.-to-s.s.b., **JAs** 1EF 2AQ 20F c.w.-to-phone, **JAs** 1AMF 1ANU 7HL 8AE 8BA 9BB 0FZ/1, **KR6AK** 10-13, **UA0KJA** 11 of Blagovyeschensk, all by way of an Adventurer, an S-38C, and long-wire, **K6SHJ**: **JA6MG** (19) 13, **KL7s** **BKZ**, **KL7** **BMA** 8, **KR6** on 120 watts and a rotating dipole, also nipped **XE2CH** on voice, **W7DJU**: nice hop to **KC4USN**, **VKs**, **ZLs**, **KL7BUZ**: **KC6KU** (23), **FK8AT** (19), **DU**. Our Mr. No-Call mentions **VP3VN** and Europeans.

80 c.w.'s suspended animation was disturbed by **W6ZOL**'s catching **VK2GW** (20) 13, and by **W7DJU** cornering **ZL3QX** one morning. This 80-meter fillip from **4X4CJ**: "I'm on 14,005-14,015 kc. between 0230 and 0330 GMT and it takes me exactly 30 seconds to switch to 80 meters. So one and all are invited, as soon as summer QRN decreases, to come on in and QSY to 3.5 Mc. — hi! Rig here is a 615 Clapp v.f.o., 6AU6 buffer/doubler, 6763 buffer/doubler, tripler, and a 6146 p.a. with 90 watts input on all bands." Since February 2nd of this year Bob has QSO'd **Ws** 1EPE 3ECR 3IEEC 3LOE 4KFC 8BIVW 8KIA 8YVJ, **Ks** 2BZT 4XG, **DJs** 2IT 3CP, **OESGT**, **OK3KES**, **OZ9CM**, **UA3HL**, **UB5AQ**, **YO3AU**, **YUs** 2MR 3EST and 4ALM on 80. . . . As for one-sixty, *requestal in pace*, at least until **W1BB** and the gang return to the hunt in a month or so.

Where:

Asia — **VS6DN** now is QRT, and all my QSOs except the last 50, for which I had no cards, have been QSL'd via bureaus. If anyone still misses his after a reasonable wait, write to **G53KY**. . . . The outbound **HS1A** QSL tally, thanks to **W6s** **FKH** and **IIM**, passed the 300-mark. . . . **MARTS** (Malaya) QSL Bureau, ably manned by **VS2DO**, still offers to relay cards destined for **VS1** **VS2** **VS4** **VS5** **ZC3** and **ZC5** areas. . . . **Ex-487MR**, through **W0VBK**, advises that all of his '57 **ARRL** DX Test QSOs now have been QSL'd through bureau channels.

Africa — Facilities of the **SARL** (South Africa) QSL Bureau no longer are available to nonmember **Zs**. This is no new departure so far as foreign-society bureaus are concerned; QSL via overseas bureaus only when instructed to do so by stations worked. . . . Cards bound for unlisted **3Vs** can go via **3V8AD** at the address to follow, learns **W1UED**. . . . "Response is very high," admits **W2AJJ**, busy assisting **FF8AJ** with **W/K** QSL chores. . . . **ST2AR/G-HAR** replies to an unfounded **W3MQY** 40-meter QSL: "Judging by the excellent reports given to the pirate I feel he must be over on your side somewhere. Such reports on 7 Mc. at this time of year would be exceptional. . . . I hope to be back on the air myself before very long." . . . **W2AYJ** finds the nutty "**ZD9AF**" still going strong and apparently oblivious to all chastisement. It appears that **ZD9** licensing authorities will accept **SARL**'s suggestion and omit assignment of the polluted **AF** suffix. Thus we can disregard all future **ZD9AF**'ing.

Oceania — "**VR3B** will be QRT towards the end of

August and is returning to Australia for vacation. I have QSL'd 100 per cent for all first contacts but, in the event of stations not receiving cards due them by January of 1958, requests to **D. Laws**, 102 Darling Rd., East Malvern, S.E. 3, Victoria, Australia, will obtain them. My thanks go to the **ARRL** QSL Bureau for a job well done in accurately distributing my cards, and also to the many **W/K** hams who provided assistance when needed." . . . From **ZK2AB** to **W6OUN**: "When our last monthly mailboat arrived it brought 120 QSLs of which I had earned only nine. Under my present system I send out QSLs after I have received acknowledgments for my contacts." Prior to April of this year **ZK2AB** was active only from January 2nd through January 17th, during which period he scored 28 QSOs, 14 with the U. S. A.

Europe — "As **SV0WN/Cure** I was able to operate for a few short hours on May 11-12 and May 15, 1957. QSLs will be issued to the stations contacted as soon as I can have them printed. My return QSL address should be: **Dwight B. Olson** DL4GF, c/o DL4 QSL Bureau, AFQ 757, New York, N. Y.; or c/o DL4 QSL Bureau, Frankfurt/M., Germany." No telling how many other guys have been assigned the **WN** suffix; so carefully check your date of QSO on this one. . . . **IS1AM** mentioned his temporary zero-per-cent QSL policy to **W2HMJ**, adding that he expects to break the ice and confirm some 300 Sardinian QSOs shortly. . . . "Due to poor response on the part of **W/K** amateurs, **M1H** will QSL only after cards are first received by



UP2AS, whose operation was curtailed in May because of licensing difficulties, works 10 through 80 meters with the **Radione R3** receiver at left, and the homebrew screen-modulated **LS-50s** rig at right. (Photo via **W5RS**)

him," advises **W8QHV**. . . . Writes **ON4KT**: "I'm always good for QSOs and QSLs with 21-Mc. **WN/KN** stations and my cards go airmail if full **QTHs** are given on the air; otherwise, upon receipt of QSLs."

Hereabouts — **Ken** of **K1NAP** suggests that car's bound for **KC4-Antarctica** stations can go via: **USN** **MCB** Special, Davisville, Rhode Island. "The next mail for them won't start until October and won't return till around November when the ice starts breaking up, so QSLs will be a little late. However, I believe they are QSLing 100 per cent so cards will arrive sooner or later." . . . **VO1DH** closed the books on operation under his previous call, **VO2JH**, and all QSLs are en route. . . . "Have QSL'd all my 460 contacts to date," assures **Port Radium's** **VE80J**. . . . From sidebender **HR2WC**: "I always QSL 100 per cent direct after I receive the other fellow's card. It doesn't take **IRCs**, tearful pleas or what have you — just a solid contact and a card." . . . **W1s** **BDI** **CTW** **DWII** **ECH** **NF** **RB** **UED** **WPO**, **W2s** **FXA** **HMJ** **JRL**, **K2s** **GFQ** **QXG** **TCD**, **W3s** **QA** **VZJ**, **W4s** **FRO** **GJW**, **K4s** **DAS** **HNA** **HQD** **IGD**, **W6s** **KG** **RLP** **UQF**, **K6JSD**, **W7s** **DJU** **FRD**, **W8OHV**, **W9s** **CFT** **UBI** **Y8X**, **W0s** **QGI** **VBK**, **K6DQI**, **VE3ADV**, **ON4KT**; **N.C.**, **S.C.**, **W.G.**, **W.V.**, **DXCs**; **ISWL**, **NNRC**, **OVSV** and **WIA** suggest:

CN8GL, **S. Millar**, U. S. Navy **MCB** No. 7, Det. Kilo, Navy 214, FPO, New York, N. Y.
DL6QA, **F. Plakowski**, Hameln/Wester, Deisterallee 8/III, Gertrany
DM2AB, P.O. Box 185, Schwerin (Meckl), E. Germany
DM2ACB (via **DM2ABB**)
DM5MM (via **DM2ABB**)
EA9BK, **F. Diaz Gomez**, Box 1210, Tetuan, Spanish Morocco
ex-FB8BR, **H. Hoffman**, F9AE, 17 Rue de Croissy, Le Vesinet (S. et-O.) France
FE8AG, **G. Gasiglia**, B.P. 298, Douala, Fr. Cameroons
FF8BZ, P.O. Box 971, Dakar, Fr. West Africa
FK8AT, Lifou Island via New Caledonia
FO8AQ, Uturoa, Raiatea Island, Society Islands, Fr. Oceania

FY7YG, R. Cuisot, Be.R., Cayenne, Fr. Guiana
GB2SM (via G3JUL)
HK3JC, Juan Cabellero A., Box 581, Bogota, Colombia
 ex-**HK4BS** (to **HK7LX**)
HK7LX, E. Quinones P., Carrera 2770-89, Bogota,
 Colombia
HP1LO, L. O'Meally, Box 4864, Panama, R. P.
K2FDX/VO, 640th ACWRON, APO 864, New York, N. Y.
K2ILO/KG6, Box 145, Agana, Guam
KA2YD, W/O T. R. McLean, Hq. 41st Air Div., APO 991,
 San Francisco, Calif.
KA8RA, A/2c P. N. Charbonneau, 8921st Radio Gp.
 Mobile, Box 170, APO 919, San Francisco, Calif.
KG1DL, USA EATF, APO 23, New York, N. Y.
KG1JA (to **W3JAK**)
KL7BUZ, 5040th Base Comm. Sqdn., Det. 1, APO 942,
 Seattle, Washington
KR6BE, K9JAB, Mellette, So. Dakota
KR6RT, A. M. Buta, 849-1 AC&W Det., APO 703, San
 Francisco, Calif.



OA7T's 21-Mc. onslaught originates in Juliaca, an
 Andean town some 12,550 feet above sea level, where an
 Adventurer, SX-100 and ground-plane give a good
 account of themselves. Evert, who first scored DXCC
 as PA0XE, awaits installation of a Ranger and 2-
 element three-band beam for DXpanded operations.

ex-**KX6ZB-KC6ZB**, Mrs. Doris Stoughton, 2413 Termino
 Avenue, Long Beach, Calif.
KZ5LW (to **K1ADL**)
M1H, Aureliano Casali, P.O. Box 80, Republic of San
 Marino
MP4BCG (to **W4GNC**)
OA7I, E. Kaleydel, Juliaca, Peru
OK1KTI, V. Dusil, Kocleroru Dvors, Kralove, Czechoslo-
 vakia
 ex-**PA0XE** (to **OA7I**)
PX1FG (see "Whence")
RAEM, Ernst Krenkel, Chaplign St. 1/A, Moscow,
 U.S.S.R.
SV0WN/Crete (see preceding text)
TF2WBO (to **W3DKF**)
TG9MO, M. A. Mazariegos, P.O. Box 155, Guatemala City,
 Guatemala
T1ZMAR, M. A. Ruiz, Box 345, San Jose, Costa Rica
T1ZVA, C. A. Angelini, Box 44, San Jose, Costa Rica
UQ2KAA, V. Zhadin, St. Nr. 4, Riga Lomonosov, Latvian
 S.S.R.
VE8PB (via **VE8AW**)
 ex-**VO2JH** (to **VOIDH**)
 ex-**VO6N** (to **VO2NA**)
VP7BN (to **VP5FH**)
VR3B (see text preceding)
VR3G (via **RSGB**)
 ex-**VS6DN** (to **G3JKY**)
VU2RT, P. Padmanabha, Box 2487, Calcutta, India
W87TI/KG1, G. Jones, 3647 Minnesota Ave., S.E., Wash-
 ington 19, D. C.
XE2TI, Ave. Pio Pico 1118, Tijuana, Mexico
Y1ZRM (via **G13KEV**)
YU3EK, A. Mikovic, P.O. Box 180, Ljubljana, Yugo-
 slavia
ZA2ACB (via **DM2ABB**)
ZB1NB, 184 Prince of Wales St., Sliema, Malta
ZC4FL, P.O. Box 216, Famagusta, Cyprus
ZD1EO, Sleme, c/o Army P.O., Freetown, Sierra Leone
ZD3GB, Box 81, Takoradi, Gambia
ZD4BQ, J. Woodcock, Box 109, Tarkwa, Ghana
ZE7JN, Box 605, Gwelo, Southern Rhodesia
ZP5s MG MD, c/o U. S. Embassy, Asuncion, Paraguay
ZS9R, N. Mettley, Box 23, Francistown, Bechuanaland

3A2BG (to **11ZCT**)
3V8AD, F. Devichi, P.O. Box 303, Tunis, Tunisia
3V8AU, P. Salles, ERMT/811, Kasbah, Tunis, Tunisia
3V8BV, P. Bruder, Rue Pasteur, Tundja, Tunisia
3V8BX, D. J. Naves, 13 Rue Napoleon, Tunis, Tunisia
 ex-**4S7MR**, Sgt. R. Marriott, RAF Edlesborough nr.
 Dunstable, Bedfordshire, England

Whence:

Europe — Still need Luxembourg? Watch for **ON4CC/LX** on s.s.b. around the middle of this month, 3795 and 14,300 kc. . . . **HB9MQ**, **ON1AU**, **F8s FC** and **J1D** joined forces to put **PX1FC** and **Andorra** on the air last month. Tip-offs from **W1MUF**, **W9EHW** and **K9JGLG** came too late for **July QST** but **DXers** who keep **W1AW** under surveillance were in the know in time. . . . **San Marino's** c.w. prospects are vastly enhanced through the more regular 15-meter appearances of **M1H**. Though **Aure's** first **QSO** took place in 1954 he has had only some 300 contacts to date, using 807s, a long-wire and a rather mediocre war-surplus receiver. This gist via **Ws 1RB** and **8OHV**. . . . **DXCC** Honor Roll habitue **W3JTC** writes from the Continent: "I'm signing **SV0WP** and having the time of my life. Sure great to be on the other end for a while. Had a wonderful time in the second week end of the **ARRL** Test — worked 74 stations in just two days. Was very surprised to work the States so easily, especially with only a Ranger and long-wire antenna! . . . Hope to have a 3-band quad up in about a month and probably a lot more power, too." Larry's favorite haunt is 14,005 kc. around 2100-2300 GMT. . . . From **ON4KT** (ex-**G2BUV**): "Let your Novices know that many of 'em put good signals into Europe on 21 Mc. I often slip into the Novice part of the band and call a few but all too often they don't come back. The trouble seems to be that they imagine 75 watts too QRP for working Europe on fifteen, but I'd like to point out that 75 watts is the maximum legal power for most of us here in Belgium; yet we still work **DX!** . . . For your statistics *my* WAS clinkers are north Dakota and Utah. I've worked 'em, but no cards. Now I just listen and hope." **ON4KT** has a neat 175/146 **DX** tally on 7, 14 and 21 Mc. . . . **DM2ACB**, circumnavigating Europe in the training ship *Wilhelm Pieck* as **DM5MM**, signed **ZA2ACB** for a **K2GFQ** **QSO** at one point on route. Which raises the question of whether he was aboard ship or land-based at the time. See p. 79, last month's **QST**, for briefing on *Pieck* certifications available for certain **DM5MM** **QSOs** from May through August. . . . **W1DWI** writes about **GB2SM**, amateur installation at the Museum of Science in London. **G3JUL**, the station's operator, handles crowds at the Communications Exhibit and expects to have full power and a rotary array available for world-wide **QSOs** soon. Geoff is consistently bombed by technical questions on all types of radio gear, modern and antique, and is collecting manuals and



The call **RAEM**, radiated from Moscow for many years, still raises eyebrows. Operator **Ernst Krenkel**, a Hero of the Soviet Union, penned a terse explanation on the **QSL** which accompanied this picture: "RAEM was the call of *SS Chelushkin*, smashed by ice in the polar sea in 1931. I was then the chief operator. Since then **RAEM** is my personal amateur call." (Photo via **H3BQA**)

handbooks to help provide reference. Got anything along that line you don't need? . . . **G2DHV** fired up **ON4IE/2** on four bands recently and worked about a dozen countries. George also still activates **DJ0AA** on occasion. . . . **W1DWH** will gladly supply Mimeographed maps and details concerning **SSA's** **WASM** certification to interested parties who come through with stamped self-addressed envelopes. **SM1BJA**, in great **WASM** demand, hangs out on 14,090 kc. at 0800 and 2100 GMT daily. . . . **W9EAM-1D4GF**, preoccupied earlier this year as **SV0WN** on Crete (see "Where") writes: "I still plan an extensive period of operation from the Greek islands and things are progressing well toward the issuance of unique calls . . . running about 150 watts d.s.b., a.m. and c.w. on 20 and 15 meters, with possible 40-meter operation if conditions warrant."

South America — **PYs** will be the world-wide rage next month when Brazil touches off its annual **LABRE** **DX** Test (c.w.) 0001 GMT September 7th to 2400 September 8th, and (phone) September 14th-15th, same times. The usual serials will be exchanged — 001RST, 002RST, etc., with that "T" omitted on voice. Who works whom? Well, it's a bit involved. Contacts between stations (a) in the same

ISITZG helps to make Sardinia available on 20 and 15, mostly phone, with this effective layout in Cagliari. (Photo via W9FHAM)



country count zero points but are allowed for the purpose of obtaining multipliers; (b) of different countries outside the American area each count 1 point; (c) of different countries within the American area each count 2 points; and (d) in the American area and in all other countries of the world count 3 points. (The "American area" is constituted by LABRE's WAA Countries List, equivalent to ARRL DXCC Countries List entities encompassed by North and South America.) Multipliers? You rate one for each American-area country worked on each band, and one for each Brazilian call area (PY1 through PY9) hooked per band. For score tote up the sum of all your multipliers and multiply by your total contact points—single-band entries are welcomed. Various Test certifications of merit will be available for high scorers as deduced from entries filed with the LABRE Contest Commission, Caixa Postal 2353, Rio de Janeiro, Brazil, no later than November 30, 1957. . . . After a lengthy layoff HK7LX puts a scarce Colombian call area on the air with 250 watts and an SX-100 at Bucaramanga. Edmundo signed HK4BS and HK7GM around 1948. . . . Another rare South American Seven is HC7WK who, says W2HMJ, maintains radio gear for missionaries in the Ecuadorian jungles. He's an ex-W9 and has been roughing it thus for four years.

Asia — RAEAL, who ought to know, declares through W8NGO that Wrangel Island is unpopulated hamwise, and that Franz Josef Land is similarly undisturbed by local QRM. . . . W8FAZ learns about Tannu Tuva possibilities UA0s KOJ and ON. . . . VS1HB gave Country No. 100 to H18BE on 20 c.w. K2OEA reports that VS1HB struggles to complete his WAS daily around 1000 GMT, 14,020 kc. And W2HMJ found neighbor VS1BB thumping brass on 14 Mc. at VS1GL while awaiting his own sender. . . . W1C2W has it that ZB1LQ will adopt a VS9 prefix for a two-year hitch. . . . W6TMM's friend H5LA confirmed 21 states and 42 countries in his first few months of activity on 15 and 20. . . . Not much news from the Spratlys, according to W6TTH who keeps a DXpeditionary eye on the place. Chinese National and Philippine personnel are reported casing the joint; Red China, South Vietnam and France also have sovereignty claims on file. This is an excellent area for congenital phonics to claim as QTH—prefix possibilities are almost limitless. . . . CR9AH, switching to s.a.b., has an SX-100 on order and is completing his new exciter, says friend W9QGI. . . . From Ws IUED and ZGJLD: KA8RA, operated by W1HZ and two others, specializes in Stateside contacts with 100 watts and a 450-ft.-per-leg Vee beam on 21 Mc. Anyone for Honshu schedules? . . . KA3CY, nigh to DXCC with a 100/86 DX score, hopes to make the Century before resuming W3MDI activities later this month. . . . From ex-487MR via W0VBK: "I am more or less permanently in England now, at least for the next two years. . . . Have applied for a G ticket which I hope to have very soon. When I do get on the air I hope to be running two 807s in parallel at 100 watts on all bands." . . . JA8AE, no stranger to W, K, VE/VO DXers, was feted by Japanese radio-regulation authorities during electronic festivities at Sapporo in June. . . . Ex-VS61DN, now G3JJKY, decries non-British Empire DX enthusiasts who habitually barge into RSGB's annual BERU Test, pointing out that for two days of each year "CQ BERU" is tantamount to "CQ NO W/K". Yanks and Canadians have the same trouble to a lesser degree during the League's yearly Sweepstakes Imbrogio when Europeans queue up to answer "CQ SS" on 14 and 21 Mc. in a merry *quid pro quo*.

Africa — Fresh certifications for your pleasure: (1) In commemoration of the founding of the city of Beira 50 years ago, LREM (Mozambique) offers non-Africa amateurs an award based on working a pair of Beira CR7s during this month only. CR7s HN CP CY DI DS DQ IT and LU will be available on 10 through 40 meters. Mail your entry and brace of QSLs with two IRCs to reach CR7BN no later than October 31, 1957. Thanks, W1s QON and ZDP. (2) Marking its first anniversary, Orange Free State's Kroonstad Radio Club makes available a KRC sheepskin for any two QSOs with different ZSs AA BH BN CO IIN IO JB JC JL MG and VL. Apply with three IRCs to ZS4MG; no time limit specified. This via W1DWH. . . . ZS4MG, with 70 watts of c.w. and 25 watts of phone, still

seeks Utah and North Dakota on 14 Mc. to clinch WAS. Sid also has 115 countries in the bag. . . . W1DWH learns that SUIIM travels about the Middle East for Egypt's Ministry of Education. . . . As you pass through Tunisia while fleeing TVI-irked neighbors, stop at Carthage's Hotel Saint-Louis where house manager 3V8AO and colleague 3V8AD may give you temporary asylum. Tip from VE3ADV. . . . ZS6GH makes it a distaff WAC on 20 for KA3CY. . . . ZB3JO, recovering from recent illness, plans no VQ9 work at this time. But Alal tells W2HMJ of plans to put his VQ1JO outfit on the air in ZS9 next month. . . . 5A5TL's W3DQV informs KH1QD he'll soon be a New Englander.

Oceania — VK5TL writes W4Y8D from Australia's rare Northern Territory: "I will be here until about the end of November. VK5s AE EW OW and ST also are here, and VK5UM is due on the air soon." VK5s EW and UM are Ws 5FMA and 8U1AM, respectively. The N.T. remains a fundamental clinker en route many WAWKCA certifications. . . . VK6AM apprises W8NGO that Coos-Keeling's VK9AJ changed operators. Les heading back to the U.K. . . . Fijiana from VR2BC (ex-VP1GG): VR2AS returned to the air after extensive rebuilding. VR2s AD and AP threaten early activity, and VR2s AG AZ BC DA and DB continue heavy local QRAL. VR2BZ, 'tis heard, signed on for another RNZAF hitch and may soon return to the islands. VR2s CG (now ZL3DX) and BZ are Fiji's only DXCC members; VR2BC, with 98 worked on A3, hopes to become the first VR2 to make the grade on phone. Greg further peeps: "Can you ventilate a condemnation of the types who call a station 10, 15, 20, 25 and 30 times without once giving their own calls? The record is held here by a W6 who called me 83 times before giving his call. Then he went on with 16 more 'VR2BCs' before I left him to his fun." VR2BC has worked 44 states on each of 10 and 15 meters, still searching for Del., Me., N. Dak. and N. H. on both bands. Greg plans a DXpeditionary visit to Rotuma Island in the bye and bye. . . . ARRL Rocky Mountain Division Vice-Director W0BWJ notes that 28-Mc. phone specialist ZL2WV is hunkering for Delaware. . . . To see an Eniwetok ham shack you'll have to go there yourself. "Local regulations forbid the publication of any pictures from here," declares KX0CG on K6TYF. Jack will be K6TYF/m on our East Coast sometime this month. . . . ZK2AB has trouble enough to make a preacher cuss, being absolutely foiled in his attempts to drive an 807s final with his v.f.o. exciter. He writes W6OUN: "When I am stuck with one of my numerous radio problems and have no one to consult, no shop where I can buy a spare

(Continued on page 150)

SMIBJA, eagerly sought by DXers pursuing SSA's WASM award, runs 150 watts to parallel 807s, receives with a Swedish-model Super Pro, spins a 2-element beam on 20 and 10, and loads a Windom on 80 and 40. At the call of the open road Lars also manipulates a homespun 6146 60-watt mobile outfit in his Jaguar XK-140. (Photo via W8DLZ)





Correspondence From Members -

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

ONE-EYED MONSTERS

8 General McLean Drive
Bellport, New York

Editor, *QST*:

I should like this letter to record my sympathy toward K6DXV, who wrote about his "automatic conelrad" in the May issue. He has, however, only his XYL to contend with; I have an entire family to battle. In some strange state of mind I consented to make an attempt at fixing the TV set and diagnosed the trouble as weak horiz. osc. Luckily (I thought at the time) I had the replacement in my transmitter and could save the family some time and money by effecting the simple repair myself.

Since I touched that TV set, I have cursed myself a thousand times for ever being so assinine as to even go near the one-eyed monster. For now, whenever Channel 2 quivers, when Channel 4 jumps, when Channel 5 shimmeys, and even when Channel 7 just sits there and doesn't do anything, it is my fault because I "... did something to the television," or I'm "... on the radio."

I've been accused of every kind of interference imaginable from ignition noise to lightning, from an electric mixer to the door bell. A pox on the man who invented television!

Please don't use my name, as I should like to go on living (if you can call this living) in this house.

— K2JZR

INCENTIVE

314 — 6th St. S.W.
Le Mars, Iowa

Editor, *QST*:

After reading W3IEL's letter in May *QST*, I am of the opinion that Mr. Brokhausen should read a little history of amateur regulations before forming such an opinion.

After all, the holders of the present Advanced Class had to wait a year, operate on c.w. or the higher-frequency phone bands before "memorizing," as he said, enough answers for the Class A test.

Another thing Mr. Brokhausen failed to think about was the fact that at the time the present Advanced Class amateurs were issued their Class A tickets it was the highest obtainable in the amateur class.

The Advanced Class holders should have a few extra privileges, since they had enough incentive to go after a higher-class license.

— Verlin Karli, W0RIS

5028 Bay
Groves, Texas

Editor, *QST*:

I enjoy reading the correspondence of members as I find good reasoning in many of the statements, as well as seeing how some of the gang let off steam at times. In May issue, W3IEL has expressed his disapproval of your policy concerning the Advanced Class license holders. As Mr. Brokhausen seems to be a normal ham who has exercised his rights in our organization and not been nasty about it, I wish to ask both him and other readers to think further about your proposal to FCC.

We are all for the incentive program, and must remember that the Advanced Class boys were interested enough to take a second examination because of the incentive reward at that time. The present General Class fellows were given all privileges that the Advanced Class group had with no waiting period or second examination.

I think W3IEL will agree that he does not know what percentage of hams "memorized a few questions" and came up with an Advanced Class license. I do not have the Extra First Class license, but on my shack wall hangs the ARRL 35 w.p.m. code-proficiency certificate, a first-class

commercial radiotelephone license, and a second-class commercial radiotelegraph license.

If Mr. Brokhausen and others who are resentful of the good fortune of this group of fellow hams will study the *License Manual*, get in some real code practice, and see the FCC examiner, I believe they will find the cure for any ill feeling towards your proposal.

— R. L. Mathis, W3JFY

915 College Avenue
Richmond, Indiana

Editor, *QST*:

It would appear from comments on page 84 of May, 1957, *QST* that W3IEL is somewhat confused about the "free ride" business. If he can get access to a February, 1953, issue of *QST*, he will discover on page 36 that the BIG WHOLESALE free ride started February 18, 1953, when there was the opening of the restricted phone bands to all General and Conditional class licensees. I am not belittling in the slightest the efforts or merits of such licensees but if W3IEL is going to indulge in the "free ride" charge, let's get the story straight.

The fraternity of amateur radio pioneers who have striven to excel through the years with top grade licenses as they were available (the holders of the "Extra First Class," the "Class A" and finally the "Advanced Class") welcome the "Extra Class" boys in the same high pursuit of the hobby. However, they deeply resent the slurs of any Johnnie-come-lately who either is grossly ignorant of the history of amateur radio or else who chooses to ignore or belittle the efforts of his predecessors in the radio art.

— Leslie Frazer, W9DD

2324 Mexico Street
New Orleans 22, La

Editor, *QST*:

Speaking of that long forgotten word of a few years ago called "incentive" that used to be associated with the amateur Class A or Advanced license, I would like to offer a suggestion to die a quick death or be kicked around.

Why doesn't ARRL introduce a docket stating to all General and Advanced license holders, be they past, present or future hams, that if they want to continue operating in the formerly-restricted bands, they will have to obtain by a particular deadline (say, 1-2 years) an EXTRA class license. This will give the old-timer and novice alike an equal chance and a fair chance. I think this step would create greater "incentive" plus a higher calibre of operators in the amateur ranks than will ever exist under the present licensing system.

— E. V. "Sandy" Blaize, W5TVW

"RECEIVERPHOBIA"

RFD #2

Skowhegan, Maine

Editor, *QST*:

FB on W1DX's May article, "Who's Afraid of a Receiver." Besides keeping me rolling in the aisles, it showed me how to correct and improve my own receiver's ailments.

I think that W1ICP, W1CUT, and W1JFQ also deserve much credit for their excellent articles for the Novice.

— Ray "Slim" Schinzel, W1LCCX

634 High Street

Newark 2, New Jersey

Editor, *QST*:

I think W1DX has done us a great service. I had "receiverphobia," but it's all gone now. My SX-28 is a bit off line, so I was very interested in the alignment part of this expert manuscript.

— Al Birnholz, KN9VAB



Operating News



F. E. HANDY, WIBDI, Communications Mgr.
GEORGE HART, WINJM, Natl. Emerg. Coordinator
PHIL SIMMONS, WIZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, WIWPO, DXCC Awards
LILLIAN M. SALTER, WIZJE, Administrative Aide
ELLEN WHITE, WIYYM, Asst. Comm. Mgr., Phone

Goals in Amateur Work. Each amateur has to establish his own goals and emphasis in amateur radio, and quite often build out or broaden his experience by setting new or additional goals from time to time as occasion requires. We couldn't begin to list the different kinds of incentives for technical excellence or operating achievements in amateur work. Every operator naturally aspires for self-improvement in knowledge, for progress in station achievement, and a growth in number of fraternal acquaintances. For the fellow who has just got his ticket it may appear at first impossible (1) to belong to a net, (2) to make BPL, (3) to be a leader, (4) to be a club officer, (5) to get on "six," (6) to work Asia for WAC, or (7) to make WAS or collect 100 cards for DXCC. There are quite a large number of accomplishments, awards, appointments, and incentives of which these are examples. But they can be appropriate and helpful, if given proper emphasis and kept in their place.

There are numerous awards of different kinds in amateur radio, local, national and international. Some award certifications were mentioned on page 50 of July *QST* and those of ARRL are detailed in our booklet *Operating an Amateur Radio Station*. Nearly every amateur is familiar with the ARRL *appointments*, as made by the SCMs whose addresses are given on page 6 of *QST* and available only to member-stations in the U. S. A. and Canada. If you can make a record as a real traffic communicator you are eligible to ORS and OPS posts granted by the SCM; if your emphasis will be on the v.h.f. field, very likely you can qualify for the Official Experimental Station appointment which involves work and reporting "above 50 Mc."

Good Aims vs. Over-Stimulation. The newer operator can progress steadily upward, using these different aims and badges of performance and criteria for measuring his operating progress. Just as we shift from band to band, from phone to c.w., from building and research perhaps to emergency operating or traffic, it is very useful to have goals . . . also be identified with our organized ARRL appointments and AREC if you can! Broad amateur experience is rewarding in terms of proficiency, friends and progress. However, to become possessed or obsessed in any single field creates an over emphasis and a narrowness of viewpoint. Changes in objective from time to time will be found refreshing, though not too many goals should be sought at a time. One west coast amateur recently wrote

of his experience *changing* his emphasis from looking for single new countries (he long ago made DXCC) to that of working more common DX and doing other things. He sought to keep away from what he termed "sinister side effects" of a too concentrated interest in one phase—wishing his amateur work to assume more the proper role of a hobby to "entertain and relax" as he put it. We *must* have appropriate goals, taken in stride and making each the ladder to building and using our communicating abilities to the most. There's *no* hobby like amateur radio. But it's wrong in principle to let all DX, or all traffic or v.h.f. or any *one* phase "take us over" so we are not in control of our own destinies. A hobby or any other activity is only good as long as we are individually in control.

Do You Keep Your Receiver on the NCEFs? In these columns we frequently repeat the chart of the National Calling and Emergency Frequencies. If you happen to read this from the vantage point of your shack we wonder if you have a receiver sitting tuned to those frequencies right now? If so, the advantages are that you will catch any emergency call—and if there's traffic around to be moved, the designated

NATIONAL CALLING AND EMERGENCY FREQUENCIES			
3550	3875	7110	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

Calling and Emergency Frequencies (see box) should be used to locate a taker at the right QTH, in between net sessions. Members of the daily ARRL Section Net by watching for calls on the NCEFs can readily take your traffic and give it further state-wide distribution in their next net operating period. See page 77 of March *QST* for further details on such use of a stand-by receiver. The more the NCEFs are used the more useful they will become.

Nets and Net Registration. Our last Annual Net Directory showed the registration of 435 nets, a considerable increase over the previous year's record high. The net registration cards are all in readiness for the '57-'58 registration. Since the League has to have every figure up to date, we depend on no old information. Former registrations are not carried along; hence a new net registration will be required from your net man-

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for May traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W7BA	22	1938	1877	53	3902
W3WTO	34	1588	1601	134	3397
W7PGY	33	1409	1280	123	2845
W0BDR	49	1337	1283	19	2688
K5WAB	44	1114	1067	47	2272
W4PL	5	1018	927	60	2010
W0CFL	11	946	895	51	1903
K7FFA	206	848	765	61	1880
W2KEB	90	884	811	51	1836
W0PZO	2	902	892	3	1799
W8ELW	5	697	655	22	1379
W0BLI	4	622	607	14	1247
W7VAZ	30	601	529	72	1232
W9DO	21	599	581	19	1220
W0LCCX	30	569	555	19	1173
W0SCA	5	581	548	5	1139
W0LGG	21	553	518	12	1104
W7APF	7	499	497	2	1005
W1TYQ	7	460	415	9	947
W9ZYX	67	449	423	26	925
K6DYX	4	435	416	10	865
W5DRZ	32	379	367	17	795
W9CXY	5	373	324	49	751
W9GAR	4	371	373	2	750
W6GQY	343	357	359	2	736
W9JOZ	11	355	361	6	733
W8UPH	19	360	298	54	731
W5ESB	27	331	306	25	689
W4RLG	18	337	291	20	666
W6BPT	5	329	322	7	663
K7WAD	22	327	283	31	663
W0KQD	38	319	285	16	658
K2PHF	192	220	120	100	632
W9TT	27	275	218	54	574
W0BJP	4	282	276	6	568
K4EZZ	59	259	230	10	567
W0NZZ	24	262	239	218	565
W4PJU	24	264	230	34	554
W9MAK	22	276	213	39	550
W9FQO	2	273	269	2	546
W6QMO	109	226	153	57	545
W9FYC	252	160	117	12	541
W8RCF	11	264	241	23	539
W2KPV	0	312	172	49	533
W4FPC	24	13	468	12	517
W0CZ	11	251	236	17	515
W4ZDB	35	243	220	10	508
W1EMG	4	252	229	22	507
W0RHZ	61	325	75	58	507
W2BNP	8	272	218	6	504
K9GJR	22	241	154	84	501
Late Reports:					
W7APF (Apr.)	2	401	399	2	804
W7TLC (Apr.)	107	180	163	97	627
W7TLC (Mar.)	102	204	93	111	510

More-Than-One-Operator Stations

K7FAE	45	298	242	54	637
K5FFB	144	162	273	34	613
K6MCA	148	217	217	14	596
Late Report:					
K7FAE (Apr.)	106	302	267	35	710

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

W6GYH	264	K2DEM	126	K4GWO	109
KL7USA	224	W9HXR	125	K8BPX	106
W0NIY	191	W1YRZ/2	122	VE3NG	104
K6GZ	166	K7FBN	122	W6GBJ	102
K9BCQ	158	W5BGD	121	K0CVD	100
K6GZ	142	K2AJV	114	Late Report:	
KN1BCS	134	K5AEX	112	W1SAL (Apr.)	118

More-Than-One-Operator Stations

W6ZJB	193	K8NAW	165	W9AB	115
W2CXM	185	W1AW	124		

BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: W2JGV, W4ZDB, W9EQO.

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 handed on amateur frequencies within 48 hours of receipt, in standard ARRL form.

ager or NCS. An analysis of 469 net registrations indicates the following: 1.8 Mc., 13; 3.5 Mc. c.w., 107; 3.8 Mc. phone, 164; 7 Mc. c.w., 10; 7 Mc. phone, 12; 14 Mc. phone, 2; 21 Mc. phone, 2; 28 Mc., 19; 56 Mc., 21; 144 Mc., 48. C.w. nets as a class report an average of 5.5 sessions per week, while phone nets average 3.8 sessions per week. V.h.f. nets appear to operate only 1.6 sessions per week, as a rule. About half the nets register a traffic purpose, and half an emergency purpose.

About frequency conflicts: The ARRL Net Directory is set up for purposes of giving recognition by the League, and for information for consultation by all amateurs to aid traffic movement between different areas of the country via NTS and nets identified with sections and states, and for use in emergency. The directory also helps individuals and groups to minimize interference. Registration, however, confers no priority or advantage of any one net over any other, or over individual operation. It probably should be pointed out that most of the net operating takes place in the early evening period of each day. By noting the frequency of one's nearby nets it is possible to operate in parts of the band (or at times) that avoid conflicts. It is generally considered foolhardy for one or two stations to operate independently on the same frequency with several, so avoid net frequencies, if you are a casual operator going it alone. Nets were mostly organized in grass roots fashion in the beginnings not only to cover all the towns and cities in an area for effective traffic distribution, but to coordinate one's operations efficiently under one control (or NCS) for an orderly sequence of communication. A net operation, as a general rule, takes the least elapsed time in operations and the smallest possible frequency range to handle a volume of exchanges of information effectively between a group of stations.

— F.E.H.

W1AW OPERATING NOTE

The W1AW summer operating schedule appeared on page 86 of last month's QST. See that issue for complete information on when and where to look for the ARRL Headquarters station.

On June 15, W1AW began transmitting daily IGY Bulletins to amateurs taking part in the ARRL-IGY Propagation Research Project. Their purpose is to announce Alerts and Special World Intervals, times for concentrated observation of v.h.f. conditions. These short IGY Bulletins are sent on phone and c.w. at the same times as W1AW Official, Special, and Propagation Bulletins.

FOURTH RTTY SS

The following participation in the annual spring activity is now reported by the RTTY Society of Southern California. Most ARRL sections were worked by W6AEE (27), by W2RUI and W2JAV, W3PYW (22 each). W2RUI reported most contacts, 108 stations worked. The exchange of message preambles as in the ARRL SS, counting one point each when successfully received for, made a possible two points per station per band. This with a section multiplier was the basis for scoring. The listings below indicate call, number of sections worked and score:

W2RUI	22	2376	W0YKZ/5	14	672
W2JAV	22	2156	W0FQW	12	360
W0BP	21	2058	W9OCV	9	234
W3PYW	22	1980	W6VPC	8	224
W6AEE	27	1890	W2TBD	8	200
VE7KX	20	1600	W6LFF	6	144
W6MTJ	17	952	W7CSC	7	140
W3MHD	18	900	W6ZBV	7	126
W4EHU	17	850	K2CSC	7	112
W1BGW	15	840	K6POL	6	96

W1AW 5-50; W6CQK/2 3-24; W6CNIH 2-14; W2FAN 2-12; VE7AIK 1-6; W1BDI 1-2; ZL1WB 1-2; also indicated scores. Also we take pleasure in indicating the "SS" aggregate score as reported for the Lockport Radio Club (NY) (W2FAN, W2VLL, K2ECQ, W2ZOC, W2SSS, K2EPV and W2RUI) 22-2404. WNY.

A.R.R.L. ACTIVITIES CALENDAR

July 27-28: CD QSO Party (phone)
Aug. 7: CP Qualifying Run — W6OWP
Aug. 19: CP Qualifying Run — WIAW
Sept. 5: CP Qualifying Run — W6OWP
Sept. 17: CP Qualifying Run — WIAW
Sept. 18: Frequency Measuring Test
Sept. 21-22: V.H.F. QSO Party
Oct. 2: CP Qualifying Run — W6OWP
Oct. 12-13: Simulated Emergency Test
Oct. 16: CP Qualifying Run — WIAW
Oct. 19-20: CD QSO Party (c.w.)
Oct. 26-27: CD QSO Party (phone)
Nov. 7: CP Qualifying Run — W6OWP
Nov. 9-10, 16-17: Sweepstakes
Nov. 14: CP Qualifying Run — WIAW
Dec. 4: CP Qualifying Run — W6OWP
Dec. 20: CP Qualifying Run — WIAW

OTHER ACTIVITIES

Sept. 7-8: LABRE DX Contest (c.w.), LABRE. (See page 74, this issue.)

Sept. 14-15: LABRE DX Contest (phone), LABRE. (See page 74, this issue.)

The following lists date, name, and sponsor. Details will be presented in future issues of QST.

Sept. 14-15: Virginia Free-for-All QSO Party, W4KX.

Sept. 28-29: W/VE Contest, Montreal Amateur Radio Club.

Oct. 5-6: Connecticut QSO Party, Connecticut Wireless Association.

Oct. 5-6: VK/ZL DX Contest (phone), NZART and WIA.

Oct. 12-13: VK/ZL DX Contest (c.w.), NZART and WIA.

Nov. 1-2: RTTY Sweepstakes, RTTY Society of Southern California.

Nov. 23-24: 21/28 Mc. Telephony Contest, RSGB.

as to personnel and objectives. Once in a while we came up against the absurd situation of amateur groups fighting each other—a most demoralizing and discouraging spectacle.

