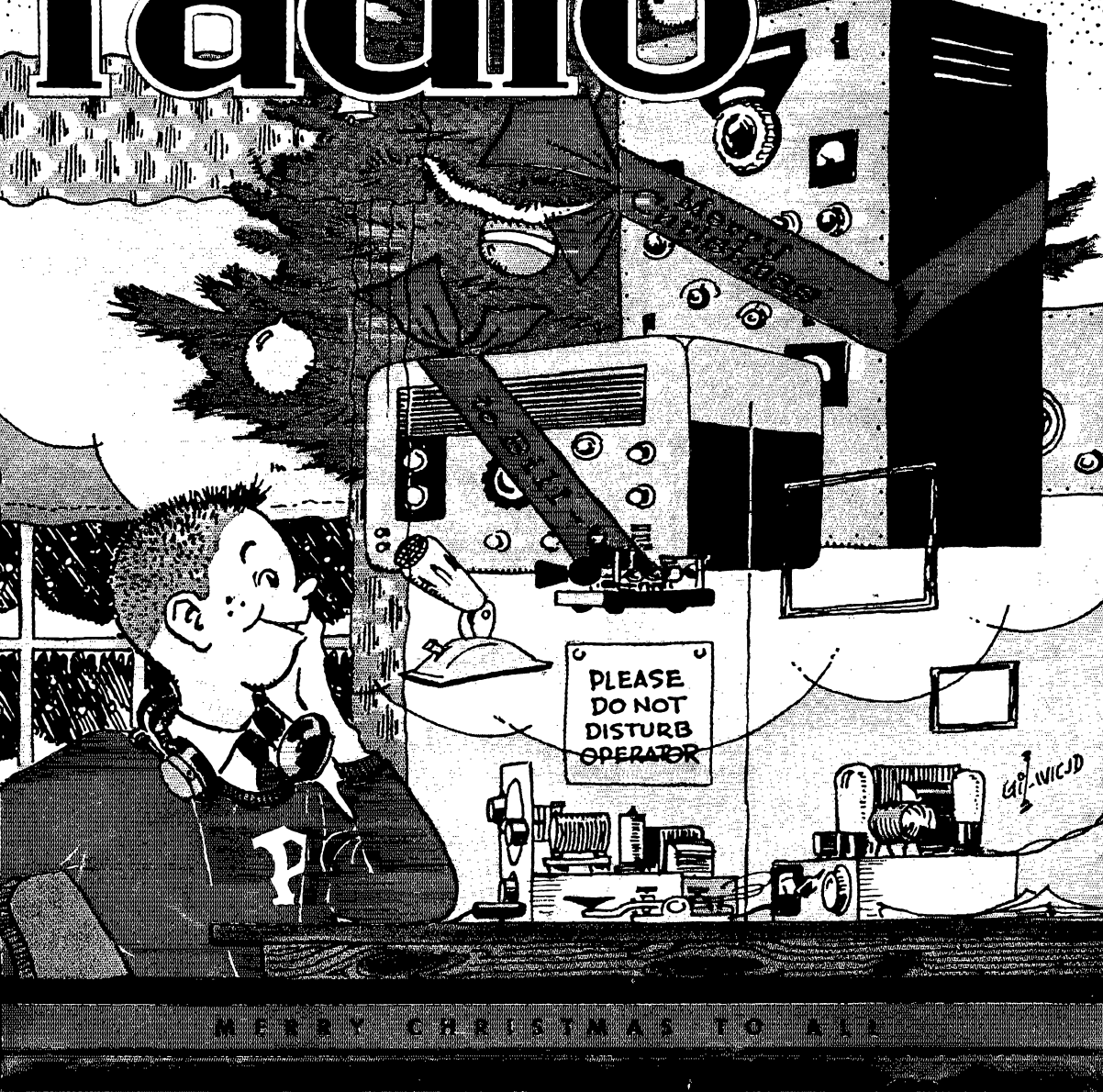
QST

December 1957
50 Cents
55c in Canada

devoted entirely to

amateur radio



MERRY CHRISTMAS TO ALL

DO-T S

Driver Transformers

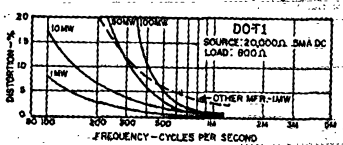
REVOLUTIONARY TRANSISTOR TRANSFORMERS

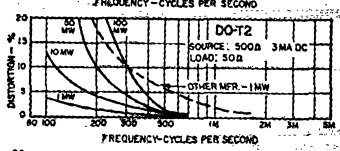
of unequalled power handling capacity and reliability

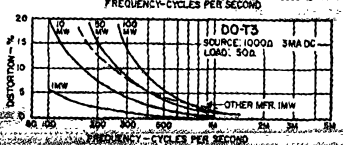
Hermetically Sealed to MIL-T-27A Specs.

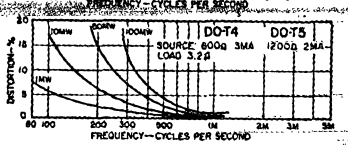
TYPICAL DO-T PERFORMANCE CURVES

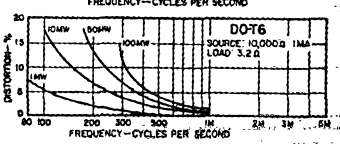
Power curves based on setting output power at 1 KC, then maintaining same input level over frequency range.

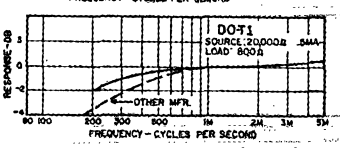


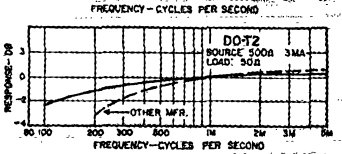


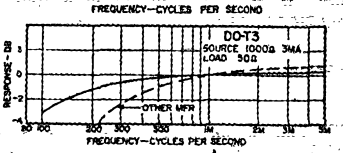


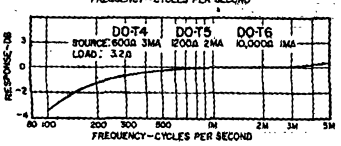












*DO-T units have been designed for transistor application only . . . not for vacuum tube service. **Pats. Pending

Conventional miniaturized transistor transformers have inherently poor electrical characteristics, perform with insufficient reliability and are woefully inadequate for many applications. The radical design of the new UTC DO-T transistor transformers** provides unprecedented power handling capacity and reliability, coupled with extremely small size. Twenty-five stock types cover virtually every transistor application*. Special types can be made to order.

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Excellent Response . . . twice as good at low end.

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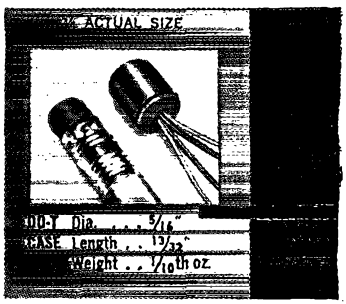

Type No.	MIL Type	Application	Pri. Imp.	D.C. Ma.‡ in Pri.	Sec. Imp.	Pri. Res.	Level MW.
DO-T1	TF4RX13YY	Interstage	20,000 30,000	.5 .5	800 1200	850	50
DO-T2	TF4RX17YY	Output	500 600	3 3	50 60	60	100
DO-T3	TF4RX13YY	Output	1000 1200	3 3	50 60	115	100
DO-T4	TF4RX17YY	Output	600	3	3.2	60	100
DO-T5	TF4RX13YY	Output	1200	2	3.2	115	100
DO-T6	TF4RX13YY	Output	10,000	1	3.2	1000	100
DO-T7	TF4RX16YY	Input	200,000	0	1000	8500	25
DO-T8	TF4RX20YY	Reactor 3.5 Hys. @ 2 Ma. DC				630	
DO-T9	TF4RX13YY	Output or driver	10,000 12,500	1 1	500 CT 600 CT	800	100
DO-T10	TF4RX13YY	Driver	10,000 12,500	1 1	1200 CT 1500 CT	800	100
DO-T11	TF4RX13YY	Driver	10,000 12,000	1 1	2000 CT 2500 CT	800	100
DO-T12	TF4RX17YY	Single or PP output	150 CT 200 CT	10 10	12 16	11	500
DO-T13	TF4RX17YY	Single or PP output	300 CT 400 CT	7 7	12 16	20	500
DO-T14	TF4RX17YY	Single or PP output	600 CT 800 CT	5 5	12 16	43	500
DO-T15	TF4RX17YY	Single or PP output	800 CT 1070 CT	4 4	12 16	51	500
DO-T16	TF4RX13YY	Single or PP output	1000 CT 1330 CT	3.5 3.5	12 16	71	500
DO-T17	TF4RX13YY	Single or PP output	1500 CT 2000 CT	3 3	12 16	108	500
DO-T18	TF4RX13YY	Single or PP output	7500 CT 10,000 CT	1 1	12 16	505	200
DO-T19	TF4RX17YY	Output to line	300 CT	7	600	19	500
DO-T20	TF4RX17YY	Output or matching to line	500 CT	5.5	600	31	500
DO-T21	TF4RX17YY	Output to line	900 CT	4	600	53	500
DO-T22	TF4RX13YY	Output to line	1500 CT	3	600	86	500
DO-T23	TF4RX13YY	Interstage	20,000 CT 30,000 CT	.5 .5	800 CT 1200 CT	850	100
DO-T24	TF4RX16YY	Input (usable for chopper service)	200,000 CT	0	1000 CT	8500	25
DO-T25	TF4RX13YY	Interstage	10,000 CT 12,000 CT	1 1	1500 CT 1800 CT	800	100