In at least one place it seemed obvious that your ARRL representative was expected to solve the local problem and present the solution. If you think about this, you will realize how impractical it is. Some of us may flatter ourselves into thinking we are experts in certain fields, but in the final analysis most of us are plain ordinary amateurs like yourselves. If you cannot solve your local problems after weeks, months, years of wrestling with them, you must not expect us to do so within five minutes after being introduced to them. In Kansas City, for example, after we had finished saying what we had come to say and floor demands for an exposé of the local situation arose, we sat down while the local c.d. director took over, and we became a good listener. Much was accomplished, mostly because all factions were together in the same room and could thrash the matter out. In the end, if no concrete conclusion was reached, at least they had mutually decided where to lay the blame, and at least we had been instrumental in getting them together for some general palaver on the subject.

You may ask: if you did not appear for the purpose of trying to solve the problems, then why did you appear? The answer to this question is that by close contact with the problems of amateurs in the field and with government agencies we can only arrive at basic principles for guidance, to lay the groundwork for mutual understandings, to set the stage for the type of organization that has been effective elsewhere and is at the same time of the utmost benefit to the amateur service and the general public. Implementation is largely up to you. We can only tell you how you should behave; we cannot make you behave that way. That is something you must do yourself.

Two tornado emergencies affected Alabama in April. The first one, on April 1, put the Gadsden Emergency Net (AENH) into operation with K4BWR as NCS. The storm area of Anniston, Jackson and Piedmont, was without communication and AENH passed traffic for the c.d. director, police, telephone and power companies. Assisting were K4s BTO AJK JMC AVE and other AENH members.

On April 8 two tornadoes struck in the area extending from Hamilton thru Kalsyville to Faulkville, inflicting damage on eight other towns in the area. At 1332 K4AOZ called AENP into emergency session and W4FOG was instructed to dispatch the Huntsville mobiles to Faulkville. W4s YFN RQS NIQ and OBV proceeded to the scene, while W4PBG acted as relay station. Traffic was handled for the CAP and civil defense. AENT went into session to handle welfare traffic. The amount of food, blankets, and other materials sent into the area was determined by messages sent out by the mobiles under W4YFN. The following other amateurs also participated: W4s APF AJG BJL BFM CUI COU CRY DGH DKP DRQ DSH HKK HAL HJM HMK KJZ PVG PBK RLG RNK WAZ WJX ZSQ ZUP; K4s BWR KOE MYH MEJ WMA. — W4TKL, SEC Alabama.

Between April 2 and April 8 three separate ice and sleet storms isolated many places in Indiana. W9PPD furnished communications between New Castle and Hagerstown for several days while the telephone lines were down. W9UPI put up a temporary 40-meter antenna to supply emergency communications for an isolated community. W9TQC maintained a continuous watch on 3656 kc. as members of the River Forecast Net kept reports on river levels coming in all week. — W9T7T.

On April 4 at 0400 CST W4BAQ, Memphis EC, was called upon by Red Cross to provide assistance in surveying tornado damage near Selma, Tenn. W4WTI departed from Memphis with two vehicles of Red Cross workers. They were joined at Collierville by W4HHK/m, proceeding to the Ramer and Selma area. W4FWX also was alerted and proceeded to Selma from Somerville. The group arrived in the damaged area about 0700 and contact with W4YMB of Memphis was made by W4WTI/m on 3980 kc. Two of the mobiles remained on ten meters working with the two Red Cross units while the third mobile maintained contact with Memphis on 75, later shifting to 40 meters when signals became weaker during the day. Reports were relayed



This column would be somewhat abbreviated this month because of an 18-day field trip that made your reporter's copy three days overdue even before he got back, except for the fact that we submitted so much copy last month that the editor had to hack some of it off and hold it until this month. If something you sent in hasn't appeared yet, bear with us, fellows. In spite of the hot weather, we are snarled!

It wouldn't be correct to say that the trip was uneventful, but on the other hand no particularly new problems came up. We visited clubs at Evansville (Ind.), Madison, Wausau and Milwaukee (Wis.), Kansas City, Omaha, Des Moines, and Wichita; and we attended ARRL Conventions in Tahlequah (Okla.), St. Paul, (Minn.), and Estes Park (Colo.). While problems varied from place to place, in general there was none that could not be solved by a little plain-and-fancy cooperation and broad-mindedness by all concerned. In one place, RACES and the AREC would go together like peaches and cream. In another, they would be at each other's throats, or completely separated both

to Red Cross headquarters in Memphis. Other Memphis operators handling traffic with the group were K4EJU and W4AFB. W4BAQ maintained contact on ten meters with W4WTI/m from Memphis to Collierville, W4UDQ of Collierville continued keeping contact with them for about 25 miles beyond there. The Red Cross was very appreciative of the assistance rendered and complimented us on the good communications. — *W4BAQ, EC Memphis, Tenn.*

Snow—cold, wet, and entirely unexpected—dealt a severe blow to all of Cleveland and its suburbs on April 8, resulting in six deaths, the closing of 200 schools and loss of electricity to 18,000 homes. Members of the Cuyahoga AREC group assisted in handling traffic for stranded motorists unable to get home. Operating on 29,160 kc., the following amateurs engaged in this activity until 2200: W3s PTC PBZ NLX MIWE ULN IJP AEU. — *K8CBE, Asst. EC., Cleveland, Ohio.*

AREC members of Oxford, Mass., were active in the fires which raged through Central Massachusetts on April 22. At the request of a town official, two mobile units were placed in action coordinating movements of materials, supplies and personnel in the area. The operation lasted from 2000 to 2317. Amateurs who participated: W1s 1XM/m HRN SPF and K1AOL. — *W1SPF, EC Oxford, Mass.*

While the midwest was fighting rising flood waters, the northeast was fighting forest fires caused by excessive dryness due to lack of rain. W1TZ, EC for Norfolk, Mass., reports activity by amateurs in his area on May 8, assisting fire-fighting operations. W1s MNW BFV ZSH EGV YRC DOR JFG MJO SRR, K1s AER and BRE turned out to assist c.d. radio officer W1VQN in directing out-of-town fire equipment to strategic points of operation, operating on the frequency of the Post Road Emergency Net. Mobile operation was most effective, and the fire was brought under control within two days. W1ALP put Area 1, Sector B on a 24-hour basis, operating as W1ALP1 in the RACES net to assist in fires in the Cape area. W1MME set up shop at Plymouth in the center of the fire area and operated from there for 48 hours relaying reports to c.d. headquarters.

Amateurs were on the scene during the dramatic rescue operations concerning seven-year-old Ben Hooper of Manor-

additional 2-meter mobile units were carried to Coushatta by K5FBI on Thursday evening, May 2. By 0900 the 3993 kc. channel and the 2-meter channel were in contact with W5FHS:5. The three portable units were turned over to K5AYT for distribution within the flood area. At one time K5AYT had to spend an entire night sitting atop an automobile (to gain antenna height) with his two-meter portable to maintain communication with W5FHS, relaying flood information and requests for aid and support. Communication with other units was maintained through the station in Shreveport. W5PNB reinforced the unit at East Point until additional personnel and equipment arrived from Shreveport so that solid contact could be maintained between Coushatta and Eastpoint. Because of heavy interference conditions on 80 meters, K5AIR was supplied with 2-meter equipment by Shreveport civil defense and the heavy traffic load was quickly taken care of. On May 6, the 2-meter installation at Barksdale was removed from K5AIR and placed in the base commander's office, using the RACES call W5FHS19. A new unit was later brought to K5AIR from Mansfield. The civil defense control station, W5FHS5, was essentially on a stand-by basis until the operation terminated at 1000 May 8, but K5AIR and K5FBI, who had moved to East Point from Coushatta, continued their operation. This is the sum and substance of amateur operation, although several other radio services were active in the emergency. The plan followed was that of the RACES organization in Caddo and Bossier parishes, which had not yet been approved at all levels. Special permission was given by FCC to operate under the unapproved plan for this emergency.

Amateurs not already mentioned operating the various civil defense rigs included W5s DOF CTO CGA ZUA EKU KEI TTB FVS PVU ZGP CEW MFS ULI NXM ISP AJS IYO JAH DMK BWZ SUA KU, K5s ICH HXV EOR PXS BXA HKF GOA. Operating K5FBI at Coushatta were W5EBQ and K5IDN. Operating K5AIR at Barksdale were W5DUM and K5ISX. In supporting roles were W5s ACE ML WNR GWC WDG QQU FIU IHI HEC TUZ FYZ MIU BQ; K5s AIE CXK EGD HEC. — *W5KU, EC Caddo & Bossier Parishes, La.*

Twenty-two SECs submitted April activities reports on behalf of a total of 6190 AREC members. We welcome three new sections to the growing list of sections heard from this year: Indiana, Kentucky and Missouri, making our total 31 for 1957. The April record is a good one, with 5 more reports and almost 2000 more AREC members than last year.

Only 42 sections still to be heard from in 1957 to make the record complete!

RACES News

Just to keep you up to date, we wish to submit some corrections and additions to the list of state radio officers which appeared in March *QST* (p. 80). Since that list was published, two additional states have been added, making a total of 44 which now have FCDA-approved state RACES plans. The new states are North Dakota, whose radio officer is Mr. A. L. Anderson, W0VAZ, and South Carolina, radio officer Mr. C. R. Commander, W4ZRH. In addition, the following changes should be made in the March *QST* list: Iowa, Mr. Charles J. Nord, W0UQG; Kansas, Mr. S. D. Thacher, W0QV; Louisiana, Mr. K. J. Jumonville, K5BES; Oklahoma, Mr. Elmo Black (call not given); Rhode Island, Mr. T. C. McCormick, W1PAZ; Washington, Mr. O. U. Tutro, W7FWD. This is latest information from FCDA.

The Omaha-Douglas County RACES organization demonstrated its readiness to serve on April 25 when tornadoes

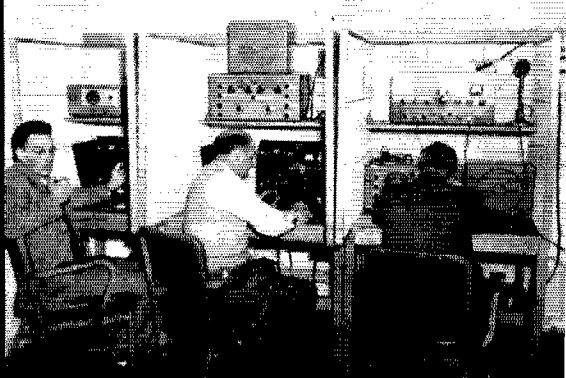
The Civil Defense Control Center for Mercer County (N. J.) RACES has a soundproofed booth for each operating position, which helps reduce anrral QRM between positions or from the room. One of these operating positions is for contact with state c.d. headquarters, on 80 meter c.w. Six and two meter frequencies are used for county-to-municipality, mobile, and highway check points. Shown in the photo, left to right, are W2LYV, W2SVV and W2GX.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

vile, N. Y., who fell into a 24-ft. deep well hole on May 16. Reports of rescue operations were relayed from W2TPZ m at the scene to W2PFY, thence by phone patch to WPAC at Patchogue. W2OQI m stood by at the scene while K2BGF monitored the frequency to keep it clear. Thus, the first news that the boy was alive, released at 1940 on May 17, was flashed to the waiting world by amateur radio. — *W2BGO, Radio Officer, New York State*

AREC, RACES and MARS amateurs were active during the floods in Louisiana in early May. After extensive planning envisaging the need for emergency communications, K5FBI from Barksdale Air Force Base was equipped with a 2-meter unit, a 50-watt linear amplifier, a 30-foot sectional mast and a stacked ground-plane antenna. Three





Quite a collection of civil defense and RACES "brass" assembled for the second annual conference of the United States Civil Defense Amateur Radio Alliance in Battle Creek, Mich., on May 9-10. Meet (back row, l. to r.) Bill Whitfield (FCDA Region 1), W4ZRH (S.C.), W0AJS (FCDA), W2OZR ((N. Y.), W1HHY (Fla.), W2BGO (N. Y., Chairman), W8FYW (Ohio), W3MPO (Pa.), W8HZA (W. Va.), K5BES (La.), WINJM (ARRL). Second row (standing on step): K8DAN (FCDA), K8DAY (FCDA), Mrs. W9SWD (Ind.), J. F. Edwards (Canadian C. D.), W4POI (FCDA Region 3). Front row: W3YA (Pa.), W2QGH (N. Y.), W8ZQN (Ohio), W8DUA (FCDA), W0JDJ (Nebr.), Pat McCleary (Conference Secretary, FCDA). Not in picture: W9SWD (Ind.).

were ripping through the area. Although, as it developed, no emergency communication was required, the RACES group alerted itself and received unsolicited check-ins from 10 members. Weather reports direct from c.d. headquarters were passed along the line, weather checks in various parts of the city were relayed to control, with W0AEM advising observations relayed via the MARS net. All told, it was an excellent demonstration of the readiness of the RACES group to serve.

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At 1115 on March 30 a simulated atom bomb was dropped on Indianapolis, in an exercise known as "Operation Warm-Up." The Vanderburgh County RACES group was on stand-by alert to render assistance if needed. Communications were conducted on 75 and 80 meters, with constant monitoring of the RACES frequencies from 0850 until 1900 CST. Unfavorable conditions on these frequencies at certain times of the day indicated the desirability of considering other frequencies for future operations. Seven amateurs participated.

— * * * —

Fifteen amateurs of Delaware County (N. Y.) RACES participated in a test evacuation of Binghamton, N. Y., on May 5. Operation was on 75, 10 and six meters. Tactical call signs were used throughout the test. Broome County RACES provided operators and a station for a net on 50.42 Mc. at Deposit for contact with Binghamton and intervening points. Radio Officer W2RZP reports, in critique: (1) Many messages were incorrectly filed, mostly because other c.d. services do not understand RACES requirements. (2) Lack of correlation between telephone and radio services, particularly in use of standard message form. (3) RACES operators cannot be the authority for the origination or transmission of messages; all must be authenticated by someone in authority. State radio officer W2BGO and Delaware County C. D. Director Chamberlain, both of whom were present, were very well satisfied with the operation.

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 August 19 at 2130 Eastern Daylight Saving Time. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on August 7 at 2100 PDST on 3590 and 7128 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station

you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EDT. Approximately 10 minutes' practice is given at each speed. References 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 buzzer or audio oscillator and attempt to send along with W1AW.

Date Subject of Practice Text from June QST

- Aug. 5: "Autosync" Frequency Control, p. 11
- Aug. 8: *Conrad Monitoring for the Mobile Operator*, p. 17
- Aug. 13: *Low Cross-Talk Six-Meter Converter*, p. 22
- Aug. 16: *National Convention News*, p. 56
- Aug. 21: *1957 ARRL Field Day Rules*, p. 47
- Aug. 27: *23rd ARRL Sweepstakes Results*, p. 50
- Aug. 29: *New Life for CODAN*, p. 34

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

Hawaii	Samuel H. Lewbel, KH6AED	April 10, 1957
New York City & Long Island	Harry J. Dannals, W2TUK	July 31, 1957

In the Connecticut Section of the New England Division, Mr. Victor L. Crawford, W1TYQ, and Mr. Carmine A. Polo, W1SJO, were nominated. Mr. Crawford received 281 votes and Mr. Polo received 125 votes. Mr. Crawford's term of office began May 23, 1957.

In the Oregon Section of the Northwestern Division, Mr. Hubert R. McNally, W7JDX, Mr. James A. McCurdy, W7QYS, and Mr. Robert R. Perkins, W7CJ, were nominated. Mr. McNally received 274 votes, Mr. McCurdy received 92 votes, and Mr. Perkins received 26 votes. Mr. McNally's term of office began May 28, 1957.

In the Mississippi Section of the Delta Division, Mr. John Adrian Houston, Sr., W5EHH, and Mr. Floyd C. Teetson, W5MUG/W5GIV, were nominated. Mr. Houston received 86 votes and Mr. Teetson received 79 votes. Mr. Houston's term of office began May 29, 1957.

In the New Mexico Section of the Rocky Mountain Division, Mr. Ray Birch, W5OZ, and Mr. Ivan R. Davis, W5CEE, were nominated. Mr. Birch received 113 votes and Mr. Davis received 78 votes. Mr. Birch's term of office began June 6, 1957.

In the South Dakota Section of the Dakota Division, Mr. Les Price, W0FLP, Mr. Lester R. Lauritzen, W8SCT, and Mr. Floyd W. Aughenbaugh, W8NNX, were nominated. Mr. Price received 82 votes, Mr. Lauritzen received 51 votes and Mr. Aughenbaugh received 25 votes. Mr. Price's term of office began July 2, 1957.

ELECTION NOTICE

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

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

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

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

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested: (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. [place and date]
38 La Salle Road, West Hartford, Conn.

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

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— P. E. Handy, Communications Manager

Section	Closing Date	SCM	Present Term Ends
Yukon*	Aug. 9, 1957	W. R. Williamson	Mar. 17, 1949
Manitoba*	Aug. 9, 1957	John Polmark	Mar. 2, 1957
Maine	Aug. 9, 1957	Allan D. Dumtley	May 16, 1957
North Dakota	Aug. 9, 1957	Elmer J. Gabel	June 15, 1957
San Joaquin Valley	Aug. 9, 1957	Ralph Saroyan	June 15, 1957
Indiana	Aug. 9, 1957	Seth L. Baker	Oct. 14, 1957
East Bay	Aug. 9, 1957	Roger L. Wixson	Oct. 14, 1957
San Diego	Aug. 9, 1957	Don Stansifer	Oct. 15, 1957
Oklahoma	Aug. 9, 1957	Ewing Canaday	Resigned
Utah	Aug. 9, 1957	James L. Dixon	Resigned
Alabama	Oct. 10, 1957	Joe A. Shannon	Dec. 14, 1957
Ohio	Oct. 10, 1957	Wilson E. Weckel	Dec. 14, 1957
Illinois	Oct. 10, 1957	George T. Schreiber	Dec. 15, 1957
Western Florida	Oct. 10, 1957	Edward J. Collins	Dec. 15, 1957
Quebec*	Oct. 10, 1957	Gordon A. Lynn	Dec. 15, 1957
South Carolina	Oct. 10, 1957	Bryson L. McGraw	Dec. 30, 1957
Alaska	Nov. 11, 1957	Dave A. Fulton	Jan. 15, 1958
Eastern New York	Nov. 11, 1957	George W. Tracy	Jan. 27, 1958

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates named.

TRAFFIC TOPICS

Ever participate in a "brainstorming" session? At the Dakota Division Convention in St. Paul in June, such a session was the culmination of the traffic meeting, held under the auspices of WØDQL. It consists of a panel of traffic men reeling off suggestions for the betterment of traffic and net operation with no comment, argument,

debate or discussion allowed. Some of the traffic men who felt that discussion would have been more beneficial didn't care much for the idea, but it *did* produce a raft of suggestions — about fifty or more. We didn't get all of them, by any means, but here are a few we managed to get jotted down in our notebook:

- 1) Report into nets promptly.
- 2) Observe instructions of the NCS without question.
- 3) Excuse stations from the net when they are clear.
- 4) Fire all NCS and start over
- 5) Refuse incomplete traffic.
- 6) Establish relays across sections to be used if necessary.
- 7) Have periodic meetings of combined phone and c.w. nets.
- 8) More publicity to amateurs not on nets.
- 9) More space for traffic activities in *QST*.
- 10) Solicit stations for nets; don't wait for them to volunteer.
- 11) Publish a net bulletin, financed by contributions from net members.
- 12) Make certificate awards to leading net members.
- 13) A spiral-bound message book (put out by ARRL) for convenience in filing messages.
- 14) Preambles to net operations for recruiting and publicity purposes.

No comments, please! We wanted to comment, too, but were intimidated by the m.c., who shushed anyone who wanted to argue or who made a negative suggestion. We don't agree with all the above either — or at least we can think of some pretty important qualifications to some of them. Once the m.c. had picked (or washed) the brains of all the panel, they were allowed to return, limp and exhausted, to their seats, muttering in frustration.

While there were those who thought the "brainstorming" session was strictly for the consumption of our feathered friends (i.e., bird brains), in all fairness we have to admit a few things. First of all, it eliminated the usual long-winded speeches by individuals on how *their* net operates. This takes up a great deal of time and seldom accomplishes anything. Secondly, it did away with all the arguing that is usually in attendance at meetings of traffic men. And thirdly, what results it did accomplish were positive, not negative. In other words, in a brainstorming session, you can't lose anything and you *might* gain something. We think the idea has its points.

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Miscellaneous May net reports: Transcontinental Phone Net reports traffic totals of 1258 for the First Call Area, 1335 for the Second Call Area and 1535 for the Third, Fourth, Eighth, Ninth and Tenth Call Areas; total, 4178. Early Bird Transcontinental Net reports 31 sessions, 785 check-ins, traffic total of 251. Interstate Net reports 361 messages handled by 31 different stations.

— —

National Traffic System. Turnover of net managers at this time of year makes for a rough situation; yet, more often than not, if a net manager intends to resign, he'll do so around the first of June, traditionally considered as the "end of the season." Then it's *really* a tough job to find a replacement, although there are usually some around who are ready to take over at the beginning of the fall season. Since NTS operates on a year-around basis, and always has, resignations at the beginning of a vacation season throw a crimp into the whole setup.

It strikes us that each net manager ought to have an understudy, someone willing and able to assist the manager and take over in case of his absence or resignation. A few nets already have such an arrangement, but most of them fall promptly into the doldrums as soon as a manager is, for one reason or another, lost. Since your NTS manager usually accepts the recommendation of the outgoing manager for a replacement (if he has any), the succession would be almost automatic — though, of course, the SCM's approval must also be obtained. In the case of managers at regional or area level in the Pacific Area, the Pacific Area Staff would function to designate such assistants, with the approval of the manager concerned.

How about it, net managers? We wish we could induce the general attitude that being the manager of an NTS net is an honor to be sought after, not a chore to be talked into. So far, however, we have been unable and unwilling to kid anybody that NTS managership is anything but just plain hard *work*, although not without its *compensations*.

May reports:

Net	Sessions	Traffic	Rate	Average	Representation
EAN	26	1141	1.56	44.0	92.3
CAN	31	1303	1.12	42.0	97.8
PAN	31	1335	0.75	43.0	100.0
IRN	27	351	0.69	13.0	94.2 ¹
2RN	53	464	0.48	8.8	96.2
3RN	46	293	0.80	6.4	79.0
4RN	16 ²	155	—	9.0	38.4
RN6	31	436	0.71	14.1	—
RN7	52	383	—	7.4	—
8RN	43	254	—	5.9	84.5
9RN	56	1058	0.73	19.0	80.0
TEN	93	2599	—	27.9	61.4
ECN	18	81	0.44	4.5	81.5 ¹
Sections ³	675	5417	—	8.0	—
TCC Eastern	58 ⁴	137	—	—	—
TCC Pacific	107 ⁴	1338	—	—	—
TCC Central	—	2447	—	—	—

Summary	1398	18192	EAN	10.2	PAN
Record	1398	18192	1.65	22.1	100

Late reports:

RN6 (Apr.)	36	394	1.02	10.9	—
ECN (Apr.)	20	88	—	4.4	86.7 ¹

¹ Regional Net representation based on one session per night. Others are based on two or more sessions.

² W4AKC reporting only partially for net manager W4LAP.

³ Section nets reporting: GSN (Ga.); Iowa 75 Phone; TLCN (Iowa); MCN & CPN (Conn.); ILLN (Ill.); SCN (Calif.); S. Dak. 75 & 40 Phone; NJN (N. J.); AENB, AENP & AENT (Ala.); MSN (Minn.); WVN (W. Va.); KYN (Ky.); VFN (Va.); Tenn. C.W.; WSN (Wash.);

QMN (Mich.); MDD (Md.-Del.-D. C.); QKS, QKS SS & QKN (Kans.).

⁴ TCC schedules reported, not counted as net sessions. PAN Manager K6DYX says Arizona traffic is handled via MARS and Utah via non-NTS channels; what, no NTS traffic men in those states? W3UE is depending on the younger element of 3RN to keep things going this summer. W4AKC says N. C. has promised better 4RN representation; zero for May. W6ZRJ reports RN6 now running one session only at 1900 MST for summer; K6GES has received his net certificate. W7GMC reports RN7 activities by radio in abbreviated form. VE3GI says ECN will use 7 Mc. to keep contact with the VEI section during the summer.

Transcontinental Corps. We had the opportunity of hobnobbing with two TCC Directors during the recent western trip. W0SCA and W0KQD — much discussion and a few reliable conclusions reached. W0SCA is resigning soon, and W0BDR will take his place.

We hope that all TCC Directors will be using CD-133, the new TCC reporting form, next month. This will permit us to present some TCC data in tabular form. For May, W3WG was the only director to use the new form. It shows a traffic total of 535 for Eastern Area TCC for the month, 137 of which were handled on out-of-net schedules. The TCC roster: Eastern Area — W1AW W1BDI W1EMG W1NJM W2HDW W2ZRC W3WG W4ZDR W9CXY W9DO; Central Area — W9CXY W9DO W9JUL W0BDR W0KJZ W0LGG W0SCA; Pacific Area — W6s ADB G1W VZT PLG YHM EOT RFW BPT 1PW VPC HC, K6s CME DYX GZ ORT, W7s GMC UJL ZBO, W0KQD.

Don't forget that Aug. 1 is the effective date for net re-registrations. Form CD-85 available on request. First net list will be in November QST.

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM.....271	PY2CK.....264	W6RW.....262
W1PH.....271	W6DZZ.....264	W3JTC.....261
W8HW.....270	W6CQ.....263	W3BES.....261
W6ENY.....269	W6TTC.....263	W2AGW.....261
W9NDA.....265	ZL2UX.....263	W6SN.....261
W6MX.....267	W2BRA.....263	W7AMX.....260
W3GHD.....264	W5ASG.....262	W2HUQ.....260
W8NBN.....264	W8KIA.....262	Z2PL.....260
W6SYG.....264	W8KTC.....262	W3JNN.....260

Radiotelephone

PY2CK.....260	ZS6HW.....246	W9NDA.....240
VQ4RR.....254	C8MMI.....245	W3JNN.....240
W1FH.....250	W8CZ.....243	W8BF.....239
W8HW.....247	W9RBI.....240	W6AM.....237

From May 15, to June 15, 1957 DXCC certificates and endorsements based on post-war contacts with 100 or more countries have been issued by the ARRL Communications Department to the amateurs listed below.

W3MJF.....157	W6MCY.....105	F9FK.....101
K4BYO.....143	O63VP.....105	G3ADG.....101
K6SC.....138	W6VWV.....104	OH5OT.....101
W3ZAO.....130	W1UMC.....103	W1DWH.....100
W7HKT.....124	W0IUB.....103	W1RCQ.....100
SM5WC.....117	OH2LJ.....103	W3HXA.....100
R1PF.....112	PJ2AV.....103	W3RSE.....100
SL5AX.....112	W3BQA.....102	K4EJO.....100
PY2AK.....111	W8AYS.....102	W6NUQ.....100
K2JYH.....110	W8ONA.....102	W6RZS.....100
PA0UW.....110	W2NIN.....101	W6WTH.....100
K4EHA.....107	K4HNA.....101	W7YOA.....100
W8WFB.....107	W6GPE.....101	W6BWH.....100
W9YFD.....106	W6BFF.....101	F19C.....100
C8BAU.....106	W0BYN.....101	SM5BPI.....100
DL1UE.....106	W9GGO.....101	SM5CXF.....100

Radiotelephone

ZP5JP.....139	W0BEK.....104	PA0TV.....101
ZP5CG.....121	W2OFN.....103	W1MLM.....100
I1RFG.....120	C8BAU.....103	W1REP.....100
HB9RS.....110	W6GPP.....102	W2CFT.....100
PY2AK.....109	W8M1WZ.....102	W6GPR.....100
XV5BS.....108	O63TH.....101	W6MAF.....100
W8SDD.....106	W1UMC.....101	DL4SK.....100
	W7KT.....101	

ENDORSEMENTS

W8DMD.....255	D17AA.....230	D17BA.....208
W6GFE.....251	W2TMA.....225	K2GMO.....201
W3JYE.....242	W4GPA.....214	W8CLR.....201
W6BZE.....233	W7GXA.....213	W2ALO.....200
W4KFC.....231	W4CQW.....211	W5RS.....200
W3ECC.....230	W9UXO.....210	W6CAB.....200

K6ENX.....200	F9TL.....160	W9WTO.....131
W2ZGB.....194	W1ZDP.....159	W2VYX.....130
W4FVR.....191	W1NHZ.....155	W2WCY.....130
W1BLO.....190	JA1CR.....155	W4UKA.....130
W1VG.....190	W2PSO.....152	W6LTX.....130
W3VOS.....190	W6FHS.....152	VE3DHP.....130
W5RS.....190	W1ROB.....151	W6AGO.....124
W2HQL.....182	LA5Q.....151	W3MOC.....123
W2AZS.....180	K2OBA.....150	W8TTO.....123
W6EPR.....180	W3ROH.....150	W2CUC.....122
W7IQI.....180	W4LID.....150	W6BSY.....122
W9UIC.....180	W43W.....150	W0BAW.....122
OK1CX.....177	W4JIL.....150	W8PSR.....121
DL4ZC.....172	W5HJA.....150	W8NOH.....121
9S4AX.....172	W8DZL.....150	4X4BR.....121
W2LAX.....171	VE3ASR.....150	K2CP.....120
W8UQV.....171	W2HO.....149	W3DHX.....120
W4HYW.....170	G6XL.....147	W0PKX.....120
W6SIA.....170	W3SWV.....146	W6WLY/0.....120
G4KS.....170	K6ENL.....144	LA7X.....120
I81AHK.....170	W2DEC.....141	W5MY.....117
ZL1AH.....169	W1CKU.....140	W2LWI.....115
W3HTX.....164	W8AJH.....140	K6LYJ.....113
K6EVR.....162	F8VK.....140	K2BDB.....112
JA1CJ.....162	W1ICW.....134	W1YXM.....110
W9YSX.....161	K2PIC.....134	W5GAI.....110
W1ICP.....160	W5LCI.....133	K5DGI.....110
W1QNG.....160	W9OTS.....132	G8KAA.....110
W5TIZ.....160	G3RVN.....132	OYTAL.....110
	W3WGH.....131	

Radiotelephone

W8BKP.....211	W4ADY.....160	W5VU.....130
G4ZU.....210	W4GO.....160	G8ATV.....130
PY2AHS.....207	W5TIZ.....152	W5ERY.....123
W9RNX.....200	W0CPM.....152	PY3AGR.....123
PY4KL.....200	W3HIX.....150	W5DQK.....120
W8DMD.....190	T120E.....149	W8BGU.....120
W4OM.....180	W6FHR.....146	W6DHE.....120
T2HP.....180	W6QOC.....146	F8BSC.....120
W7ADS.....170	K4BVQ.....142	K5BEU.....114
D17BA.....168	W2BQM.....140	W8TUA.....112
K2CJN.....162	W8TMA.....134	W8MXS.....110

W/VE/VO Call area and Continental Leaders

W4TO.....254	VE3QD.....210	VE7GI.....224
W4TAM.....254	VE4CO.....118	VE4XG.....191
W0AIW.....251	VE5QZ.....164	VO6BP.....190
VE1HG.....164	VE6VK.....140	ZS6BV.....250
VE2WW.....192		4X4RE.....222

Radiotelephone

W2BXA.....207	W0AIW.....227	V7ZM.....178
W4HA.....207	VE1CR.....122	ZL2GK.....227
W5RGP.....222	VE2CQ.....130	OD5AB.....180
W7HIA.....188	VE3CF.....163	EA2CQ.....225
	VE6NX.....101	

• 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

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Cronberger, W3UCR—SEC: PKC, Section Nets: MDD, 3650 kc., M-S 1915 EST; MEPN, 3820 kc., M-W-F 1830, Sat. and Sun. 1300 EDST. On May 21 the National Capital V.H.F. Society had IHQJ as guest speaker. Ed spoke on v.h.f. propagation and illustrated his talk with tape recordings of the various types of v.h.f. paths. Mason Southworth, PRP director, described the ARRL Propagation Research Project with slides showing the processing of the reports and the headquarters for the project. The RCARA joined the V.H.F. Society in its meeting. The Antietam Radio Assn. showed two movies at its May 21 meeting. One was "TVI Patterns" and the other was "How to Use a Signal Generator." The Boy Scout Council presented ARA with a letter of appreciation and thanks for successfully providing communications for the Boy Scouts' "Adventure Unlimited" held in Hagerstown May 10 and 11. QJG was re-elected president of the Area ARC with HXN, vice-pres.; KLA, corr. secy.; UOW, treas.; and Joe Bosak, rec. secy. AARG and the Harford County Amateur Radio Assn. held a joint meeting and visited the Power Facilities at Conowingo Dam. The HCARA elected QKC, pres.; AXZ, vice-pres.; and re-elected NFS, secy. and YPU, treas. New officers of the WRC are ECP, pres.; CDQ, vice-pres.; BWT, corr. secy.; AKB, rec. secy.; and BPE, treas. Chuck Connors, ex-ET2CC, W1ZZM, was guest speaker at the NRLRC meeting on May 28 and told of his ham activities in ET2-Land. New officers of the NRLRC are SQP, pres.; CMX, vice-pres.; DHQ, secy.-treas.; and KMG, act. mgr. The Cumberland ARC's new officers are UFI, pres.; FXL, vice-pres.; DIB, secy.; and ZQG, treas. WTF is the new director of MEPN and HZT is NCM of MEPN. Rockville RACES, under the direction of CDRO 3FWR, provided communications for the Rockville Memorial Day Parade with the following also participating: KN3AEV, KN3AFE, WN3JXC, N8JXE, N8JWM, 3PIH and WFI. The WALARCs still are enjoying correspondence with their adopted YL DJITE, FXL and FXQ, father and son, took and received both their Novice and General Class tickets at the same time. K4DKG/3 is off to KR6-Land. ZGN received a scholarship to the U. of Maryland to study E.E. BUD is kept busy phonepatching K3NAK/VOI and building a new home. K3AGR is the XYL of PJM and received her Tech. Class license. MAX and OQF have gone to Cedar Rapids, Ia. ENY's jr. operators made the grade with KN3ALG and KN3ALH. RDZ qualified for OO Class 1 in the February Frequency Measuring Test. KN3AIC is awaiting DX-20 in the Patuxent River Area. PMP and FRM are proud fathers of new jr. operators. K3AEA is a new Tech. Class licensee in the Washington Area. Traffic: (May) W3UE 358, K3WBJ 241, W3WV 207, TN 151, K4DKG/3 143, W3ZGN 127, PQ 96, AHQ 82, PZW 81, UCR 51, EUG 40, RV 37, ULI 37, ECP 21, CQS 15, IPO 12, BUD 11, OYX 6, BKE 4, FAP 4. (Apr.) W3WV 241, ULI 14.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW, PAM; ZI. Appointments of the month are K2MUE, Riverside, as ORS; K2HPV, Penns Grove, as OPS and K2SOL, Sewell, as OPS. Section Net certificates have been issued to QER and NCZ. ZI, Trenton, is taking a vacation trip to the West Coast and Canadian Northwest. K2WAO has a new 10-20-meter beam. We wish FQ, Maple Shade, a speedy recovery from an operation. K2JGU, Glassboro, is doing a fine job on N. J. Phone and TCPN Traffic Nets. YRW has planned a vacation in Cape May County and hopes to extend our AREC coverage to that area. K2SOL is a new Gloucester Co. traffic outlet. Danny Weil of the Yacht Yasme fame was an SJRA

speaker. Contact REB and make convention plans. TE tops SJRA DXers with 195 countries. K2CEF has returned to Atlantic County. LS, Pleasantville, is doing FB with a mark of 2.6 parts in a million in the recent ARRL Frequency Measuring Test. Mercer Co. Emergency Net operates each Tue. night with K2IHW/2 as net control, W2HX/2 is NC of the Mercer Co. Disaster Net. K2DNF is chairman of the SJRA picnic committee. RACES activities are on the increase in Mercer, Burlington and Camden Counties. SVV, UA and RG are the Radio Officers in charge. Maple Shade continues its emergency communication training. The headquarters station signs KHV/2, Form 1 reports from appointees are increasing monthly. It is hoped that Camden and Gloucester Counties have an EC representative very soon. No reports were received from the Tri-Cities Radio Club. Traffic: W2HDW 206, YRW 192, K2JGU 191, W2RG 176, W1YR/2 143, K2MUE 104, W2ZI 75, BZJ 53, K2SOL 23, PTJ 22, KN2THX 14, K2HPV 6.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: YTH/RRL, RMs: RUF and ZRC. PAMs: TEP and NAL. NYS C.W. meets on 3615 kc. at 1800. ESS on 3590 kc. at 1800, NYS Phone on 3925 kc. at 1800. TAR on 3570 kc. at 1700, 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. Your SCM attended the W R Ham Family Picnic sponsored by the Rome ARC. Over 200 were present and CHR gave a talk on d.s.b. K2MLT is on the air with his 6N2. K2BBJ was endorsed in W.N.Y. as OPS. K2DWE and K2ECL were appointed OO-IV. K2s CBD, PDL, YNK, CBT and PTH received their Section Net certificates for being active in the NYSP-TEN. K2KCE has worked 152 countries and 38 zones in two years on 20-meter c.w. running 20 watts to a vertical. K2BUI is net mgr. of the Friars Net linking the Monasteries of the Franciscan Fathers. Members include PAW, GJV, EZE, 3DXR, 1NUY and K2GBN. The Net meets on Tue. at 1500 on 7060 or 7250 kc. BUI has 3 brothers who also are hams. Timon H.S. RC elected K2VEE, pres.; K2MIHF, vice-pres.; K2VWV, secy.; WN2CPV, treas. CXM, the Cornell ARC, was endorsed as OPS. The station also made HPL this month as a result of Engineers Day. New officers are 3BOT, pres.; K2ADV, vice-pres.; K2EEN, secy. The club also has a new p.p. 4-250 kw, and exciter in the works. Kenmore H.S. RC, K2ERC, is working on an IGY project. K2RHQ is on the air with the DX-35 he won at the RARA Hamfest. Clyde Central School RC has been given K2ZVJ, and is building a p.p. 307 rig. The Syracuse V.H.F. Club handled the communications for the Intercollegiate Regatta on Onondaga Lake. The Syracuse Area now has seven 6-meter mobiles. WZR and K2SZM made a DX-pedition to Vermont. The Rochester Peanut Whistle Net (phone) meets at 1900 EST on 21.4 Mc. Sun. There has been some interest expressed by many of the gang on 144 Mc. that a section net be formed for traffic-handling purposes. Anyone who would be interested please contact the SCM. New officers of the RARA are ZS, pres.; JFV, vice-pres.; QGL, secy.; ZIB, treas. GB is back on 80-meter c.w. with s.s.b. coming up. BMM is Asst. Radio Officer of Monroe County. JJT is organizing a 6-meter mobile net in the Rochester Area. UXP and ALL have been working cross-band on 432 Mc. K2s RGX, KCN and UXF dropped the "N." PPY reports that Erie County C.D. received 40 new 2-meter Communicators. The calling frequency is 145.3 Mc. which will be monitored. The Eastern Technical Net sponsored by Air Force MARS continues to be a highlight feature Sun. at 1400 on 7540 kc. The Rochester DX Assn. contest was won by FBA on c.w. with 211 countries and TQR on phone with 72 countries. OZR has a Model 26 printer and has joined the ranks on RTTY. The 13th Annual Oneida Hamfest and Ladies Night will be held Sat. Sept. 28. Contact RXW for details. EMW worked VK6CJ for No. 217. K2DXV was renewed as ORS. He's using a Ranger and HRO-50. Traffic: (May) K2IYP 395, W2CXM 202, K2BUI 69, GWN 52, GOU 46, BBJ 22, W2QHH 22, EMW 18, K2DG 13, KTK 6, CUQ 2. (Apr.) K2DG 19, BUI 8.

WESTERN PENNSYLVANIA—SCM, John F. Woitkiewicz, W3GJY—SEC: OMA, RMs: UHN, NUG, GEG, NRE, PAMs: AER, TOC. It is with deep regret that I record in this column the passing of AZG and BCL, both well known among the amateur fraternity. UJP

(Continued on page 84)

W E L C O M E T O H A L L I C R A F T E R S !

On August 30th the Ninth National Convention of the American Radio Relay League will convene at the Palmer House in Chicago. It promises to be the finest event of this kind ever held, and the preliminary publicity lists many features which will be of interest to all amateurs. Over and above these attractions, however, the convention provides a wonderful means for meeting with our old friends, making new ones, and demonstrating once more the underlying brotherhood of the amateur fraternity.

We at Hallicrafters are proud that Chicago has been selected as the site for this year's convention and want to take this opportunity to extend a cordial welcome to all amateurs who plan to attend. We are also proud of our factory and want each of you to feel free to come out for a visit. If you have never been through a modern radio laboratory you will see much of interest, and if you have visited us before you will be intrigued by the many new products now in design or production.

We sincerely hope that nothing will prevent you from coming to this convention, because we know you will have a wonderful time that will be long remembered.

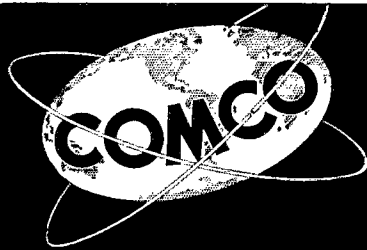
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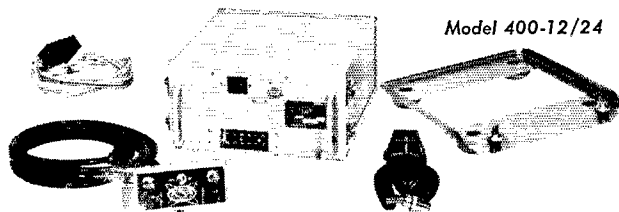
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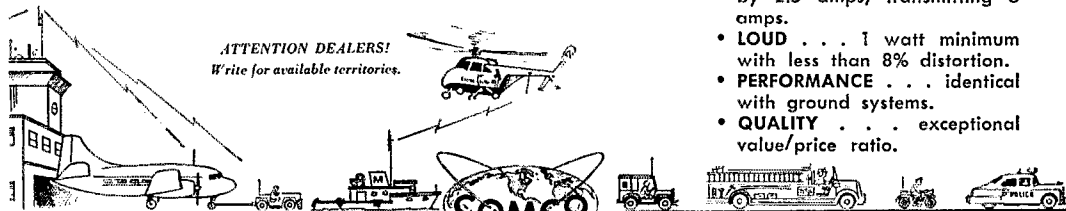
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- **LIGHT** . . . 22 lbs. (without antenna and speaker)
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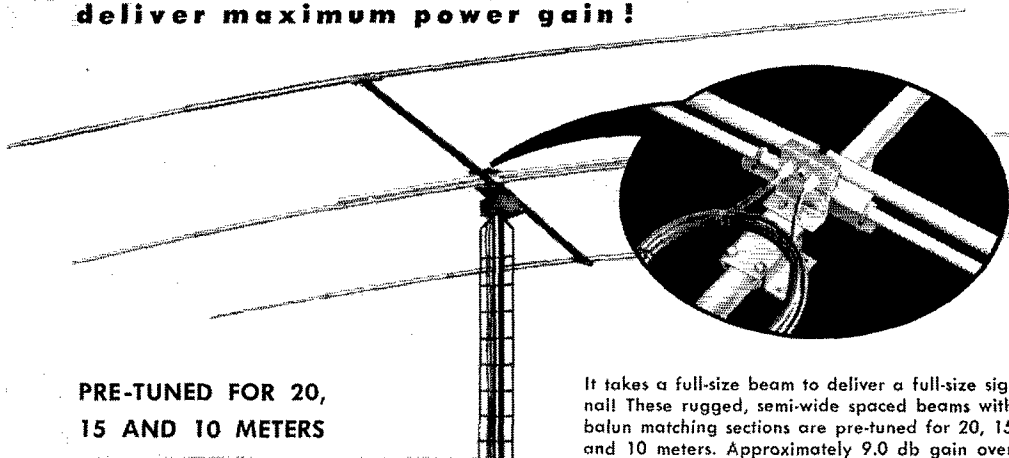
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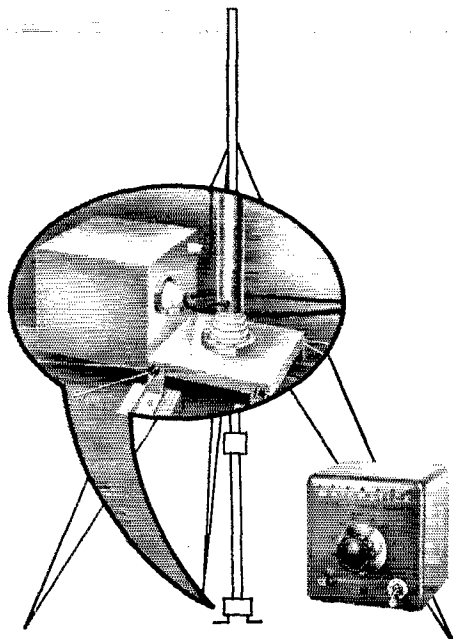
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138-415-3	15 Meter Beam — 13'7" Boom.	110.00
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It takes a full-size beam to deliver a full-size signal! These rugged, semi-wide spaced beams with balun matching sections are pre-tuned for 20, 15 and 10 meters. Approximately 9.0 db gain over tuned dipole — greater than 27 db front-to-back ratio with low SWR. Pattern is uni-directional, beam width is 55°. No adjustments required. Boom assemblies are of 2" galvanized steel tubing, elements are aluminum alloy tubing. No loading devices needed for flutter dampening or corona discharge.



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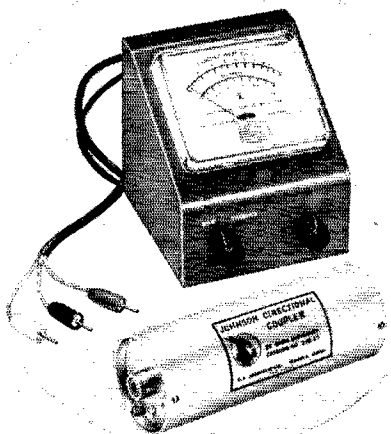
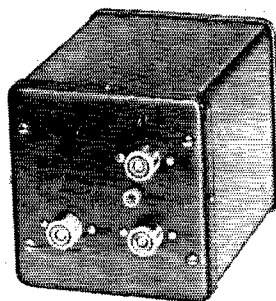
Johnson introduces...

2 NEW STATION ACCESSORIES!

T-R SWITCH

This new Johnson T-R Switch provides instantaneous high-efficiency electronic antenna switching. Exclusive double-gated circuitry, with 6BL7 dual triode, gives excellent receiver isolation—printed circuit wiring means extra durability. Gain: 0 db at 30 mcs. — 6 db at 3.5 mcs. Will handle high peak power capabilities of new linear amplifiers—rated at 4,000 watts peak power. Instantaneous break-in on SSB, DSB, CW or AM. Will not affect transmission line SWR—will provide an effective impedance match to most receivers through the 3 to 30 megacycle range. Nylon tip jack facilitates connection to an internal RF probe for driving an oscilloscope or other monitoring device.

Cat. No. 250-39 — T-R Switch wired and tested, with tube and power supply.....\$25.00 Amateur Net *



DIRECTIONAL COUPLER AND INDICATOR

The new Johnson Directional Coupler and Indicator provides a continuous reading of SWR and relative power in the transmission line. Coupler may be permanently installed in 52 ohm coaxial line—will readily handle maximum legal power as specified by the FCC for amateur service. Standard tip jacks will permit the use of a commercial multimeter as an indicating instrument—reference sheets showing curves are supplied with each coupler for popular multimeter basic ranges. Indicator consists of a 0-100 micro-ammeter calibrated directly in SWR and relative power. Continuous monitoring of either incident or reflected power may be quickly selected with a switch on the front of the meter cabinet. A second control on the front panel, permits easy adjustment and calibration of the meter.

Cat. No. 250-37 — Directional Coupler, wired and tested.....\$11.75 Amateur Net

Cat. No. 250-38 — Indicator, wired and tested.....\$25.00 Amateur Net *

* Prices subject to change at time of delivery.

See your distributor

Most authorized Johnson distributors offer liberal terms. Often as little as 10% down puts you on the air, and your used equipment (especially if it's Johnson) is always worth top dollar in trade.

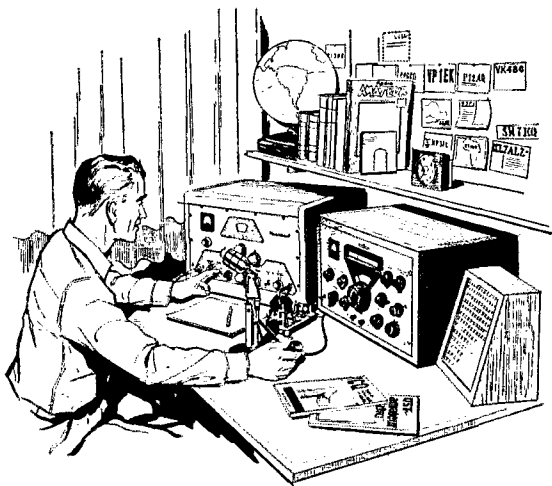


E.F. Johnson Company

2831 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

HEATHKITS®

*Top quality
ham equipment
in kit form . . .
designed especially to
meet your requirements!*



Heath amateur radio gear is designed by hams—for hams, to insure maximum "on the air" enjoyment. Good design and top-quality components guarantee reliability. Heathkits are easy to build and are easy on your budget! You save by dealing direct, and you may use the Heath Time Payment Plan on orders totaling \$90.00 or more. Write for complete details.

HEATHKIT

DX-100

TRANSMITTER KIT

PHONE
AND CW

- ▶ *Phone or CW—160 through 10 meters.*
- ▶ *100 watts RF on phone—120 watts CW—parallel 6146 final.*
- ▶ *Built-in VFO—pi network output circuit.*
- ▶ *Easy to build—TVI suppressed*



MODEL DX-100

\$189⁵⁰

\$18.95 dwn., \$15.92 mo.

Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified.
\$50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.



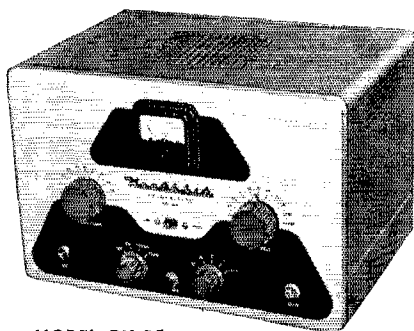
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT **DX-35** TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulator and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulator. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

\$56⁹⁵

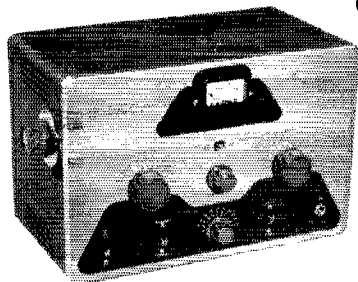
Shpg. Wt.
24 Lbs.

\$5.70 dwn., \$4.78 mo.

- ▶ Phone or CW—80 through 10 meters.
- ▶ 65 watts CW—50 watts peak on phone—6146 final amplifier.
- ▶ Pi network output to match various antenna impedances.
- ▶ Tremendous dollar value—easy to build.

BRAND NEW

HEATHKIT **DX-20** CW TRANSMITTER KIT



MODEL DX-20

\$35⁹⁵

\$3.60 dwn., \$3.02 mo.

Shpg. Wt. 18 Lbs.

- ▶ Designed exclusively for CW work.
- ▶ 50 watts plate power input—80 through 10 meters.
- ▶ Pi network output circuit to match various antenna impedances.
- ▶ Attractive and functional styling—easy to build.

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!

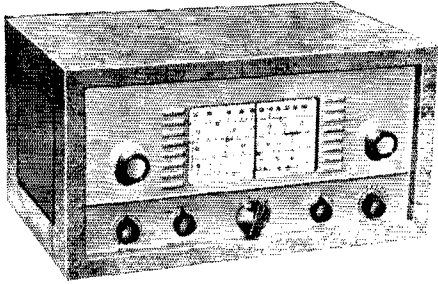
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. 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—headphone jack—and AGC. Has built-in BFO for CW reception.

MODEL AR-3

\$29⁹⁵

incl. excise tax
(less cabinet)

\$3.00 dwn., \$2.52 mo.

Shpg. Wt. 12 Lbs.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. \$50 dwn., \$4.95

A HEATHKIT VFO KIT MODEL VF-1

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 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. \$1.95 dwn., \$1.64 mo. **\$19.50**

B HEATHKIT GRID DIP METER KIT MODEL GD-1B

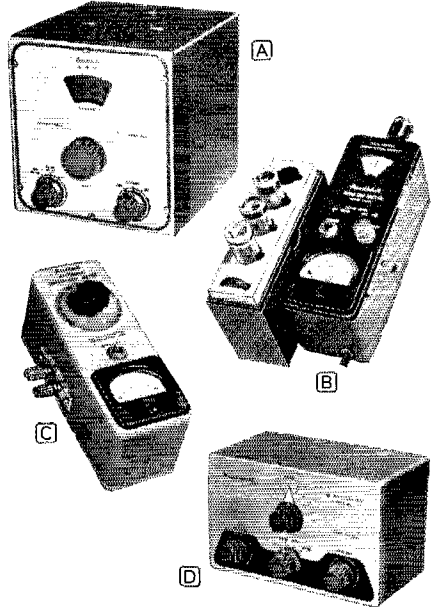
Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. \$2.00 dwn., \$1.68 mo. **\$19.95**

C HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. \$1.45 dwn., \$1.22 mo. **\$14.50**

D HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC 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. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. \$1.00 dwn., \$.84 mo. **\$9.95**



HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling \$90.00 or more.



HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.



"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.

I USE MY GOTHAM ALL BAND VERTICAL ON 6, 10, 15 AND 20

ME TOO, TOM-AND LAST NIGHT I SWITCHED TO 40, 80, AND NO. WORKED SOME REPL. DX!



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.

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. No trick fittings or castings needed.

AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.

NO GUY WIRES

Our design eliminates unsightly guy wires. You save time, trouble, space and money by avoiding guy wires.

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



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.....



WORK THE WORLD



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

1805 PURDY AVENUE
MIAMI BEACH 39, FLA.

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 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.)

THE DESIGN IS PROVEN

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

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 3/4" and 1 1/8".

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use 3/8" and 3/4" tubing elements; the deluxe models for these bands use 7/8" 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 terrific gain is to use a Gotham Tribander Beam.

TECHNICAL CHARACTERISTICS

S.W.R. On Each Band 1:1
Total Number of Elements 3
Diameter of Elements 3/8" & 1"
Number of Booms 2
Diameter of Booms 1"
Boom Length 12'

6-10-15 Tribander

GAIN	F/B RATIO
6.5db on 6 mtrs	23db on 6 mtrs
7.8db on 10 mtrs	27db on 10 mtrs
6.5db on 15 mtrs	23db on 15 mtrs

10-15-20 Tribander

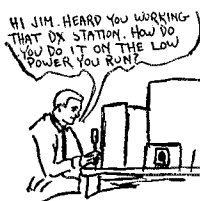
GAIN	F/B RATIO
6.5db on 10 mtrs	23db on 10 mtrs
7.8db on 15 mtrs	27db on 15 mtrs
6.5db on 20 mtrs	23db on 20 mtrs

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like WøDEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.



Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. GST
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TRIBANDER

6-10-15 \$39.95 10-15-20 \$49.95

6 METER BEAMS

<input type="checkbox"/> Std. 3-El Gamma match 12.95	<input type="checkbox"/> T match 14.95
<input type="checkbox"/> Deluxe 3-El Gamma match 21.95	<input type="checkbox"/> T match 24.95
<input type="checkbox"/> Std. 4-El Gamma match 16.95	<input type="checkbox"/> T match 19.95
<input type="checkbox"/> Deluxe 4-El Gamma match 25.95	<input type="checkbox"/> T match 28.95

10 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match 11.95	<input type="checkbox"/> T match 14.95
<input type="checkbox"/> Deluxe 2-El Gamma match 18.95	<input type="checkbox"/> T match 21.95
<input type="checkbox"/> Std. 3-El Gamma match 16.95	<input type="checkbox"/> T match 18.95
<input type="checkbox"/> Deluxe 3-El Gamma match 22.95	<input type="checkbox"/> T match 25.95
<input type="checkbox"/> Std. 4-El Gamma match 21.95	<input type="checkbox"/> T match 24.95
<input type="checkbox"/> Deluxe 4-El Gamma match 27.95	<input type="checkbox"/> T match 30.95

15 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match 19.95	<input type="checkbox"/> T match 22.95
<input type="checkbox"/> Deluxe 2-El Gamma match 29.95	<input type="checkbox"/> T match 32.95
<input type="checkbox"/> Std. 3-El Gamma match 26.95	<input type="checkbox"/> T match 29.95
<input type="checkbox"/> Deluxe 3-El Gamma match 36.95	<input type="checkbox"/> T match 39.95

20 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match 21.95	<input type="checkbox"/> T match 24.95
<input type="checkbox"/> Deluxe 2-El Gamma match 31.95	<input type="checkbox"/> T match 34.95
<input type="checkbox"/> Std. 3-El Gamma match 34.95	<input type="checkbox"/> T match 37.95
<input type="checkbox"/> Deluxe 3-El Gamma match 46.95	<input type="checkbox"/> 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

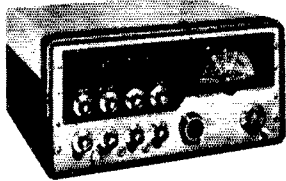
Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

<input type="checkbox"/> Beam #R6 (6 Meters, 4-El).....	\$38.95
<input type="checkbox"/> Beam #R10 (10 Meters, 4-El).....	40.95
<input type="checkbox"/> Beam #R15 (15 Meters, 3-El).....	49.95

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



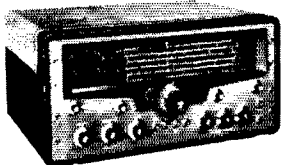
ARROW.. First in Value, First in New Equipment!



**Hallicrafters
Model HT-32**

Cleanest signal on the air! Hallicrafters new HT-32 transmitter brings a new standard of clarity with two exclusive features: (1) 5.0 mc quartz crystal filter—cuts unwanted sideband 50 db. or more; (2) new bridged-tee modulator, temperature-stabilized and compensated network provides carrier suppression in excess of 50db. SSB, AM or CW output on 80, 40, 20, 15, 11 & 10 meter bands. High-stability gear-driven V.F.O. 144 watts peak input. Ideal CW keying and break-in operation.

Amateur Net \$675.00



**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 A.V.C. off. Selectable side band.

Amateur Net \$395.00



6 Volt Dynamotor

Rated output: 425 V. DC at 375 ma. High efficiency, compact. 4" diam., 7½" long. Shipping weight 13 lbs. Worth 2 to 3 times this low price **\$12.95**



**"Wonder Bar"
10 Meter Antenna**

As featured in Nov. 1956 QST. Complete with B & W 3013 Miniductor. Only 8 feet long for 10 meters.

Net Price \$6.95

**Trade-ins Welcomed
ALL PRICES F.O.B. N. Y. C.**

ARROW ELECTRONICS INC

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Dlgy 9-3790

525 Jericho Tpke. Mineola, L. I., N. Y.
Pioneer 6-8686

Station Activities

(Continued from page 84)

reports that 515 registered hams attended the recent BSN Hamfest held at North Park. Top prize, a Collins 75A-4 receiver, was taken home by WN3HSW of Etna. A record 80 mobiles checked in during the outing while FRJ operated the 50-Mc. transmitter and ZWZ emitted on 28 Mc. VFR is sporting a new call over (Cleveland way, K5EDJ, Novice ADC is the proud possessor of the first "K" call. PH, HEA and UJP finally received their mobile certificates. QYF, in high gear on 28-Mc. phone, has 151 DX contacts verified. This is the last call for one and all to attend the South Hills Brass Pounders Annual Hamfest to be held at the Totem Pole Lodge, South Park, Aug. 4. BZR has joined MARS and still is QRL with code classes. The Coke Center RC is in the midst of a rebuilding program. KNQ keeps active by participating in the WPA Tfc. Net (3585 kc.) and the Erie Co. 6-Meter and RACES Net on 50.52 Mc. Our very able RML UHN, reports that his station, KNQ and LXQ have been "holding up" the WPA Tfc. Net to date. These ardent supporters deserve a big hand for their continued activity in traffic work. WIQ sends in another "astronomical" figure for this month's traffic total. WCJ is working hard on his mobile 75-meter transmitter. KFY plans to make a large "hole" in the 10-meter band with a beam and 1-kw. transmitter. LKC and NQA are going RTTY. WQA is stringing new antennas. TOC did some "yeoman" work for ZFB during a recent 3-week period, passing along information on her father's condition while he was hospitalized in Pittsburgh. ZFB repaid Bill with a personal visit. The Etna RC held a family night during June which was thoroughly enjoyed by all. VEQ is a new club member. KN3AMY is a new licensee. Up Erie way, c.d. officials were greatly impressed with the part amateurs played during the "Drive-Out" c.d. drill. Both 10- and 6-meter nets were active and manned by POS, JOQ, JTF, ALD and UCZ. Ham radio was used exclusively during this drill. ZLD has a new Johnson 1-kw. transmitter. MED is testing a new 10-meter rig. OIE is Acting NCS for the 10-meter net. BVN is going 7-Mc. mobile. AKARA news: Ninety per cent of the enrollment is attending code and theory classes. The club has obtained crystals on 2936/2950 kc. for its C.D. Mobile Net from the New Kensington c.d. office, and is cooperating closely with New Ken and Westmoreland County c.d. officials. RACES and communications for the northern sector of Westmoreland County are its prime functions. Operation is held every Tue. at 2100. ROA found his cubicle quad too big for his roof. KFD, CHN, UNQ and MRJ took part in the Armed Forces Day parade with their mobiles. KQD worked KC4USN and EA9BK for 144-145. OJX has a 10-over-20 beam. It's a Tri-Bander for VPF. Traffic: W3WIQ 3397, BZR 155, GJY 31, UHN 29, YA 26, KNQ 9, TOC 5.

CENTRAL DIVISION

ILLINOIS—SCM, George T. Schreiber, W9YIX—Section Nets: ILN, 3515 kc. Mon. through Sat., 7 P.M. daylight time; IEN, 3940 kc. SEC; HOA. RM; MAK. Asst. RM; K9GJR, Cook County EC; HPG. The National Convention, scheduled for Aug. 30, 31 and Sept. 1, is just about set, reports General Manager QKE. We had a glance at the program and it looks like big and interesting stuff. Repeating, please do not send your AREC applications to the SCM. Drop us or HOA, the SEC, a card and we will tell you the call of your Emergency Coordinator. STZ has resigned as Route Manager of ILN and MAK has been appointed in his place. Assistant is K9GJR, of East St. Louis. We regret that a typographical error gave the date of the North Central Phone Net Picnic as Apr. 4, instead of Aug. 4. You still have time. Incidentally, North Central handled 604 messages in May, reports CSW while ILN handled 268 in the same period. We still have had no report from IEN. Maybe they just chew the rag and don't handle traffic. Hi! SXL is busy assisting in organizing the Peoria C.D. Net on 3508.5 and 1820 kc. Silent Key—Paul W. Barger, W9IBN, who specialized in phone patches for service men on 20 meters. CTZ recently celebrated his fourth anniversary with his Official Bulletin service for ILN and other section amateurs on 3515 kc. at 6:50 P.M. Daylight Time. A new call heard on the traffic nets in K9USN at Great Lakes. Main operators YOS, K2OPT and W1WEA. K9AXS recently passed her General Class exam and TDC is happy with her General Class license, operating 10 meters. KYZ has a new QTH in Carpentersville while K9BCG operates from a new QTH in Bartlett. Congrats to SSL and LQP on a new jr. operator. NW finds joy in a new grandchild. GME now is heard on 2 meters with an antenna 100 feet in the air. Our sympathy to BHL, whose mother passed

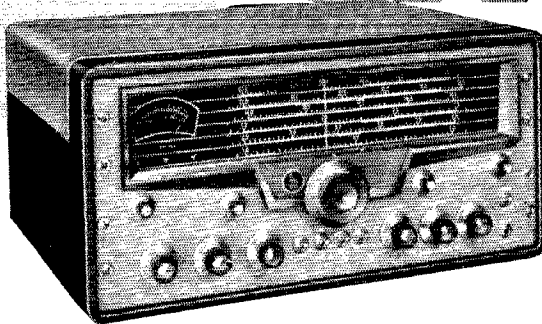
(Continued on page 96)

More than 50
lucky amateurs
will

an

WIN
SX-101

Receiver

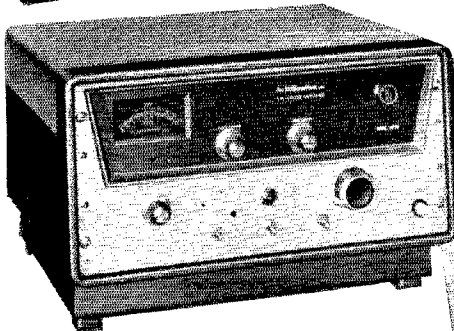
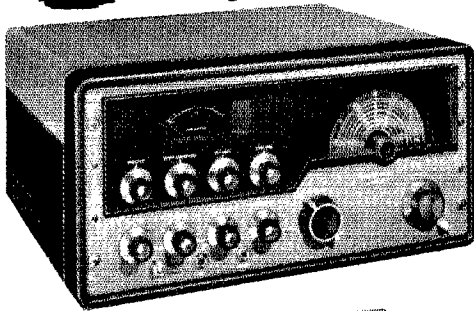


and one lucky amateur will also

WIN

an **HT-32**
transmitter

and **HT-33**
kilowatt amplifier

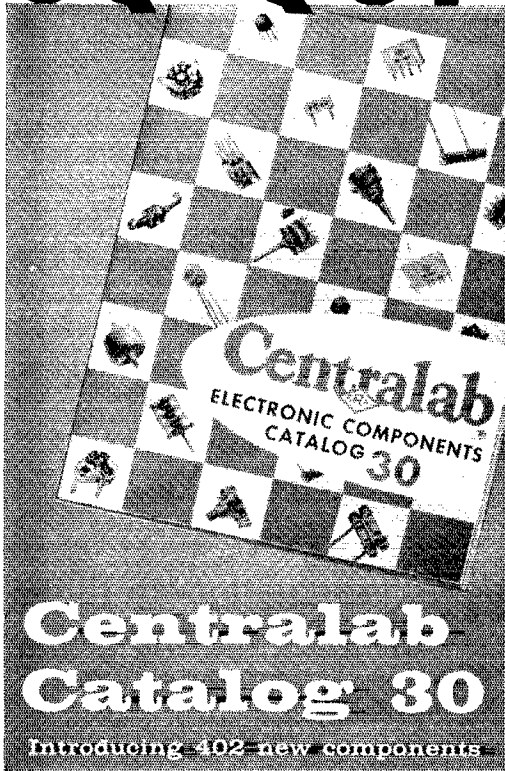


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communications are
born at

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hallicrafters
Company

4401 W. Fifth Avenue Chicago 24, Illinois

CQ-QSP



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away. New officers of the Chicago YLRL are K9CQF, pres.; GME, secy.; Elise Harper, XYL of BWMI, vice-pres. BA writes that e.d. down Belleville way is picking up. K9GII should have his Johnson KW going by this time, while UWP enjoys his 140-X and K9BIY a 129-X. K9EBA made WAS and WAC in short order after obtaining his General Class license. The St. Clair Amateur Radio Club issued its 100th ten-contact certificate to UOR. Congrats to the Collinsville Amateur Radio Society and to the Shawnee Amateur Radio Association on their recent affiliation with ARRL. YMZ, after 21 years as a ham, finally came through and in a short time made WAS, OTC, RCC and received a 20-w.p.m. Code Proficiency certificate. Now he's working on e.w. WAC to go with the phone version he has held since 1955. HPG reports he finds many newcomers on 2 meters these days. UQT and BUH both are recovering from long illnesses. NN has a new oscillator in his 75A-1 and hopes to take the next F.M.T. HUX, after all these years, finally is taking a fling at mobile. BCQ writes that the Rockford gang finds the e.d. drills most interesting. YFO spent some time in Florida with K4KDN, ex-9MRQ. See you at the Convention. Better order your ticket and make your reservation now. Traffic: (MCQ) W9DO 120, MAK 550, K9GJR 501, W9IDA 323, PCQ 200, OKI 175, K9EDI 160, W9FAW 125, JZK 72, YIX 51, K9UN 42, W9SL 40, BUK 24, CTZ 22, YFO 6, SKR 5. (Apr.) K9EDI 109.

INDIANA—SCM, Seth Lew Baker, W9NTA—Asst. SCM: George H. Graue, 9BKJ. SEC: QYQ. RMs: DGA, TQC and TT. PAMs: GMT, KOY, SWD and UXK. New ECs: QOT for Jefferson Co., K9ELE, Pike Co., MMY, Wabash Co. and WTR, Tippecanoe Co. New OOs: TQC and ESA. New OPS: R111. The Ft. Wayne Club station, KJY, is in operation with 500 watts. BKJ left in July for a trip to Wisconsin and Minnesota in his new trailer. The Terre Haute e.d. group handled its Armed Forces Day Parade with 6-meter mobiles. KLR worked states No. 31 and 32. Texas and Vermont, on 2 meters, also Cuba on 6. The Madison Hamfest held at Clifty Falls State Park on May 26 and 172 registered. New officers of the Martinsville ARC are ZSK, pres.; SWC, vice-pres.; and Dick Hendrix, secy.-treas. QYQ has a Viking 500. The Kokomo ARC Annual Hamfest will be held Aug. 11 at Highland Park, Kokomo. Aug. 25 is the date of the Tri-State Hamfest at Bauers Grove, 7 miles North of Evansville. The Seymour ARC has affiliated with ARRL. The Putnam County Assn. of RA now has 22 members and puts out a nice club paper, *Blown Fuses*. UNT has left Evansville for the Hughes Plant in Culver City, Calif. EGL and his XYL, FYH, have a Gonet on 6 meters and a four-element up 60 feet. SWD reports 1FN morning traffic as 210 and evening as 342, total 552. TT reports QN traffic as 397 and RFN as 95. CABN had 136, as given by FHZ. The Interstate S.S.B. Net, reported by KOY, had 361. Those making BPL were ZYK, JOZ, TT, NZZ, EQO, JYO, AB and HXR. The Duneland ARA puts out an FB bulletin. The club station of the Michiana ARC at South Bend, AB, is compiling a line traffic record besides acting as NCS for 1FN on Mon. nights. NIO, WAU and K9AUI have done most of the NCS work. LGQ has a new Valiant and four-element beam. KN9GOE made over 1000 contacts on 40 and 80 meters in 4½ months. Traffic: (May) W9ZYK 925, JOZ 733, TT 574, NZZ 565, EQO546, JYO 541, K9BBO 445, W9EZH 367, SVL 290, TQC 227, AB 216, HXR 215, KOY 128, VAY 112, EJW 111, BKJ 99, KTX 96, SWD 85, NTA 78, WUH 70, DHJ 66, JBQ 55, RTH 50, QYQ 40, CC 36, DOK 35, VNV 35, BUQ 32, UXK 28, VPJ 27, DZC 26, HRW 26, CMT 22, PQZ 22, ZSW 20, WHL 17, WBA 16, LDB 12, EJC 11, IMU 11, DGA 10, K9HGF 10, W9EZW 8, SYM 8, AQP 8, HUF 7, K9DWK 6, W9WTY 6, QR 5, CDW 3, CTF 3, K9LFG 3, W9AMW 2, WAU 2, K9ELE 1. (Apr.) W9CTF 5.

WISCONSIN—SCM, George Wolda, W9KQB—SEC: EIZ. PAMs: NRP and AJU. RMs: KJJ and KQB. Nets: WIN, 3535 kc. 8-15 p.m. CDT daily; BEN, 3950 kc. 6 p.m. CDT daily. Wisconsin mobile and e.d. frequency: 29,620 kc. Many monthly reports contained words of thanks for a job well done and good wishes for the future to our former SCM, Reno Goetsch, RQM, and also the Clayton Cardy, OVO, our former SEC. New officers of the MRAC are ZPV, pres.; VD, 1st vice-pres.; FDX, 2nd vice-pres.; K9CJK, secy.; CUW, treas. The Badger Amateur Radio Society at the U. of W. elected the following new officers: SDC, pres.; YXW, vice-pres.; ZQA, secy.-treas.; VAK, trustee; DUJ, chief engineer of the BC-610 transmitter and Collins receiver. ZQA/9 was the call used by the Badger Amateur Radio Society while set up at Truax Field on Armed Forces Day. PJT is a new OBS on 7044 kc. Wed. at 6:30 p.m. and 7106 kc. Sun. at 9 p.m., and has added a 20-w.p.m. sticker to his CP certificate. CXY received a QSL card from NSS and

(Continued on page 98)

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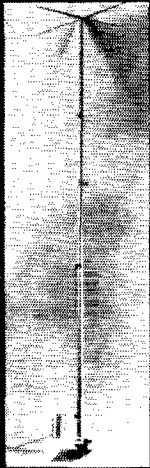
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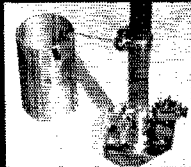


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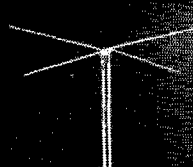
Auto Toppers



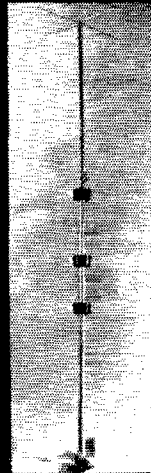
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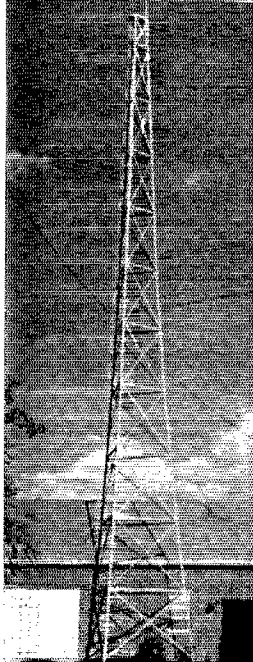
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98

Certificate of Merit for perfect copy of the Armed Forces Day message. Jim also has just made BPL for the twentieth time. EIZ has a new position as post office clerk and, as our new SEC, is busy lining up new ECs. GI is back sailing on the Lake Michigan car-ferries, this time as purser and not "Sparks." SZR brought his DX total up to 92 with HA, LZ and YO. K8ORT, ex-W9MQV, now of Redding, Calif., is looking for contacts with his old Wisconsin buddies on 40 and 20 meters. K9CET is using a new Globe King. DQE is enjoying his new HQ-100. OVE finally settled for a new 75A-4 and is now giving out the frequency checks. Wisconsin now has 601 members active in the AREC with 218 reported mobile units. Monthly reports from more of you Wisconsinites will be appreciated by the new SCM. Traffic: W9CXY 751, K9AEQ 160, W9KQB 122, SZR 64, SAA 58, ZQA/9 43, OT 9, OVO 9, PJT 8.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Elmer J. Gabel, W8KTZ—Let's get in nominating petitions for SCM by Aug. 9. KLP has deserted the ham hands and gone over to commercial broadcasting. Best of luck, Tommy, while at KFVR. The NYL of UGM is now K8GPW. The N.D. 75-Meter Phone Net handled 63 pieces of formal traffic in 24 recorded sessions with 302 check-ins during May. Traffic: K8CNC 103, W8KTZ 18, PHC 5, K8ATK 4, CMX 2, W8HVA 2.

SOUTH DAKOTA—SCM, Les Price, W8FLP—Asst. SCM: Gerald F. Lee, 8YKY. SCM assistants: HOH, FKE, APL, GQH, NEO, TI, MZU and GDE. SECs: YOB and GDE. PAM: ULV. RM: SMV. The 75-Meter S.D. Phone Net had 31 sessions. OLI 11, GQH 8, CTZ 4, SCT 9, KXZ 1; QNI 775, high 34, low 14, average 25; traffic 56, high 6 (3 times) low 0 (11 times), average 1.3; informals 64, high 6, low 0 (9 times), average 2. The 40-Meter S.D. Phone Net had 26 sessions. FFI (QHL op.) 3, YKY 5, KXZ 6, EXX 5, SCT 7; QNI 367, high 18, low 10, average 14.11; traffic 123, high 20 and 15, low 0 (twice), average 4.73; informals 28, high 3 (twice), low 0 (6 times), average 1 plus. SVI is taking night courses at the School of Mines. GDE has his portable transmitter, a Viking 1, up at Cheyenne Agency, S.D., for use when there looking after part of his trucking business. A new ham at Iroquois is Owen Johnson, KN8JMW, a Standard Oil truck driver. A new call at Waubay is K8JAW, received minus the "N" on May 26, when his first phone contact was with K8GGB, followed by SCT and K8BQR. Also previously unreported in Waubay is K8GJW, Carroll Kittelson. On Apr. 19, lightning struck the station of Skip Hofer, GWA, Dolton, just moments after he had disconnected the antenna. The flash damaged his receiver and big transmitter, but the Ranger driver was not damaged. In a discussion with Skip after he got back on the air suggestions were made to use for protection Graybar lightning arrestors available from the telephone company or the type gaps REA Hyline use, an adjustable gap for 2 lines with the center grounded. It is reported the latter has no effect on antenna operation. On May 14-15 TNM St. Onge, set up a display at his high school in Lead to demonstrate ham radio to visitors. Contacts were made with DVB, home station and EQV, mobile. TNM wishes to sell his Viking 1 & VFO, reasonable. On May 22 NIW and his NYL became the parents of a son, Larry, Ann Howard, age 12, and her father Dave are waiting their Novice Class licenses. RAIK and UAJ are in Rapid City house hunting. K8AKB, 12 years old, spoke on May 11 to both the junior and senior divisions of the R.C. Astronomical Society on radio-astronomy with microwave study of the heavens. K8BQR made a trip to the West Coast from June 4 to 24. K8HHM will be off the air for the summer because of full-time job. A new call at Lead, is KN8DTL, held by Allen Larsen; a new call at Hot Springs is K8HVY, held by Louis Waugh. At its May meeting the PDARC discussed Field Day and saw movies. The Signal Hill ARC met May 6 at the home of APL and discussed Field Day. The NYL Club met May 13 with Grace Ellis, K8ARF, and Martha Shirley, ZWL, as hostesses. Martha spoke on grapho-analysis. The Sioux Falls ARC held an auction May 13, with the Worthington, Minn., ARC as special guests. SCT also was present. The Huron ARC continues plans for the South Dakota State Convention in September. SGM is off the 75-Meter Net, K8BQR was off June 4 to 24. ZLB was off May 29 to June 4. YVF was off until June 17. K8HHM is off for the summer. RRN added a dinette to the back of the house. Traffic: (May) W8SCT 410, K8FEJ 143, W8DVB 33, OIT 16, YKY 12, OFP 11, BQS 10, CAS 7, K8AIE 6, W8GQH 5, FLP 4, K8ARE 2, W8RWX 2, K8BQR 1. (Feb.) W8SCT 318.

MINNESOTA—SCM, Robert M. Nelson, W8KLG—Asst. SCM: Robert Schoening, 8TKX. SEC: GTX. RMs: DQL and RLQ. PAMs: JIE and LUX. The

(Continued on page 100)

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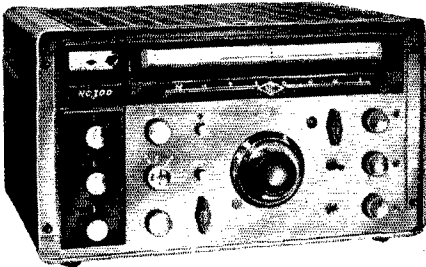
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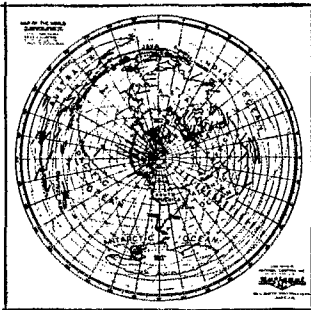
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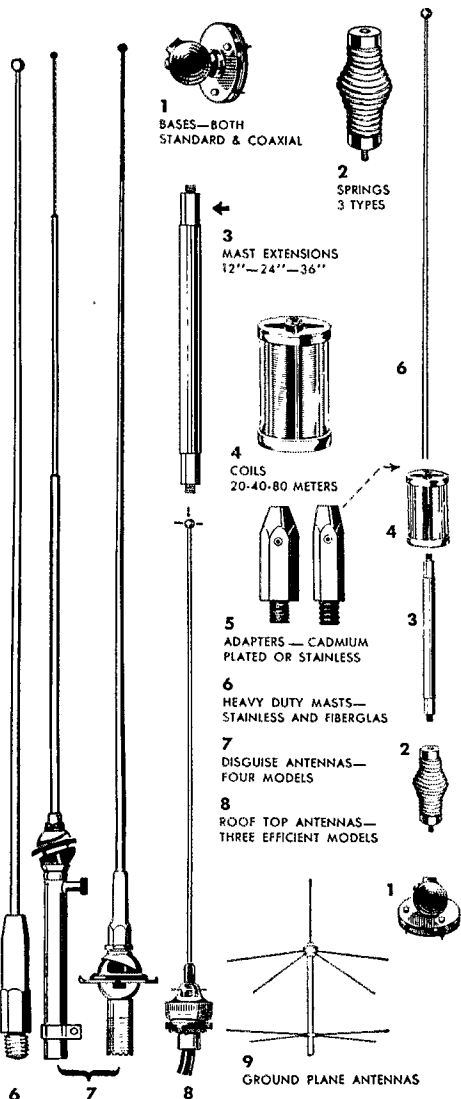
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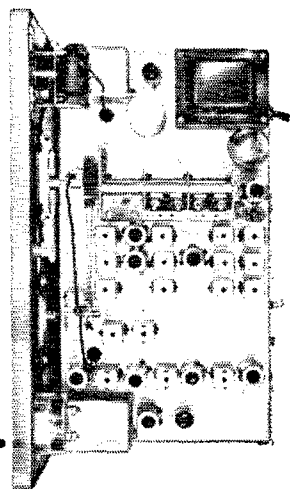
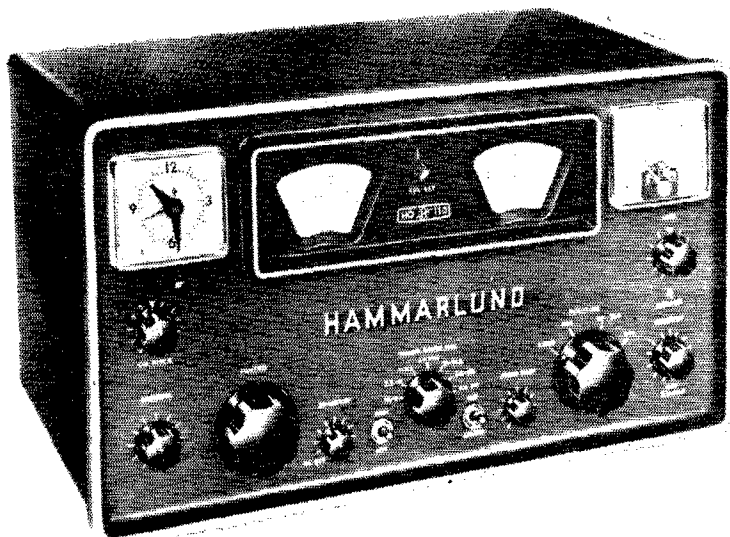
Mankato Area Radio Club concluded its current code class with 22 prospective amateurs taking license examinations. The Worthington Radio Club went to Sioux Falls, S. Dak., and met with the club there. Two radio club picnics are coming up—St. Cloud, Aug. 11, and Minneapolis, Aug. 18. For details inquire on the section nets. K9CCG and KJZ made RPL this month. K9CCG has moved to W6-Land for the summer. His XYL died in May. Our condolences, John. RXL has remodeled his house and has a new ham shack done up in knotty cedar. PBT was WAC—that is, Whammied All Channels, 2-13! RAK also is battling TVI. FGV is going mobile with an 815 final, homebrew. During PBY's stay in the hospital he kept contact with QKA via a 2-meter rig in his room. PBY and QKA also are working 2-meter RTTY. WMA worked VP3HAG for his No. 100 Country. K9CNC visited with K9BUD. The annual MSN/MJN C.W. Nets Party was held at #RQJ's mansion in Edina, at which time 'FEX held on to his code-copying ability title, with W9RLQ runner-up; KJZ recognized the most lists of a group that had been typed on 80 meters, the annual business session was held and all enjoyed the chow and eyeball QSOs. New appointments: QVR as OO, K9ERO, MDL and RGR as OPS. Appointment renewals: RNL as ORS, KFN and LIG as OPS. Say, you 6- and 2-meter enthusiasts: Are any of you interested in an OES appointment? If so, drop me a line or catch me on 80 or 75 meters. Also we are in need of more Official Observers in our area. Traffic: (May) W9KJZ 507, K9CVD 174, W9KLG 173, DQJ 112, ALW 86, R1Q 61, K9DMA 60, W9WMA 39, K9BUD 34, W9CMLX 29, BUO 28, WVO 26, QVR 23, IYP 16, LIG 16, K9EPT 15, W9IRJ 14, TCK 13, QDZ 12, K9GQZ 8, K9GKI 7, HNN 7, W9EMZ 6, FGP 6, NGA 6, K9GCN 5.