‡DCMA shown is for single ended useage (under 5% distortion—100MW—1KC) . . . for push pull, DCMA can be any balanced value taken by .5W transistors (under 5% distortion—500MW—1KC)

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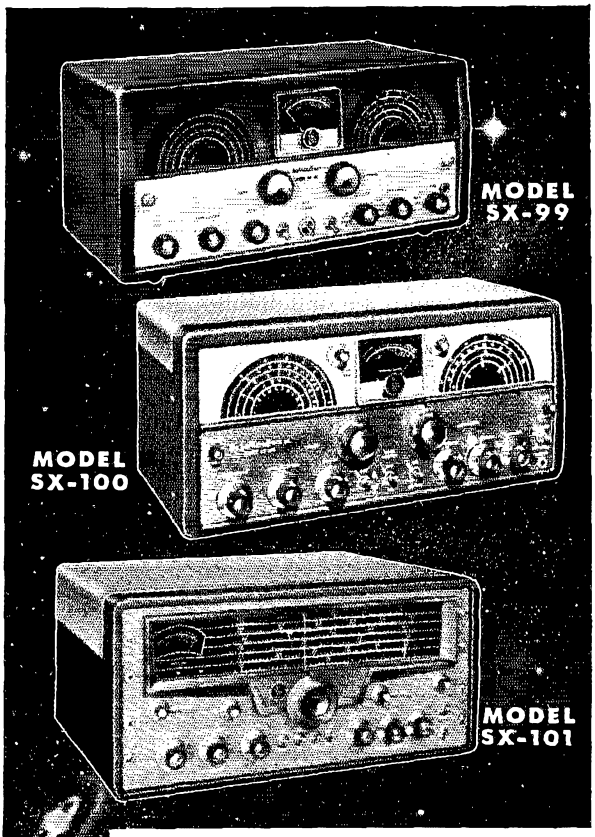

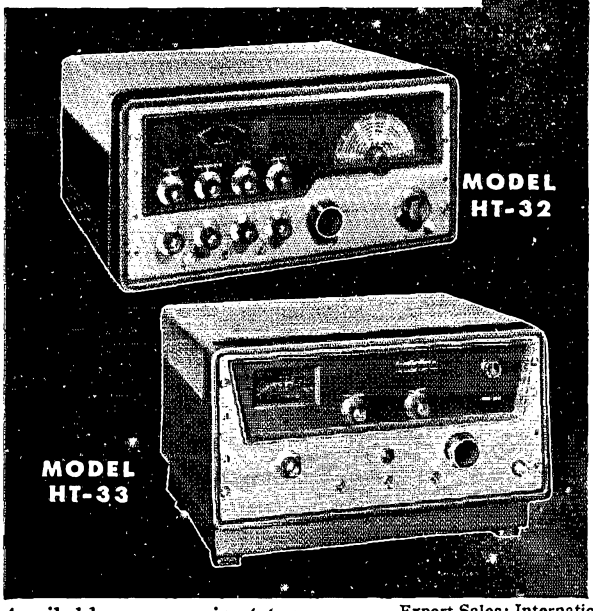

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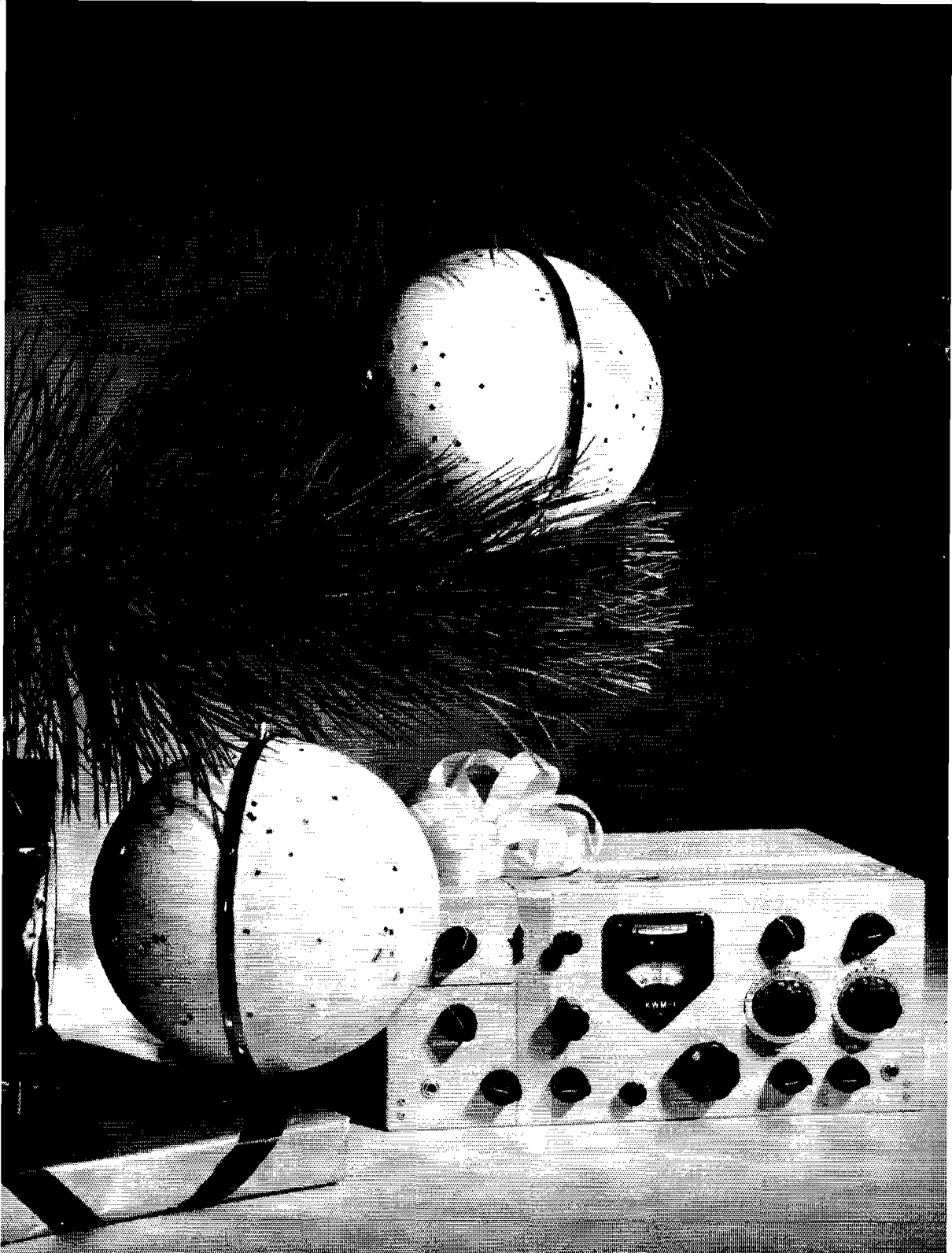

first on every Amateur's list*

*even if he already has the 75A-4 and KWS-1

QST

DECEMBER 1957

VOLUME XLI *NUMBER 12*

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

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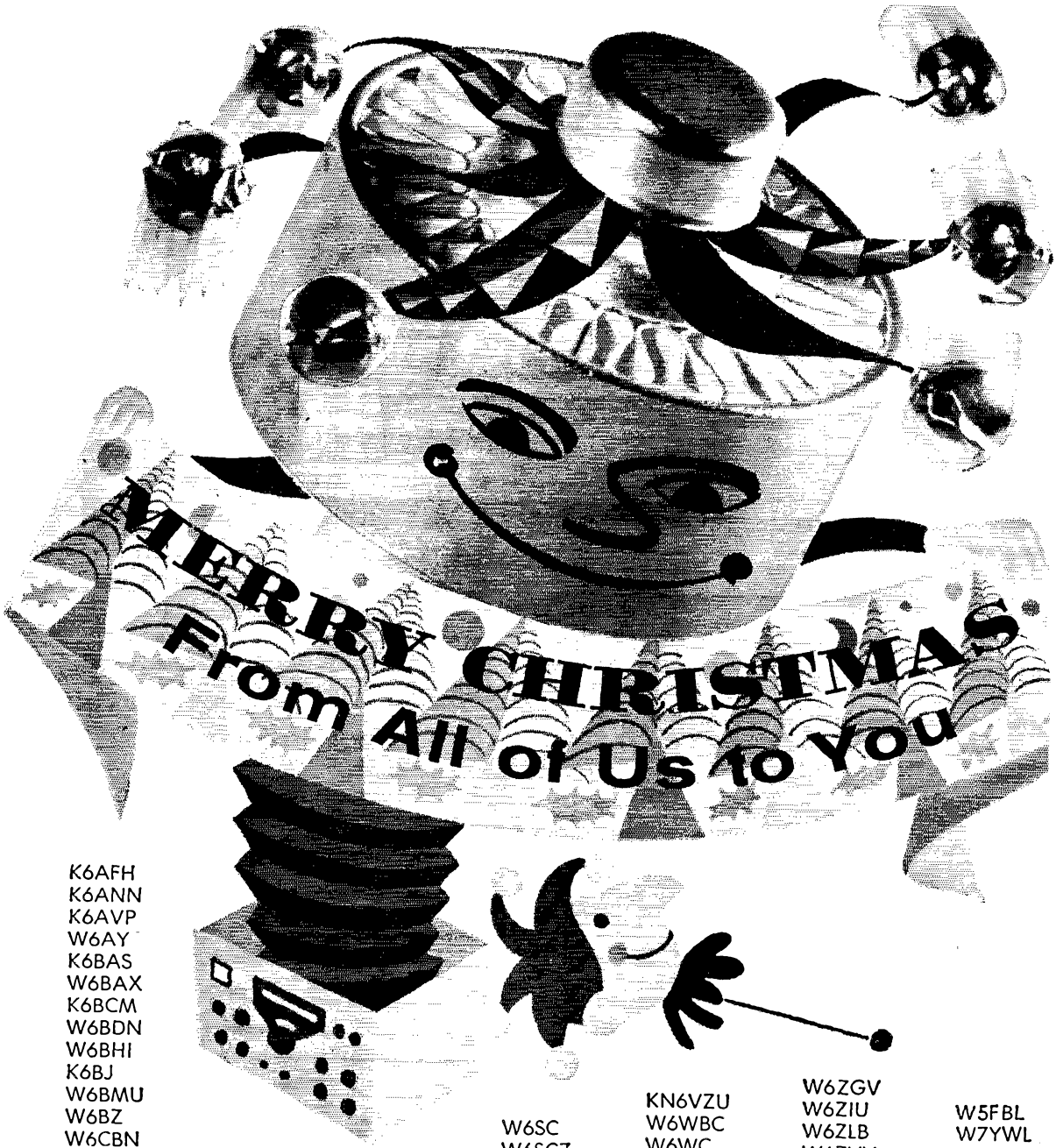

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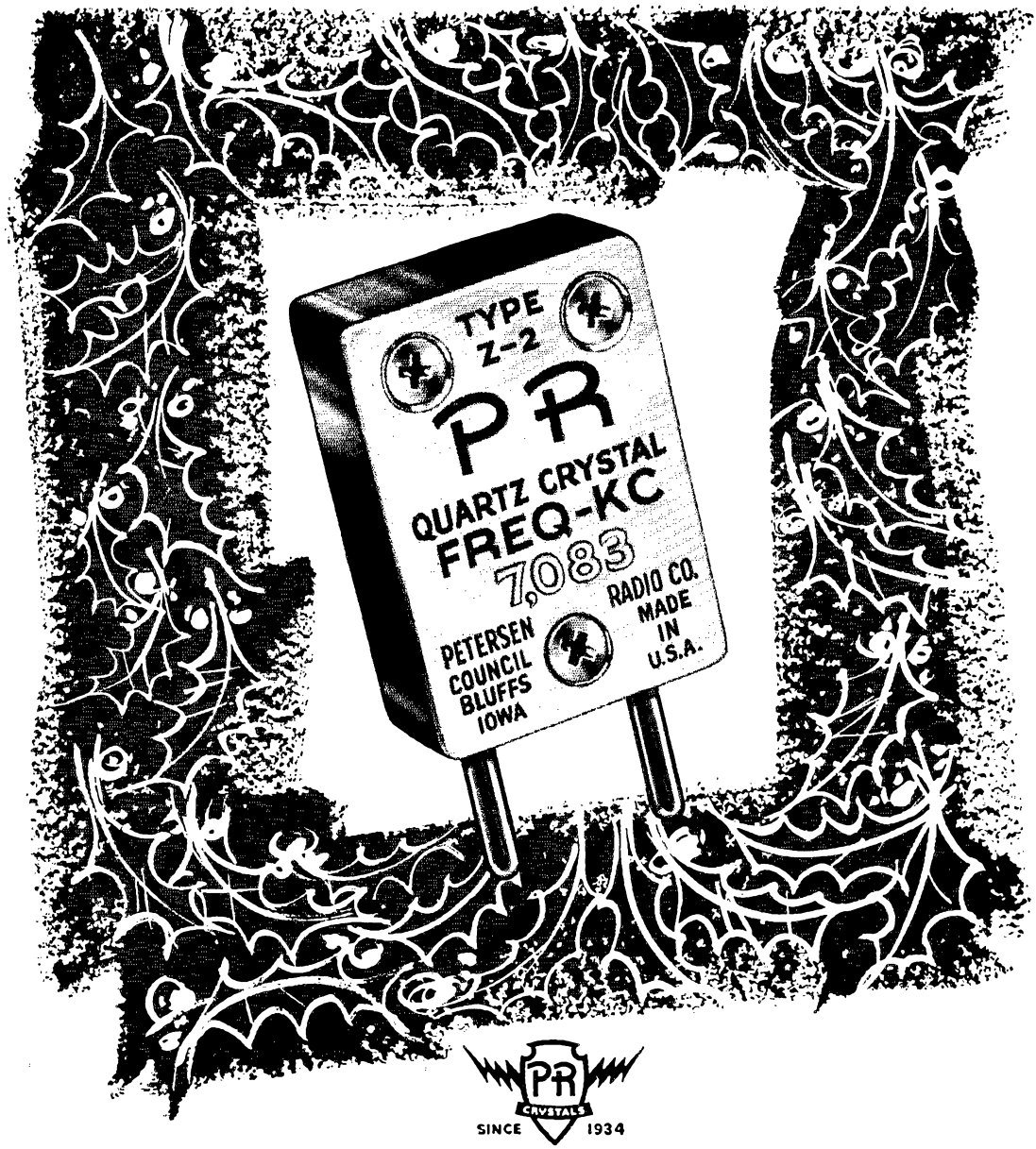

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SINCE 1934

PETERSEN RADIO COMPANY, Inc.