DELTA DIVISION

ARKANSAS—SCM, Uimon M. Goings, W5ZZY—SEC: VKE, PAM: DYL. We feel that the station activity in Arkansas still is pretty good but the reports received do not show up very well. The hamfest held at Camp Robinson, Little Rock, May 19, was well attended and everyone had a great time. This hamfest was put on by amateurs belonging to Army MARS. The Arkansas Emergency Phone Net is coming along very fine since its coverage has been extended to five days per week. However, there still are a few of the larger towns in the section that do not have stations participating. The Single Side Band Net, which meets daily at 1730 on 3925 kc., could use more sideband stations from this section. K5ANF has up a new all-band trap antenna. WRR has moved from Paragould to Blytheville. A new ham in Van Buren is KN5JPD. We notice VTZ showing up on sideband occasionally now. KN5KLE is a new ham in Batesville. We sure would be happy to have reports from the stations in this section. We invite reports for this column. Traffic: W5DAG 63, KRO 52, ZZY 22, JVL/5 11, K5GCF 8, W5WSM 3, K5ANF 2, W5EY 2, M5V 2, K5HYD 1.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—The previous month's report was made from Shreveport because your SCM was assigned to a flood-fighting unit in that area. This time this report comes from Texarkana where the same type of activity is in progress. VAA dropped by to say that local hams were organizing to supply communications in the flooded areas. K5ALF has renewed his OPS appointment. BMD also sent in his ORS certificate for endorsement. TWV has been appointed OPS and OES. He has been operating on 2 and 6 meters and plans for a 10 KMC transmitter and a sixteen-element beam are coming along. K5CHC, who holds OES appointment, reports there is plenty of activity on 50 Mc, and he is planning to build a 220-Mc. transmitter in the near future. JAW, OO Class IV, has been doing an FB job on 7 and 14 Mc. MIX, who is struggling with his Valiant, has accepted the chairmanship for the October Hamfest to be held by the Greater New Orleans Amateur Radio Club. Get behind him and let's make it a good one. EA finds it hard to get Arkansas and Louisiana boys to work c.w. nets in the summer. K5DMA put up a two-element wide-spaced 15-meter beam and the first three contacts were O4, LU and CE3. K5AGJ is active on MARS and 40-meter c.w. K5DDH has the a.m. rig working on 40, 20 and 15 meters. NDV is banging away with a good traffic report. K5HFI is now on 75-meter phone with a Valiant and an NC-300. BMD is at the Boy Scout World Jamboree in England. Civil defense has been put into operations in Webster Parish. Those participating are FYZ, IYT and TEB. On May 28 AAT passed away. A real old-timer, he was active on 75 meters and in the old days on 160 meters.

TENNESSEE—SCM, Harry C. Simpson, W4SCT—Asst. SCM: Richard A. Crowell, 4WQW. SEC: RRV. PAM: PQP. RM: IV. Our thanks to K4CWB and the
(Continued on page 102)



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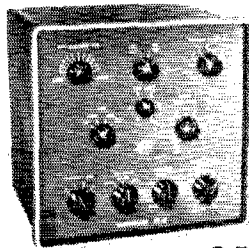
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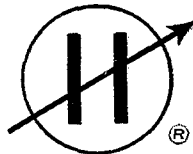


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BETTER STILL, COME IN—PLENTY OF PARKING SPACE

Nashville Club for their fine poetic bulletin. Congratulations also to the Oak Ridge Club on its new bulletin, and to K4CWS, editor of the fine new Frye ARC bulletin, *Radiation*. All bulletins received, including the Memphis Club publication, *Zero Beat*, were unusually well prepared. CWS is now on 6 meters with a Globe Scout 880, FWC, HSX, HUT and SCF, deep in the heart of a 2- and 6-meter walkie-talkie project, find that all that glitters is not gold! The Memphis club was treated to another outstanding program, VT's "Memoirs Of An Old Man." The same club is sponsoring a 6-meter portable transceiver building program. WQW, after a photographic layoff, is again active on TN. POP, our fine PAM, traveled through Middle and East Tennessee with good friend GGM and met many TPN members. YRM reports May was the best 6-meter month ever and is now listening for Poland and Sweden. UWA confirms having worked 15 new states on 6 meters during two days in May. The Memphis Cotton Carnival utilized ham radio more than ever before, with BAQ, ENA, BAO, CTA, GPZ, DSI, CLO, HLR, HUT, HSX, YMB, FRB, WBK, YMG, IQX, KVN, WTI, ACE, VZU, AFE, WTJ, UDI, EML, CPM, ASK and SCF handling difficult assignments in timing riverfront activities, parades, etc. The Humboldt ARC likewise assisted in the Annual Strawberry Festival. CLS, AOW, WCT, HQM and IGW received high praise from Festival officials for maintaining proper spacing of floats, relaying information to various parties, etc., using 10-meter gear RM IV reports TN will continue through the summer. TDZ, reporting on outstanding 6-meter activity in the Chattanooga area, reminds all hams of the Chattanooga Hamfest to be held Aug. 4. PL reports that he purchased his first piece of radio gear since the early surplus days—an RME receiver. Traffic: W4PL 2010, W5RCF 539, W4OQG 105, VJ 67, UVL 61, WQW 47, NHT 43, EWC 40, IV 39, SCF 35, BMC 24, IGW 24, GFL 23, CWS 12, VNE 10, PAH 4, HUT 2, TDZ 2, UVU 2, HSX 1, IFN 1, PHW 1, POP 1, UWA 1, YRM 1.

GREAT LAKES DIVISION

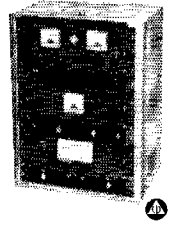
KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH, PAMs: VJV and STD, RM: QCD. A nice letter from K4LWL states that the Fort Knox Amateur Radio Club is now active and booming again with application in for affiliation with ARRL. KPN is going well with five more stations earning their Section Net certificates. They are HJJ, K4CJP, K4HCK, K4HTK and K4HAA. ZDB has made BPL again. KYN goes on summer schedule to 1800 CST daily with an excellent line-up of NCSS. QCD is on a "Honey Do" vacation—"Honey Do this and Honey Do that." Hi! BAZ reports a G66 and a G77 mobile now working 40- and 80-meter c.w. HSI is off the air with antenna trouble until he gets up a new vertical for 75 meters. CDA is planning a 50-mile canoe trip down the Kentucky River for camping and photography. RHZ is using KYN to QSP from BAZ mobile on 10 meters to HOJ and back to RHZ. OMW is an active OO again with 102 confirmed countries now. The Northern Ky. Emergency Net meets the 3rd Wed. of each month on 29.6 Mc. KKW was very glad to see his youngest son graduate as an aeronautical engineer. J4CN sold his house and will be off until December. Hope to see all of you at the Chicago Convention. Traffic: W4ZDB 508, KKW 178, QCD 169, JSH 116, RPF 96, K4AIS 93, W4BAZ 79, K4KIO 65, JGN 59, W4HSI 51, K4KIN 47, W4CDA 40, RHZ 35, NGN 31, ILI 25, KQU 25, HOJ 22, MWX 22, K4HOE 11, W4OMW 10, SZL 5, K4HTK 4, W4BZY 3.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—Asst. SCM (phone) Bob Cooper, 8AQA; Asst. SCM (c.w.) Joe Beljan, 8SCW. The traffic total for this month is the highest that I have had the pleasure to report. May traffic totaled 2929 and the extras brought the grand total to 3112 points. ELW and NAW both qualified for BPL. Seth continues to keep in the listing despite his predictions to the contrary. To date only a small percentage of the holders of lapsed appointments have replied to the cards mailed as reminders. By the time that this report reaches you, your appointment may be cancelled. Those of you who find yourselves in that situation may be reinstated upon evidence of the required activity. The SCM appointments file must be cleared of inactive appointments in order to keep the Headquarters mailing lists current. Please accept the cancellations in the manner in which they came about. The June report will not contain traffic information since it will have to be filed before the end of the month when I'll be on vacation. The July report will contain both June and July traffic. Should things work out as anticipated, the June report will be devoted to a summary of the June 15 RACES meeting to be held in Lansing at the request of the new State RACES Radio Officer. RDN was appointed to that office recently and
(Continued on page 106)

Now, increased safety factor through use of the 4-400A Final Tube

Globe King 500B

A bandswitching transmitter for 540 watts on fone and CW; 540 watts on SSB (P.E.P.), with 10W external exciter.



Outperforming any rig in its price and wattage range, the King bandswitches 10-160M in a 31x22x14 1/2" handsome cabinet, especially designed for TVI-suppression. The Transmitter is relay controlled; includes a built-in antenna relay; built-in VFO; and separate power supply for modulator section, allowing better overall voltage regulation. Commercial-type compression circuit keeps modulation at high level. King features grid-block keying for signal clarity. Pi-network matches most antennas, 52-600 ohms. Provisions for crystal operation.

Cat. No. 145AF001—Wired & Tested.....\$699.00*

*As of Sept. 1, 1957 this price will be advanced to\$725.00

All WRL Electronics Transmitters operate on most CAP and MARS frequencies.

Globe Scout 680

65 watts CW; 50 watts on fone, plate modulated.



A compact, self-contained, bandswitching transmitter for operation of the 6 through 80 meter bands, with built-in power supply. High level modulation is maintained. TVI-suppressed cabinet. Pi-network output on 10-80M; link-coupled on 6M, matching into low impedance beams. New type, shielded meter. Globe Scout 66 is identical, except bandswitching 10-160M. Size: 8x14x8".

Model 680
Cat. No. 145AF007—Kit.....\$84.95
Cat. No. 145AF008—Wired & Tested.....\$99.95
Model 66
Cat. No. 145AF005—Wired only.....\$99.95

FCDA Certified on factory wired and tested models for crystal controlled operation.

Globe Chief 90

A completely bandswitching, 90 watt transmitter for 10-160M.

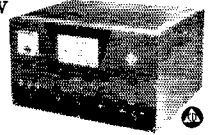


Here's a compact, 8x14x8", sturdy rig with well-filtered, built-in power supply. Pi-network matches most antennas from 52-600 ohms. Modified grid-block keying is employed for maximum safety. Has provisions for VFO input and operation. Kit form includes complete manual and all tubes and parts. Meter and cabinet carefully shielded for reduction of unwanted TVI.

Cat. No. 145AF013—Kit.....\$54.95
Cat. No. 145AF012—Wired & Tested.....\$67.50

Globe Champion 300

A bandswitching, 10-160M, Transmitter for 350 watts CW, 275 watts fone, and 300 watts SSB (P.E.P.), with any 10W external exciter.



The single-switch bandswitching Champion is extensively TVI-suppressed, filtered and bypassed. High level Class "B" modulation is sustained without usual clipping distortion through use of a new commercial type compression circuit. Pi-network output circuit, 48-700 ohms, built-in VFO, push-to-talk, antenna changeover relay, and improved Time Sequence keying are all features. 1000 volt plate capacity of Final tubes offer 33 1/3% safety factor. Only 12x21 3/8x17" in size, self-contained.

Cat. No. 145AF011—Kit.....\$349.00
Cat. No. 145AF010—Wired & Tested.....\$449.00

*As of Sept. 1, 1957, due to inclusion of a pre-assembled VFO, this price will be advanced to\$375.00

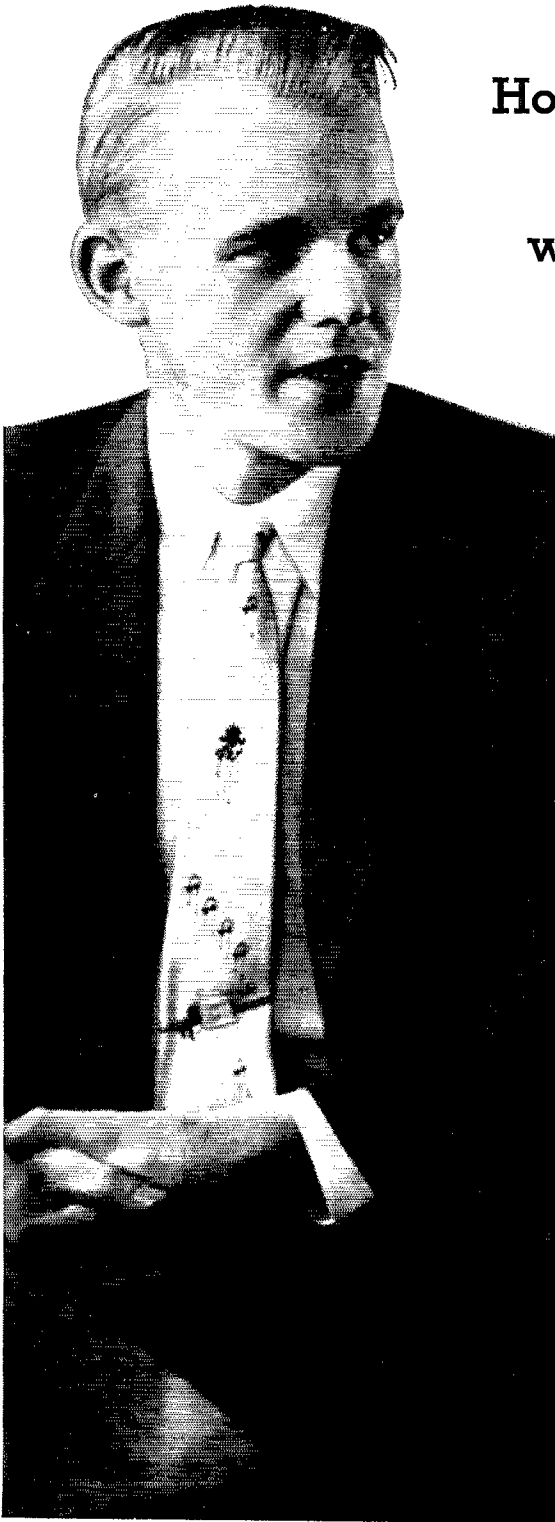
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How far can you go in Electronics without a Degree?



Bernie Roth examines ribbon from printer during Field Engineering Laboratory period.

Without a formal degree, 24-year-old Bernie Roth is already handling a key responsibility with IBM. At the McGuire Air Force Base, a directional control site for Project SAGE, Bernie is part of a team maintaining an entire electronic digital computer system. In this assignment, he must stay abreast of all the most advanced electronic concepts—developing his professional know-how every day. “That’s what’s different about IBM,” Bernie says. “The graduate engineer has an advantage anywhere—but here at IBM the technician also can grow into managerial positions.”

IBM instituted its program for specialized technical training many years ago. The theory behind this built-in educational system asked the question: Why should the capable man be denied the opportunity simply because he lacks a formal degree? The wisdom and foresight of IBM’s decision are reflected in the story of Bernie Roth—in the misgivings of his past—in the certainty of his future.

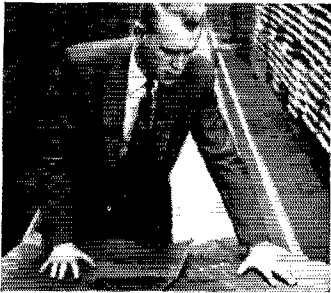
The Navy steers Bernie on the right course. When Bernie graduated from Flemington, N. J. High School in 1950, he received a general diploma—mathematics and science made up a small part of his curriculum.

Enlisting in the Navy in 1951, Bernie proved his aptitude for technical work and was assigned to the electronics preparatory school in Jacksonville, Fla. Later, he attended the Class A Aviation Electronics School in Memphis, Tenn., but, an event that occurred during a furlough in the spring of 1955 put a brand-new light on Bernie's future.

Reports for training. After reading an advertisement mentioning opportunities for IBM Kingston and Project SAGE, Bernie hopped a bus to Newark for an interview with the IBM representative. He took the required number of tests—talked over his hopes and ambitions, and, "That's about all there was to it." In July, Bernie notified IBM that he was definitely available. Soon afterward he received

times, I have the chance to assist in systems and displays. Now displays really fascinate me. There's a kind of television screen on which you can detect a plane, determine whether it's friendly or hostile, and where it's headed. My work is always different, never routine, and that's very important to me."

How does the future look to Bernie? A happy and prosperous future is in the offing for Bernie Roth. Based on the records of his older associates, he's confident that in a short time he will qualify as a Systems Engineer, at the very least.* The next steps going up the ladder are Group Supervisor and then Group Manager. "IBM is quick to recognize and reward improved ability through greater knowledge."



Here, he scans the schematic of computer circuits.



Bernie checks a unit in one of the operating consoles.



An outdoor man, Bernie takes full advantage of the New Jersey game preserve.

instructions to report to Kingston to begin training in the applications of electronic computers.

The material he studied at Kingston. "The Kingston program is quite an eye-opener in electronic techniques. First of all, I studied basic circuitry. Then, I actually learned a new way to think—the ability to comprehend the whole from the assorted parts. Later on, I studied the various input-output devices which are used as auxiliary units to the central computer. Finally, I analyzed the methods that supply the power for this electronic giant. Millions of watts are needed—a phenomenal amount. In general, I'd say that you couldn't find a better training ground for understanding the uses of electronics as well as electro-mechanical equipment."

How does Bernie feel about his current assignment? "I'm responsible for the performance of the input-output devices—the auxiliaries that supply information to the central computer. The many Project SAGE outposts—picket ships, reconnaissance planes, Texas towers—flash their signals to the input devices which, in turn, correlate and compile the data. This, incidentally, is one of the world's largest computers, which is built and tested at Kingston, then disassembled and shipped to a directional control site such as McGuire. Some-

What about you? Since Bernie Roth joined IBM Military Products and the Project SAGE program, opportunities are more promising than ever. This long-range program is destined for increasing national importance, and IBM will invest thousands of dollars in the right men to insure its success.

If you have 2 years' technical schooling—or equivalent experience—IBM will train you for 6 months as a *Computer Units Field Engineer*.

If IBM considers your experience equivalent to an E.E., M.E., or Physics degree, you'll receive 8 months' training as a *Computer Systems Engineer*.

After training, you will be assigned to an area of your choice. You receive *salary*, not wages, plus overtime pay. In addition, every channel of advancement in the entire company is open, and IBM is a leader in a field that is skyrocketing in growth. Of course, you receive the famous IBM company-paid benefits that set standards for industry today.

WHY NOT WRITE—today—to Nelson Heyer, Room 12808, IBM Corp., Kingston, N.Y.? You'll receive a prompt reply.

**Note: Since this article was originally prepared, Bernie has been promoted to Computer Systems Engineer, with assignment to Santa Monica, California.*

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he is doing all possible to get RACES launched. I have expressed the best wishes of all to him as well as offering all possible assistance. My exchanges of correspondence with him have been most encouraging and the meeting should be of interest to all. Aside from appointment correspondence this month, nearly all mail from members and clubs contained news of Field Day plans. Traffic: (May) W8ELW 1379, K8NAW 344, W8LTP 252, N0H 175, DAP 149, OCC 108, FWQ 94, FX 82, YAN 72, NUL 55, QJX 32, RVZ 30, DLZ 25, DSE 24, OGY 24, PXA 23, RAE 21, WXO 17, OCU 6, AUD 5, HKT 3, EGI 2, QOO 2. (Apr.) W8HKT 66, TIN 47. (Mar.) W8RTN 41, TIN 16. (Feb.) W8TIC 13.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCMs: J. C. Erickson, 8DAE, and E. P. Bonnet, 8OVG, SEC: UPB, RMs: DAE and FYO, PAMS: HPP, HUX and HZJ, South East ARC's club station is K8EMY and fifteen of the code class are awaiting their tickets. MWL (K4KXP) returned to Canton after spending the winter in Florida. EQN reports the recent Ohio Intra-state Contest was the finest, with both phone and c.w. very active. Ohio Valley ARA's *Ether Wares* tells us the club held an auction, NDU was in the hospital about four weeks, DLZ has 145 countries confirmed and worked FSRT and OHIAA/B for new ones. JY has a new SZ-101, OG has a 10B s.s.b. exciter. VZE attended the 25th anniversary of the Tri-Town ARC in Illinois where he was a charter member. EHW had his tower and thirteen-element 2-meter beam ruined by a freezing rain storm, NUY's wife presented him with a baby girl. The Springfield ARC placed 24th among club entries in the 1957 V.L.F. Sweepstakes. The North Canton RC was organized with UKT, pres.; EUL, vice-pres.; and K8DGO, secy-treas. KN8AQI has a new jr. operator, K8CTQ received his General Class license and a new Globe Scout. GKB has a new Globe Champion and worked ZK2AD on 40 meters. Ohio stations made names for themselves in recent contests: AJW was top on 27 Mc., BKP was top on 21 Mc. and JIN was ninth of the top ten in CQ's DX Contest. AJW again was top scorer in the YL-QM Contest and top Ohio scorer in the 1956 Sweepstakes, both on phone, and was in the top five in the second annual Delaware QSO Party. LZE rewired the entire station. The stork brought a girl to YCP and his YXL. A new ham in Toledo is KN8DHU. OEQ, the oldest son of HXB, is home for a summer vacation. Armed Forces Day was observed in Youngstown by MIVARA members with CGP, QOD, ITH, IWI, IKE, NXX, OZW, TTO, YBV, K8s AAK, FCA, K2KVP/8 and W8RFT/8 taking part. KN8EHY is a new Novice in Logan. WE's YXL won two prizes at the Midwest YL Convention at Flint, Mich. Columbus ARA's *Carascope* reports that VOW worked five new countries on 21 Mc., GKQ picked up 11 new countries on 20-meter phone, IBX received his WAC certificate and LVC has a new jr. operator. The stork brought a baby girl to KN8DOJ. The Massillon YMCA ARC had a hidden transmitter hunt, 9VBV/8 is out of college and has left for Illinois. WRP, K8s ANG, AZV, BMM and BXT have their General Class licenses now. USP moved to Cleveland. BXA has a phone patch. KX1/3 stopped off in Warren, UYX moved to Warren from Michigan. FWL has a new Valiant. WRP has a new Ranger and is mobile on 10 meters. EPW has a new 6N2 and a 6-meter beam. KN8CTM is on 2 meters. The Warren ARA is conducting a course on industrial electron for its members. KJE is s.s.b. with a 20-meter exciter and a DX-100. 6VTF, ex-HKR, visited Warren. RQL is on 2 meters with a new beam. HCX is conducting code classes. KAK is married. K8BML has a new DX-100. K8BMM has a new SX-99. OKC made WAS. KN8CMQ has a new HQ-150X. FBE vacationed in Florida. The Trumbull County Emergency Net meets every Tue. at 1845 on 29.604 Kc. and invites anyone to report in. TCT worked 3 new states on 6 meters. On May 14 Greater Cleveland had a violent wind storm with winds up to 90 m.p.h. Because of severe damage the Cleveland broadcasting stations alerted the civil defense in the western part of city, but the officials were much surprised to find the AREC hams already on the job. The following AREC and RACES members participated: AJH, BUQ, FKB, HFE, INO, NGY, OIO, OBT, VM, ZEU, K8AAG and KN8DJS. UPII and K8BPX made BPL in May. Toledo RCs ham for the month is LAH. MIQ and NBD are sporting 3rd-class phone commercial tickets. New appointments are CGF, VYU and K8BPX as ORSs and K8ECK as OES. PLEASE get your reports to me so that I have them by the sixth of the month. Traffic: (May) W3UUPH 731, K8BPX 237, W8CSK 222, DAE 161, HXB 127, VDA 102, K8DDG 74, W8AL 45, GFE 41, CGF 38, VYU 38, W9VBV/8 34, W8GQD 28, PLQ 24, HZJ 18, STR 15, WE 15, QIE 10, RO 10, VVW 10, YCP 9, LZE 8, ARO 7, GKB 7, MGC 6, EEQ 6, LMB 2. (Apr.) W8CGF 128, LZE 12, MJO 11, GQD 6, LMB 6.

(Continued on page 108)

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Hallicrafter S38D... 49.95	Hallicrafter SX100... 295.00
Hallicrafter SX104... 89.95	Hallicrafter SX62A... 349.95
Hallicrafter SX105... 89.95	Hallicrafter R46B speaker... 17.95

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MALLORY HAM BULLETIN



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However, when you use Mallory Capacitors in your equipment, you're well protected against this enemy—for heat is no problem—Mallory electrolytics can take it!

For over 15 years all Mallory FP-WP type electrolytic capacitors have been built for continuous duty at an elevated temperature of 85° C., and at no increase in cost over conventional 65° C. capacitors. All other Mallory metal cased electrolytics employ this same superior construction.

Heat, as an accelerating agent, is believed to be the cause of practically all electrolytic capacitor failures. At elevated operating temperatures, electro-chemical activity in an electrolytic is greatly accelerated with the result that both leakage and equivalent AC series resistance increase. With an increase of leakage current, internal heat is generated which tends to drive out the moisture from the electrolyte, resulting in increased contact resistance between the electrolyte and anode. Under these conditions, if the capacitor does not actually burn up internally, or short through, its effectiveness to operate as a capacitor is greatly reduced because of a permanent reduction of capacitance and increase in equivalent AC resistance at the ripple frequency.

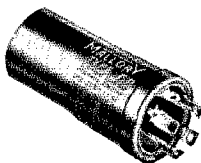
Poorly made electrolytic capacitors, especially those fabricated with little regard to cleanliness of raw materials are particularly subject to heat failure, for heat accelerates the corrosive effects of even infinitesimal amounts of chloride salts permitted to remain within the capacitor cartridge at the time of manufacture.

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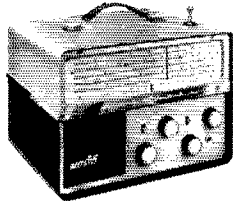


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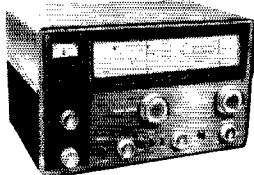


Band Coverage:
DF — 150-400 Kc
BC — 50-1.4 Mc
1 — 1.40-4.05 Mc
2 — 4.0-11.4 Mc
3 — 11.0-23 Mc

Has all controls: Main tuning, bandspread, volume, AM/CW switch, band selector switch, stand-by—off—receive switch, AC/DC battery operation; phone jack;

speaker; slide rule dial; 2 antennas (whip and loop stick). Indoors or out, at home or away, a portable that's hard to beat.

NC-188



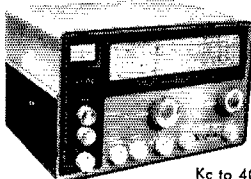
Band Coverage:

A — .54-1.6 Mc
B — 1.6-4.7 Mc
C — 4.7-15 Mc
D — 14.0-40 Mc

3.5-4.0 Mc (80 mtrs)
6.0-7.30 Mc (40 mtrs)
14.0-14.35 Mc (20 mtrs)
20.4-21.5 Mc (15 mtrs)
27.0-30 Mc (10/11 mtrs)

Calibrated for the four general coverage ranges and 5 bandspread ranges in amateur bands (80-10). Covers 540 Kc. to 40 Mc. Voice or CW. Tuning system has separate general coverage and bandspread tuning capacitors in parallel on all bands. Bandspread also useful as vernier for general coverage. Extremely good audio system, sensitivity and selectivity with complete controls and full tube complement. This is indeed a low-price general coverage receiver smartly styled.

NC-109



Band Coverage:
A — .54-1.6 Mc
B — 1.6-4.7 Mc
C — 4.7-15 Mc
D — 14.0-40 Mc

3.5-4.0 Mc (80 mtrs)
6.0-7.30 Mc (40 mtrs)
14.0-14.35 Mc (20 mtrs)
20.4-21.5 Mc (15 mtrs)
27.0-30 Mc (10/11 mtrs)

Here the accent is VALUE . . . with features found only in more expensive receivers. Has the exclusive "Microtone" crystal filter, separate product detector for CW and SSB reception. Has big "S" meter. Covers 540

Kc to 40 Mc in four bands including broadcast, voice, CW

Controls: Main tuning; bandspread tuning; antenna trimmer; band selector switch; RF gain control; AC ON/OFF and AF gain control; stand-by switch; mode selector switch for AM, AM, CW, SSB and ACC; tone control switch; BFO pitch control; selectivity control; phasing control.

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6 meters. New officers of the Hillcrest RC are K2QEP, pres.; KN2UFS, vice-pres.; and KN2UDT, secy.-treas. K2QEP dropped the "N." K2s IBH and GXL announced the arrival of their 4th harmonic. Ditto TEZ with the 4th, too. K2RCD dropped the "N." RDD hopes to snag DXCC with his new 20-meter beam. K2TIM has worked 44 states, K2s UEI and VMY won a science fair first prize for ninth-grade exhibits with their 435-Mc. transmitter demonstration. Officers of the Kew-Forest ARC are K2SEIX, pres.; K2TTA, vice-pres.; M. Ernstoff, secy.; and K2VNA, treas. New officers of the NYRC are ASI, pres.; VTX, vice-pres.; ATT, secy.; and OWL, treas. K2PWH is working on a 50-Mc. v.f.o. oscillating on the fundamental frequency. PRB has a new HT-32 exciter to drive his 4-1000A linear and is converting a BC-458 for s.s.b. mobile work. A fall course in Theory for General and Technician Exams will begin Oct. 1 at the Evening Community Center, Jamaica; contact W2HNG. Traffic: (May) W2KEB 1838, K2PHF 632, W2KFX 533, K2DEM 376, ECY 161, W2BO 160, WFL 117, K2LUM 115, KH6RPZ/2 89, W2AEE 84, TUK 82, LPJ 66, PF 29, K2RJO 24, PSE 21, OPJ 20, GLI 19, KSP 18, W2DRD 16, IVS 12, K2AAW 8, W2TAG 8, JGV 8, K2SEK 8, W2JCA 7, K2KQG 7, TSE 6, W2EC 5, K2AZT 4, TBU 4, W2YBT 4, GP 1, K2JZR 1, (Apr.) W2LKG 16, DID 12, K2AAW 11, W2OME 4, IVS 1, K2ZGB 1.

NORTHERN NEW JERSEY—SCM, Lloyd H. Manumon, W2VQR—SEC; IIN, PAM; VDE, RAMs; BRC, NKD, CGG, K2RKH is QRL for a few weeks. Stan is going s.s.b. as soon as he gets 20A in operation. ISK is on 144 Mc. of his new QTH in Washington Twp. IMG, in keeping with a true tradition as an all-out radio amateur, has named his new canine friend "RF." GEX is heard on 144 Mc. from Colonia. 3UQB is frequently heard airborne on 144 Mc., commuting from Saranac Lake to N.Y.C. K2LNO now is on 6 meters. FPM is on all bands mobile with a new rig. The Raritan Bay Radio Amateurs Club reports a big increase in membership and attendance because of the efforts of K2BEV and DDM in presenting an interesting program to prospective new hams. K2GBE is urging more of the gang to join him on 40 meters. K2DDM is going mobile with a DX-35. K2MFX is a new OPS. K2DSW, Carteret RA'ES Officer, has the new e.d. gear set up. K2EQD is operating on 40- and 20-meter s.s.b. from Miami. K2MMM is installing a BC-459A on 40 meters. New officers of the Irvington Radio Amateur Club are K2IGH, pres.; K2KIB, vice-pres.; K2VNA, secy.; RXH, treas. We take the pleasure of listing K2KIB as the elected vice-pres. even though he later was disqualified because of a corporate state ruling that an elected officer must be 21 years of age. More power to you, Jim, and I am sure the gang will make it stick on your 21st birthday. K2MFX is liaison station between the 6-Meter Net and NJFN on 75 meters. The Eastside High School Radio Club of Paterson won first place in the school's science fair in the club division with a display of amateur radio station operation. K2TPH and RIC did the operating. First place in the senior division was won by K2TPH with a display of vacuum tubes. The GSARA held a very successful covered-dish supper on May 22. At a previous meeting A. C. Beck of Bell Tel. Labs was the speaker of the evening. K2SFC, HYB and W2JWD are mobile on 10 meters. K2PAI is working on a transistorized "Conelrad" alert monitor for mobile operation. K2GTX is piping a kw. into his new Telrex four-element beam atop his 70-ft. tower. New members voted into GSARA are K2RXW, RXQ, RXX, KXX and KN2UBV. K2IPAI has a 30-w.p.m. sticker. K2JTU has a new 75A-3 receiver. K2BWO made WAS. The Penn-Jersey ARC operated a station at the Hobby Show in Belvidere recently. FSL is back from a cruise as radioman aboard the U.S.S. *Edward H. Allen*. K2GBP operates from 3AD0, U. S. Naval Academy. GVV is going on a trip to California. NJN report for May: Sessions 23, attendance 392 and traffic 352. New members of NJN are K2UQY and W2EBG. The following stations in NJN also are NCS on 2RN: HDW, RG, BRC and K2EB. K2MFP has received his 2nd class radiotelegraph ticket. NJFN reports K2HJJ as a new member station. KFR is a new OPS. The NJFN monthly bulletin issued by VDE, our PAM, is an example of a well-organized group. A correction from our previous column regarding the starting time of FNJ, our new 40-meter net: It should read 1715 EDT and not 7:15 p.m. The frequency is 7105 kc. and new stations are invited to call in. K2QYI is a new ORS. K2EMJ has a new SX-101. K2SZO is planning a new 2-meter rig. GUM is a one-man task force in recruiting new members for the GSARA. YLS is blasting through with the new Johnson 500 rig. While doing some experimental work on long-haul commercial gear, we had the occasion to work with experimental station KU2XAL in Kahuku Point, Hawaii. Who was on the

(Continued on page 112)

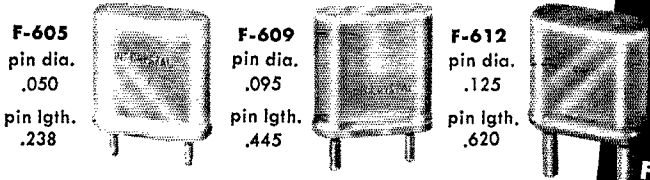
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Wire mounted, plated crystals, for use in commercial equipment where close tolerances must be observed. All units are calibrated for the specific load presented by equipment.

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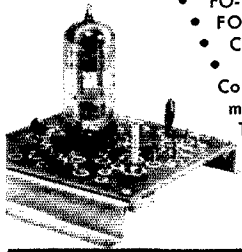
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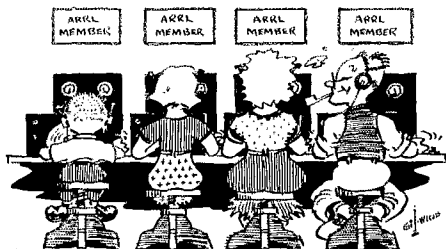
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other end but ex-W2UK of 2-meter fame. Ralph wanted to be remembered to all the gang back in Jersey. Traffic: K2AJV 234, W2VDE 129, MLW 120, K2BWQ 114, G1F 101, W2BRC 94, K2MIM 84, PYL 76, W2RXL 76, KFR 68, K2MFF 62, W2ZYV 58, K2TNJ 45, W2WVJ 31, K2MFX 21, RKH 21, UOY 21, W2DRV 18, OXL 18, K2GIQ 16, W2CVW 11, K2EMJ 7, W2CJN 6, NY 3.

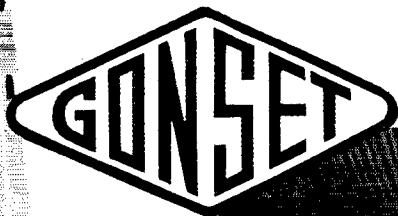
MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, W8BDR—The annual TLON Party was held in Des Moines with 31 present. LGG was reelected manager. The following past managers were present; AUL, QVA, BDR and BLH. The Oskaloosa Club will be host at the annual 75-Meter Phone Net picnic on Aug. 18 at Lake Keoma. BDR visited the Burlington Club. K8CLS, EVC and W8ZNU have received EC appointments. RMG renewed his. SCA renewed his RM appointment. ATA and SCA renewed their ORS appointments. UJC was reappointed Asst. SCM. NWX, Midwest Division Director, attended the annual Board of Directors meeting in West Hartford. LGG received a 10,000 Traffickers Club certificate. K8CYF is being heard better with his new 80-meter doublet. KN8KAQ is a new ham in State Center. The Cedar Rapids Club is planning to have a transmitter hunt every 10 days during the summer. K8CLS received a 15-w.p.m. Code Proficiency award. FZO has been appointed Asst. Director by NWX. BTR has moved back to Webster City from Missouri. JDV is now on with a kw. rig. The 160-Meter Net has suspended operations for the summer. B8Z is now out of the Navy and is moving to Wisconsin. Traffic: (May) W8BDR 2688, PZO 1799, LCN 1173, SCA 1139, LGG 1104, BJP 568, CZ 515, GXQ 343, KJV 145, SLC 101, QVA 95, UTD 73, K8CLS 71, W8LJV 41, NGS 29, K8EXN 25, CYF 23, W8FMZ 22, VWF 22, K8AHZ 15, WAD 13, W8HNE 8, CGL 7, K8BRE 5, W8EEG 5, GQ 5, FDM 4, PTL 4, K8AIC 3, W8REAL 3, BWN 1. (Apr.) W8WVF 37, K8DON 16, AHZ 15, W8BTX 12, GQ 12. (Mar.) W8BTX 24.

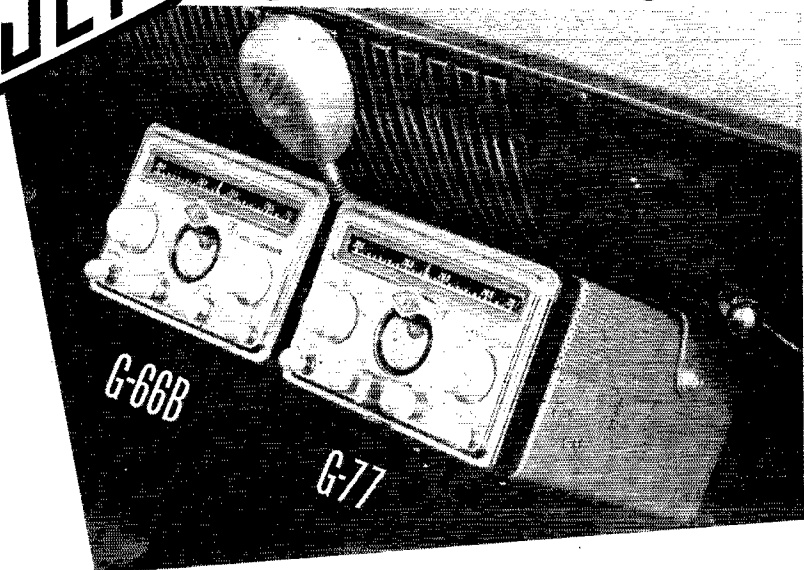
KANSAS—SCM, Earl N. Johnston, W8ICV—SEC: PAH, RM: QGG, PAM: LEW. Congratulations to our new PAM, Bob Manske of Yates Center. I wish to pay tribute to FNS, our retiring PAM, who has guided our Phone Net so well during the past 5 years. The Humbolt Amateur Radio Club recently was organized with K8AZN, pres.; KN8HVA, vice-pres.; K8AZQ, secy.; KN8BGG, treas.; UHL, act. mgr. WWA has a new DX-100. Rick is only 15 and has passed his Extra Class exam. VHF is booming in Salina. MVG has 35 watts in his mobile antenna on 6 meters. JAS has two bays of 12-ft. ten-element Long Johns up 63 feet and holds a sked with JND (165 mi.) daily. The Wheat Belt Amateur Radio Club holds its AREC drills each month using c.w. to combat QRM and QRN. The KYRC c.d. has a 28-ft. trailer with a built-in 5-kw. power plant and a 1-ton air-conditioner. KGV, of Mission, has a new Globe King. KQZ is the new chief engineer of the FCC office in Kansas City. K8DRR received a DX contest award for 28 Mc. for the entire W8 district. QFQ has received a DXCC sticker for 114 countries confirmed, having worked 144, all on 21-Mc. phone. IFR, of Topeka, is getting a new 45-ft. trailer home. BLI made a huge traffic total in May using c.w., phone and sideband. Traffic: (May) W8BLI 1247, NY 371, TOL 320, FNS 277, QGG 223, IFR 128, K8BXP 122, W8IOL 120, QQQ 77, K8BIX 76, KN8HSF 69, W8ABJ 68, SYZ 44, PON 39, KN8HVZ 28, W8IHN 20, MXG 16, ONF 14, K8AHW 11, W8VZM 11, WWR 11, ICV 9, SAF 9, DEL 8, SKW 7, TEZ 7, FDJ 6, K8BIX 3, W8UAT 3, WWA 3, K8AOQ 1, W8DPQ 1. (Apr.) W8TEZ 10.

MISSOURI—SCM, James W. Hoover, W8GEP—The following stations were active on the Mo. Emergency Net after tornados struck Fremont and Desloge on May 21: ACO, CDA, GEP, GMG, GPB, LFE, MRR, NVH, OMG, PTG, QMP, RMX, UNT, YOR, ZZI, 9AIU and 9WBB. Through the efforts of MINW, EC: K8ABA, Asst. EC; and WPS, RACES Radio Officer, four 6-meter mobiles were dispatched from St. Louis to the Desloge Area to handle Red Cross disaster traffic. A relay was set up from the Bonne Terre Hospital to St. Louis until an antenna was erected, and traffic was handled directly with St. Louis without relaying. The following participated with the mobile stations: CVS, NYF, ODI UXX, WEQ, K9BDW/8, K8ABA, K8BVL, K8DCQ, K8DGE, K8IEK and W8SBO/8. K8DGG was the St. Louis station delivering traffic to the Red Cross. GEP and WPS monitored activities. GCL is returning home after traveling for the CAA for the last several months. WAF has a new NC-300 receiver. WFF has moved to Florissant. MQL has a 75A-2 receiver. ETW received a Masters Degree in Business Administration from Washington U. VPQ has received a Traffickers 2500 certificate. K8DEY has built some 8-meter equipment and is working on in-

(Continued on page 114)

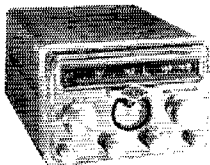


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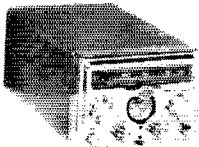
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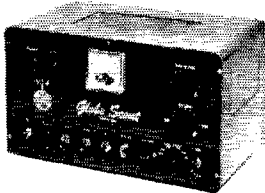
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creased receiver sensitivity. New officers of the Missouri School of Mines Radio Club are K8CHZ, pres.; W8YTB, vice-pres.; K0DFY, secy.; K8CFL, treas.; K8DGT, sta. mgr.; K8IFL, program chairman; K8CHZ, trustee. Traffic: (May) W8CPI 1903, GAR 750, GBJ 401, UXT 296, OUD 119, KIK 88, BVL 73, VJD 69, OMM 64, YVM 56, GEP 34, IIR 30, EEE 23, RTW 21, BUL 19, CKQ 16, WYJ 15, OVY 13, WFF 13, YEC 13, ECE 11, PAIE 10, K8HBC 8, HQQ 7, DEX 6, W8HUI 6, K8CHZ 3, W8EPI 3, K8GSO 3, IFL 3, DEY 2, W8MHS 2. (Apr.) W8EEE 82, WAP 70, HUI 29, YVM 25, K8GSO 20, W8LQC 15, ECE 13, OMAI 4, K8CHZ 1. (Mar.) W8OMM 146.

NEBRASKA—SCM, Charles E. McNeel, W8EXP—SEC: JDJ, PAM: MAO. DHO reports having logged over 100 stations on s.s.b. in Nebraska. TKK, from Cedar Rapids, Nebr., is operating s.s.b. on 15 and 20 meters from Formosa. UOB has moved from Sidney to Louisiana and the boys are looking for AI from his new QTH. TOZ has moved to a new QTH at Cortez, Colo. Doris, SPK, reports the 75-Meter Morning Net had 27 stations active on June 1. Those added are MAO and BEA. The May report of the Morning Net is 413 QNI, QTC 104, NIK reports the Western Nebraska Net had 492 QNI, 57 QTC. The 75-Meter Noon Net, MAO as NC, reports 516 QNI, high 24, low 8, QTC 45. New members are BOQ, FRB and SPV. Forty-one stations were active June 1. The Slow Speed Net reports QNI 195, high 9, low 3, 11 members active June 1. K8CZO is a new member. BOQ is active again after rig trouble. K8BSG, from Edgarr, is now operating portable in Omaha. An unusual piece of traffic with a check of 322 was handled by EGQ, which was mailed from Leigh. It had to be transcribed into Braille so the recipient could read it, as she is both blind and deaf. UJI, from Neligh, is in the Navy and stationed at McGuire Air Force Base, AIN, from Lewellen, has moved to Santa Monica, Calif. The North Platte Club will hold its annual picnic on Aug. 25 at the Youth Cabin in Coly Park and invites all hams to come and bring a covered dish. There will be transmitter hunts, an auction and a good time for all. Traffic: W8ZJF 114, MAO 102, NIK 50, ZWG 48, DDT 46, SPK 33, OCU 32, EQQ 27, UJK 27, BRQ 24, DFO 21, BRS 18, CDG 18, DQN 17, QRK 15, ELU 12, PDJ 12, TIP 10, ELO 8, HKW 8, ZOU 7, ZWF 7, VGH 6, VZJ 6, NGZ 5, OOX 4, BTG 2, CJO 2, EFV 2, LJO 2, URC 2.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—SEC: FOR, RAM: KYQ, PAM: YBH. Traffic Nets: MCN, Mon.-Fri. 0645 on 3640 kc.; CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1845 and 2200 on 3640 kc.; CTN, Sun. 0900 on 3640. My thanks to those of you who made possible my election as SCM. During the next two years I hope to serve you all in a satisfactory manner. To help me do this please feel free to write with questions, suggestions or criticism at anytime. Congratulations to AW, who made BPL along with TYQ. All nets showed a seasonal decrease in traffic for the month of May. MCN handled 139 messages in 23 sessions. QNI honors go to RFJ and IBE with 18, while EFW and BVB checked in 14 times. CPN handled 229 pieces of traffic in 30 sessions with an average daily attendance of 30 stations. High QNI: YBH, 30; VQH and TVV, 28. KYQ advises the first session of CN handled 139 messages in 27 sessions. Average daily attendance was 12. The second session also met 27 times, handling 49 messages with average attendance of 4.3. High QNI: GVK, 28, KAM and AMY, 26. Congratulations to FOR, Connecticut SEC, and the more than 50 hams who made the civil defense drill in Eastern Connecticut on May 19 a big success. Utilizing both 75 and 2 meters, you fellows once again proved amateurs can do the job. A new Novice in Bridgeport is KNIBYC (EJH's mother). WNMIDB has cured his TVI problem. BDI continues to keep the late TCC schedule on 20 meters. KNICAK is a new Novice in Wethersfield. FYF, who placed first from Connecticut in the Delaware QSO Party, received WANE and Granite State Phone Net certificates. FDJ is in a new QTH operating all bands, including 8 meters. W4ZBF is now KIBPA in West Hartford. ECH added WAC and W-DEL certificates. IGG has joined MARS. HYP, a past Connecticut SCM, is moving to Florida. QUJ, ULY and WHO are busy helping WNIOQA, OQB, OQC, OPB, KNIADC, ADD and BHG prepare for the General Class license examination. MLY already has passed it. OO reports were received from AMY, BVB and DHP. C'UT and FVV submitted QES reports. New appointments: ECH and FHP as OPS; VYL as EC. Appointments renewed: VW and RFC as OO; WPR as ORS; VW as OPS. Club secretaries, please write me giving your club activities. Traffic: W1TYQ 947, AW 452, FYF 414, EFV 314, YBH 313, KYQ 187, HID 18, RGB 111, GVK 96.

(Continued on page 116)

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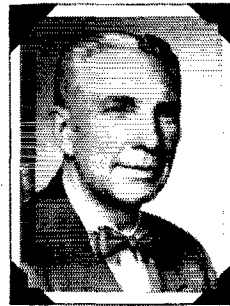
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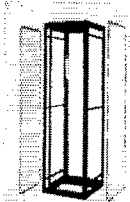
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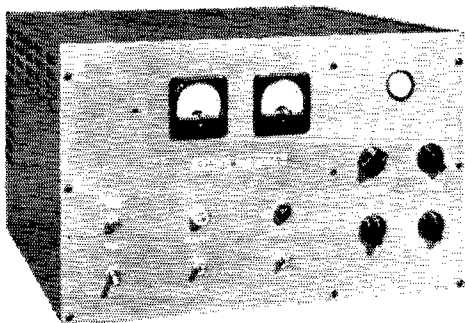
DHP 91, AMY 70, BDI 68, CUH 56, ULY 53, IUC 46, BVB 45, EKJ 27, RFJ 20, VY 14, EBW 12, GEA 10, YOG 7, WN1MDB 6, W1FHP 4, EJJ 2.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: DVS, Falmouth, as EC. Endorsed for another year: JSM, Waltham, VRK, Swampscott, ICU, Amesbury as ECs; AYG as OO; JSM as OES; UKO as OPS. DTB likes his new SX-101 receiver. TZ is Alternate R.O. for Sector 1B. BXC, YZU and RLT are on 75 meters. Many of the c.d. groups were on during the forest fires and did a fine job. ALP attended the ARRL's Board Meeting. The Federation of Eastern Mass. Radio Clubs' picnic was held at Riverside and was pretty well attended despite the damp weather. ALP and his WYL attended the picnic held at LYV's QTH by the Cape Code & Islands Amateur Radio Assn. Heard on 2 meters: KNs AFD, BOV, BEX, BMA, WN1KXY and NME. All of the c.d. groups were on during Massachusetts Operation "Alert." WLU will be operating during the summer on Star Island off the New Hamp-shire coast on all bands. TNI will be on 6 meters soon and also will have walkie-talkies. WK, R.O. for Quincy, has 3 more Gonsets for 2 meters coming and 2 for 6 meters. ETH is back on the air and will be on from Hull during the summer. The GBARS held a meeting. SX spoke at the Wellesley Amateur Radio Society meeting. NF has 95 countries for DNCC. Ex-ILLW has moved to Los Angeles, Calif. ICU, R.O. for Amesbury, says he has a RACES license. New officers of the South Shore Club are YTB, pres.; VJC and FBT, vice-pres.; DOM, secy.; TZQ, treas. New officers of the Braintree Radio Club are CTR, pres.; QVN, vice-pres.; ZSS, secy.-treas. Area 1 Radio Conum, held a meeting. EMG is working days again. KN1BYN is new in Easton on 7 Mc. EPE has certificates from the Royal Order of ARFERS and the Eastern States Net. #TOS/1 is on at Pocasset. HOO, Lynn, has a new vertical and a three-element beam for 10 meters. LLY held a meeting of his c.d. group. The Framingham Radio Club had its annual banquet at the Marlboro County Club. HIX was M.C. ATX will be on at Mattapoisett during July and August. RCQ has WAC and WAS. FJJ has a rotary dipole for 15 meters. CLS spoke on s.s.b. at the QRA meeting. YQF is working at WLYN now. The Rhododendron Swamp V.H.F. Society is now affiliated with ARRL. New officers of the T-9 Radio Club are TJP, pres.; 1BF, vice-pres.; KON, secy.; ISX, treas. LGO is General Class and has a TBS-50C. New officers of the So. Eastern Mass. ARA are FNB, pres.; LAZ, vice-pres.; CZW, secy.-treas.; ATI, TZU and CQT, directors. The club is going to hold a Radio Festival at Edaville in So. Carver on July 28. IME, Winchester, is on all bands. KN1AQL still is working DX on 15 meters with a new three-element beam. AVY has gone to W6-Land. RUC has a 4-150A ABL on s.s.b. THO, our 6-meter PAM, sends in news on that band: K1s AFS, APX, AZQ, BFK, BHP, BHR, BKT, W1s EPW, GE1/m, GQL, GZB, HUS/m, IDG, IKO, LKU, LQU, PSV, SKP, SAM, SSG, WAW and JRG are mobile on 6 meters. CEI, GQL, JRG, AQE, GRT, ZOC and HTJ have 8X2. VCZ is moving to W4-Land. K2HDA/1 was in Cambridge in April. FOS/m has a "HALO". 2RRP/am, 2ADD mobile. LKD has a 6146 rig on. MER has a Gonset. KCR says he hears W4s on 6 meters and a W1VO1. AHE worked New Jersey, New York and Connecticut and was heard in Pennsylvania on 2 meters during inversions. He has a 820B on 6 meters. HIT and FAW were on during the "Alert" in Cambridge. Traffic: (MAY) W1EMG 507, EPE 109, EAF 75, W8TOS/1 74, W1FJJ 55, GNX 43, AUQ 36, ZEN 19, ATX 14, UKO 10, TZ 8, RCQ 6, CZW 4, LM 3. (Apr.) W1FJJ 86, WLU 21, AOG 14, BGW 10, RCQ 6.

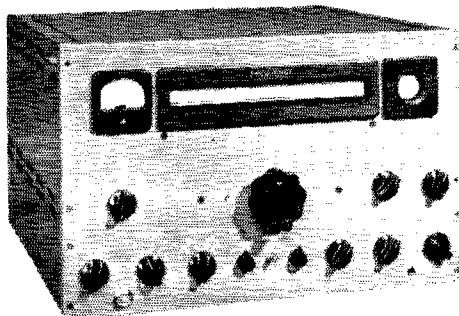
WESTERN MASSACHUSETTS—SCM, Osborne R. McKeaghan, W1HRV—SEC: RRX, RM1; BYR, PAM; MNG. The W1CW Net, which meets daily on 3500 kc, at 1900 EST, needs support from the Worcester and Pittsfield Areas. How about it, some of you c.w. men? The West Mass Phone Net, Wed. at 1800, needs more traffic and with more activity could expand to more sessions per week. Certificate endorsements go to BVR as RM and ORS, also to ZEO as EC and OBS. The Berkshire County Assn. held its annual business meeting June 7 at Rosa's Restaurant in Pittsfield. A new slate of officers was elected, the food was enjoyed and a discussion of West Mass activities was held with the SCM. The Saint Marks School Short Wave Society of Southboro recently became affiliated with the ARRL. The Annual Gafest of the Central Mass. Assn. was held in Worcester June 8. The SCM regrets a last minute change of plans that made it impossible for him to attend this year. SFF, Worcester Area EC, is organizing a Tornado warning network to work with the Worcester Weather Bureau. Anyone interested from Worcester, Hampden and Hampshire Counties, contact him. The SCM has available information on speakers

(Continued on page 118)

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ELDICO SSB-1000



ELDICO SSB-100F

ELDICO SSB-100F

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.
Frequency Stability: Control Oscillator—(800 to 1300 kc) +100 cycles after two minute warm up period. Output frequency—within 300 cycles after five minutes warm up period. Dial accuracy + 2 kc after calibration.
Tube Lineup: 22 tubes, including two rectifiers, two voltage regulators, one oscilloscope and one 5894 power amplifier.

There's a lot of good commercial equipment on the market today. And some home-brew gear rivals the best of the factory built rigs. But if you stop and take a critical look at virtually all of these handsome packages you find they are the work of "specialists." Manufacturer "A," convinced that SSB is the panacea for ham work has virtually forgotten that a lot of us still like to pound brass or work AM. W2XXX, who never heard that you can modulate a rig, has a gorgeous c.w. station that can't be employed for anything else. And so it goes, making the selection of a well-rounded design more difficult than might appear at first.

Eldico, long-time pioneers in designing completeness into transmitters, spent a lot of time over the coffee pot and drawing boards to produce the newest and finest package, that's as much at home on the SSB frequencies as in the midst of trunk line A or a 75-meter AM roundtable. What does this mean to you? For one thing you'll get a chance to really enjoy ham radio at its fullest and richest . . . you can find out what the other man likes and you can compete on even terms. Price? For \$795 you start with the 100-watt SSB-100F transmitter exciter. With it you drive ANY final amplifier; or you can add, for \$745, the SSB-1000 kilowatt amplifier. Look over the specs, compare with anything on the market, and then get together with your Eldico distributor to find out what terms can be arranged to put this "Years ahead" gear in your shack.

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Low Drive Requirement: 3 watts P.E.P. will drive to full kilowatt. Pi-network Output: Single knob bandswitch. High-efficiency silver-plated Pi-network output circuit. Matches wide range of antenna impedances.
High Harmonic Attenuation: High-Q plate and grid circuits and Pi-network output circuit provide maximum harmonic-attenuation.
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Peak Envelope Power:
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 Output SSB-625 watts
Frequency Range: 10 thru 80 meters.
Tube Lineup: 9 tubes; two 866, two OA2, one OB2, one 6AU6, one 1CP1, two 4 x 250B.

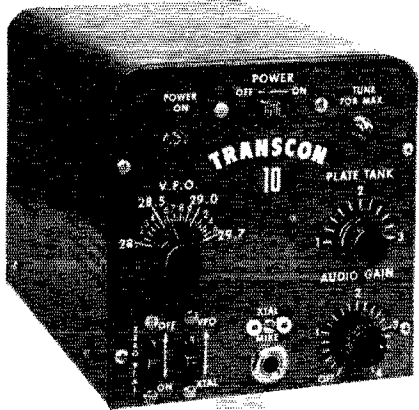
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from club meetings which he will gladly send to clubs interested. The Mountchusset Club in Fitchburg enjoyed an FB talk on antennas by PMZ. The Town of Oxford has received RACES approval. The May C.D. Alert was very successful with all radio communications doing a fine job. Easthampton set up a 10-meter net to enable more towns in Sector 4C to be in radio contact with Sector headquarters via the 6-meter channel. AZV has received his DXCC certificate and most of the contacts were made with 30 watts power. HJL and KQK are teaching a class in Pittsfield for Novice and General Class licenses. New Novices are BUM in Pittsfield and BHZ in West Springfield. BKG is on s.s.b. with a new Pacemaker and is president of the Pittsfield Radio Club. DGA is working on a 300-watt final for 6 and 2 meters. JJO has a kw. about ready to go on 6 meters. WNHJF passed the Technician Class exam. AGM reports good luck with a new vertical antenna. FZY has a new 15-meter beam up and working. Holders of official appointments, please check your certificates and send them in for endorsement. The SCM would like to hear from someone who would be interested in an SEC appointment. Traffic: (May) W1UEQ 191, BYR 119, LDE 46, DGL 33, DZV 29, FZY 25, TAY 25, HIRV 10, AGM 8. (Apr.) W1FZY 25.

NEW HAMPSHIRE—SCM, John A. Knapp, W1AJJ—SEC: BXU, RAS; CRW and COC. PAM: CDX. GSPN meeting time is 1900 on 3842 kc. Mon. through Fri. and on Sun. at 0900. NHN (Traffic Net) meets Mon. through Sat. at 1900 on 3685 kc. NHEN (RACES) is on 3850 kc. on Sun. at 1300. SEC BXU reports that during the State c.d. alert on May 17 for test of evacuation of schools, all counties checked in on RACES network on a last minute alert and forwarded pertinent information relative thereto to C.D. Hq. in Concord. GJM, HCD, IMB and YGV were operators at Portsmouth Naval Base Amateur Radio Station on Armed Forces Day. GSPN certificates go to COC, SAL, MKA, FYF and ZDS. NHN certificates go to GJM and FUA. K1AXQ has a new cubicle quad 10-meter skywire. On June 6 the Concord Brasspounders and assembled guests were treated to a talk by Danny Weil, VP2VB of *Yasme* DX-pedition fame, who gave a most interesting account of his voyage aboard the *Yasme*. Approximately 90 hams and guests attended. A hearty welcome to new hams: KN1s ATH, VTB, ATL, ATT, AVF, AVP, AVR, AWF and K1s AXA, AXQ and W1G1B. Traffic: (May) KN1BCS 138, W1HOU 82, GJM 41, H1Q 28, PFU 22, ENM 16, CDX 10. (Apr.) W1SAL 150, FUA 95, GJM 37, ENM 14.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ, PAM; YNE, RAS; BBN and BTV. K1ABR is a new OPS. VZP received the award of outstanding ham radio operator of the year of the Providence Radio Assn. at the PRA annual dinner dance on May 18. 2LH1/1, pres. of NCRC, has been transferred to Boston and JBB, vice-pres., is in charge of the club's activities now. New culls on 50 Mc.—K1s AJC, BWX and AMQ. FIG has completed graduate school at Boston U. and looks forward to having more time on the air. LPO is operating portable on 50 Mc. from Coventry for the summer. JIV is now active in MARS as well as amateur activities. YRC is pleased with the results he is getting with his new G-65B mobile/fix receiver. K1ABR is building a 10-meter mobile rig. YNE has moved into a new QTH. HKN is active on 40-meter phone and 20-meter c.w. ZPH was elected temporary president of the East Providence Amateur Radio Assn. at the organizational meeting of this new club on June 1. Other officers of the EPARA are OLO, secy.; and HLY, treas. M1U has his General Class ticket. LJM is on 40-meter c.w. On May 7, the BCRA had several visitors from the Warren C.D. Red Cross Unit. The ARRL Film, "One Every Minute," showing scenes of c.d. radio and Red Cross working together, was viewed. Traffic: W1H1J 29, HLY 29, ZXA 27, VRC 26, VXC 23, KDS 21, JJW 11, TGD 10, HKN 5, YRC 4.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK—SEC: SIO, RM; BNV, PAM; SEO, Nets; VTN. Mon.—Sat. at 6:30 P.M. on 3520 kc.; VTPN, Sun. mornings at 9 on 3860 kc.; GMN, Mon.—Sat. at 5 P.M. on 3860 kc. Thirty-six messages were handled on VTN during May in 14 reported sessions. New members reporting in are BOY, FND and VSA. Our PAM reports 4 Sunday sessions for VTPN with a total of 54 different Vermont stations reporting in. New on VTPN is DMZ of Shrewsbury Center, who hails from Connecticut. Helping with NCS were LYD and ZYZ. Seventy-three different stations checked in to GMN handling 43 messages. AVP's OO, EC, OPS and OBS certificates were endorsed. ZEW has graduated from high school and is employed with G.E. in Pittsfield, Mass. The newly-appointed RACES State Radio Officer is AUE. We welcome UCU to the State from Rhode Island. KN1BVH is new in Rutland. New in Marshfield is KN1BOL, operating a Globe Scout 65-B transmitter.

(Continued on page 120)

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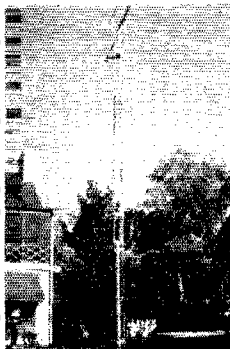
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NORTHWESTERN DIVISION

ALASKA—SCM, Dave A. Fulton, KL7AGU—KØILD, operator at USA, is returning to the States and hopes to work some of the KL7 gang from his State-side QTH. CDF reports that in looking for a Fairbanks contact he has worked 58 countries and WAC but not a Fairbanks station. CDF is active on 14 21 Mc., c.w. and phone. BJD is NCS for the Sourdough Net, with BOU, BJW and BZJ as ANCSs. REW has a new Pacemaker. AYZ has a new Johnson 500. AZI and MS are on from the new QTH at Sisters Island with a new Pacemaker. BTU, of Kodiak, was a recent visitor to Anchorage via the Coast Guard cutter from Kodiak. BJD reports 83 check-ins on the Sourdough Net for the month of April and a traffic count for the net of 89. Traffic: KL7USA 317, CDF 18.

IDAHO—SCM, Rev. Francis A. Peterson, WTRKI—Mobile hobo hams are on the road everywhere. Your SCM was visited by AWT, SOO, OTL and 4LBU recently. VQC has a new car with Morrow equipment. EMT was appointed Net Control for the CARS Net. ASA broke down and got on phone. Will NH go and do likewise? WNTHRW wrote to correct his call in a QST report. The Lewiston-Clarkston Club is now incorporated and planning ARRL affiliation. GMC was visited by his brother, JPH. RQG is reported moved to Spokane. The Pocatello Club has applied for affiliation with ARRL. GCO fixed mobile, then the company sold the car. YBA vacationed with his family in Eugene. CUM always seems to have a clear channel, but is moving to Seattle with her OM CKX and Q18. WN7GGV still is waiting for his phone ticket. Don't forget the hamfest Aug. 2-3-4. Traffic: W7GMC 495, VQC 27, EMT 17.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WX1—SEC: KUH, PAM; EOJ, RAI; KGI, Montana Phone Net: Mon.-Wed.-Fri. at 1800 MST on 3910 kc. LER and IGU joined Silent Keys. Ø0VY moved from Great Falls to W5-Land. WNTNI is a new call at Baker. YPN, CQC, FL, HQF, SFK, ZQA, TNJ, Y18, GEF and DWJ earned Net certificates for having the best attendance on the Montana Phone Net for five months. EPZ is on 6 meters. ZCO went to Ohio to study automatic bowling-pin-setters. TTC and family went East for a vacation and more schooling. VDZ and family went to Wisconsin on vacation. TAT is home on leave from the Navy. LBK received his 1st-class radiotelephone license. The Harlo Radio Club had a booth at the Harlowton Hobby Show, May 4. The club station, TRU, was operated for demonstration purposes. The Missoula Ham Picnic was held May 19 in the Pattee Canyon Picnic Grounds. FSP has a new DX-100. FTD has a new 75A-4 and a Triband beam. Recent appointments: JFR as EC for Butte. Traffic: (May) W7TKB 152, CQC 20, YPN 25, UWY 20, OIQ 12, WRK 12, OOG 11, FTD 8, DWJ 7, NPV 4, YQZ 2, YUB 2. (Apr.) W7TVX 26, MIQ 12.

OREGON—SCM, Edward F. Conyngham, W7ESJ—APF accounts for his activity by having the highest traffic score in Oregon for some time. TLC has moved to Ingewood, Calif., to take a 65-week course for his E.E. degree, then will return to Oregon, or a new job. LT stacked up a high traffic total on MARS. OMO, who publishes OSN News, has just returned from Spokane where he visited his daughter. QBO has finished modification of a Navy TCS and is now enjoying it on the air. FPW is busy making preparations for the arrival of the USS Nautilus. OUR, MARS Director 6th Army, paid a visit to Oregon and had a meeting of the gang at the Army in Portland.

(Continued on page 122)



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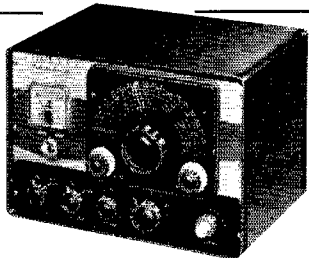
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WGB completed modification of the c.w. section of a Navy TCS transmitter that sounds beautiful. HDN still is on the sick list. AJN is now net manager of OSN. FIF is modifying a Navy TCS. JDX has been elected the new SCM for Oregon. Reporting stations should forward reports to him after this month. Traffic: (May) W7APF 1005, ENU 181, TLC 57, LT 34, OLU/7 29, OMO 18, VBF 2. (Apr.) W7APF 804, TLC 627. (Mar.) W7TLC 510.

WASHINGTON—SCM, Victor S. Gish, W7FLX—The West Seattle Amateur Radio Club officers are LCS, pres.; TWU, vice-pres.; PN, secy.; CWN, sgt. at arms; WAE and WN7IKK, stewards. The Valley Amateur Radio Club of Puyallup is showing movies at each meeting. EHH is mobilizing. PGY and BA reports the biggest traffic month. BXH now is going in for hydroplane-racing. WQD is running up traffic totals. AIB is rapidly getting the new shack completed. GVV is trying out shortened antennas on a small city lot. EVW went on a trip East to pick up a new car. VAZ turns in his largest traffic score. K7FAE reports many phone patches, lots of schedules and plenty of DX. HNQ has been transferred to Canada. K7FEA reports suspension of amateur band operations because of lack of licensed operators. ZCZ transferred to KL7. WAH's school work is cutting down on his traffic count. He plans to operate 7 from the Seattle YMCA Radio School this summer. AVM is back to normal again after surgery. All those holding appointments are requested to check expiration dates and renew if necessary. Those making BPL this month were BA, PGY, K7FEA, VAZ, K7WAT, K7FAE and K7FBN. Add to April BPLs, K7FAE. Orders for car license plates now are being taken by the State. JPH was up from California for a visit and stayed with PGY. AUK took an auto and vacation trip to New Orleans. JNC has 100 countries confirmed. Traffic: (May) W7BA 3902, PGY 2845, K7FEA 1880, W7VAZ 1232, K7WAT 663, FAE 637, W7WQD 163, APS 158, K7FBN 136, W7FRU 134, WAH 89, ER 62, JC 62, AIB 58, AMC 36, USO 25, GVV 19, LVB 10, BXH 9, EVW 2, HDT 2. (Apr.) K7FAE 710, W7FRU 210, WAH 131, GVV 13, YFJ 2.

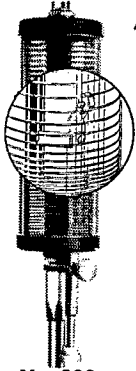
PACIFIC DIVISION

NEVADA—SCM, Albert R. Chin, W7JLV—SEC: JU, ORSS; VIU and YNO. Sorry to have missed last month's report because of a sojourn in the hospital. NARA elections were held May 14. Re-elected for their outstanding job in reorganizing the club were TQE, pres.; PC, secy.-treas. New officers are MAAL, vice-pres.; TZL, sgt.-at-arms; CX, trustee; and Board of Directors are JLV, chairman, BYR, Chet May, TQE and PC members. Visiting hams are invited to participate in the Reno hidden transmitter hunts every Fri. at 8 p.m. P1ST on 29.072 Mc. Meet the gang at the intersection of N. Virginia and Sierra Sts. Be prepared for anything—buried transmitters and operators, modulated signal generators, etc. JU reports the SNARC at Las Vegas is now incorporated. Application is on file for SXD as the club call. YLO is active in Las Vegas on RACES organization. The SNARC awarded WAN certificates No. 44 to VZS and No. 45 to 9HYM, of Penitente, Ind.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W8YHM—Asst. SCM: Roy E. Pinkham, 6BPT. SEC: NVO, RM; ZRJ, PAM; OFJ and WGO, MAIG's appointments as ORS and OO were endorsed, as were NMV's as EC and PBC as OES. YHM is assisting KN6YSZ is getting information relative to the forming of a new club in Felton. K6BAM is active on 144 Mc. K6JFS and K6QHL set up 56-Mc. rigs in the Fiesta Bldg. at San Mateo on June 1 for the Scout-O-Rama. NEPC reports its Field Day location was in the hills west of Burlingame. C'FK, at the request of the chairman of the affiliation committee, made arrangements with K6DV, W6QBO and W6NX to attempt radio contact with amateurs in Okayama, Japan, these contacts to confirm the friendship of the members of the SCCARA for the members of its counterpart club in Okayama. PHN is using a new 75A-4 receiver with FB results. CZV worked six Europeans in half an hour with his 14-Mc beam up only twenty feet. VQK reports the Field Day location of the MBRC was on Fremont Peak. K6JAW has left the P.T.&T. to go into business for himself. ZTX is moving to King City and will be on from that location with a 600-watt rig soon. RHA announces that the MTN roundup will be held in Watsonville again this year. MBRC welcomed the following new members: Mike Gleeson, Milan Terkla, RHA, and J. C. Valentin. This writer wishes to extend the welcome of the League to those new members and hope to number each of you as members of ARRL. At their May meeting members of the SCCARA took part in a transmitter hunt. Traffic: (May) K6DYX 865, W6BPT 663, K6CGA 351. (Continued on page 124)

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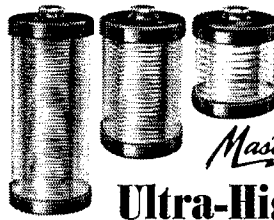
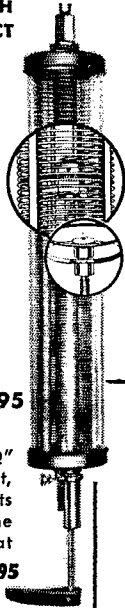
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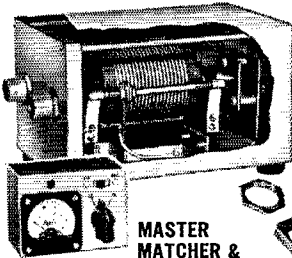
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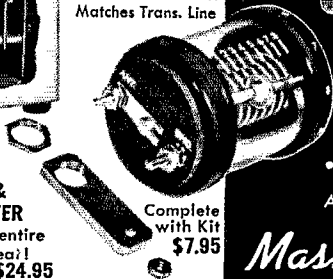


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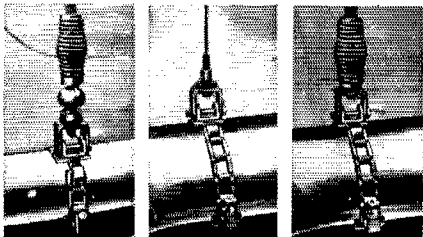
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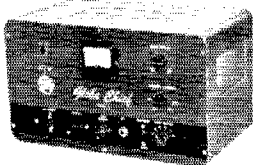
I am writing to tell you how much I like my Globe Chief 90 transmitter. I purchased the Chief in kit form and found the assembly very simple. I put it on the air and found that it is the rig you say it is, as I received 589, 599 reports from various states. I have had my novice license about two months, and with the Chief I have worked thirty states, VE and WP4. Have just tried the Chief on 15 meters and found that it loads nicely with no TVI! I wish to thank you for putting such a fine transmitter on the market.

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GZ 292, W6PLG 283, YHAM 182, YBV 122, ZLO 60, AIT 49, K6LGA 17, W6MMG 14, OIL 13, HC 10. (Apr.) K6CGA 166, W6HC 33.

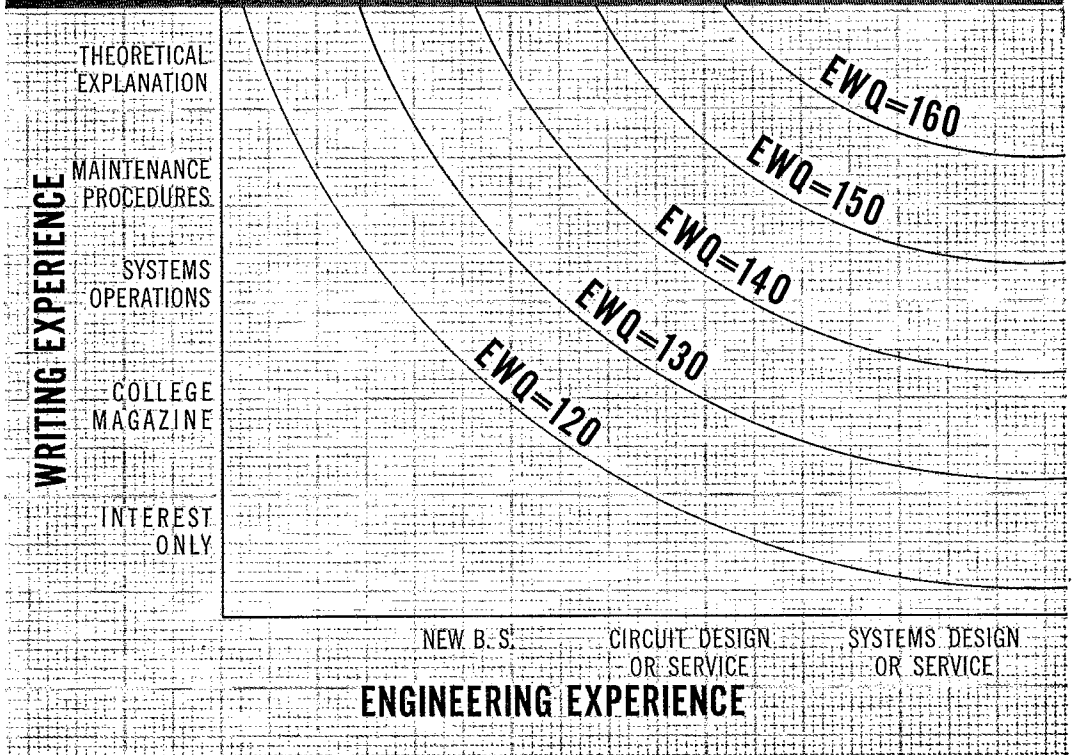
SAN FRANCISCO—SCM, Walter A. Buckley, W6GGC—The San Francisco Radio Club had a big turnout at its May meeting and all reported enjoying the film "Mr. Sun," the "Oscar" of electronics. This Telephone Co. film is acclaimed as "the best" and any club that gets the opportunity of obtaining same for showing at its meeting should grab it. OST put on the 29ers hidden transmitter hunt. Ten cars took part in the hunt. KZL again requests that all fill out completely the Form 7 Emergency Corps application showing gear, activities and frequencies and send same to him. He will compile information and forward to ARRL, FCC, ECs, local C.D., etc. Many of the local amateurs took in the Fresno Hamfest. GGC was initiated into the "Buzzards Club," an honor that he has awaited the past couple of years. JWF has been busy at CXO checking into the different nets and asking the boys to write to FCC saying why the amateurs should retain the 11-meter band. Took in the Sonoma County Radio Club meeting with OPL and enjoyed renewing talks with the old members and was happy to meet many new members. It is good to see so many of the young chaps taking such an interest in the hobby. K6GES, formerly W9UYX, now is active in NTS. He is net control station on RN6 on Tue. nights. Walter hopes to have a kw. rig on the air soon. AIII was missed at the 10-meter transmitter hunt. He is now the proud owner of a new station wagon so installation was not completed in time to "win" as usual. GQY reports that he will not be as active during summer months because of other commitments. Hurry back, Joe, the boys will miss those relays. Traffic: W6GQY 736, QMO 545, K6GES 219, W6GGC 29, JWF 14, GCV 12, GHI 8, BIP 4.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—Congratulations to K6QIF, who is not only the new EC for Sacramento County but also is the newly-appointed Radio Officer for RACES in the Sacramento Area. Keith is doing a FB job on the local nets with the able assistance of OPY, RSZ and PIV. Thanks to BLW, Oroville, who has formulated a RACES plan which soon will be ready for approval. Under the present plan all of Butte County may have the same Radio Officer for their new program. KR6RX (W6HJP) still is with the Air Force in Okinawa. Art works into Sacramento fairly consistently and is eagerly awaiting his return to the old home town. Next month we'll have all the results of the Sacramento Clubs in the local Field Day contest. WWW has been elected president of the recently-formed North Hills Radio Club of Fair Oaks. Best wishes to the North Hills group. We understand they are going to affiliate with the League. Speaking of affiliation, MWR says the Red Bluff Club is affiliated. It's a real FB deal, fellows and gals. Have your club secretary write to Headquarters for all the information. Our monthly reports can be no more interesting than the information you give to the SCM. All clubs and individuals are urged to report activities regularly to the SCM. Also, we need more ARRL members. The more members we have, the more space we are allocated in QST. Traffic: K6SXA 47, W6CMA 39.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—The Fresno Amateur Radio Club held its Annual Hamfest in Fresno and had an attendance of 430. A great time was had by all. AK won the Phasemaster s.s.b. exciter. The Buzzards held their annual convention in Fresno prior to the Hamfest and there were 62 buzzards and guests. SUV was in charge of the Buzzards dinner and accommodations. PPO is vacationing in the Southland. K6RIP was a pilot of one of the B52 planes that flew around the world. K6EIA won the 4-125A at the Buzzards convention. TSI is going back to the old country. AFO and LFF were recent visitors to Fresno. LOS has recuperated from his recent illness and is heard back on 75-meter s.s.b. SVM has a new WRL Globe Scout. K6KFW got the bugs out of his Pacemaker and is running a 304TL in the final. AOW is vacationing in New York. ONK has a new mobile rig on 75 meters. QON is building a 200-watt mobile rig. KN6ZLI is the newest Novice call around town. The Indian Wells Valley Amateur Radio Club in China Lakes has been affiliated with ARRL. If you want to be heard from, send me some news about your club. The Turlock Radio Club has appropriated a 58-ft. crank-up tower on wheels. K6GOX is working 6 meters on week ends and going to college during the week. We hope everyone has a very nice and enjoyable vacation this summer and comes back with a lot of fire and vinegar for this fall's activities. Don't forget the news. CMA reports that CVN is on 3525 kc. at 1930. Traffic: W6ADB 88, EBL 19, JPU 5, JUK 3.

(Continued on page 128)

what's your EWQ?



EWQ = engineering writing quotient

To find your EWQ locate on the "Writing Experience" scale the type of writing you have done and on the "Engineering Experience" scale, your experience. Read your EWQ from the curves.