2800 WEST BROADWAY, COUNCIL BLUFFS, IOWA

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 (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members. These include ORS, OES, OPS, OO and OBS. SCMs 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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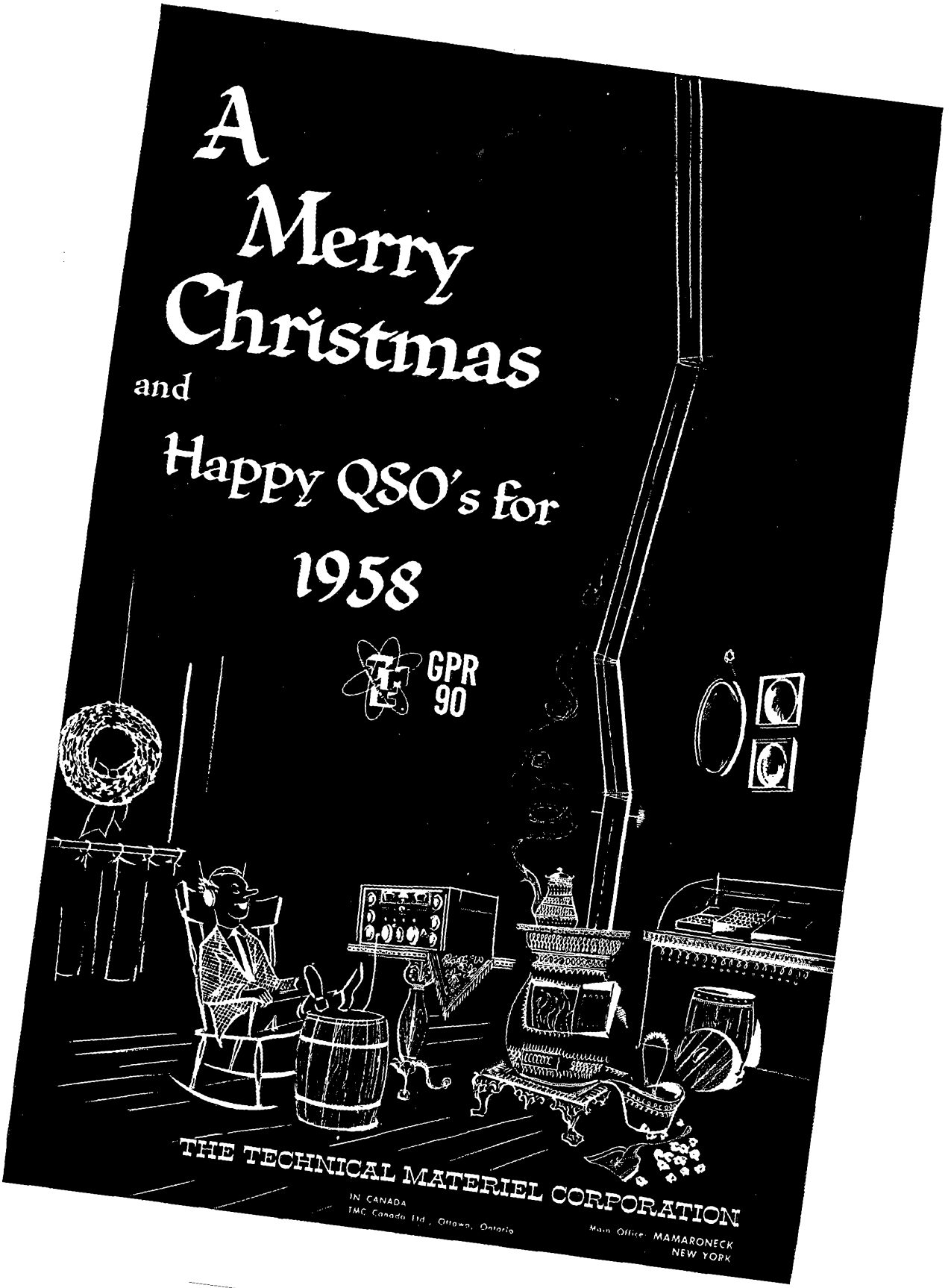
*Official appointed to act temporarily in the absence of a regular official.


A Merry Christmas
and
Happy QSO's for 1958
GPR 90
THE TECHNICAL MATERIEL CORPORATION
IN CANADA
TMC Canada Ltd., Ottawa, Ontario
Main Office: MAMARONECK NEW YORK

THE AMERICAN RADIO RELAY LEAGUE, INC.,

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

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

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

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

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

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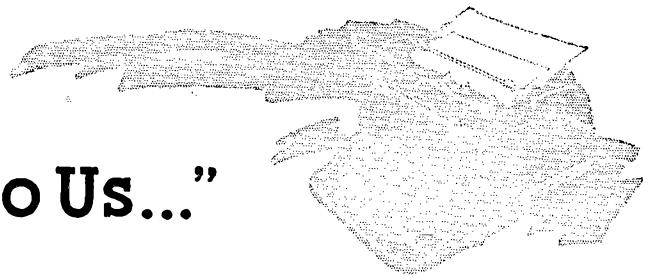


"It Seems to Us..."

DISASTER COMMUNICATIONS SERVICE

It seems to us that many organized amateur groups in the Amateur Radio Emergency Corps and the Radio Amateur Civil Emergency Service are overlooking one of the most useful tools provided by the Federal Communications Commission in the field of emergency communication. It is the Disaster Communications Service, which operates on fourteen channels in the 1750-1800-kc. band and is set up under a unique set of rules which make it valuable for liaison between the various services interested in emergency communications. Police, fire departments, the Red Cross, RACES, organized amateur groups in AREC, hospitals, the forestry service and other groups can communicate directly with one another on this band. Anyone eligible for a radio station license under any other part of the Commission's rules is eligible in DCS. The holder of any grade of commercial license and any amateur except a Novice or Technician may operate in DCS, though only to the extent they can operate in other services. A third-class licensee, for instance, is not permitted to make adjustments to the transmitter.

Not only can amateurs secure licenses to operate in DCS, but cross-band communications between amateurs operating in the ham bands and stations in DCS, when the latter are properly activated, also are permitted. Government stations, too, can secure authorization either to operate in DCS or to operate cross-band with DCS stations.

The equipment rules are not too severe. No particular types of equipment are specified,but the frequency tolerance is 0.015% of the channel in use, bandwidth allowable for an a.m. signal is 6 kc. with not over 100% modulation, and power inputs are up to 500 watts. It is seen, then, that amateur equipment used in the 1800–2000 shared segments can be adapted to use in DCS with little or no modification.

Automatic alerting devices are also permissible, as is automatic retransmission of other stations in the network. This makes many refinements to the art of emergency communications possible.

Application can be made by any responsible group presenting an integrated disaster plan for a community or larger area, approved by competent local authority. Where a civil defense organization exists, an official of the group will be accepted as competent authority. A disaster communications service can be established even where CD has not been organized, however, with the consent of the local authorities.

The rules can be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for five cents; ask for Part 20 — *Disaster Communications Service* — of the FCC Rules and Regulations.

SPUTNIKS AND MOUSES

Publicity for amateur radio has had many high points over the years, and at the risk of evaluating history which is quite recent, it seems to us that one of the outstanding by-products of the Russian Sputnik was the great amount of favorable publicity which resulted for amateurs. As soon as the news was announced Friday evening, October 4, and after the special W1AW bulletin had gone out, amateurs throughout the country tuned in 20 or 40 Mc. and monitored the now-familiar beep-beeps. The satellite was front-page news for days, and newspapers and broadcast stations turned to amateur radio men for feature-story material. Almost every press and radio report mentioned the monitoring activities of amateurs. The Russians may have struck a propaganda windfall, but U. S. amateurs came in a close second!

In recent weeks official IGY circles have been evaluating the technical results of Sputnik I as background for possible modifications of procedures for the next Sputnik and our own MOUSE (Minimal Orbit Unmanned Satellite of Earth). At meetings in Washington and Boulder, Colo., ARRL Technical Director Grammer has investigated fields in which amateurs can perform useful functions. The record shows that early amateur observations of Sputnik were highly useful to Project Vanguard radio-tracking headquarters at the Naval Research Laboratory in Washington; NRL has expressed its thanks for the splendid cooperation provided by amateur and other volunteer observers. Such observations, however, were

(Continued next page)

useful only during the first few hours of the satellite's life; once the general flight path was determined from early, though rough, observations, precision-measuring equipment took over the job. The role which the average amateur — i.e., short of participation in a group Minitrack or Microlock project — can play is outlined in an article in this issue of *QST*.

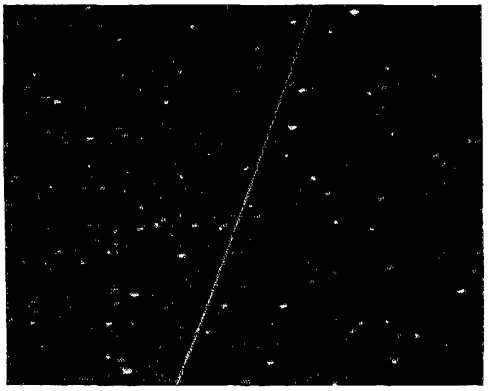
Also in following pages of this issue you will find details of a 40-Mc. converter whipped up by W1DF to aid in getting useful information from the Russian satellites; a description by W1HDQ of simple monitoring antennas; and an economy version of a previously-described 108-Mc. converter, by W1VLH. And don't pass up the article on Microlock — maybe *your* club would like to get started on this kind of a project, or the Minitrack system described in earlier issues.

The League has received a great number of reports of the activity both of individuals and club groups since the launching of the first space satellite, and we regret that — despite the fact that this is the largest issue in *QST*'s history — there is not sufficient space to record more than a few high lights on the following pages.

Holiday greetings from all of the Headquarters staff! We can't send a personal card to each and every one of you, but it is with pleasure that we do send you this, the largest issue in *QST*'s history.

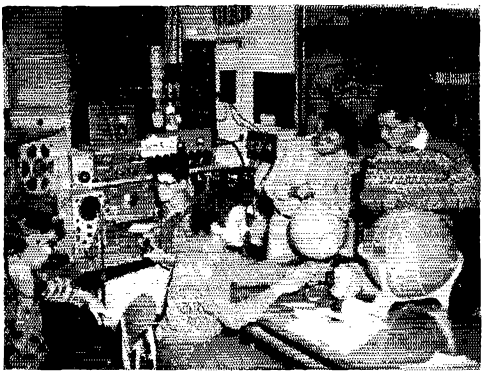
A Brief Report

Pictorially, on What Some Hams Did During Sputnik I's Early Travels



Down in Redding Ridge, Conn., about six A.M., W1DBM recorded the rocket high in the sky with his camera.

Even shaving was no interruption for W1IUC as he listens to the signals from outer space. At the left is W1MWB and at the right is W1BPV. The QTH is that of W1MWB.



The St. Joseph Catholic High School Radio Club (Cleveland, Ohio), led by Brother Michael Stimac, W8KTZ, spent numerous hours and some 20,000 feet of magnetic tape keeping tabs on the satellite. And they had considerable success in predicting the times that the satellite would next come through on the frequencies. Left to right are KN8EVB, K8DTS, KN8EGZ, KN8GKB, and W8UYZ. Information forwarded to us by the club demonstrates what a large amount of excellent publicity they generated for ham radio and what an excellent job they did in tackling this project.

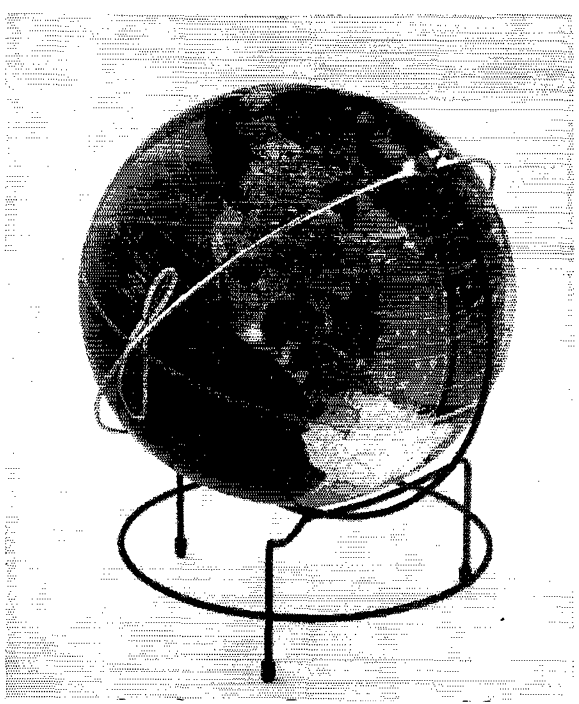
Dr. John Sharp, K5AKR, and "Space" Duane, K5BSD, both of El Paso, heard about the satellite early in its flight and proceeded to monitor it at great length. Using the announced (by the Russians) information that the satellite's orbit was inclined 65° to the equator together with a few computations of their own, these two were able to plot its estimated orbit. Here we see K5AKR (right) and K5BDS (left) looking over a graph of time vs. signal strength which they prepared from their recordings. They too got a considerable amount of excellent local publicity.

A couple of modest Hq. staffers managed to get their pictures in the paper. Technical Director George Grammer, W1DF, was beseiged by phone calls from the local papers and press associations and radio-TV stations as soon as the first announcement of the satellite came through from Moscow. George spent the next week issuing "public statements" on the day-to-day health of the satellite.

Phil Simmons, W1ZDP, ARRL's Assistant communications manager for c.w., recorded a considerable amount of tape and got this picture in the West Hartford News. The headline, however (Local Monitor Loses Satellite) left something to be desired!

Even the Fort Monmouth Signal Laboratory announcements concerning the satellite had a ham flavor. Harold Jaffe, W2TQC, had designed a v.h.f. radio direction finder for use in pin-pointing enemy ground stations, but when Sputnik came along the r.d.f. was pressed into service as a satellite tracker—with great success.

There was much good ham radio publicity in the Lexington, Ky., area, with both W4ODK and W4OEE being prominently mentioned. Col. John Rider, W2RID, well-known publisher of the Rider Manuals, happened to be a house guest of W4ODK that weekend of Oct. 4, and here we see him tuning in on 20.005 Mc. as W4ODK looks on.



We built an "orbit" for our lab globe so that we could more clearly visualize what the satellite and its rocket were doing. This construction is not completely accurate, for it does not take into consideration the angle with respect to the sun, but it does tilt the orbit at the correct angle of some 65° above the equator. The adjustable clamp will enable us to shift the "orbit" as necessary for future Sputniks and MOUSEs. All we have here is a ring of aluminum wire ('cause it was nice and shiny) and a brass clamp which holds the two ends of the aluminum wire at the desired angle.

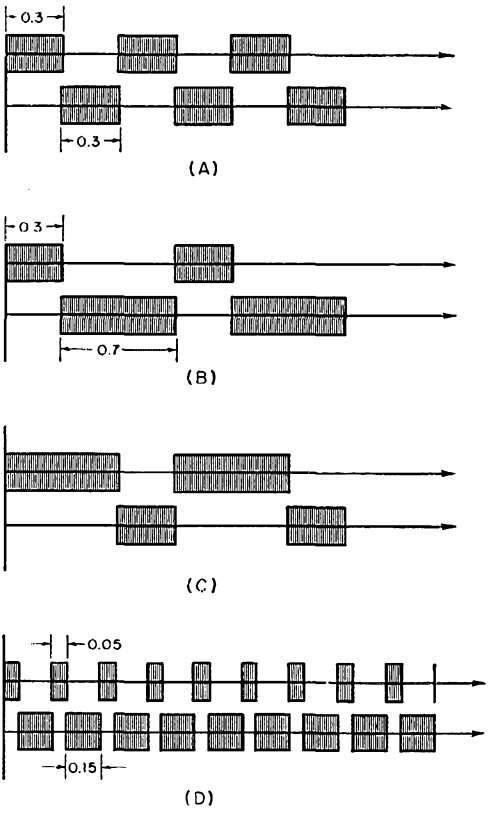
Note on Satellite Monitoring

FROM some of the so-called "Sputnik" logs we've seen, it is apparent that what some fellows were hearing definitely was not the satellite. Observations reporting the wrong signal not only are worthless, but may waste valuable time for those who have to analyze the data. So before you send any reports as described elsewhere in this issue, make absolutely certain that what you are reporting is actually a satellite signal and not some commercial circuit working near 20 Mc. — or even WWV!

Assuming that, as is likely, future Russian satellites will use approximately the same frequencies as the first Sputnik, those who plan to monitor 20-Mc. should spend some time familiarizing themselves with what normally goes on near that frequency. Locating WWV is the obvious first step, and getting familiar with its various forms of modulation, times of changing from one form to another, and so on, is the second (not forgetting that WWV is silent for about four minutes each hour beginning 45 minutes after the hour). A little time spent in checking the activity in the 10 kc. above WWV at various hours of the day should go far toward reducing the chance that some stray signal will be misidentified as the satellite.

A good deal of the confusion with Sputnik I arose from the fact that for a large part of the time the signal was simply a continuous carrier. When there is keying, identification should be relatively easy — although some types of keying aren't *too* different from what occasionally comes out of a point-to-point commercial transmitter. The accompanying chart shows some possible forms of keying on Russian satellite signals. The article in *Radio* (U.S.S.R.) from which this chart was taken does not explain what the various forms might mean; it merely says that signals of this type would be used to indicate "internal conditions" in the satellite — i.e., telemetry.

The Doppler effect is another excellent means for identifying a satellite. Although an exceptionally stable receiver is required for actual measurement, it can be observed in a qualitative way on any reasonably stable set if the beat oscillator is on and all controls are left alone during the satellite's passage. As described in the Russian article in November *QST* (page 22) the maximum total shift amounts to about 1000 cycles on 20 Mc. and 2000 cycles on 40 Mc. Because it sounds as though the transmitter (or receiver) frequency is drifting there is a strong temptation to keep retuning, but if you resist it the Doppler stands right out. No ordinary signals, even unstable ones, have anything quite like it.



Forms of keying stated as possibly to be used on Russian satellite signals. Numerals refer to duration of pulse in seconds.