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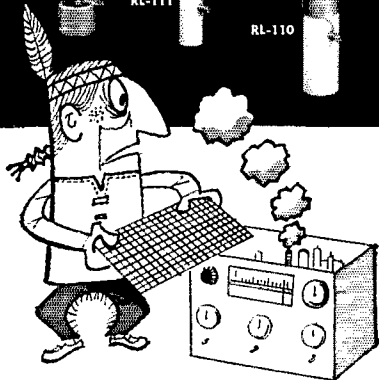
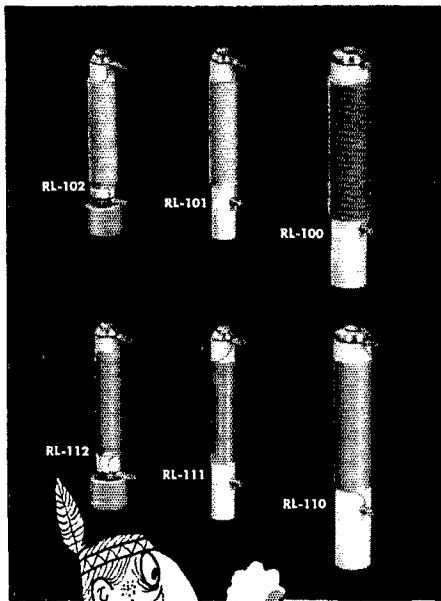
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ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC; ZG, PAM; DRC. Had a very nice report from the Alamance County Radio club and the Kinston Club. Stanley County has organized a new club, so has the Cleveland County group. The amateurs in Cleveland are planning may operations, among which are RACES training program and a BIG Hamfest to be held Sept. 1, 1957, at Brackets Cedar Park, about 14 miles from Shelby. Reports reaching here indicate that all counties with RACES Plans filed are drilling their nets at least once a week. Ninety-two per cent of these nets are on 10 meters, the rest on 2 and 6 meters. Eighty-three per cent of the AREC nets are conducting net drills also on a weekly basis. In event of a natural emergency the State RACES Command and Information Net will be activated on 3993 kc. and handle emergency communications (a new net) and route it to the counties with RACES programs. At that point distribution will be on the County RACES frequency. This should eliminate much of the confusion in the past. The Tar Heel Net will operate on 3865 kc. and approximately 60 per cent of the MARS operators will have liaison with these nets and establish communications with the Third Army. This is in accordance with the N. C. State MARS plan. All the groups have had net drills as individual nets and should work exceptionally well when operating as a team. My sincere thanks to those men who have made it possible.

SOUTH CAROLINA—SCM, Bryson L. McGraw, W4HMG—FFH, our PAM, reports on the tornadoes of May 8-9 that struck the Cheraw, Jefferson Areas. Joint NCS was handled by FFH and COA and both reported outstanding work by mobiles ULH, TYS, DX, HAP, GOV and AUL, also emergency-powered EOZ, along with fixed stations UFP, HCZ, HMG, ZNW, HDR, HWZ, PED, QRX, LDS, GLU, HRO and K4s FMC, AP'U, G1F, EGI, JFN, HHM, EJR, FAI, BIO, AII, IID, AHO, IBX, GHT, GGF, HCD and FGD. The SC C.W. Net, with AKC as NCS, stood by with full support during the entire emergency. The Charleston County RACES plan now is in the mill and names 3CCE/4 as County Communications Officer to act as NCS on 145.35 Mc. with 17 locations named to date. K4KCO is splitting speaker cones with his PB signal here. Thanks to the Shaw-Sumter Club for making my annual visit such a pleasant one. The Mayor of Andrews finally has his ticket with the call K4PJE. Woolly asks all hams passing through his fair town to stop in for a chat. Congrats to THH as EC for the N. Augusta-Belvedere Area, Congrats to AKC on the best emergency test with his c.w. net that I have ever heard. Listen at 1900 EST on 3795 kc. and hear a top-notch c.w. net in action. Rock Hill RACES, with HJK, VEP, JCP and others, is rolling along with its county plan, the NCS call being JCP. The Mobile Net is suspended until fall. The Palmetto Club now has a de luxe 20-meter beam. Congrats to K4IE on becoming a new AREC member. Join the ARRL. Do it today. Traffic: W4AKC 410, K4EJR 329, BVX 303, JFN 135, GAT 96, W4GAW 88, Y4A 57, CJD 35, K4HQK 19, HCD 18, DFW 17. (Apr.) K4BVX 160.

VIRGINIA—SCM John Carl Morgan, W4KX—SEC; PAK. There was record activity in the May Virginia QSO Contest. The 29 logs submitted show at least 202 stations in 54 counties participated. The winner was K4ASU, followed by W4UBC, KN4KGZ, ZCY and IA in that order. Full details will appear in the Bulletin. See announcement of the Virginia Free-For-All Party in next month's issue. The Roanoke Hamfest was a howling success with some 225 hams and kinfolk attending. The Shenandoah Valley ARC reminds us of the Dickey Ridge Hamfest to be held Sun. Aug. 4, on Skyline Drive. Mobiles of the Fredericksburg gang, aided by several from the Greater Washington Area, assisted in Fredericksburg during the Jamestown Festival Week Parade. K4s LKQ, IPA and DBC held a demonstration at the High School Science Fair. VON Net activity has been reduced to Tue. and Fri. for the summer. We regret to hear that VN stalwart K4DBC is moving to Illinois. Welcome to Virginia, K4MEV, ex-W8LEE, and K4DSD from Florida. KN4PRP is a new ham in Fredericksburg. TFX is home from G.W.U. KFC raked up country No. 245. K4CAN, K4OQR and KN4OKZ handled traffic from the Clifton PTA Fair. EC PAK urges all ECs and others to get rigs and schedules ready for the hurricane season. BRP is planning a skeed with XYL IKA while he's away from home. ZM complains that DST in that part of the State snags net participation. Traffic: (May) K4EZZ 567, W4IA 439, QDY 316, K4MEV 261, AET 152, W4SHJ 150, K4GWO 148, W4KX 101, K4ELG 68, DKA 58, W4PVA 55, AAD 51, FLX 50, BZE 49, K4JLO 43, DBC 25, W4APM 22, KFC 17, CVO 13, K4DSD 13.

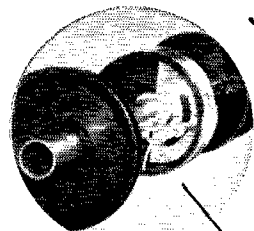
(Continued on page 128)

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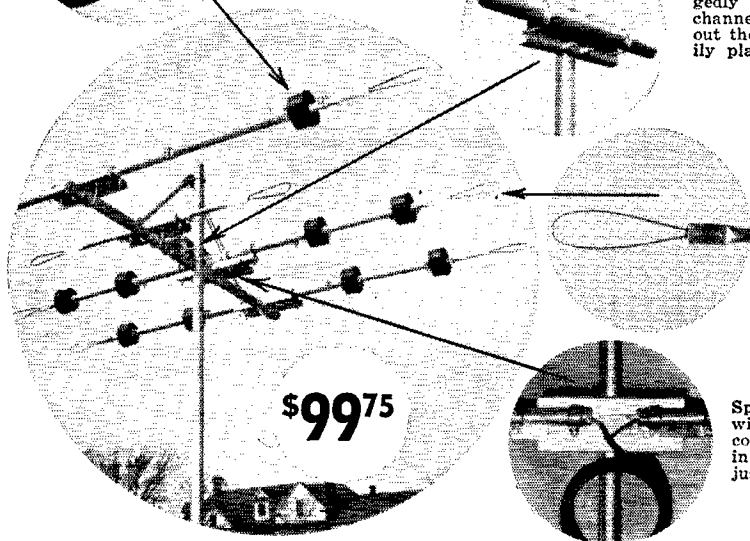
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3 Element	152T-3	8 Aver.*	25 Aver.	Less Than 1.5:1	1 Kw	59°	216"	1 1/2" Hot Dip Galv. Steel	1 1/8, 1, 3/8, 3/4"	.058, .049, .035	6061ST6 Ant. 41	31', 9"	58#

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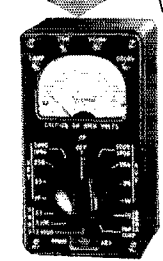
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W4THM 13, ZM 10, K4BYS 7, W4CWB 6, (Apr.) K4DKA 112.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM; Festus R. Greathouse, 8PZT. SEC: KXD. PAM; FGH, RMS; DFC, GBF, HZA and PBO. Brothers K8DLX and DLY are working lots of DX. Both visited PQQ. NYH won 1st prize of an AF-67 at the Roanoke Hamfest. He is getting a new SX-100. KN8EYS is very active and is doing a good job on his WAS. K8DDB moved to an antenna farm location. ESH has been working 6-meter DX during recent openings. K8CSG made WAC. IRN received his DXCC and is searching out rare DX. SET is well on the way to completing WAS, GBF and AKQ attended the Quarter Century Club meeting in Pittsburgh. PBO has moved to Ohio. The new SEC is W8KXD. Please assist Alvin in setting up the AREC program. JM is very active now. Henry Payne is back on with the call K8DYA. BZY has his General Class ticket and has a new SX-99. UYR and GEC are on 14 Mc. chasing DX. PQQ worked FV8AA on phone and c.w. for a new one. K8GEQ is a new ham in Princeton. He is on with an SX-101 and an HT-30. GGC and GCZ will operate from their camp again this summer. Traffic: W8FNI 115, KXD 94, HZA 53, SNP 45, CNB 10, BWK 27, PZT 7, CSG 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonmore, W8DML—SEC: NIT, RAI; KQD, PAM; IUF, OBS; K8BTU, OO; OTR, K8CPQ, a very active member of the Boulder gang, has moved to Dallas. We will be watching for you from W5-Land, Norm. You guys should be getting your power plants back in shape after the big run during Field Day. One never knows when they will be needed again for an emergency. Congratulations to all who participated in the Radio Chess tournament, RRV, IA, UX1, CHM, FKQ, YFL, NIT, ALI and others who handled the communications. The president of the Boulder Chess Club expresses his appreciation for the cooperation and satisfaction with the smoothness with which the operation was conducted. We are happy to hear that TV is feeling better. WME, K8EGJ and EDK are the antenna fixers in Montrose. Did you know CYT was responsible through amateur facilities for the help and rescue of a number of people stranded on the highway between Scottsbluff and Cheyenne, including all passengers on a trailways bus, during the April blizzard? K8CEN is in his new QTH. CVG still is digging for uranium. TDG, NVX, WPY, DWZ, YCD, TX, GDC, AGU, HKQ, YEB, NVU, RHM and AYC still are trying to tell us how hard they work. DRY is from Wray instead of Center. YFL made a hurried trip to Tennessee because of illness in the family. Traffic: W8KQD 658, K8BCQ 321, W8EKG 158, K8DCC 99, W8NVU 70, BWJ 41, NIT 39, SGG 11, NWJ 1.

UTAH—Acting SCM, John H. Sampson, jr., W7OCX—SEC: GPN, PAM; DTB. The Ogden City-Weber County Emergency Net meets on 29.510 Mc. Thurs. at 2000 MST. LQE has moved to W6-Land, where he will be employed by the CAA. OCX is Acting SCM until an election is held. SAZ has a new long wire. JJD, UTM and NHQ are converting ARC-4s for 2-meter operation. LRF is vacationing in W6-Land. His mobile Morrow rig has not been heard from there yet. JJD is with the CAA in Salt Lake City in a radio capacity. The Ogden Amateur Radio Club had a new location for Field Day this year. Utah needs an RM. Applications are welcome. Traffic: W7OCX 12.

NEW MEXICO—SCM, Einar H. Morterud, W5FPB—SEC: K5DAA, PAM; DVA. The NMEPN meets on 3838 kc. (alt. 7272 kc.) Tue. and Thur. at 1800 MST, Sun. at 0730; NM Breakfast Club meets on 3838 kc. (alt. 7272 kc.) daily except Sun. at 0700. As a result of the recent poll sponsored by the Albuquerque Chapter of ARCCNM, the ARRL Board of Directors transferred the New Mexico section from the West Gulf to the Rocky Mountain Division. GRI was in the Dakotas on business. MSG has a transistor oscillator on 7, 14 and 21 Mc. and is building an amplifier. KKW has a 150-watt c.w. rig and needs Delaware for WAS. Lucille, K5GYZ, is active on 40 meters. The Santa Fe Radio Club is now ARRL affiliated. QNT attended a church conference in Omaha. SB and family vacationed in Salt Lake City. NSV attended a GOC school in Florida. POI has a 8-ft. radio-controlled boat. PBV and family vacationed in Houston and California. The term of FEB as SCM expired May 4. The closing date for ballots for election of new SCM was June 6 at which time Ray Birch, W5OZ, Route 1, Box 700, Albuquerque was declared elected. Traffic: (May) K5WSP 92, F1U 57, 1PK 27, W5TBP 9, GEM 8, CIN 7, UAR 6, ZU 6, (Apr.) K5WSP 109.

WYOMING—SCM, James A. Masterson, W7PSO—SEC: MNW. The Pony Express Net meets Sun. at (Continued on page 130)

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comes west...*

Anywhere in the entire region...
Alaska... the Pacific Area...

*about a real sizzling
electronic "sparkler"*

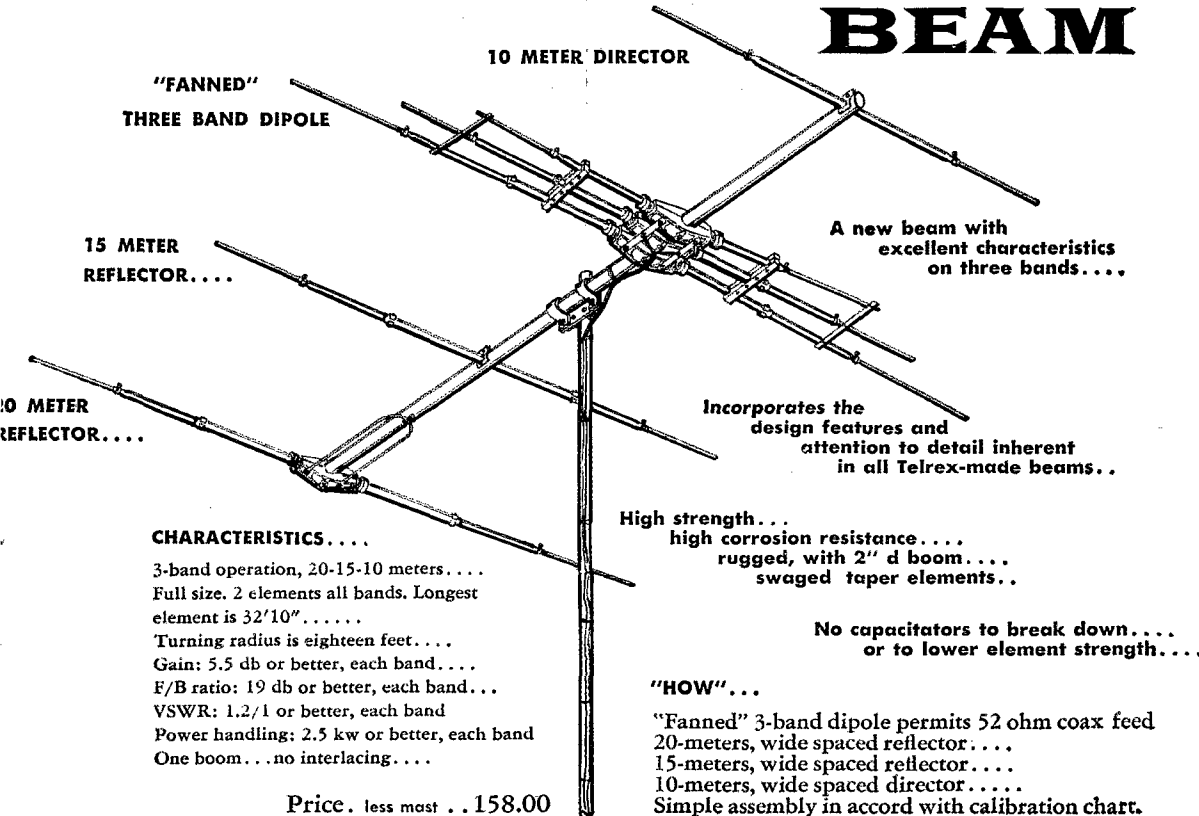
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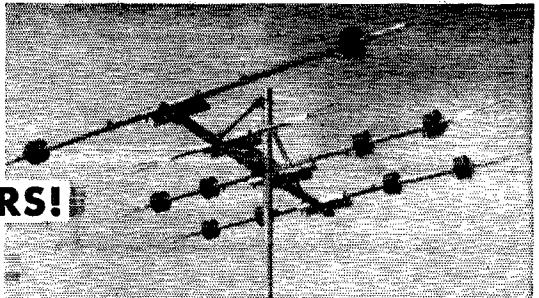
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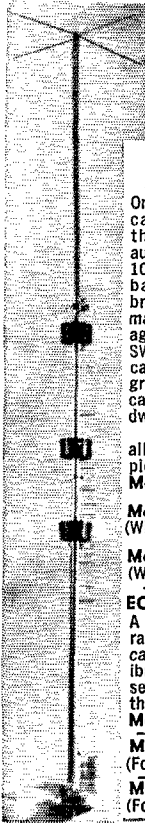
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<p>ONE ELEMENT Single three-band dipole, may be rotated or fixed in favored position. 28 feet long, weighs 10 lbs. Model 152-T1, \$39.95</p>	<p>TWO ELEMENT A space saver that can give you a healthy 5.8 db gain in signals transmitted and received! Boom only 6 feet long. Has separate 10 meter reflector. Wt. 36 lbs. Model 152-T2, \$69.50</p>	<p>THREE ELEMENT The favorite! Now with separate 10 meter reflector. Greatest power gain per Dollar, 8 db on all bands! 18 foot boom, 29 foot element. Weighs 58 lbs. Model 152-T3, \$99.75 (Additional 10 meter director element, for even more boost in power. Model AD-1, \$14.95)</p>	<p>FIVE ELEMENT The DeLuxe array that is the ultimate in a three bander! Its 12 db gain is the equivalent of increasing power by 16 times, makes a 200 wattor pound thru QRM like a 3 KW rock-crusher. 36 foot boom. Wt. 96 lbs. Model 152-T5, \$395</p>
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COME TO HAM HEADQUARTERS, USA, AND SEE EVERYTHING!

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Only 21 feet high, but capacity top-hat and three Insu-traps give automatic selection of 10, 15, 20 and 40 meter bands; optional calibrated base loading coil manually extends coverage to 80 and 160. Low SWR to 52 ohm co-ax cable when radials or ground used. FB for vacation time, or city cliff-dwellers.

Complete with base, all hardware, and complete instructions.
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Model 80-AV \$29.95
(With loading coil for 80.)

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A 22 foot, 9 inch vertical radiator, with top-hat capacity loading and calibrated base coil for tap selection of any band, 6 thru 40 meters.

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(For 6 thru 80 meters.)

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hy-gain
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One pair of these new, improved Insu-traps in a 107 foot long wire antenna, fed at the center with a single 75 ohm twin-lead (or 52 or 72 ohm co-ax), and you have a high efficiency radiating system which automatically loads beautifully on 10, 15, 20, 40 and 80, and really puts out! Rated to handle a full KW, guaranteed a full year. Ideal for portable lash-ups.

Pair of Insu-Traps, pre-tuned for top performance (but with internal variable capacitor color code calibrated for peaking from phone to CW, or to any favored part of the bands), complete with no-solder antenna wire clamps and detailed instructions.
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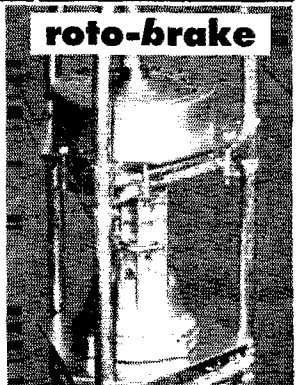
Kit of 150 ft. #14 enameled copperweld wire, special center and 7" end insulators, and 8 Burndy wire clamps.
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Amphenol 75 ohm heavy duty KW twin-lead.
Per foot, 7c

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Band	Elements	Gain	Model	Price
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2	10	12 db	210	9.95
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10	3	8.5 db	103	19.95
15	3	8.5 db	153	29.95
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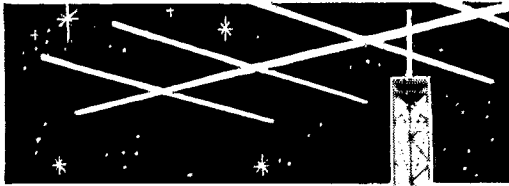
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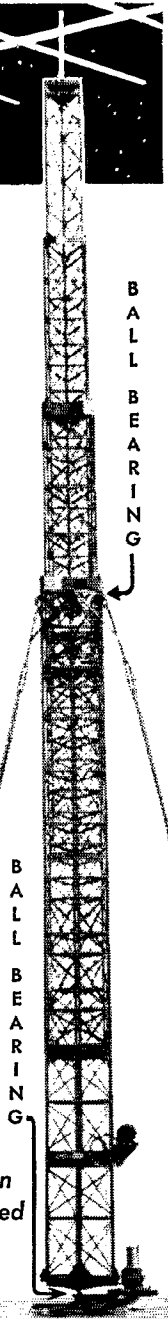
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purchased a 51SB to go with the 5100. EQR is hunting those final four states on 6 meters. MIS is hunting the final seven. K4AGM now has 31 states on 6 meters. ZFL has graduated from high school so K4AFF will be looking for a new chief operator. K4PIQ/M is a welcome newcomer on 6 meters. K4PMP joins the gang, as does K4PIC. K4HYL is sporting a three-element beam for 20 meters. K4BHI at last has a transmitter and converter on 6 meters. QK is thinking towers to clear the trees. VR and AXP remain loyal to 7-Mc. c.w. ZPN keeps skeds with his son but SSB seems to want his frequency. Hi. K4PIN is planning a super antenna at his beach property. RDC won a nice prize at the Mobile Hamfest. PQW was in evidence judging mobile installations. HIZ keeps busy meeting nets on all frequencies. UUF keeps threatening to leave 6 and go back to 2 meters. K4YVD works on the swing shift so misses some 6-meter openings. DAO/DEF is QRL work. BKN, Panama City, is selling the 32V-1. RKH and MFY were in fine form at the Mobile Hamfest. K4ECP/M is QRL boat-racing. MUX keeps 40-meter phone hot. PAA still is CQing DX. JLW wants to sell his beams and move to his beach home. SPP is QRL night watches at Forrest Sherman Field. K4KYW does FB 6-meter work with low power. K4APE is doing excellent work as an OO. UCY is happy with 10 meters going great guns. OKB and PJP are reviving the Sauley Field Radio Club. YES is leaving us for W2-Land. K4IYQ has a new VHF-152. AYS has completed Pency High. K4AGM, HBK, ZFL and BGG will join GMS at Fla. State this fall. WKQ keeps the rig in shape for contests. CDE meets the MARS nets from Blountstown. LRC has the 20A s.s.b. unit perking. K4AH. K4IVD and K4PMP are living within 100 yards of each other. PTK and TTM went up for the 500 at Indianapolis. NJB is QRL motorcycle. K4DDD is improving the mobile unit. RE should be in full swing at the beach with the Ranger. UUF, ZFL and RCI meet on 2 meters every night at 8 p.m.

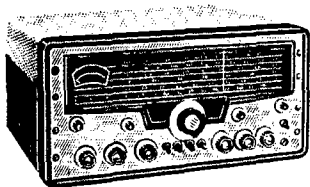
GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC; K4AUM, PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0900 EST Sun; ATLCW on 7150 kc. at 2100 EST Sun. GSN, Mon. through Fri. at 1900 PST on 3595 kc., PIM as NC; the 75-Meter Mobile Phone Net each Sun. at 1830 EST on 3995 kc., UUH as NC; the Atlanta Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc. VHW, as NC. Hats off to K4DNI, W4BYH, K4CZR, W4ZML, W4NWK, Harry and Carolyn Shirley and other members of the Atlanta Radio Club for putting on a wonderful hamfest in Atlanta on June 2. The DX-100 was won by K4JTC. KN4OUB is a new ham in Valdosta. FGH is getting ready for the 1957 SS by building a new final. The Albany Radio Club has a new charter. ETD has added an r.f. gen. a.f. osc. to his rig and hopes to measure frequency and modulation soon. K4LVE, Gladys, in Valdosta, turned in a traffic count this month of 159. K4HOU has installed a TR-switch and sure is crazy about it. KN4FDX has dropped the "N." K4PNP is General Class now and is owner of WRCD. The Charles E. Newton Amateur Radio Club of Griffin, Ga., had a wonderful picnic on June 9 at Lake Dundee. BBQ won the Regency converter. CBJ won the 75-meter mobile hidden transmitter hunt. Membership in the CSCS Club is increasing by leaps and bounds. K4DLE worked 36 states on 6 meters with 18 confirmed and is running 100 watts to a coax vertical. K4AGD has been appointed Asst. EC for Cobb County. 5SOP/4 now is stationed at Dobbins Air Force Base and has a KWS-1 at home. The Kennelochee Radio Club at Marietta now has a v.d. Viking transmitter, an HQ-140X receiver, a new broad-band converter for 2 meters, a DX-100 transmitter and a Super-Pro receiver. K4ANZ is the new EC for Colquitt and Cook County. K4APC is the new EC for McDuffie and Warren Counties. Check your League appointments for renewal. Traffic: K4LVE 159, W4PIM 131, K4BAI 100, W4ETD 65, K4CSI 61, HOU 44, W4BSV 28, ZD 21, K4GNO 10, W4BWD 6, K4GCF 4, W4PDP 2.

WEST INDIES—SCM, William Werner, KP4DJ—SEC; HZ, CB/VX transferred to Rio de Janeiro with I.T.&T. EA transferred to Atlanta with FCC. UW returned to KP4 in charge of the FCC office here. W4HZ/KP4, DV and DJ attended the USWB Hurricane Coordinating Subcommittee meeting representing USN, CAP and amateurs, respectively. DJ reported that 16 stations comprise the Antilles Weather Net with 9 active at present on 3815 kc. There are now 14 fixed stations in the P.R. Amateur Radio Emergency Net with emergency power plants, and all amateurs have permission to use police emergency plants at Arecibo, Aguadilla, Guayama, Humacao, Mayaguez and Ponce. The net also has 13 mobile stations on 3925 kc. throughout the island. In the San Juan metropolitan area we have seven active v.h.f. stations on 50 and 144 Mc. The newly-formed Radio Club of Mayaguez held its first monthly hamfest at Yauco at the QTH of HM, WT, the presi-

(Continued on page 134)

WE TRADE HIGHER!

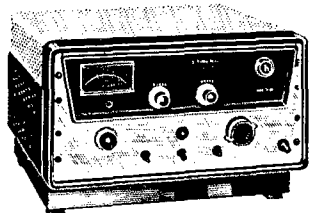
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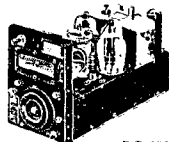
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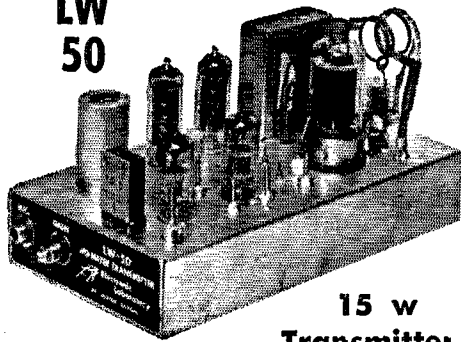
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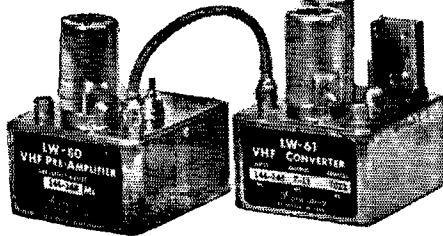
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ROUTE 2, JACKSON, MICHIGAN

dent. writes: "Este club, no se pague cuota, solamente paga la comida, lo mas económico posible. El fin de este club es unir a todos los KP4, conozcamos cada día mas, levantara en todos los corazones coraiones de hermanos, que seamos todos una gran familia bien llevada." UH has returned to the States. AFG uses a DX-100, an NC-183 and has a 2.5-kw. emergency power plant. Amateurs in the Mayaguez District are using 40-meter phone. A new station on 3925 kc. is ADY at Yauco running 10 watts to a 6AQ5 rig. ACQ has worked 50 KP4 stations on 3925 kc. since obtaining his General Class license in April. AAK Ponce, AJN Isabela and AEB Humacao are new stations on 75 meters. MC is converting a Command set to DSB. CK, CL and CO are visiting in the States. CX, EK and HZ returned from I.T.&T. labs where they studied microwave equipment to be used between P.R. and Santo Domingo. JE transferred to San Francisco. Traffic: KP4WT 18.

CANAL ZONE—SCM, E. A. White, KZ5WA.—Field Day activity was at a high pitch at Gaubon, on the bank of the Chagres River on June 22 and 23. Cubical quad antennas were used on 10 and 15 meters and an off-center-fed long wire on 20 and 40 meters. Transmitters were a Viking and a TBS-50. Overall chairman was BG, four committee JJ, equipment GD and VR, antennas WA, power and sites committee RV. KG is doing fine work at the club station. JW, at the Balboa JWB-USO Center patching servicemen through to their folks in the U.S. EP has moved from Balboa to Diablo and is now on vacation in the States. Bob Seiler has graduated from VR's code class and now has a DX-100 and an NC-300 and GD's beam antennas on 10 and 15 meters waiting for the day when that ticket comes through. MJ has gone back to Nebraska and will be missed on the MARS Net here and for his well-known modulations checks before net drills. KK and KI also have left these low latitudes for the U.S. New licensees in the Canal Zone are LW, Leland Whitney; IZ, William Comer; and a Novice, KZ5FZN, Justin Fuel, KZ5KA and RM are on vacation in the U.S. and will call us from W9OYA and W9RIH. Traffic: KZ5HA 191, VR 125, JJ 47, KA 38, HO 15, WA 12, RM 8.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: LIP, RMs: BHG and GJP. PAMs: K6BWD and W6ORS. Thanks for all the club bulletins and reports. New appointees this month: K6SRE, OPS; K6QPG and K6QZZ, OOs; K6LYF, OES; K6LAIW to Class 1 OO; W6HKD, Asst. SEC for the eastern end of the section. 9HSG now is in Burbank as K6YUU. The San Fernando Valley Radio Club has new officers: UEI, pres.; K6EPS, vice-pres.; K6OKT, secy. K6MKG has a new DX-100 on all bands. AM is going on s.s.b. ZJB and K6MCA made BPL in May. QMIN made WAC. 1AH is running 60 milliwatts to a transistor rig on 40 meters. New officers of the Los Angeles YL Club are DNI, pres.; JZA, vice-pres.; K6ANG, rec. secy.; K6ACF, corr. secy.; K6OQD, treas. The San Gabriel Valley Radio Club is now an affiliated club with the following officers: DTQ, pres.; QYY, vice-pres.; K6GKU, secy.; GMC, treas. Some nice openings are reported on 50 and 144 Mc. The OOs are reporting many cases of operation outside A3 sub-bands, and Novice harmonics in the commercial bands. Support your section traffic net, SCN, 3600 kc. 1930 PDT nightly. Traffic: (May) K6MCA 596, W6GYH 469, K6OZJ 305, W6BHG 251, ZJB 246, K6MON 189, W6HJY 169, INH 155, VSH 142, K6QZZ 114, COP 100, GUZ 77, EA 73, W6ORS 57, QLM 33, K6OQD 31, W6YSK 23, USY 18, BUK 17, CMN 17, CK 14, SRE 10, K6HOV 8, W6AMI 7, GTE 4, K6ICS 4, LAIW 4, DDO 3, BEQ 2. (Apr.) K6MCA 756, W6ZJB 195, K6MON 184.

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. PAM Grand Canyon Net: LUJ, PAM AEN: ASL 6EKMI, Southwestern Division Director; 7QZH, president of the ARC of Phoenix; and OIF, SCM. We were present at the May meeting of the Old Pueblo Radio Club of Tucson. YRB is getting great reports with a new 10-meter beam. RTT is off the air for a while. AOF is working in New Mexico. UVR has added a third section to his 2-card QSL. CDJ is keeping a sked with FQY on Mt. Bigelow and running a phone patch to the family. PYI has had 225 QSOs with ZEZKR. Ex-6KIR is back with a new coil and is on 40, 6 and 10 meters. New officers of the Phoenix V.H.F. Club are AOU, pres.; DIQ, vice-pres.; GJJ, secy.-treas.; PIW, pub. The Club-sponsored code practice, which has been on 11 meters since Feb. and was sent by KYE, will be back on the air in the fall. UXZ and WKMI can be heard on 20-meter c.w. from Boston. The Annual Montezuma Well Hamfest was the largest ever with a total of 375. There were 98 calls and 50 mobiles. It was marred by the crack-up of SU1 and YBZ in Ed's new M.G. NUL is back in Ajo after signing K6TTC for awhile. Traffic: W7FKK 278, CDJ 13, W5FTO/7 10, W7CAF 6.

(Continued on page 136)

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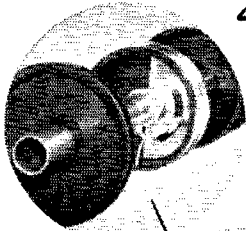
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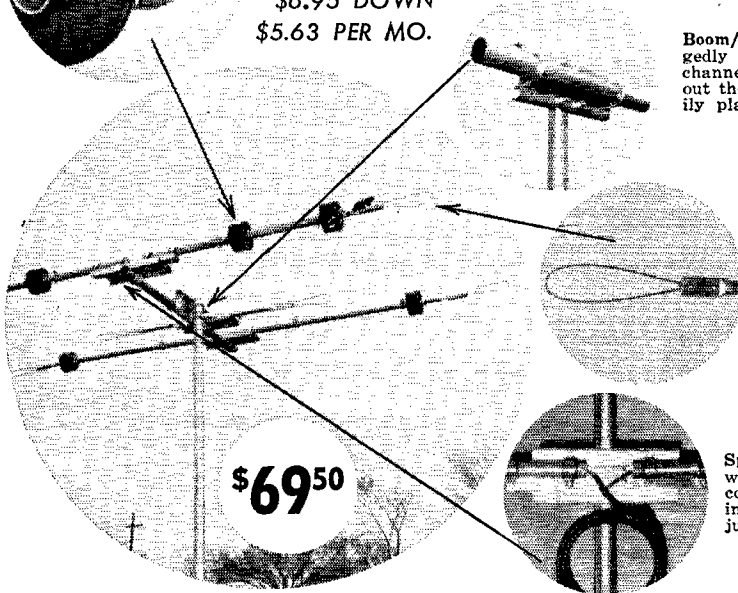
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Boom/Mast and Element Clamp;- ruggedly designed 12 Ga. galvanized steel channel for positive grip. Used throughout the entire Tri-Bander Series. Heavily plated and serrated 5/16" U-Bolts.



The "Carpet Beater" Ends;- employed on all Tri-Banders, specially designed of aluminum wire to reduce fatigue caused by vibration, increase the broad band characters of the beam, and to reduce element sag to a minimum.

Split Insulated Dipole;- fed directly with RG-8U ohm coaxial cable and coaxial line balancing choke results in low SWR on all bands. No adjustment necessary.

All specifications furnished from experimentally derived data. These figures will maintain in most installations if antenna is relatively in the clear.

	Model No.	Gain in DB Over Dipole	F/B Ratio In DB	SWR	Max. Power	Horizontal Beam Width	Boom Length	Boom Diameter	Element Diameter	Element Wall	Element Alloy	Longest Element	Approx. Net Wt.
2 Element	152T-2	5.8 Aver.	18 Aver.	Less Than 1.5:1	1 Kw	68°	72"	1 1/2" Hot Dip Galv. Steel	1 1/8, 1 1/4, 7/8, 3/4"	.058, .049, .035	6061ST6 Ant. 41	29'	36#

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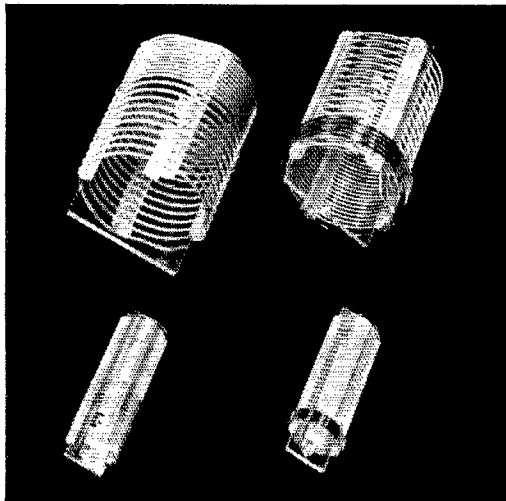
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SAN DIEGO—SCM, Don Stansifer, W6LRU—A "ham" wedding took place in San Diego recently when HME married ex-KN6LWW, who was given in marriage by her father, K6CZF. K6GAO was best man and K6LAF an usher. 7UMK/6 is a new member of the Coronado Club. K6STG has received a scholarship to M.I.T. in Boston. The Ryan Club participated in the Industrial Recreation Council Hobby Show. New officers of the Silver Circle Club are K6SEL, pres.; K6SHT, vice-pres.; K6MJW, secy.-treas. They hold 6-meter hidden transmitter hunts the 2nd and 4th Thurs. of each month. The Upper-Ten Picnic has been changed from Aug. 4 to Sept. 15. New officers of the San Diego YLRL are GGX, pres.; K6YGJ, vice-pres.; OLP, secy.; and KN6RDU, treas. SK is back at work after a recent operation. CAE now drives a new Buick. K6RWM and his wife vacationed in Yosemite and San Francisco. K6s BCG, HQZ and OLS are all working on APS-13 transceivers for 420 Mc. HJP, of Newport Beach, is now signing KR6RX in Okinawa and looking for Orange County QSOs. FVA, EC for North San Diego County, reports 28 stations checking in on 3825 kc. Sun. mornings for the AREC Net. EOT, RM for the section and an ORS, is now the EC for the AREC in Eastern San Diego County, replacing KUU, who recently was appointed SEC. Your SCM will spend the last four weeks of August in the High Sierras. Please send all news, Form 1 cards and reports to reach me prior to Aug. 3 so I can write my column before leaving on the 4th. Traffic: W6EOT 460.

SANTA BARBARA—SCM, Mrs. Dorothy E. Wilson, W6REF—Asst. SCM; Bill Farwell, 6Q1W, SEC; K6CVR. The York Mountain Boys RC and the Paso Robles RC competed in Field Day with the losing club furnishing the barbecue. FYW, MSG, MSW, TOP and KN6THH attended a meeting in Atascadero in May. The Paso Robles RC has a 5-kw. generator. EGC is DXing during the wee hours. AGO made DXCC. Maria Wallace, Poinsettia RC secy., now is KN6ZYR. Her OM is KN6ZYS. They are on the air with a new Globe Chief and an SX-99. K6JRT worked CWT for the first time even though CWT first introduced him to ham radio 30 years ago. The Poinsettia RC has a DX-100 for its shack now being built by the club members. HXP is making talking tapes of radio magazines for blind hams. Write to J. H. Laken, HXP, 4178 Beck Ave., North Hollywood, Calif., for information. 3TSU/6 now is at Casitas Springs. The Santa Barbara ARC c.d. drill was retrocast by K1ST to show what ham radio could do in emergency. Field Day was held at the Forest Service helicopter landing in Santa Ynez Mts. with the SBARC providing the food. K6OFO is moving to a new QTH. K6LXW moved from Ojai to Ventura. Traffic: W6Q1W 70. K6ELR 15, W6REF 10.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—Asst. SCM; J. Bruce Craig, 5JQD, SEC; BNG, PAMs: K5AEX and IWQ, RM; AHC. Our new RM, AHC, announces a change in time on NTX; it now meets on 3770 kc., at 1900, NTS on the same frequency, every Sun. at 0800. Please do not hesitate to check into these c.w. nets because of your "rusty key." The NCS will match your code speed, regardless of how slow it may be. Besides, here is a chance to "bone up" a bit on your c.w.! New appointments this month: BOO and AYX as OBSs, HCH and JAO as OOs. AEX reports a gratifying increase in traffic, as well as stations checking in on the NT-O Traffic Net. KN5KOO is new to the air in Amarillo. Novices: The North Texas Novice Net will welcome you on Sun. at 0700 on 7180 kc. UBW has reported to Uncle Sam and will be in "boot camp" at Ft. Smith. K5JMY is a new station on the air from Dallas. Welcome also to K5JWA, ex-K6QHI, now residing in Big "D." We would like to remind all readers again that this section has openings for all official appointments. We especially need Official Observers and Official Experimental Stations. If you will just drop me a card or QTC, I will return application forms at once. We'd sure be happy to have your support! KOR is now aeronautical mobile with a terrific signal from that mighty 15-watter! AEX and his net control stations on the NT-O had an "eyeball" meeting recently in Hillsboro, hosted by GON for the purpose of hashing net business. Traffic: (May) K5WAB 2272, FFB 613, AEX 267, IAB 157, WAT 114, BKH 77, W5UBW 52, BOO 50, TFP 29, K5EMR 28, W5AHC 19, K5HTH 12, EGB 2, (Apr.) W5UBW 158.

OKLAHOMA—SCM, Ewing Canaday, W5GIQ—Asst. SCM; James R. Booker, 5ADC, SEC; LXHL, PAMs: KY and MPX, RM: JXM. The State ARRL Convention at Tahlequah was quite an affair and despite the rain, which doubtless cut attendance, everybody had a great time and almost everyone this writer talked with expressed the hope the Tulsa Club would do it again next year. New officers for the Oil Capitol Mobile Club

(Continued on page 138)

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Model FT-200
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Pair **\$12.50**

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RG11/U Coax **\$0.14** per ft.
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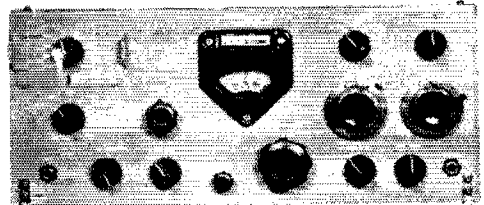
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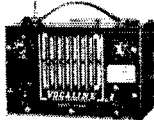
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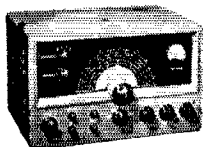
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are INJ, trustee, KYA, pres.; JJR, vice-pres.; QVH, treas.; K5BVW, rec. secy.; and K5DVE, corr. secy. Floods have been big news in Oklahoma during the spring months and again the hams have rendered invaluable service. Our hats are off to UCT, PCQ and BDU, who operated direct from the flood area, and to all the others who stood watch on the frequency to handle their emergency traffic. By the time this column appears in QST the writer will have arrived in Ethiopia for a two-year stay as Information Specialist for the Imperial Ethiopian College of Agriculture. Richard "Dick" Hawkins, FEC, will act as Acting Section Communications Manager until an election is held. Again I want to thank all concerned for their fine cooperation during the last 15 months and for their kind wishes for my trip. Look for me as ET3?? Traffic: W5DRZ 795, ESB 689, CCK 138, JXM 112, GIQ 110, ADC 86, K5EGS 85, W5MFX 75, K5CAY 57, DVE 51, W5VNC 47, MCK 41, K5BNQ 40, W5UCT 29, K5AUX 31, W5EHC 30, K5CBA 29, DJA 28, W5PNG 23, K5HZF 21, W5PEC 18, GOL 17, VAX 17, BBA 13, BNP 12, K5DLH 6.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QRF, ES, the El Paso Club station operated Field Day from Cloudford, N. M. KBP has a pair of 65-ft. poles at his new QTH. ESZ and DKX are building new ham shacks. INJ has a new NC-300. HYY is doing FB with a new Johnson 500. AIVL is moving to a new QTH with more rooms for antennas and rigs. RPH has a new HT-32. LUU and his XYL have been vacationing in Louisiana. AQN is building a new QTH. CAW, the 1956 Fifth District SS winner, is visiting in Corpus Christi. DIW and EGD are vacationing in Minnesota. They are operating 15-meter mobile, both phone and c.w. DKK has 750 watts on s.s.b. to 813. The San Antonio Radio Club Emergency Net, under the direction of DKE, is to be congratulated on the good job they did with the c.d. on the recent floods in the San Antonio Area. K5CNF has a new Globe Scout 90. LMU visited in Corpus Christi. FNH and UNE visited in Houston. RUM and KNSKEG are members of the Corpus Christi Radio Club. Traffic: W5RGD 278, DTJ 101, K5GEM 2.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, 10C, SEC: FH. The NBARA announces that call letter license plates soon will be available to New Brunswick amateurs. The NSARA is now an incorporated body. The recently-formed St. Croix Valley Radio Club's officers are CL, pres.; W1EOP, vice-pres.; JP, secy.—treas. QM has a new KWS-1 and 75A-4. ABV and family have moved to Sable Island. W5WJQ recently vacationed in Prince Edward Island where he operated /VE1. W1QCC/VE1 is operating on 50 and 144 Mc. from Pictou, N. S. Congratulations to NO and his XYL on the arrival of a new jr. operator. Congrats and best wishes to ACJ and his XYL on their recent marriage. 3DRL (ex-10Q) is now located in Dartmouth. Fredericton amateurs now operating mobile include LS, LX, OD, PE, RF, VU and WR. It would be appreciated if information concerning newly-licensed amateurs could be passed along to this office. Don't forget the Maritime ARRL Convention to be held at Charlottetown on Labor Day week end. See you there. Traffic: (May) VE1FQ 130, FH 96, W2RX/VO1 51, VE1EK 24, OM 14, ME 10, ADH 9, DB 9, YJ 8, UT 4, AEB 3, AAN 1. (Apr.) VE1FQ 118, FH 47.

ONTARIO—SCM, Richard W. Roberts, VE3NG—By the time you read this Field Day will be over. Many of our Ontario clubs had their sights on the Marconi Trophy which was won last year by the Toronto West Side Club. DEX and GH were fortunate enough to win a new car. HB9PV visited Toronto and Sarnia. DVT is working DX. EAW is recovering from an operation. PH and ALU also are on the mend. AES is heard on 75- and 20-meter phone. BUR uses a 75A-4 to hear 'em on the c.w. nets. AUU had Field Day fever. The Grey-Bruce Net, on 3645 kc. Mon., Wed., Fri. with DPO as NCS, is growing very rapidly and gaining more members each session. BPR, NN and CAB are active on 2 meters in the Belleville Area. RW is 75-meter mobile. DPG, ex-2UQ, is now QTH Sarnia with his DX-100. AML is in regular QSO with 3ATU/m in Rafal, Gaza. Steve formerly was in Kingston, then Oshawa. AEA reports that the Peterboro Amateur Radio Club operated an FB show at the Springtime Exposition in Peterboro. CGD is a newcomer in Cobden. He is Cobden's first and only ham. DUU is PAM for 2 meters. The Metro Radio Club sponsors a new award known as "WOC." Worked Ontario Counties. Details may be obtained from the club at 570 Eglinton Ave., West, Toronto. The club bulletin soon will have a new look. ABB and BIS received some very nice publicity on their recent assistance to the Ontario Civil Defense. Exercise Co. Op. I, DJJ is by now a VE6. DFU is editor of the Sarnia Radio Club's bulletin. The Scarborough Radio Club reports its recent 11th Annual Banquet was a success. I agree. I

(Continued on page 140)

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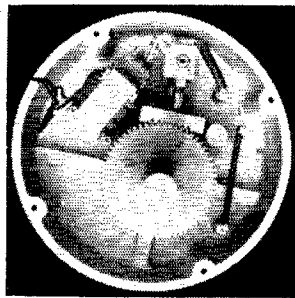
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was there. Many clubs have written to me regarding the possibility of obtaining call sign license plates in Ontario. This is a matter that will take a lot of cooperation on the part of all of us. It will have to be 100 per cent. Possibly after the Federal Election we can band together and try again. This time with all of our sections represented. This would be appropriate for discussion at the Ontario Provincial ARRL Convention to be held in October. VD is rebuilding. NO is busy with traffic. AJA has a new car and mobile rig. AEJ has joined the ranks of the Valiant men. CO, RB, NO, VG, DUU and DSM assisted your SCAM in the coordination of a Navy squadron fly-past at the Toronto Garrison Day Parade. AEJ was control station. BTO is heard on 75 meters. ELC is on 10-meter mobile. NF and GI visited Toronto. The c.w. boys are getting up speed for the receiving contest which will be held at the Ontario Convention. Traffic: VE3NG 205, DPO 175, BUR 161, GI 124, NO 72, AUU 59, RW 50, AML 44, KM 41, APL 36, EAU 30, DH 23, DEX 22, DBA 17, AVS 14, DWN 14, BZB 11, BJV 9, AFS 8.

QUEBEC—SCM, Gordon, A. Lynn, VE2GL—AJD has become quite a skillfull DX hunter on 10 meters. APA is heard on 75-meter phone each Sun. morning. ATL, in addition to reporting in on nets, is transmitting code practice each Sat. and Sun. at 10:30 A.M. on 3630 kc., and is planning to attend radio school to get a commercial ticket. AGN is active on 80-meter c.w. and handles some traffic. DR flitted over to SM-Land the end of May for a visit. DU has been confined to the hospital for the past few weeks, but is making slow recovery. Our best wishes to him that it continues. Reports again are at a low ebb, and you are requested to send details of your own and other VE2 activities. An EC is required for the Valdor Noranda Bourlammaque Area, and recommendations for such are solicited. Traffic: (May) VE2ATL 95, DR 92, CP 48, AGN 35, ATQ 23, EC 19. (Apr.) VE2CP 56.

ALBERTA—SCM, Sydney T. Jones, VE6MJ—AK and JH are recent additions to the 144-Mc. gang in Edmonton. HMI and his XYL have returned from a vacation trip to Vancouver and Victoria and other Island points. OD was an Edmonton visitor and took part in c.d. exercise "Cooperation 1." PV reports TG and AM did an FB job in the recent c.d. exercise in Lethbridge. Ed, formerly of Edmonton, is now located at Edson. XD still is confined to the hospital but his XYL reports that he is very much improved. If you have not already made plans to attend the Alberta Ham fest being held this year in the Stampeder Hotel, Calgary, you should do so immediately. The Calgary gang is going all out to make this one you will remember. See you all in Calgary Aug. 3 and 4. DZ (mobile) worked NX over a distance of 40 miles on 144 Mc. This is the best DX for this band to date worked by the Edmonton gang. Traffic: VE6HM 154, TT 15, OD 14, PV 8, MJ 4.

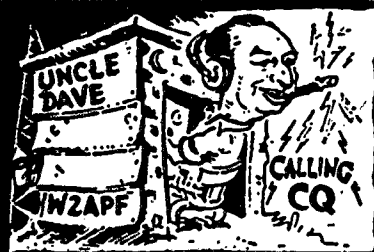
Mobile Transmitter

(Continued from page 28)

Before applying power to the r.f. amplifier, insert the clamp tube, turn R_7 to the maximum-resistance position, set S_2 for c.w. operation, and connect a dummy load to J_6 . If you haven't already done so, lock K_1 in the transmit position and switch M_1 to the amplifier plate circuit.

Tuning of the r.f. amplifier is conventional. The plate-tuning capacitor, C_2 , and the loading control, C_3 , should be adjusted to nearly maximum capacitance for 3.5-Mc. operation, and a progressive reduction of the two capacitances will resonate the tank as the frequency of operation is increased by rotating the band switch. Screen voltage (checked by a d.c. meter connected to J_4), grid current, and plate current must be adjusted in accordance with normal ratings for the applied plate voltage. Because the latter will vary with individual installations, and because there are so many sets of operating characteristics for the 2E26 and 6146 (including their 12-volt versions), the reader is referred to *The Radio Amateur's Handbook* for current and voltage values which conform with the supply voltage he has available.

(Continued on page 142)



FORT ORANGE

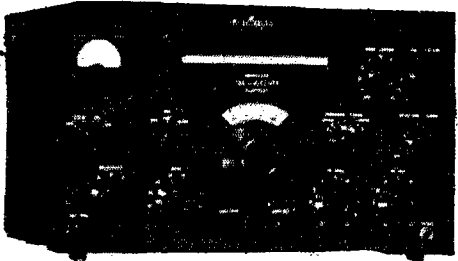
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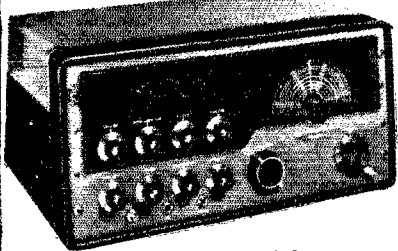
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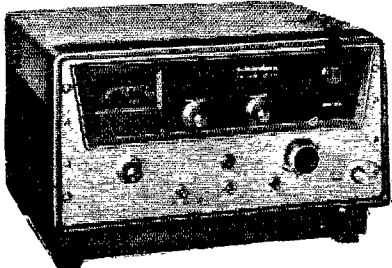
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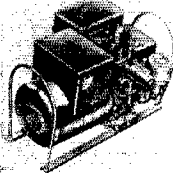
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Stability tests were made by operating the rig for *very short* periods with the crystal and the clamper tube removed. It was completely stable as long as it was coupled to a load. If some slight departure from the original specifications makes neutralization of one or more stages necessary, the capacitive system shown on page 160 of the 1957 *Handbook* can be installed without difficulty. In fact, the type of interstage circuit used in the transmitter was originally selected because of its adaptability to adding capacitive-bridge neutralizing.

The audio circuits of the mobile transmitter may be tested by using any one of the simple methods described in Chapter 9 of the *Handbook*. S_2 should be switched to a position appropriate for the type of microphone plugged into J_7 . Although the modulator plate supply may be turned on before, or simultaneously with, the speech-amplifier supply is activated, do not permit the low-voltage supply to come on *first* as this may damage the screens of the modulator tubes

The regulator tube V_{11} in the modulator screen circuit should glow when the low-voltage supply is turned on, and it will maintain a fixed voltage for the modulator screens as long as the stage is not overdriven. Therefore, the audio volume control, R_9 , should never be adjusted so as to permit the regulator to extinguish when normal speech level is applied to the microphone. No-signal plate current for the modulator should be approximately 50 ma. and will rise to 100 ma. or so on voice peaks.

Antennas

The pi-network output tank is designed for coupling to a 50-ohm resistive load. This means that best performance will be obtained when the antenna feed line is matched at the antenna end. Chapter 19 of the *Handbook* shows how easily a coaxial line may be matched at the base end of a mobile whip.

V.F.O. Operation

A remotely-tuned v.f.o. control head using LC constants taken from remotely-tuned unit described in the *Handbook* has been used with the transmitter. Drive for the final was somewhat lower than that obtained with crystal control, but was adequate for 6-band c.w. or phone operation — with full input to a type 6883 — providing the slug-tuned coils for 3.5 and 28 Mc. were adjusted to favor the mode of operation in use. Unfortunately, the size of the laboratory lash-up of this v.f.o. turned out to be best suited for trunk mounting (!), and the details would be of little interest to anyone who wants an under-the-dash v.f.o. unit. However, this month's cover shows a compact v.f.o. which will soon be described in *QST*.

Conclusion

If you've stayed with us this long you might be interested in the cost of the transmitter. As illustrated — with all the trimmings, and including tubes — the price of all *new* parts runs around

(Continued on page 144)



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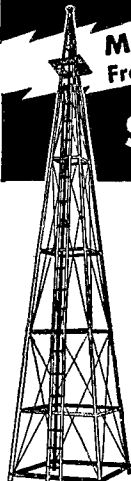
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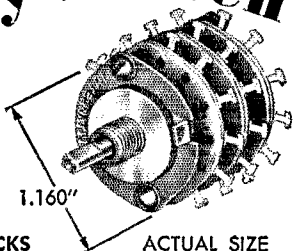
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\$118.00. Of course, quite a few dollars can be shaved from this amount if you eliminate some of the extras such as voltage regulation for the oscillator, choice of microphone input, screen-voltage control for the final, provision for c.w., etc. And the nice thing about any of these modifications is that they won't involve any of the experimental work or other headaches that one is apt to run into when attempting to *add* to an existing design!

The Alert Alarm

(Continued from page 19)

Operation

To place the unit in operation, plug the transmitter supply line into the socket on the rear of the alarm unit, plug the alarm into the a.c. line, and turn the BC set on. After the BC set has warmed up and is receiving a signal, press the reset button. You are then ready to turn your transmitter on.

If your transmitter draws more current than the relay contacts are rated for, it will be necessary to use the unit to control a larger relay, which will control transmitter power.

It may be more practical in some situations to connect the a.c. socket to the relay so that while the relay is open there is power available to operate an alarm bell, etc. Another possibility is to connect sockets to both sides of the relay, using one to control the transmitter and the other to ring an alarm.

Some BC sets may require a larger dropping resistor, R_1 . However, it will seldom be necessary to go above 4.7K ohms.

DX Operating Tactics

(Continued from page 60)

ways a squad of fellows who will sit on you and call. Might as well work them all there."

We also asked each of our correspondents to name the top operating stratagems that would help in working DX when a mob was fighting for a single station. Here's the hot dope: "Smart operating tactics. Big and clean signal." "Learn the DX operator's operating practice. Observe the operating signals which he controls his QSOs with. Make as little QRM as possible, in order to facilitate QSOs at a high rate. Shift frequency slightly after each unsuccessful call. Do not break up the DX station's own efforts to work a piece of rare DX. Have patience!" "Put out a *good* signal where the DX is listening. Use several short calls. Tail end. Listen to and obey the DX stations' calling instructions." "There's only one stratagem for working DX — be smarter than the other guys in a pile-up." "Make sure you know where the DX station is tuning, and *when* he is listening. Then, place yourself on the correct frequency and call him. It's as simple as that!" "Short calls, and avoid high speed. Follow the instructions of the DX station. Be courteous." "Note the operating habits of the DX station, and then call him at the right time, for

(Continued on page 146)

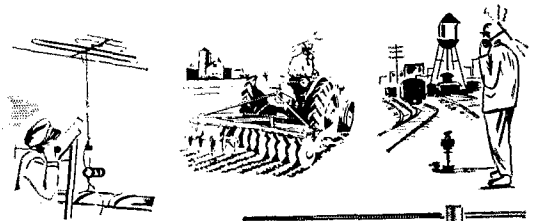


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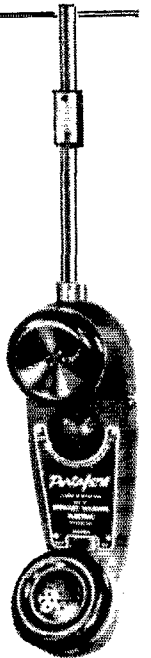
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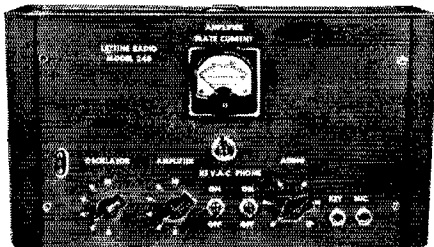


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the right length of time, on the right frequency."

Control by the DX Station

Running through all these comments, comments of fellows who have operated from choice DX spots, is the same thread of philosophy — that the DX station can, if he wishes, completely control the conduct of the pile-ups. By specifying where he will answer calls, and how he will answer calls, he dictates the procedure to be followed. A few final quotes are in order: "The DX station has absolute control of the situation since he has the choice of which station he answers. The important thing is for the DX station to inform the 'mob' of his operating and working procedure, and then to strictly adhere to this." "I feel that in almost all cases the DX station can control the situation. He can refuse to reply to anybody who calls on his own frequency. . . . (He) can maintain control of the situation by refusing to reply to stations who call prior to the time that he has indicated he will be receptive to the next call."

The true-life experiences of these various DX operators certainly have been interesting and instructive. Do you suppose that anyone will pay attention to the valuable tips they have volunteered?

— R. L. B.

50-Mc. Converter

(Continued from page 81)

always picked up by the antenna at 50 Mc.

The converter requires 200 to 250 volts on the 6BS8. Regulated 105 volts is used on the mixer and crystal oscillator, though the stability may be adequate without using regulated voltage on these stages. The heaters take 6.3 volts at 0.9 amp.

Adjustment procedure is extremely simple. The basic principles have been covered many times in *QST* and the *Handbook*, and need not be repeated here.

Happenings of the Month

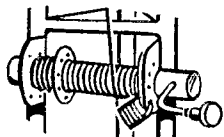
(Continued from page 68)

danger of interference in the amateur 7-Mc. band that can arise as the result of harmonics generated in the 3.58-Mc. oscillator circuits in color television receivers, together with the additional sidebands associated with color reception. We are deeply appreciative of the Commission's concern for the amateur service in this instance, and believe its attitude to be well warranted.

3. There is a similar danger of interference in the amateur bands at 14 and 21 Mc. Because of the short time available for filing comments it has not been possible to organize and conduct comprehensive tests, but brief experiments have indicated that a signal of 1000 microvolts applied to a.c. wiring will produce interference, in a receiving installation of average type, of considerably greater intensity than the median strength of amateur signals in the 14- and 21-Mc. bands. This has been found to be so even when the interference voltage was applied to a branch circuit separate from that to which the amateur-band receiver was connected. Under certain circumstances the magnitude of the received interference is substantially independent of the separation between the interference source and the receiver, within the same building. These tests also indicated that the present limit of 100 microvolts provides, in the main, a satisfactory degree of protection to the amateur service.

4. We are here concerned primarily with interference
(Continued on page 148)

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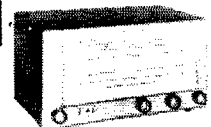


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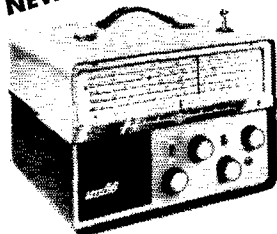
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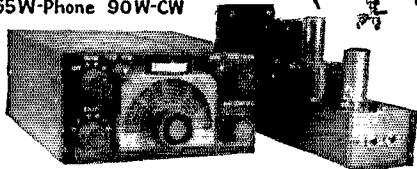
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generated by the sweep circuits and color circuits of television receivers. Interference to amateur operation from television receivers is all too common. When present, it is also of an "inescapable" type, consisting as it does of a series of interfering signals at intervals of 15,750 kc. (or in the case of a color receiver, at intervals of 7,875 kc. when both color and sweep components are present) extending throughout the amateur bands affected. It is our understanding that the present limit of 100 microvolts has been accepted as reasonable by the designers of television receivers. We therefore urge that it be continued as a general requirement.

5. The report of Task Force No. 5 of the Radio-Electronics-Television Manufacturers Association, mentioned in Paragraph 6 of the Notice of Proposed Rule Making, is not available to us. However, there is available a copy of a letter from the chairman of Task-Force No. 5 to Dr. W. R. G. Baker in which the results of the work done by the Task Force was to determine the magnitude of interference voltage reaching the power line at the FM receiver intermediate frequency of 10.7 Mc. and its harmonic at 21.4 Mc. The letter urges that relief be sought for FM receivers from the power-line interference limit of February, 1956 (no other types of receivers are mentioned). It is argued that to incorporate sufficient power-line filtering would disproportionately increase the cost of FM receivers, and that experience has shown that interference arising from this source has been negligible.

6. The League concurs with the opinion of the chairman of the RETMA Task Force No. 5 that, in practice, interference from the FM intermediate frequency of 10.7 Mc. and its harmonic at 21.4 Mc. has been essentially nonexistent. Although the harmonic falls within the 21-21.45 Mc. amateur band, no case of interference of this nature has ever been brought to our attention. Since FM receivers now in use have been manufactured without consideration for reducing interference of this type, there appears to be no practical interference problem. The League would not object, therefore, should the Commission see fit to make an exception for FM receivers only, increasing the power-line voltage limit to 1000 microvolts at the FM intermediate frequency of 10.7 Mc. and its harmonic at 21.4 Mc.

AMERICAN RADIO RELAY LEAGUE, INC.

BY PAUL M. SECAL

816 Connecticut Ave.

Washington 6, D. C.

Its General Counsel

A. L. BUDLONG
General Manager
June 5, 1957

Facsimile Transmissions

(Continued from page 46)

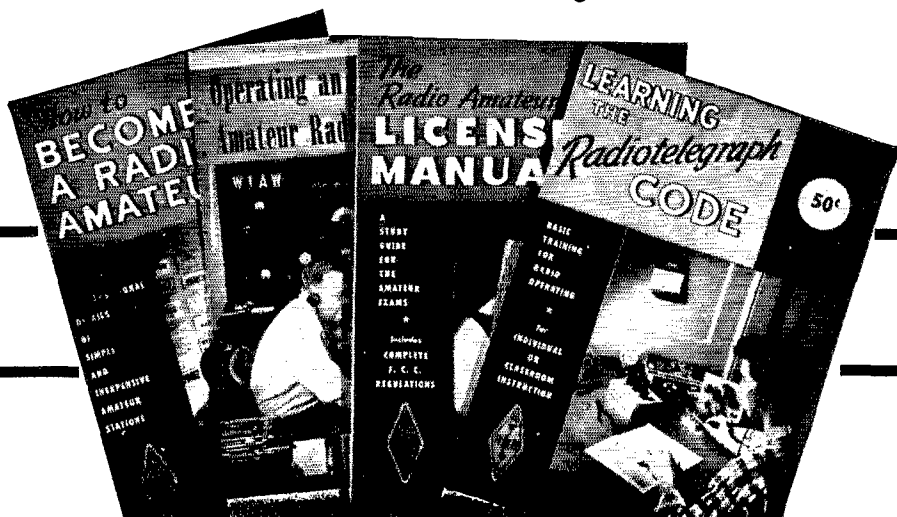
Including the cost of the surplus machines, the necessary power supplies, paper and instruction manuals, each member of the FAX circuit got on the air for something less than \$100 (exclusive of the regular r.f. equipment, of course). The fellows on this 2-meter FAX network (including W6CZ, W6IZJ, W6CLW, W6CMIQ, W6SCQ, W6CAP, W6AEE, W6DEO and W6LMW) are particularly pleased with the splendid cooperation they have received from the Times Facsimile Corporation. The Times gang bent over backwards to help the FAX group get their machines on the air.

Anyone else on FAX?

— R. L. B.

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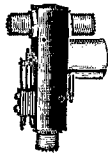
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New Multiband Tank Circuit

(Continued from page 47)

it into a pi network if that type of circuit is preferred.

A factor contributing to the power-handling ability of the assembly is the use of ceramic forms for the tank coils. The plate spacing of the tuning capacitor should be sufficient for voltages up to 1000. The capacitor is insulated from the 2 1/2 X 4-inch mounting plate, a feature that makes it easy to use series feed in a transmitter or, when the tank is used in an amplifier grid circuit, to use capacitive-bridge neutralization of tetrode or pentode power amplifiers. An insulated coupling must be used on the capacitor shaft in either of these cases. The band switch shaft, which is grounded to the mounting plate, is left long so it may be cut to fit when ganging with other switches used in band changing.

The GP-50 is made by Harrington Electronics, Box 189, Topsfield, Mass.

— G. G.

How's DX?

(Continued from page 76)

part, and no adequate test instruments, believe me, I envy you people all your facilities and clubs to straighten out your worries. Most likely you envy me my location, but I can assure you it definitely has its drawbacks!"

56 ZL/VK Test results see Ws 1PPN 2WZ 3VKD 4LZF 5DF 6LDD 7SFA 8JIN and 9JMB tops on c.w. for their areas. Continental c.w. highs were turned in by CE3AG, G5RI, JA3BB and ZS5U. On phone W3VKD registered the fattest U. S. figure among nine entrants.

W6NTR and others deem the recent ZM7AC a bent-brain and probably linked with sporadic ZK2AB piracies.

Via K2GFQ: VR6TC, who had been sticking with phone for several months, now panics fans on 20 c.w. with a new DX-35 and HQ-120 with a beam a-planning.

Hereabouts — Around the idea of March W8TII/KG1 worked KC4s USV USA and USN in quick succession, the first QSO on 20 phone and the others on 15. That's real DX. Gene thanks the traffic gang, especially K4EEY and W9RUK, for QTC services rendered while he was cool in Thule.

VP5AR's new triband cubical quad impresses K4HQD mightily in turn tests.

W8s BHW and BRA finished one-two in the tricky DX quiz at Dayton's April Hamvention. W8ACE counted the house at 500 for the DX Forum alone, a goodly crowd indeed.

After ten months of N.W.T. haunting VE8OJ nailed his last United State, W1JY of New Hampshire, Doug describes a trick for fast-code merchants: Record W1AW's 30 and 35 w.p.m. transmissions on a recorder that permits you to speed up at will. Sixty w.p.m. is okay for VE8OJ but 70 eludes him.

Next month will find ready "How's" helper K6CER lup-tup-thripping at Kemper Military School, Boonville, Missouri.

W2s HQL and IWC scored several hundred 15- and 20-meter QSOs from Navassa Island in early June, the tip-off coming through W1AW special bulletins. Plenty of the brethren still need KC4 QSOs of this Caribbean variety — who's next up that rickety ladder?

Wanderlusty W3JAK, lately KG1JA, expects to conclude his Greenland tech-rep assignment soon.

HR2WC (W6EWC) now has worked s.s.b. two-ways with 64 countries.

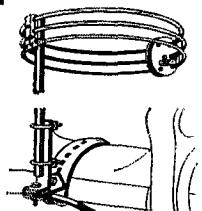
W6RLP desires data on the present whereabouts of the KS6KN and W6YOT/C6 he worked 'way back in 1948; K2GFQ ditto regarding ex-ZD8AA.

W6RZS's 100th DXCC QSL arrived at

(Continued on page 162)

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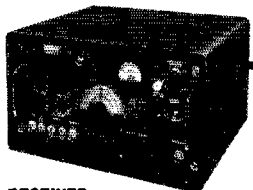
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SEE PAGE 109 NOVEMBER QST

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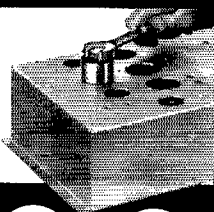
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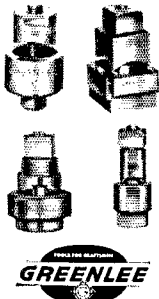
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the 113-worked mark, a neat batting average. Consensus indicates the usual ratio to be around 120/100 although this depends on how fast one works 'em, of course. . . . Maine and Delaware are the remaining WAS holdouts for KL7BPK. . . . KG4AN returns to the mainland this month for school and leave, according to K4HMS, Jim's nomination as phony-of-the-month is 3N1OIL, 14-Mc, c.w. . . . DXer W5K6J was chosen with three other teenagers to represent Uncle Sam on a Red Cross good-will tour of Japan last month. . . . Intrigued by "DXCC?" possibilities, W1HKJ examined his QSL hoard and found himself forty pasteboards shy of the squared Century. . . . KL7CAW returns to Michigan this month. . . . Editor W6OUN didn't let a broken clavicle halt the presses during his May SCDXC Bulletin run.

Ten Years Ago in "How's DX?" — A pull of crackling atmospherics enshrouds lower-frequency DX on our continent in August, 1947. ZL1KN is logging many 75-meter W phones during the quiet New Zealand winter, while KV4AA and UB5AL are the best offered by noisy 40. . . . Twenty? Plenty. The cream of the 14-Mc, c.w. crop are AC4YN, CIs AN DK, EK1s AF AS, EPs 1AL 2BU, ET1IR, FK8NQ, FT4AN, HA1KK, H1MAF, HI1Q, H1S1s LN SS; HZs 1AB 2TG 2YY, IIAHC/I6, I6USA, K6SCU/KP6, KAs 1ABU 6FA, KGGAV/VK9, KSA4C, LT2IC, MXs 2AG 3KG, PKs ITC 6HA 6NG 6VR, RAENL, TRIP, UA9s AB CB CC, UA0s AK KAA KFA KFC KQA SF, UC2s AC AD, UD6BN, UG6WD, U18AR, U05AC, UO2AB, UR2KAA, Papuan VK4s BI HC, VRs 5IP 5PL 6AA, VSs 4VR 7ES 7YT, W2s OUB/GI WMV/C9, W6s NQG/KM6, RWQ/VR6 VDG/KW6, XUGRLL, YR5AH, ZB2B, ZC61D, ZDs 3B 6NG 6VR, 61T. On phone we find CR10CB, EK1TA, ES1TU, H1G0, SU1RC, VS9AB, W4BOW/Iwo, W7IAW/C6, XAMC, Y12CA, YR5G, ZB2A and ZC6FP. . . . CP5EA, FURAA, PK1MF, UA9CF, V08AD, WILQ/TF, XAAN and XADW bolster a slim 28-Mc, rundown. . . . Those curious MB9s turn out to be okay (British in Austria). . . . An interesting summer DX diversion occurs on 10 and 20 meters, the pursuit of QSOs with LI2B, research raft *Kon-Tiki*, en route Polynesia from Peru.

The World Above 50 Mc.

(Continued from page 70)

on 50.37 Mc. From May 17 to 30 he caught openings 7 days out of a possible 14. His June record, when we have it, should be at least as good.

Note to certificate collectors: you can pick up a few on 6 these days. We report new ones in these pages as they are announced, and here's a recent addition, W1LJ (Worked Three Houston Jims!) is sent to anyone who has worked W51D, W5UYF and W5GHL on 6. Simply send the dates of your contacts to Jim Flowers, W5GHL, Box 1931, Houston, Texas.

Surprise by-product of simultaneous operation of several rigs in the June VHF Party: W3KKN, Willow Grove, Pa., brought in W3VIR and his 220-432 gear to combine forces for 4-band operation. There was plenty of crossband QRAI, as might be expected, but there was also tremendous TVI. Any of the rigs by itself caused no trouble, with two of them on at once beats seemed to show up all over the place.

Use of the 6-meter band in recent flood emergency work in the Dallas and Ft. Worth area was a conspicuous success. Consistent interference-free communication was maintained in many instances on 50 Mc. where lower frequencies failed. W5CVW says that the mobiles equipped with halo antennas worked up to 75 miles with well-equipped fixed stations. Not every 6-meter effort worked out so well, however, usually through ill-advised choice of frequencies for the emergency communication. On May 22 we heard one Oklahoma net trying to carry on its emergency business on 50.1 Mc., of all frequencies! They were being clobbered constantly by stations in 20 states and had channel-clearing stations at work trying to move the interfering W1-2-3-4-5. (Continued on page 154)

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See Page 142, June 1957 QST

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8-9-0 stations off the hot spot. With all the band we have, why 50.1 Mc?

In one of the first really good May 50-Mc. DX sessions W4CXY, Oak Ridge, Tenn., was not doing so well. Everyone he called seemed to come back to another Tennessee station, and many CQs went unanswered. Finally a phone call, and the inquiry, "Is this W4CXY?" put Mack a bit on edge, especially when the caller followed up with "Do you have a TVT Committee in Oak Ridge?" W4CXY replied in the affirmative and was told, "Well, you're tearing up my Channel 2 reception; I wish you'd have the committee investigate it!" "Glad to, if you'll give me your name and address." "OK — this is K9CKW, Platteville, Wisconsin, near Madison!" W4CXY was revived some hours later. He now has a card from K9CKW confirming the call and wonders if he can use it for his 50-Mc. WAS collection.

W5SFW, W9ALU and W0ORE Make 50-Mc. WAS

The tremendous sporadic-E skip of recent weeks helped many 6-meter men along the hard road to WAS, and it put three new calls into the bold-face listing in our WAS box. Just too late for inclusion in last month's copy, W5SFW worked W1FMK in Vermont, for his 48th. His cards were in our hands a few days later. Phil Patterson, long-time 6-meter enthusiast, of Amarillo, Texas, thus became holder of special 50-Mc. WAS Award No. 22, dated May 29.

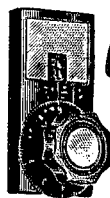
Award No. 23 went to Frank Huffman, W0ORE, Gary, S. D. Frank worked 48 some time ago, but had a hard time collecting the necessary cards. No. 24 is the pride and joy of Harley L. Christ, Metamora, Ill. Had was stuck at 47 so long he'd begun to think he'd never make it, but a May opening brought him a contact with W7JLV, Reno, Nev., and he was in.

Just a word about future awards. We mentioned some months ago that special 50-Mc. WAS certificates would be discontinued after No. 25, except for the first operator in each U. S. call area to make the grade. This brought in scores of letters from WAS aspirants who took what we had said to mean that 50-Mc. recognition would no longer be given — that their hard-won WAS would mean no more than one made on lower bands. We hasten to assure all 50-Mc. men that such is not the case. Certificates for 50-Mc. WAS will still be clearly endorsed to indicate that the award was made for 50-Mc. work and they will be serial-numbered as such. Only the Old English hand lettering, the special hallmark of the first 25, and the first in each U. S. call area, will be discontinued.

At least two more of the Old English jobs are yet to be won: No. 25, to whomever wins it, and one each to the first W4 and W8 to show proof of contact with 48 states on 6. Specially marked and serial-numbered awards will be continued indefinitely thereafter. In submitting cards, be sure that your desire for a 50-Mc. certificate is indicated in a covering note. At least one batch of 50-Mc. cards was processed for an unendorsed certificate, because there was no request for a special award accompanying them. They are no longer being checked individually by your conductor.

How tough is 50-Mc. WAS? Well, it certainly isn't easy, even with our present high activity level, but it is much more readily made than in the pre-Technician area. The nature of 50-Mc. propagation just about guarantees that WAS on this band alone will remain a considerable achievement, deserving of special recognition, but it is not the formidable problem it once was. There is activity in every state now, for one thing. Some early holders of the 50-Mc. WAS award had to conduct personal campaigns in certain states to get somebody started on the band. Typical example: Nebraska was a tough one for several 50-Mc. WAS aspirants. The other day W0RMB told your conductor

(Continued on page 156)



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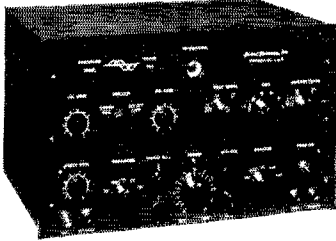
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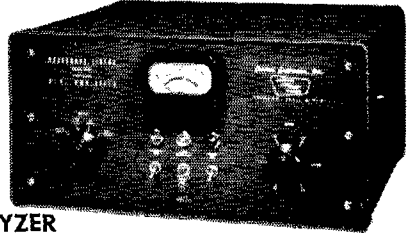
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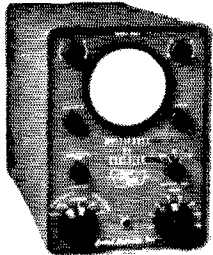


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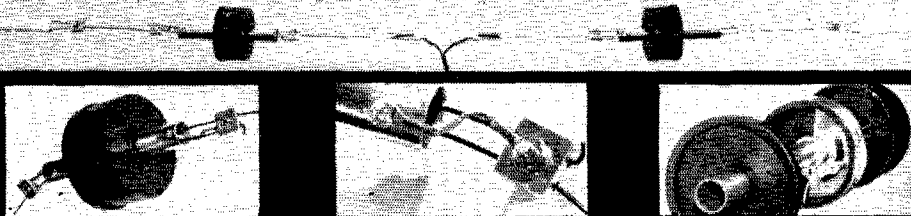
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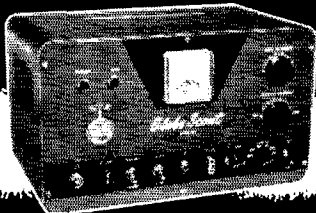
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that there are now 46 stations on 6 in the Omaha area alone. Delaware still is not easy, yet W1HDQ/3 worked three Delaware stations in a few minutes driving across the corner of that tiny state recently. Vermont, Rhode Island, Nevada, Utah, Wyoming and Montana, all once practically in the Tibet category, are now well supplied with good active operators, doing their best to supply contacts (and QSLs) from their states.

You still don't make 50-Mc. WAS over a convenient week end. And you may never make it if you don't capitalize on every propagation opportunity the band affords. Aurora and the various forms of scatter are almost musts, if you would get that prized award in a hurry. Good equipment, wide-awake operating and some perseverance are still needed. A 50-Mc. WAS award is something to be proud of — positive proof that you have what it takes in the 6-meter department. Let us know how you're doing, and we'll list your standing in the WAS box. No confirmations needed until you apply for the award.

OES Notes

W1UHE, N. Tirocton, R. I. — Using selective receiver on 220 Mc. shows that most stations have considerable drift. More attention should be paid to oscillator stability in transmitters for 220 Mc. and higher bands.

W3GKP, Spencerville, Md. — Experimenting with audio filters to improve both c.w. and phone reception. For latter, bandpass, high-pass and low-pass filters were tried, using the following characteristics: BP 300-3000, BP 500-2500, LP 3000, HP 300. Under some conditions the first gave slight improvement, most noticeable on signals having excessive bass. Unexpected effect: on s.s.b., or a.m. with b.f.o. on, the cut in the lows permitted greater tuning tolerance.

W3UQJ, York, Pa. — Trying c.w. on 50 Mc. nightly 2200 and after. Using 600 watts, but results are slow. Would welcome skeds.

W4LZC, Birmingham, Ala. — Worked W4ZZ on 50 Mc. May 19, for what is believed to be the first ground-wave work between Birmingham and Knoxville, Tenn. Distance is 240 miles, over rough terrain.

K5CHC, New Orleans, La. — Jefferson 6-Meter Net operates each Tuesday at 2000 CST; W5WCJ NCS. Frequency 50.52 Mc.

K6DCQ, Irving, Texas — DX heard or worked on 50 Mc. 12 days out of 21 on the air in May. 23 states heard May 30.

W6PIV, Sacramento, Cal. — Transmitter hunts on 144 Mc. stirring interest in d.f. antennas for that band. With multiple reflections from trees and buildings, hunting is often more an art than a science. Thus far all antennas that give good directional characteristics are rather bulky for convenience in hunts.

W9KLR, Benssler, Ind. — Meteors — they're wonderful! Contact with W5DFU, Tulsa, Okla., makes 33 states on 144 Mc. Too many fellows are afraid to try meteor scatter because they think very large arrays and high power are required. W1MNN has 100 watts and 30-element array. W5DFU uses 250 watts and old reliable 16-element collinear. Now wants skeds with Maine, Delaware, South Carolina, New Mexico and Colorado, not to mention all W6 and 7 states. Eight more to go are within the "easy" 1200-mile radius.

Went to 64-element collinear here after comparisons with 24-foot Yagi showed the big collinear to be far superior.