U. S. Satellites in December?

There may be experimental satellite launchings from this country during December — both in the just-authorized Army project and as part of the regular Vanguard program. These satellites will have orbits at an inclination of 35 degrees and will have radio equipment operating on 108 Mc.

The 6-inch "preliminary" Vanguard satellites will have two transmitters, according to present plans, one on 108.00 Mc. and one on 108.03 Mc., with tolerances of ± 4 kc. in each case. Each transmitter will have its own antenna. The lower-frequency crystal will be mounted at the center of the satellite so the temperature will be as nearly constant as possible, but the crystal for the higher frequency will be temperature-sensitive and will be mounted on the satellite's skin. Thus the difference between the two frequencies will indicate the skin temperature. The sensitivity is of the order of 100 cycles per degree C. and the accuracy is expected to be ± 5 degrees.

Let's get those 108 Mc. converters built!

What To Do About Satellites

WITH A MIGHTY "Whoosh!" a giant rocket leaves the ground, trailing fire as it tears upward to surmount the atmosphere. Minutes later, an instrument-loaded, oversized basketball is given a final superpowered shove, putting it into a predetermined orbit where it will stay indefinitely, its radio transmitter signaling its presence as it starts its innumerable journeys around the Earth. Radio tracking stations, previously alerted, get their "fixes" as it passes by; in a matter of hours, the object's future position at any time has been approximated, in a matter of days, the orbit is known with all the accuracy that is possible by radio measurements. Thus another man-made satellite is successfully launched, and science begins making the measurements that, it is hoped, will unlock some of Nature's secrets.

A nice picture, to be sure — but what if it doesn't work out quite that way? What happens if the ball starts out in a wrong direction, out of range of those tracking stations that were set up so painstakingly for accurate bearings? What if it stays up for only a few hours, or for only a day or two? Is it lost with no clue? Did anybody hear its signals while it was flying? If so, where and how?

The radio amateur can be a handy fellow to have around during a satellite launching. The precision measurements that must be made, during the long pull, for results of real scientific value are beyond the capabilities of his equipment, in all but a handful of cases. But in those vital first few hours it may turn out that what he hears from the satellite is of inestimable importance. And whether or not the flight turns out ultimately to be a success, those early observations help to fill in gaps, help to give a more complete picture of the path before enough accurate bearings have accumulated to make its plotting a routine matter.

Almost every amateur, anywhere, can take part in this phase of Project Moonbeam.[1] Satellites to be launched from both the U. S. A. and the U. S. S. R. are involved, with the announced frequencies of 108 Mc. for the U. S. satellites and 20 and 40 Mc. for the Russian ones. Nearly everyone can listen on 20 Mc., and by this time nearly everyone has had a little practice at it on Sputnik. Comparatively, not nearly so many are equipped for listening on 40 and 108, but it doesn't take a world of trouble to get there, as the articles elsewhere in this issue show.[2] The thrill of participating in one of the great scientific experiments of all time ought to provide ample incentive to get going.

Is highly accurate direction-finding equipment such as the Mark II Minitrack necessary in order to contribute anything of value in the earth-satellite program? Or can the ordinary amateur without specialized equipment make himself useful, too?

Read this and see where you can fit in. You can help not only by supplying information that is wanted, but by not supplying data that no one can use.

What To Do at a Launching

The first satellite was launched completely without warning, and there may be little or no advance notice of some of the future ones. So keep your ears open and your equipment in readiness. Keep your clock on time with WWV. When the word comes, as it will pretty quickly through news sources and also W1AW, start monitoring 108 if it's a U. S. satellite, and 20 and 40 if it's Russian. If you hear the signal, record the *accurate* times at which it came in and went out. Note the character of the signal — strong, weak, steady, flutter fade, and so on — and the form of modulation, if any — keying, tone, or other.

Observations of this type will be useful during the first 24 hours of a satellite's flight if they are transmitted immediately to the Vanguard Control Center, Naval Research Laboratory, Washington, D. C. The information may be sent by telephone or telegraph (not collect) or by amateur radio. Washington amateur stations will be on the job to take satellite traffic and will be monitoring the frequencies shown in the accompanying table. Make your message concise, giving these items of information:

1) Your station call and location.
2) Date.
3) Frequency on which the signal was heard.
4) Time in (specify CST, MST, etc.).
5) Time out.
6) Strength.
7) Character.
8) Modulation.

A typical message might have the following form: "K7ZZZ TUCSON ARIZ DEC 3 SAT 108 MC. IN 2048 OUT 2057 MST S5 SLOW FADE TONE MOD."

After 24 hours this elementary information will not be needed unless called for. Watch W1AW for such a call, and if one goes out, mail your data to the Vanguard Control Center.

In general, observations at this stage will have greater utility if the signal is of "line-of-sight"

[1] Pickering, "Project Moonbeam," *QST*, November, 1957. The installation and operation of Minitrack Mark II and Microlock stations will be possible only for a comparatively small number of amateurs and is not discussed here because the organization of this phase has been going on separately for more than a year.

[2] Grammer, "Satellite 40-Mc. Converter"; Southworth, "Cutting Costs in the 108-Mc. Converter"; Tilton, "Antennas for Satellite Monitoring on 108 Mc."; all in this issue.

character. In the case of Russian satellites, therefore, the 40-Mc. frequency is to be preferred. However, 20-Mc. observations are better than none, and may be equally as satisfactory as those on 40 Mc. late at night after the m.u.f. has dropped below 20 Mc.

Call "CQ DCS" for a Washington Contact When You Have Satellite Traffic

The following Washington area nets will be on the air for the 24-hour period immediately following news of a satellite launching:

C.W.		*PHONE*	
MDD	3650 kc.	Maryland Emergency Phone Net	3820 kc.
VN	3680 kc.	VFN	3835 kc.
TCRN	7042 kc.	Cracker Barrel Net	28,600 kc.

Washington stations also will be monitoring the following National Calling and Emergency frequencies during the same period:

C. W.	*PHONE*
3550 kc.	3875 kc.
7100 kc.	7250 kc.
14,050 kc.	14,225 kc.
21,050 kc.	21,400 kc.
	29,640 kc.

Afterward

Observations during the second and third days of a satellite's flight can be used, although not on an urgent basis, provided more extensive information can be included. This might take the form of a bearing with direction-finding equipment, or precisely timed and reasonably accurate Doppler shift measurements. Unless the equipment is available to make such measurements, observations made after the first 24 hours cannot contribute anything of enough significance to be of assistance in establishing the satellite orbit and therefore are not needed. If these more extensive observations can be made, they should be mailed to the Control Center after the three-day period.

After the third day, only observations made with Minitrack Mark II equipment will be useful.

So much for the No. 1 phase — establishing the orbit. Everyone can help during the first few hours, very few of us after that.

Telemetering

The second phase of Project Moonbeam begins simultaneously with the first, but is of a different character — tape recording of the satellite signals. The principal object here is to make records of the modulation on the signals — that is, of telemetered data — chiefly in the role of backer-up for the official stations that will be doing such recording. Any amateur who has a tape recorder and can hear the satellite signals can take part. Record the satellite's passing whenever you can, but don't send the tape to Washington, Hartford, or anywhere else. Keep it for at least 48 hours, during which time word will go out if a recording from a particular section of the country is needed. If you do not get such word within the 48-hour period, the tape may be erased and used over again. This procedure will save effort, time and money for everyone concerned, since it is expected that it will be necessary to call for recordings only in the case of emergencies.

This phase obviously calls for some organization, particularly with respect to advising participants when tapes are needed. Details are now being worked out. It seems advisable for amateurs in the same locality to work as a group, if possible, both for better coverage (dividing observing time among a number of stations, for instance) and for ease of communication. In the meantime, if you want to take part please advise ARRL Headquarters to that effect, giving a list of the pertinent equipment available and some indication of the time you might have free for making observations.

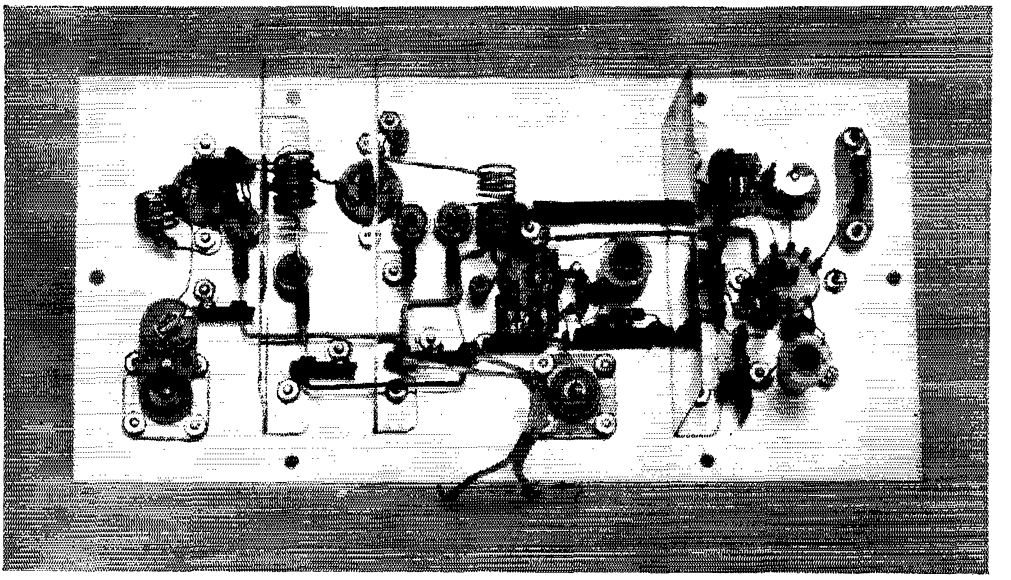
Besides the pure back-up feature, tape recordings can be useful in the case of unusual propagation conditions such as may occur during solar flares. The same 48-hour notification procedure will hold.

Experiments

Phase 3 of the program is the collection of amateur observations on the radio signals from satellites for such use as various scientific groups might be able to make of them. This part of Project Moonbeam is very much in the initial stages at present. The various Panels of the IGY have been invited to suggest (to the Panel on satellites) the types of observations they would like to have. Since at this writing these invitations are just going out, it will be some time before we have anything definite to pass along.

Nevertheless, time is short, and it seems only prudent for us to do immediately whatever seems likely to be useful and is within our capabilities. Since our own satellites will not be transmitting in the frequency range where long-distance ionospheric transmission of the ordinary type is generally possible, the 20-Mc. frequency used by the Russians offers an otherwise unavailable opportunity to observe phenomena associated with c.w. signals coming from outside the ionosphere and from a source moving at extraterrestrial speed. Some interesting things have shown up already. We therefore suggest that logs be kept that will tend to bring out any peculiarities in the behavior of the 20-Mc. signal. Such a log should be *accurately* timed, with significant points like time of appearance of the signal, time of disappearance, times of temporary fadeout and reappearance, and so on, recorded to the nearest second. This is not difficult, since an electric clock (one having a secondhand should be used) will ordinarily not have appreciable drift during a period of ten minutes or so, and can be checked against WWV immediately before and after the passage of the satellite to find the proper correction to apply to the clock reading. The log also should indicate the approximate variation in signal amplitude during a passage; this does not have to be highly detailed,

(*Continued on page 174*)



Bottom view of the modified 108-Mc. converter. The new 6AJ4 r.f. amplifier stage is at the extreme left. Vertical "lines" are three copper shield plates for interstage isolation. For additional details refer to the original description in *QST* for November, 1956.

Cutting Costs in the 108-Mc. Converter

A Less Expensive Version for General Satellite Monitoring

BY MASON P. SOUTHWORTH, * W1VLH

OCTOBER 4, 1957 and the Soviet launching of little Sputnik are history now. Suffice to say that "satellitis" proved every bit as catching as the Asian flu, and that every sort of wireless set imaginable which could be tuned to 20 or 40 Mc. was pressed into service for moon-listening. We suspect that many ham-bands-only communications receivers came in for their first cussing from once proud owners about this time!

The more forward-looking victims of "satellitis" began to think about equipment for listening in on the various Project Vanguard spheres due to be sent aloft shortly. Looking back through the pages of *QST*, we found little to recommend in the way of 108-Mc. receiving gear that wasn't a bit more than most of our pocketbooks could stand for such a side project. About a year ago, the writer described in these pages a very low-noise converter design which could be built for either 108 or 144 Mc.[1] The 108-Mc. version was intended to be used with the Minitrack Mark II system for obtaining accurate information about the orbits of U. S. artificial earth satellites during the IGY. Since the cost of a converter represents a very minor item in the budget of a Minitrack setup, we felt no pangs about making use of a relatively expensive first r.f. amplifier tube, the 417A, in our design, especially since over-all system performance of a high degree was certainly required. Little thought was given to the fellow who might want to do a little casual listening — just to say he'd heard the thing.

Clearly, there was need for a less expensive design than the November, 1956 unit. The obvious answer was to modify the original unit right where it hurt — that is, in the 417A stage. However, by replacing the 417A tube with, say, a 6AJ4, good performance could be retained and the price could be cut.

The modification was tried, and worked out to be both simple and successful. The 6AJ4/6AJ4 lineup had a noise figure of about 5 db. as soon as power was applied. A little time invested in optimizing the various tuned circuits yielded nearly a db. of improvement. No instability was experienced, and you should have no trouble equalling these figures with any well-constructed unit built according to our diagram and layout.

Mechanical changes from the original design

* ARRL-IGY Project Supervisor.

[1] Southworth, "A Low-Noise 108/144-Mc. Converter," *QST*, Nov., 1956.

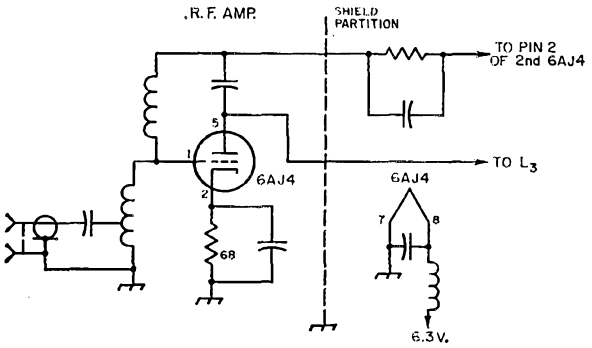


Fig. 1—Circuit of the modified r.f. amplifier stage. Except for the 6AJ4 and the cathode resistor, components are the same as in the circuit on page 12, November, 1956, QST.

are mainly the result of the 6AJ4's different pin connections. For best layout, the tube socket should be turned 180 degrees from its 417A orientation. This will make for short leads to the various element connections. The only electrical change consists of substituting a 68-ohm cathode resistor for the higher value one used previously. The other resistors and capacitors, and the various coils, can be the same as for the 417A.

Rather than labor any further over such simple changes, we refer you to the detailed construction and adjustment sections of the original article. Careful following of the former will considerably simplify the latter, and you should come out with a good, usable design which can later be converted to two meters, either with or without the 417A. Of course, you may become so taken with the "music of the spheres" that you will want to leave the set right on 108 Mc. — particularly in view of new developments which make it possible for a ham with only a receiver and a recorder to take a useful part in the IGY satellite program.[2]

[2] See "What To Do About Satellites," this issue. — *Editor.*

Strays

Outer space being in the headlines so much these days, it is only fitting that we consider amateur awards which transcend the difficulty and romance even of WAS. For many years there has reposed in the offices of your Headquarters this handsome cup shown at the right. It was donated by Fred Elser, now W2GVU but who has held many, many calls throughout the world, and by S. M. Mathes, who at one time was SCM of the Philippines and was KA1CY. This cup, or whatever it is, is to be awarded to the first amateur (on Earth) who establishes two-way contact via amateur radio with the planet Mars.

So, you who aspire to contact outer space, remember that one of your rewards may be this impressive Elser-Mathes trophy!

Antennas for Satellite Monitoring on 108 Mc.

ANTENNA SYSTEMS for tracking the satellites to be launched as part of the United States IGY program have been described in *QST*.[1] But these were for the Minitrack installations, which are admittedly beyond the scope of individual workers, and all but the more advanced amateur groups. How about the fellow who merely wants to listen for the satellites, and perhaps record his reception, once it is achieved? This now seems the most likely opportunity for the average amateur to contribute to Project Vanguard.

If he is in a part of the country where the satellite orbits will pass overhead he may need something special in the way of arrays, but a large number of U. S. amateurs will be well to the north of the path. They will see the satellites, if at all, only low on the horizon. Thus the antenna requirements will not be unlike those of normal v.h.f. reception and communication. Low-angle arrays having not too sharp a pattern in either the vertical or horizontal planes will be needed. For this work the conventional Yagi array appears a logical choice.

The Easy Way

Probably the simplest and very likely the least expensive way to provide for 108-Mc. reception with some gain and directivity is to revamp a TV antenna. There may be arrays on the market for the 88–108-Mc. f.m. band in some areas, but TV arrays are everywhere, and cheap. The spacing of the elements on the boom is not particularly critical, so if a TV antenna for Channel 6 is available it will be necessary merely to cut the elements down for 108 Mc. The conical type of TV array being a broadband design, will work fairly well with no modification at all. The Yagi array, with element lengths adjusted for maximum gain at 108 Mc., will be better by several decibels, however.