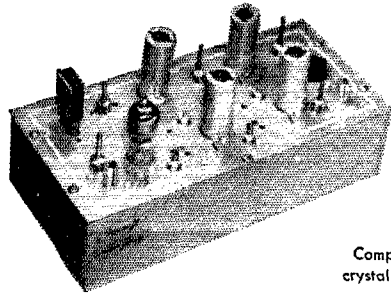
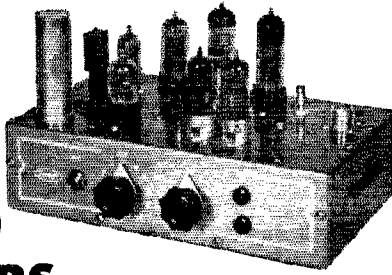
K7UCDF, Anchorage, Alaska (formerly W9KLD) — Hope soon to be going on 6. W1KPH/KL7, at same location, also interested. Note marked difference in v.h.f. coverage with weather changes. Early mornings show strong signals out to 200 to 250 miles when skies are clear, but only to 75 miles or less during overcast. This is 250-watt commercial gear on frequencies from 120 to 250 Mc.

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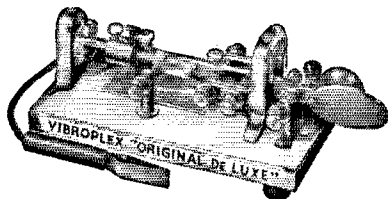
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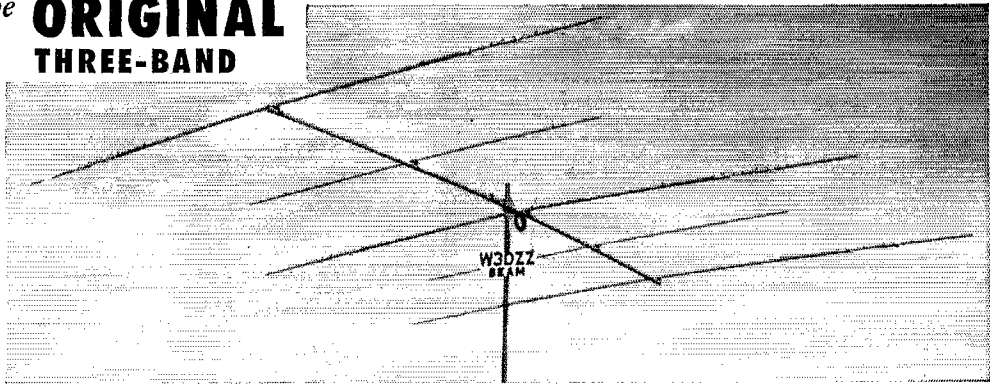
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THREE-BAND



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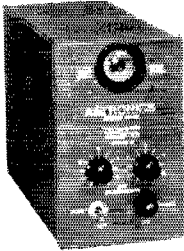


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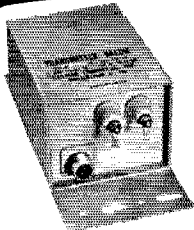
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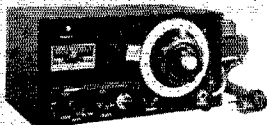
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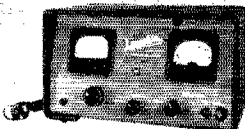
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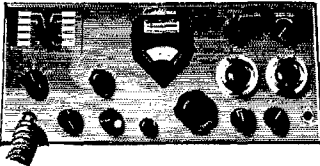
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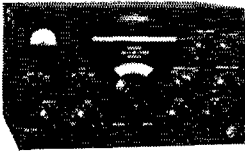
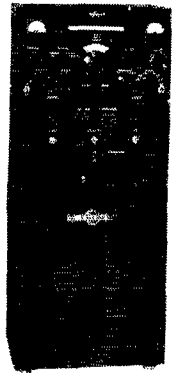
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WANTED: All types aircraft & ground transmitters, receivers ART-13, RT18/ARC1, RS/ARN7, BC610F, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KJW, 308 Hickory St., Arlington, N. J.

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RUBBER Stamps for QSL's. C. W. Hamm, W9UNY, 542 North 93, Milwaukee, Wis.

CREATIVE QSL and SWL Cards. Are you proud of your card? If not, let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob Wilkins, Jr. KN66/MT, Creative Printing, P.O. Box 1004-C, Atascadero, Calif.

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SELL: NC-2400 w/spkr, perfect condx, must sell. First \$120 takes it. K5ASB, Jimmy Dennis, 1525 Edison Dr., San Antonio, Texas.

LOOK: An NC-300, Globe-King 275, Heath VFO, 2-meter FM mobile equipment, plus some small parts for sale to highest bidder. Write Dick: W9NVU, Huntington, Ind. 1255 N. Jefferson.

SELL Four BC-611 walkie-talkies in gud condx, complete, except batteries, best offer. Want Viking II. Lew Prescott, W1RFQ, 108 Morris Ave., Pawtucket, R. I.

SELL Complete power supply, 150 watts, 750 volts at 225 milli and 100 watt modulator, all on chassis, 17" x 3" x 3" with 8 1/2" x 19" panel. \$40. No delivery, sorry. Jim Berger, W3MWC, 6615 Silverwood St., Phila. 28, Pa.

FOR Sale: Viking Ranger, \$160. Jim Connor, K0ADL/1, RFD 41, Littleton, Mass.

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WANTED: Highest prices paid for ART-13, ARC-1, BC788, BC610, BC348, ARC-3, BC312, BC342 and other military or aeronautical surplus. Name your price. We pay freight and C.O.D. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

A FLANTIC City vacation. Kilowatt accommodations at low power prices. Hotel Commodore, 715 Pacific Ave., Atlantic City, N. J. Ben Robin, W2BIG, Mgr. Write for free color brochure.

WANTED: ARC-3, ARC-1, ART-13, BC-312, BC-342, BC-610, BC-788 and other surplus. Advise what you have and price. W4VHG, Box 5878, Bethesda, Md.

STUDY at home for Commercial radio licenses. Very reasonable fee. Free sample lesson. Write Radio License Aids, Box 159, Buzzards Bay, Mass.

SALE: VHF Climaster, Model 62T10, 2, 6 and 10 meter xmitter, 200W. A1 and 160W. A3; 4X150X final, p. 135, Nov. 1956 D87; Gonsel Communicator, 2 meter, Eldico electronic key, Mod. EE 2. Tom Moody, W4HJO, Glendale, Ky.

MUST Sell, urgently need money. HQ-129X, like new, \$150; DX-20, new, wired and tested, \$40. Complete station with modulator and many extras. Best offer over \$200. F.o.b. W3CDE, Jerry, Mason-town, Pa.

SEND for this month's standout listings of Reconditioned Equipment. Also request our new 1957 Amateur Catalog. We feature all leading brands and promise you an attractive deal always regardless of your needs or budget. Check our offer first. We deal quickly, easily and always on a personal basis. Stan Burghardt, W0BJV, Burghardt Radio Supply, Watertown, S. Dak.

TECHNICAL Manuals TM11-274, 120 pages covering BC-312 receivers and BC-191 transmitters, \$2.50. ID-60/APA-10 Pandator 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 take your choice from the hundreds of "Like New" bargains in the world-famous Harrison Trade-In Center (SSS photographs, p. 137, March D87 and p. 143 April D87). Greater values, because trade-in turnover means lower overhead! Terms, rates: BCNU, Bill Harrison, W2AVA, 225 Greenwich St., New York City.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, ARC-1, ARC-3, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallcrafters, Hammarlund, National B&W, Gonsel, Elmac, Telrex, Fisher HL-FI, etc. Write Tom, W1AFN, Alltrons-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048. Stores: 60 Spring St., Newport, R. I.; 44 Canal, Boston, Mass.

WANTED: Gonsel "Monitone", perfect condx. Rowles, W1UDA, R.F.D. 2, Pittsfield, N. H.

SSB transformers, newly manufactured for 10A, 10B, 20A and W2EWL exciters \$12.45 per set of three, postpaid USA. Electronics Associated, P. O. Box 206, Montclair, N. J.

SALE: QSL metal file boxes with State and DX index. Initialed with call letters, \$3.00 each. Gerold Kaminski, W8OQR, 2814 Albion St., Toledo, Ohio.

CASH for RA-63, BC-939, JB-70, BC-610-E, BC-614, BC-221, BC-312, BC-342 and late type test equipment, receivers, etc. Amber Industrial Corporation, 75 Varick St., N. Y. 13, N. Y. We pay freight charges. Write.

FOR Sale: following new items: 1.87 Kw and 9.3 Ka 120V 60 cycle 1800 rpm generator with exciter; 6 tube farm radio less battery, six 5VCT 30A 20 KC insulation th. xfrm; also: prop pitch motor 50 ft., 8 PC 1 1/2" aluin. masts, miscellaneous smittg tubes and meters, BC-458, 6V dual Vibrapack, 500V DC. W2PUK, Glen Ridge, N. J.

SHAW Electronic Supply has new and used ham gear. Clyde, W9KLF, Darling at Gale, Angola, Ind.

WANTED: One or two Gordon Koto-Bean rotators with Synchro Antenna-A-ator control boxes. No broken units wanted. Must be in working order and very reasonable. L. K. Rusli, Box 1418, Jackson, Tenn.

KILOWATT plate transformers, any voltage, \$42.50. Write for details. Delaware Electronics, 220 West 4th St., Wilmington, Delaware.

GRID Dip meter Heathkit, wired, mod. GD-A1, \$10; Eldico antennas-AT-1, \$10; Heathkit factory-wired, V7VM Mod. V7A, \$14. Also oscilloscope 3", factory wired, Mod. OI-1, \$22. W4GFH, 325 Chilean Ave., Palm Beach, Fla.

FOR Sale: Single 813 final for 350 watts max. output; complete with Class AB1 grid modulator, all necessary power and bias supplies; in ft. metal cabinet on casters; also buffer/doubles in separate table top cabinet and three VFO units of the BC type. All in excellent condx and ready for opern. \$150 buys the lot or will sell piecemeal. Contact: Bill Tisdale, W2KEL, 170 Ridgewood Rd., Buffalo 20, N. Y. All inquiries will be answered.

SELL: DeLuxe basic tape-recorder, consisting of Peutron 9T3M mechanism and hi-fi preamplifier mounted in attractive wood cabinet, \$75. Professional-looking sloping panel, illuminated VU meter. Use with high speed. Originally \$174.50 list. Also Duramot 37" accm \$20; signal generator, \$10; K2BIB, 307 Richardson Drive, North Syracuse, N. Y.

NEED Money for school. \$250 Ampro tape-recorder with bass reflex speaker, \$100; Millen 25 wt xmitter, all coils, \$20; Meissner signal shifter with phase mod., \$25; Marmax KW Rothman mod., \$25; Emerson AM FM radio-tuner, \$10; 3-speed phonograph, \$10; Gonsel Hopper, all coils, \$8; bug, \$5. W9QXR, 1422 Noyes, Evanston, Ill.

HARVEY-WELLS T-90 with AP590 supply, \$208; P-9 receiver w. spkr, \$128. All four pieces, \$300. Really good DX-100, \$175; HA-100, \$129.00; S-40B, \$69; RME-R4, \$59; PMRGA with 6V DC supply, \$97. A. Brown, W0IHZ, Brown Electronics, Inc., 1032 Broadway, Ft. Wayne, Ind.

SELL: For Cash! Complete or part ham station; all in pert. condx: Hallcrafters SX-99 with spkr, \$100; Heathkits, Q multiplier, \$7.00; antenna tuner, \$7.00; VFO, \$15; 250-volt power supply, \$7; 6146-50 watt output transmitter with built-in modulator, \$45. All plus shipping cost. Allan Friedland, 81 Minna St., Brooklyn 18, N. Y.

SSB Transformers, new, for W2EWL or similar exciter, set of three, \$5.00 postpaid. Greenberg, W2EJL.

FOR Sale: Modulator transformer for Collins 30K-1, price \$18; also used TV tube 5TP4, price \$20 F.o.b. New Britain, Conn. John Savonis, W0DBS, 11 Dwight Court, New Britain, Conn.

SALE: NC200 with speaker, gud condx, \$95. W3IHP, 31 North Craig, Baynesboro, Penn.

WANTED: New, used, unused equipment! Get the most cash when you sell to Leo, W0ATC! We buy most for: APN-9, BC-348, BC-224, R-5/ARN-7, ART-13, BC-788C. All types of test and communication equipment. Alvaradio Industries, Box 151-QS, North Hollywood, Calif.

SELL to best offer. Preferred prices listed. Globe King 400-B, factory-shielded, coils for all bands 80-10, \$250; Heathkit AT-1, \$15; VFO, \$15; Eldico A-300 Universal antenna coupler, coils for all bands 80-10, \$20; Bud low-pass filter, \$10; coax relay, OPDT external contact, \$10; bug, \$5; crystal mike, \$5. Everything plus connecting cables, \$300. In perfect working condition and appearance. F.o.b. Hobbs, N. Mex. W5FTP, 300 Yucca.

2 METER VFO Gonsel Mod. 3024, like new, \$40. Will ship. Ed Clements, Box 127, L'Anse, Mich.

FOR Sale: Johnson Pacemaker. New condition with factory modification. Would accept equally clean 20A as part payment, \$495. prepaid express within 500 miles. W5W1, 2514 North Garrison, Tulsa, Okla.

FOR Sale: Collins 30K1 400 watt transmitter, like new condx. W8VVE, Orville Wood, Camden, Ohio. Tel. 243.

A 41 year old man in a wheelchair, ham, would like to correspond with any respectable male person who might be interested in a permanent home in exchange for being a companion, guide and handyman. Plenty of leisure time for haunting or fishing. Write KRAKE, Lake Odessa, Mich.

HALLCRAFTERS SX-42, \$150; SX-71, \$160; R46 speaker, \$15 with either receiver. Will swap both sets for Collins HRO or GPR90 receiver. Will ship F.o.b. N. Y. C. S. Lipsky, 574 West End Ave., New York 24, N. Y.

FOR Sale: Central Electronics shop wired 20A with latest changes and QTI \$160; also Central Electronics BC-458 VFO converted with detune kits for 10 meters, \$9.50. Both in excellent shape. Ed O'Brien, 86-10 34th Ave., Jackson Heights 72, L. I., N. Y.

SELL: Gonsel 6-meter Communicator, brand new, used only 5 hours. Absolutely perfect, in original carton, manuals and cables, plus two xtals: \$140. Pvt. Arthur Berkow, K2LOM, "E" Battery, 3rd Regiment School Brigade, Ft. Bliss, Texas, Box 2174.

WANTED: Good used Viking II or DX-100. State price, condition, etc. S. Kaplan, K2RDO, 105 Rose Lane, Rome, N. Y.

FOR Sale: Lampkin 103-B freq. meter, in excellent shape, Ser. 3026, one owner only, manual included. Price: \$145. Bill Clark, P. O. Box 128, Trenton, Illinois, W9HKJ.

FOR Sale: NC-183-D, in exc. condx, with matching speaker and manual: \$250. Cannot ship, sorry. John Wallace, W2LCU, 18 Third Ave., East Islip, L. I., N. Y. Tel. Juniper 1-4076.

SELL: Vibronex Deluxe, carrying case, like new condx, \$20. O. H. Ketchum, 10125 Flora Vista Blvd., Bellflower, Calif.

PHILADELPHIA Area: Hallcrafters SX-28A with xtal calibrator, \$50; Gonsel TV-Bud and latest circuit modifications per CQ Hbk (12 volt, \$25; Globe Scout 40A with home-bud 4-tube VFO (TVI suppressed), \$85. Many small parts for little or no. Want mobile gear (12V). Write or call Jeff Hutchinson, W3IHV, 1429 Spruce Ave., Wilmington, Del. Tel: Delaware WV 4-1004.

SELL: Complete amateur station except for rev. Globe Scout 65A, xtals, key, antennas. Write for full details. Also have some other equipment. Richard R. Robinson, K0AQX, 1508 Park St., Hamburg, Iowa.

ETCHED—Circuit material, supplies, instructions, free catalog, Etched circuits! P. O. Box 2582, South Bend 14, Ind.

NR1 receiver servicing and TV course complete, \$40 postpaid to sender of first check. Warren Smith, K1HOW, 445 Laone St., Waukegi, T.H.

FOR Sale: Excellent, HT-9 Hallcrafters bandswitching xmitter, with 3 sets of coils, \$275; Meissner signal shifter with plug-in coils, \$40; RCA 10-meter mobile rig, with Gonsel converter and noise-limiter, \$75 or best offer! T. C. Willis, Blakely, Ga.

WANTED: NC-125 receiver, in gud condx. Will consider best offer James Berberet, 1754 Nashville, Chi. 35, Ill.

HAMFESTERS Radio Club's 23rd Annual Picnic, the liveliest and friendliest gathering in the Midwest: August 11, 1957 at Santa Fe Park, near Chicago. See August Hamfest Calendar or write to W9ICQ for complete information.

SINGLE—SiLebanders, Sprague 200 ufd 3000V DC, \$40; Stancor P-805 primary 115-230V secondary 250-247.5-0-235/29.50 (CAS 575 MA, \$60; power supply, 4900V, C.T. 500 MA, two section filter, \$60; 3500 C.T. 1, 500 MA, two section filter, \$45; B&W CX-82B, \$10; CX-58B, 10; PR833A, used, \$9; Workshop 3-element 10-meter beam, new, \$35; Perry Valente, WIGOL, 5 Summit Terr., So. Pea body, Mass.

NEW Marlin 39-A lever action rifle for trade; DB23 excellent condx, \$35; Cubex 10-15 quad original carton, never opened, \$25; new Esco BC-1000, 1000, new BC10 filament xfrm, \$7; Superior VOM Model 67 with manual, \$19; WRL Antenna Tuner \$5; Transistor TR switch, \$6. Mast base MP 22A with eight sections, \$7. W0PRM.

WANTED: Harvey-Wells Z-match coupler, W20ZH.

BRAND New items: Eimac 32 KV vacuum condensers, 12, 25 or 50 μ fd \$5.50 ea., 2 for \$10.50; Uncser audio xfrm pr, 100 ohms to 100,000 ohm sec., high ratio eliminates one stage of voltage amplification; hermetically-sealed multi-winding miniature audio xfrm, 600 and 5200 ohm c.t. pri. to 27,000 ohm c.t. sec. (9 conn.); Both xfrms have myriad uses: a. i. input and output and for s.d. line impedances, perfect for portable-mobile, either type, \$1.95 each; 2 for \$3.00. Postage extra. S. Tucker, W2HLT, 51-10 Little Neck Pkwy, Little Neck 62, N. Y.

HALLCRAFTERS, Central Electronics ham gear - others. Swartzlander Radio Limited, Fremont, Ohio, Call Jerry, W8EPI or write.

COMMERCIALLY styled CW kilowatt. See it! Operate it! 180 DX coils worked! Final, pair 4-125-A, Westinghouse blower-cooled; VFT, 100% parts replacement including KW plate transformer 13 meters, 6 ft. rack, 8 relays, all bands, dummy antenna loading unit with two K.F. meters, reduced power control. Photos on request. Asking \$350. W1JKD, Chicopee Falls, Mass.

ELMAC PMR-7 receiver with PSR 6-12 V power supply, three weeks old. New warranty, \$150. Al Lawrence, K1AHO, 101 Woodchester Dr., Weston, Mass.

CONSET G-6 receiver with 110/6 V., universal power supply. New; only 5 hrs. Not butchered, \$180 less shipping. W1VYE, 77 Reservoir Rd., Quincy 70, Mass.

2 PHASE 12 volt - 100 amp. min. alternator for mobile use, complete with regulator and rectifier. Clyde Safford, Chief, Police Dept., Westfield, Penna.

SINGLE Sideband linear with pair 811's, mtd. by Adams. Delivery from Long Island. \$225. W4GFH, H. H. Smith, 325 Chilton Ave., Palm Beach, Fla.

BARGAINS: With New Guarantees: HT-9 \$99.00; HT-20 xmt., \$275.00; Collins 32V1, \$275.00; Collins 32V3, \$495.00; Collins 32RA8, \$79.00; TBS-50C, \$69.00; Morrow PTR & P.S., \$49.00; Morrow 3BR, \$24.95; Morrow 5BR, \$49.50; Lyso 600, \$69.00; Elicio TR-75TV, \$25.00; S & W Mobilizer, \$49.00; Elmac A54, \$80.00; Gonset Tri-band, \$24.50; Gonset 4024 VFO, \$45.00; Sonar SR-120, \$99.00; W. J. Trotter, \$34.50; Globe King 500A, \$52.00; Globe King 275, \$199.00; Globe King 400B, \$275.00; new HRO coils, \$16.00; and many others. Free trial. Terms financed by Leo W. GFGO. Write for best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

SALE: New DX-100, wired, no bugs. In perfect cond. \$150. S-85 receiver, in excellent cond. \$60. P.o.b. Chesaning, Mich. Daren Kettler, 812 S. Front St., Chesaning, Mich.

SELL: Harvey-Wells T90 and APS90 power supply, \$175 F.o.b. N.Y.; Gonset Monotone, \$12; Vibroplex \$15, pair balun coils, mounted, \$3.50. All in like brand-new cond. and hardly used. R. E. Ewing, W6BUF, 833 Hawthorne Way, Millbrae, Calif.

SACRIFICE Slightly used 3 x 5 printing press. Complete, with lots of supplies; \$35. Ideal for printing QSLs. W. Cook, 1614 Morson Rd., Jackson 9, Miss.

FOR SALE: DX35, new in February. \$45 plus shipping costs. Pair Eimac 4-125A's, \$12.50. W4KGR.

FOR SALE: Onan gasoline electric plant; 1500 watts with carrying frame. New, never been used! Model #105AKIP. Write to Mrs. Wm. C. Rutz, Blossomland Amateur Radio Assn., Inc., P.O. Box 292, St. Joseph, Michigan.

TRADE New "Bud" LF-601 low pass filter for Telrex 2M-8C 2-meter beam. Art Robertson, 5945 Estes St., Arvada, Colorado.

FOR SALE: 30-watt 80-40 meter transmitter with two crystals and key, \$15; power supply 450V at 250 Ma. and 350 V at 150 Ma. Marion 2500 o.p.v. multimeter kit, \$5; two double section 3000 V 250 μ fd variable condensers. One in line, one right angle drive, \$2.50 each. Island Began, 88 Gallup St., Providence, R. I.

CODE Course Supreme, on magnetic recording tape. Results guaranteed. Novice instruction, practice material to 6 WPM, \$5.95; advanced tape practice material 9 to 18 WPM, \$4.95. Combined, \$9.95. 7" dual track, 3 1/2 IPS. Tapedcode, Box 31-E, Langhorne, Penna.

DELUXE Nameplates engraved. Your call in white letters. On black - eight inch plate for one dollar. L & J Products Co., Box 122, Downers Grove, Illinois.

OST. In Binders, 1917 to date, December 1915 Reprint and Bound October and December 1916 issues. Will include DeSoto's "200 Meters and Down." Shipped prepaid, \$200. W6RFT.

NATIONAL NC-240C with speaker and 100 Kc crystal calibrator, in gud cond; \$125; WRL VFO factory-wired, new, never used, \$35; 750 volt 200 mill power supply with two Command transmitters, \$45; RG-8U coaxial cable, 86 per foot; bug key, \$5. J. F. Skelton, W5MA, 1916 Briarwood, Irving, Texas.

SX-71 revr, factory overhauled, A-1 condition: \$125. W4VNY, 2712 Springmont, Jacksonville 7, Fla.

DX-35 and VF-1, like new condx, and perfect throughout, excellent results achieved. \$75. K2RKT, Neil Martin, Harrington Park, N. J.

SELL Gonset Commander transmitter 80 thru six meters with coils and book, eighty-five dollars. Richard Vogele, W2IPB, 554 Seventh Ave., New Hyde Park, N. Y.

BECOME a Radio Amateur. Free information on how to pass (Ord and Theory FCF examinations. American Electronics, 1203 Bryant Ave., New York 59, N. Y.

FOR SALE: Heathkit AT-1 and AC-1 Coupler, \$35. Don Rowan, K2PCL, 101 Noel Dr., Centereach, L. I., N. Y. Tel. RO 9-3766.

SALE: SX96 receiver, perf. condx, \$175; matching speaker \$14; Bud self-powered 100 Kc calibrator, \$14; excellent 30 watt modulator for low power rig, \$20. Auguste Schwab, Jr., K2LGS, 500 Woodmere Blvd., Woodmere, L. I., N. Y.

2 METER Items: Converter and power, needs work; 1953 Hbk, p. 374; \$15, xmt. RF only, \$29B final, 7" panel, grid & plate meters, and new components, \$25; beam, 24-ohm, (2 twin-sixes with harness) and rotor \$25; Astatic G push-to-talk stand (for D104 and others), new \$10; Heath 0-7 with kit to make 0-9, \$40; 100-1000 Kc Stand with 400 cycle modulation, separate power, quality construction, \$15; Choke 4 H 900 Ma., \$10; Tubes 4-65 (2) @ \$5; 20 meter 2-l. beam; May 1954 OST, \$20. F.o.b. Jaray, 215 Main St., Port Chester, L. I., N. Y.

FOR SALE: Complete ham station, must sell immediately: \$250 takes all. Write to J. J. Cusumano, K2KJ, 33 Willow St., Port Chester, N. Y.

FOR SALE: NC240D receiver, with speaker, \$125; CE Q-multiplier, Model DQ, like new, \$15; CE 20A with ARC-5 VFO, gud condx, \$155; LW-61 2m. converter, brand new, \$15; 3-BC453 IF transformers, \$2.50; used plate and filament transformers choice, 2-6ufd, oils; for 100 volt at 100 ma. power supply, \$15. New TL-10B in case, \$2.50; PR 100 Kc. xtal and printed osc. circuit, \$8. W8HJU, 502 Forest Ave., Ann Arbor, Mich.

NO Room and no time! Sell complete station: HQ-129X with frequency standard and R9/R. 300 watt fone-c.w. rig, mike, key, spare S11 and 813 tubes, 60 watt portable VFO c.w. rig, 25 watt mobile rig, Tri-Band, clipper, mike, antenna, mount. Best offer \$250 up. Gene Farnett, K4ATN, Athens, Ga.

FOR SALE: Complete mobile: G-66 and G77 plus Shure 505C, Shakerspe whips for 10, 15, 20, 40 meters, only 20 hours operating time, \$450. Write to demonstrate. Mobile transmitter, 500 w. p. 450 of the 1956 Ed. of Rad. Amateur's Handbook; modulator as per p. 454 and DM35, 12V. dynamotor, working but never used, \$75. Sell or trade Harrihalt NE-6, 6 meter transmitter, almost new, \$45 or what have you? Need test equipment, MicroMatch, 20-meter beam. Walter Gordon, W2KAH, 4100 43rd Ave., Sunnyside, L. I., N. Y. Tel. HU 2-5668.

TRADE new HQ100 for 95.00 in U. S. gold coins, any denomination. Also excellent Collins 75A3, 190.00 in U. S. gold coin, any denomination. W2KUW, T. Dams, 308 Hickory St., Arlington, N. J.

SACRIFICE RME 4300 four months old, perfect \$165; 60 watt bandswitching transmitter with power supplies, \$45; going mobile. K4OBM, 10923 N.E. 9th Court, Miami, Fla.

FOR SALE: Viking Ranger, in excellent condition: \$160. Wish to trade HRO-60 ten meter coil for fifteen meter coil. W6EHF, 2558 Ida, Omaha, Nebr.

FOR SALE: New DX-35, \$55; VF-1, \$15; Modified AT-1, \$25; AC-1, \$10; OL-1, \$25; 600V 300 Ma. pwr supply, \$40 or best offer. WRL VFO, \$45. W3EAG, Glyndon, Md.

VIKING Valiant, \$325; NC-240D revr with speaker, \$125; new D-104 with G stand, \$25; DHNZ mike, \$15; original bug, \$15; 2 P10's, \$20 each; Supreme 542 Multimeter, \$10. Going overseas. Must sell. Cash before October 1, 1957. James M. Demott, Chaplain, USAF, Box 34, San Antonio, Texas.

CLOSEST Offer for NC-173 receiver with speaker, \$125; Millen 50 watt transmitter exciter, new \$30. Both with manuals. Stuart Herman, 141-33, Pershing Crescent, Briarwood 35, N. Y.

MODIFIED S-38C, \$30. W4GIM.

WANTED: 10, 15, or 20 meter xmitter with power supply. Low or medium power tone and c.w. P. Long, Program 47, CETG, Box 9, Mercury, Nev.

KILOWATT Sell KW final, pair of 250TH's in P.P. Power supply switching from 1200 to 2400 volts. Grid and plate meter and room for three more meters. Beautiful cabinet with relay racks. (Used with DX-100. Best offer over \$150. Modulator for \$40. W8UEP.

COMMUNICATOR II (two meters), \$150; new SX-71; BC-459A, \$5; PE-103, \$16; 829B, \$4; tape recorder, \$45; used tape, reel, 60¢; wireless intercom; FM Pilotuner, \$20; intercom kit, \$9; last year Callbooks, \$2.50; wireless phono-changer, \$7; \$21 buys three complete sets of VTM frequency and bar generators. Richard C. Lackner, W9WFT, 2029 Bradley Place, Chicago 18, Ill.

CANADIANS ATTENTION! Hallcrafters HT-18 calibrated VFO, \$60; Elmac transmitter A54H, \$70; RME converter, 10-6-2 M.C. \$3, \$40. H. M. Chisholm, VE3GU, 130 Garfield Ave., Toronto 7, Ont., Can.

G66 Revr, Univ. power supply/spkr. No holes. First \$180 takes it. D. Randall, K0HMB, 5010 E. Blake, Wichita, Kans.

COLOR, new 1956 Motorola TV set, blond, full year warranty, first \$95 takes it; Viking II, has time sequence keying, \$190; 75A-2 converted to A-3, 3.1 Kc filter; calibrator and product detector, \$375; 10A with 80, 40 coils and Q-T-1, \$99. BC-458 used with 10A, \$10; S-38B, \$29. Charles Vangsgard, W9QCH, Luck, Wis.

WANTED: Globe King 500B transmitter or Viking Valiant in gud condx. L. P. Duncan, Palmyra, Va.

FOR SALE, new HT-30 exciter, \$375. Will ship. W1SUQ.

NC-98, w/o speaker, \$85; RME HF1020 converter, \$40. First \$120 takes both items. Buyer to pay shipping. W3DDV, 13209 May Court, Silver Spring, Md.

FAMOUS VHF "Lunenburg" antennas, 6 meter 5-element, \$14.95; 2 meter 6 element, \$6.95; 6 meter horizontally polarized Mobile antenna. Wholesale Supply Co., Lunenburg, Mass.

WANTED: SX24, SX25, SX71, KN6JTL, Ellsworth, Iowa.

SELL Heath grid dip meter, \$16.75; Heath condenser checker, \$16; Johnson SWR bridge, \$7.25; B&W 551-A coaxial switch, \$6.50; 8-15, 40 and 80 meter Novice xtal, 80¢ each. Everything is in very gud condx! KN4NLQ, Warren Culpeper, Andalusia, Ala.

SELL: Hallcrafters, S38A receiver, And Navy TBV-8, 28-80 Mc. PH Rec-trans, 40 power supply, carrying case. Clean, \$30 each. C. Asea, K2IOX, 1402 27th St., North Bergen, N. J.

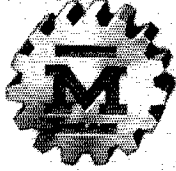
WANTED: Low frequency tuner units, particularly TU-B from BC-375 aircraft transmitters. Can use several at the right price. Grote Reber, c/o Leo Honea, Box 901, Puuene, Maui, T. H.

FOR SALE: Heath AT-1 transmitter and AC-1 antenna coupler; Heath AR-2 receiver. Excellent condition. No reasonable offer refused. All replies will be answered. Earl Poulson, K9CPT, 929 E. Colonial Dr., Racine, Wis.

FOR SALE: Tubes, brand new 813's, \$8.00; 810's, \$8; 832A's, \$4; 829B's, \$6.50; 5654/6AK5, 75¢; 1-23/ARC-5 two meter transmitter, complete, \$16; RCA Aut 114 transmitter, \$75; power supply for SCR-222, \$12; BC-322 transceiver, covering 52 to 65 Mc. Makes a swell 6-meter rig, \$22; Elmac A-54H all band VFO transmitter, \$85; Palco 600 six volt transmitter supply \$20; Elmac PMR-6A receiver, covering broadcast through 10 meters, \$85; Elmac PSR-6 six volt revr supply, \$20; Navy ATD revr, covers 540 to 905 Kc, \$20. All guaranteed. Can ship C.o.d. Bill Slep, W4FHY, Box 178, Ellenton, Fla.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallcrafters S38 \$29.00; S40A \$69.00; SX99 \$119.00; SX11 \$149.00; SX96 \$189.00; SX100 \$229.00; Viking Adventurer \$39.00; Viking II \$199.00; S40B; S85; SX88; SW54; NC98; NC183D; HRO5; NC300; HQ129X; HQ140X; HQ140XA; GPR90; A54; A767; PMR6; PMR7; Collins KWS-1; 75A1; 75A3; 75A4; 32V3; many other items. Easy terms. Write for list. Henry Radio, Butler, Missouri.

Designed for



Application



90801

**The No. 90801
EXCITER-TRANSMITTER**

The No. 90801 Exciter-Transmitter is of the most modern design including features and shielding for TVI reduction, band-switching for the 4-7-14-21 and 28 megacycle bands, circuit metering. Conservatively rated for use either as a transmitter or exciter. 5763 oscillator-buffer-multiplier and 6146 power amplifier. 90 watts input for CW. Can be keyed in the oscillator and/or amplifier or by means of keyed external V.F.O. such as the 90711. 67 watts input phone. Rack mounted 3 1/2" panel height.

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in Chicago, August 30, 31 and September 1

It may be the LAST of the BIG get-togethers
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—all meetings and exhibits are in the completely air-conditioned Palmer House

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—no matter what your special interest—every phase will be covered

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—bring the XYL and the Junior Op—we've planned for them, too

- **it's Amateur Radio at Its Best!**

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There's still time to beat the August 15th Pre-Registration Deadline.

See pages 51 through 54 for complete details

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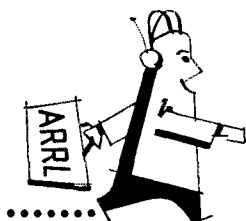
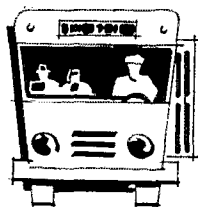
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come and enjoy

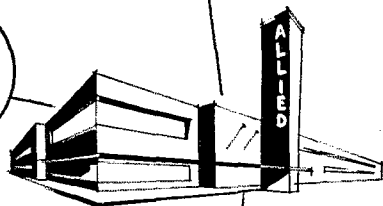
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- The world's largest electronic supply operation
- Our 35-man Ham staff on hand to greet you

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Palmer House in Chicago,
Aug. 30, 31, Sept. 1

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THE ACCENT IS ON VALUE... A LOW PRICED GENERAL COVERAGE RECEIVER

A new low-priced general coverage receiver featuring smart, modern styling.

Receiver is directly calibrated for the four general coverage ranges and five bandspread ranges for the amateur bands (80-10 meters).

Covers 540 KC to 40 MCS. Voice or CW.



FEATURES:

- ★ Calibrated bandspread for 10, 11, 15, 20, 40 and 80 meter amateur bands. Separate tuning capacitors, knobs, and scales for general coverage and bandspread.
- ★ Large easy-to-read 12 inch slide-rule dial with combination edge and backlighting. Has large tuning knobs with two pointers for two scales; general coverage and bandspread.
- ★ Adequate over-all selectivity with nine miniature tubes including rectifier.
- ★ Has gang-tuned RF amplifier stage for increased sensitivity and image rejection.
- ★ Covers 540 KC to 40 MC in four bands.
- ★ Two IF amplifier stages and two audio stages with tone control.
- ★ Separate antenna trimmer on front panel.
- ★ Separate High Frequency oscillator tube for increased stability. Oscillator is temperature compensated and ventilated for increased stability.
- ★ Separate RF and AF gain controls.
- ★ Series type automatic noise limiter.
- ★ Receives AM, CW and SSB signals. BFO provided for CW and SSB.
- ★ Has "S" meter on front panel for signal strength indication and more accurate tuning.
- ★ Provision for balanced or unbalanced antenna input at 50 to 300 ohms.
- ★ Handsome two-tone gray cabinet.

COVERAGE:

BAND	GENERAL COVERAGE	BANDSPREAD
A	.54-1.6 MC	
B	1.6-4.7 MC	3.5-4.0 MC (80 meters)
C	4.7-15 MC	6.9-7.30 MC (40 meters)
D	14.0-40 MC	14.0-14.35 MC (20 meters)
		20.4-21.5 MC (15 meters)
		27.0-30 MC (10/11 meters)

TUNING SYSTEM: Separate general coverage and bandspread tuning capacitors connected in parallel on all bands. Bandspread, used primarily for tuning the amateur bands, can be used as vernier for general coverage use. Separate antenna trimmer control.

AUDIO SYSTEM: Two-stage audio amplifier with single 6AQ5 output tube provides 1.5 watts at less than 10% distortion. A handsomely styled accessory speaker is available. Phone jack.

SENSITIVITY: Under 2.5 microvolts (10 DB signal/noise ratio).

SELECTIVITY	NORMAL
6 DB	5.2 kc
60 DB	22 kc

CONTROLS: Main tuning; bandspread tuning; antenna trimmer; band selector switch; RF gain control; AC ON/OFF and AF gain control; stand-by-receive switch; noise limiter switch; tone control switch; BFO pitch control; AM/CW switch.

TUBE COMPLEMENT:

RF Amp.	6BA6	2nd IF Amp.	6BA6
Freq. Conv.	6BE6	Det, AVC and ANL	6AL5
HF Osc.	6C4	1st AF and BFO	12AT7
1st IF Amp.	6BA6	AF Output	6AQ5
		Rectifier	5Y3GT

OTHER SPECIFICATIONS:

Antenna Input: 50-300 Ohms, Balanced or unbalanced.
 Size: 16-13/16" Wide x 10" High x 10-7/8" Deep.
 Finish: Handsome two-tone gray wrinkle finish.
 Shipping Weight: Approx. 35 lbs.
 Optional Accessories: Matching Speaker.

Only \$15.95* down

Up to 20 months to pay at most Receiver Distributors.

*Suggested Price: 159.95**

**Prices slightly higher west of Rockies and outside U. S. A.

Eight out of 10 U.S. Navy ships use National receivers

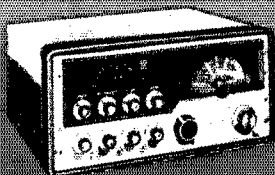
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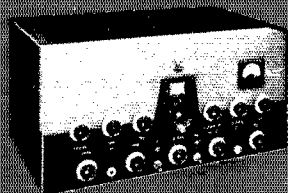
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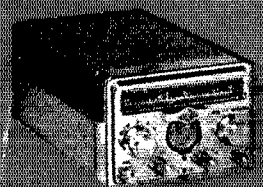
Hallicrafters' HT-32 uses two RCA-6146's



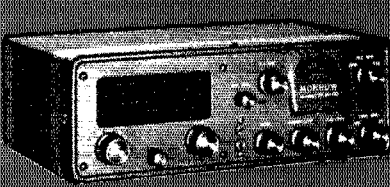
Viking II uses two RCA-6146's



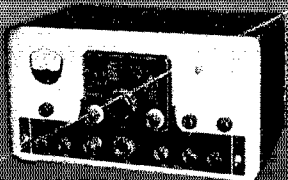
WRL Electronics' Globe Scout uses one RCA-6146



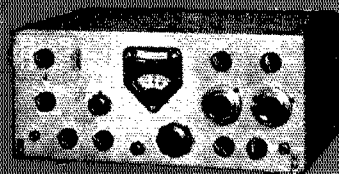
Gonset G-77 mobile transmitters uses one RCA-6146



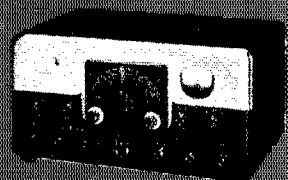
Marrow MB-560-A uses one RCA-6146



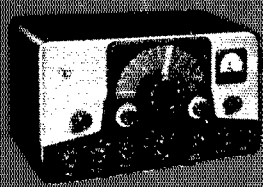
Viking Valiant uses three RCA-6146's in final, two in modulator



Collins KWM-1 Transceiver uses two RCA-6146's



Viking Pacemaker uses one RCA-6146



Viking Ranger uses one RCA-6146



RCA-6146 Beam Power Tube
(RCA-6883 is identical to the RCA-6146, but is designed with a 12.6-v heater for mobile applications)

RCA-6146

DESIGNERS' FIRST CHOICE

The commercial rigs pictured on this page are typical of the many professional designs now making communications history across the amateur bands. And every one of these outstanding transmitters uses at least one RCA-6146 beam power tube in the final.

Here's why so many of today's best-known transmitters are designed around the RCA-6146: (1) This husky, compact tube packs a mighty wallop—even at low plate voltages; (2) RCA-6146 requires very little driving power—fits snugly into bandswitching circuits, requires fewer driver stages; (3) RCA-6146 is economical, and it's built to "take it".

RF AMPLIFIER SERVICE MAXIMUM AMATEUR RATINGS, CLASS C		
	RCA-6146	RCA-6883
Heater Volts	6.3	12.6
Plate Input Watts		
CW	90	90
AM	67.5	67.5
DC Plate Volts		
CW	750	750
AM	600	600



TUBES FOR AMATEURS
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RCA-6146's and -6883's are available from your local RCA Tube Distributor. For technical data on the 6146 and 6883, write RCA, Commercial Engineering, Section H-37-M, Harrison, New Jersey.