Most TV antennas are made with elements that fold back against the boom for compact packaging and quick assembly. With this type of construction it is necessary to cut off both ends of each element. Dimensions for up to 5-element beams should be as follows:

Driven element — 51 inches
Reflector — 53.5 inches
First director — 48.5 inches
Second director — 48 inches
Third director — 47.5 inches

Dimensions for optimum performance tend to be more critical as the number of elements increases. For conversion of long TV Yagis it might be well to scale the manufacturer's element lengths and spacings down from the TV channel for which the array was designed to 108 Mc.

[1]Easton "Radio Tracking of the Earth Satellite," *QST*, July, 1956, p. 38.

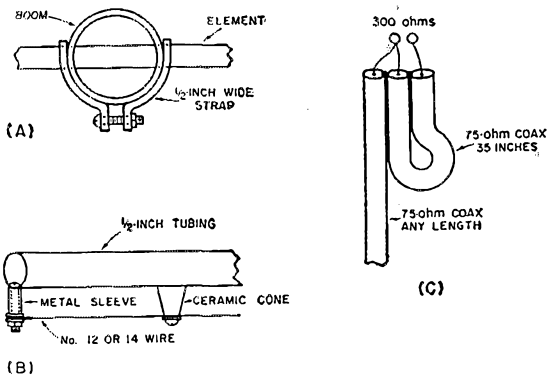


Fig. 1 — Mechanical details of 108-Mc. Yagi antennas. A simple but effective way of holding elements in place is shown at A. Boom material can be metal, wood or bamboo. One end of a folded dipole for stepping up impedance is shown at B. The main section of the dipole is ½-inch tubing, running through the boom as shown at A. The fed portion is wire, supported on small cone insulators. Electrical connection is maintained by the metal sleeve, bolt and nut at the end. A balun for feeding the center of a 300-ohm antenna with coaxial line is shown at C. A 200-ohm array could be fed similarly with 50-ohm coax.

Matching

TV antennas are designed for 300-ohm transmission lines, ordinarily. If the element spacing is left the same as in the original, altering the array for a higher frequency will tend to raise the feed impedance somewhat. Where the change is merely from Channel 6 to 108 Mc., this is not likely to cause a serious mismatch. If you are match-conscious, and you give the TV antenna designer credit for having been the same, you may want to scale the spacings of the elements down from the original, to keep the relationship between the elements the same, in terms of wave length.

The revised array may be fed with 300-ohm Twin-Lead. Or, if the coax is preferred (and it is desirable from the standpoint of keeping down spurious signal levels at the receiver) a balun may be inserted at the array. The feed line can then be 75-ohm coaxial line. Dimensions and construction of the balun are shown in Fig. 1.

Making Your Own

Making antennas for v.h.f. applications is easy, and if materials are on hand that can be adapted to the purpose you can probably save some money by doing the work yourself. The range of usable materials and possible mechanical designs is almost infinite. Wooden or even bamboo booms may be used, if suitable metal tubing is not at hand. Round poles such as rug or closet poles are fine. The elements may be almost any kind of metal rod or tubing that will stand up with only a center support — or there is nothing to prevent putting on supports, if they are necessary mechanically.

Regardless of the boom material, the elements need not be insulated from the boom. Rod or tubing about ¼ inch in diameter or larger is fine for elements, except the driven one. If the boom is of wood the elements may be run through it and held in place with wood screws. If hollow tubing (bamboo, fiber or metal) is used for the boom a very simple clamp arrangement, shown in Fig. 1, will hold the elements firmly in place. These clamps may be made of sheet metal, preferably the same as that of the elements to prevent electrolysis.

Element lengths may be as given above. These dimensions are optimum for an element spacing of about 0.2 wave length, or 21 inches at 108 Mc. This may be the same between all elements, but if it is desirable, in order to get the greatest number of elements on a given available boom length, the reflector spacing may be pulled in to as little as 15 inches.

The simplest way of matching the home-built Yagi, particularly where it is to be used for receiving only and no power source can be used for matching adjustments, is the folded dipole, a portion of which is shown in Fig. 1. Here the fed portion of the dipole is made of smaller material than the main portion, the relative sizes of the parts and the spacing between them determining the impedance step-up obtained.

A 4- or 5-element array with the dimensions given will have a feed impedance of roughly 25 ohms. If we are to use 300-ohm line, or 75-ohm coax and a balun, we will need to step this up 12 times. A main element of half-inch tubing and a fed portion of No. 14 wire, mounted ¾ inch away from it, will just about do it. If 50-ohm coax and a balun (dimensions same as in Fig. 1) are used the wire may be No. 12. In either case it may be held at a fixed distance from the larger portion by soldering to small lugs fastened to ¾-inch cone stand-off insulators.

Stacking

More gain and a lowered radiation angle, if the latter can be used, may be obtained by stacking two arrays one above the other, at spacings of a half wave length (53 inches) or more. If half wave-length separation is used, two 300-ohm arrays can be phased with a line of about 400 ohms impedance. TV-type line of the open-wire variety is suitable, or a better line can be made of No. 12 wires spaced about ¾ inch apart. The feed impedance of such a stacked array, at the midpoint of the phasing line, is then about 300 ohms.

Higher gain may be obtained with increased stacking dimensions. Optimum for 5-element arrays is about one wave length, or 107 inches. The wire size and spacing of the phasing line are not important in this case. The feed impedance at the midpoint is about half that of each array alone. Not too serious a mismatch is thus obtained if 50-ohm coax and a balun are used at the midpoint, when the individual bays are designed for 300-ohm feed.

Height

If the array is mounted above wires and other metallic objects by 8 feet or more they will not affect the performance to a large extent, but preferably the array should "see" a clear field in the direction of reception. Wires, trees or buildings in the line fire may not have a serious effect, but getting above them is certainly desirable. Other than permitting a clearer view, great height is not of major importance. Where higher ground lies along the path the antenna should be high enough so that the normal pattern of the array clears the obstacle, if possible. A high mountain range across the path may not be a deterrent to reception, if it is a single range, and at such a distance that the antenna pattern grazes the top of it or clears it completely. In some locations the mountains may even provide a degree of refraction of the "knife-edge" variety that will give stronger signals than would be obtainable over open terrain. — *E. P. T.*

FEEDBACK

The 12-volt heater circuit in Chambers' latest mobile converter, *QST*, November, page 17, is incorrect as shown. Pins 4 and 5 of V_2 should be connected to Pin 4 of V_1. Pin 9 of V_2 should be connected to S_{1C}.

Microlock

A Tracking Receiver for Satellite Communications

BY HENRY L. RICHTER, JR., *W6VZA

This article describes a technique recently applied to communications. The receiver described has been built by the San Gabriel Valley (California) Radio Club for use in tracking the earth satellite and for receiving telemetering from the satellite. Using a phase lock-loop system with very narrow band width, the receiver has been designed for reception of signals approaching or below the noise threshold of conventional receivers.

DUE TO THE WIDESPREAD interest in amateur radio participation in the IGY and the possibility of amateur satellite tracking, a receiver has been developed by the San Gabriel Valley Radio Club which will be useful for both tracking the satellite (as it passes through the antenna pattern) and for recovering information which may be placed on the carrier of the satellite transmitter. Fig 1 is a block diagram of the system. As has been described before (Reference 1) the satellite transmitter will operate on 108 Mc. Several satellite experiments and pay-loads are contemplated, involving different types of scientific measurements. Some of these experiments will place continuously telemetered information on the carrier, some will place information on the carrier only when interrogated by an official Minitrack ground station, and others will have continuous transmission of information, plus transmission of data stored during the previous orbit upon interrogation.

The receiver as designed is capable of tracking the satellite with an accuracy of two or three milliradians of arc.[1] It will also detect either f.m. or a.m. modulation of the carrier frequency and hence will be useful for recording information telemetered from the satellite. Three antennas serve as an interferometer system to get either east-west or north-south position data. A fourth antenna is used as a reference antenna and could also be used for communication purposes. The pattern of the antenna system is broad and the satellite can be tracked from horizon to horizon. The satellite would hence be "visible" for some ten minutes on a pass that went directly overhead.

The Microlock Receiver

The receiving equipment described in this article is a simplified version of the Microlock tracking and communications system developed by the Jet Propulsion Laboratory of the Califor-

* 1490 Wellington, Pasadena, Calif.

[1] A milliradian is 1/1000 radian = 0.0573 degree or 3 minutes 26 seconds of arc. — *Editor.*

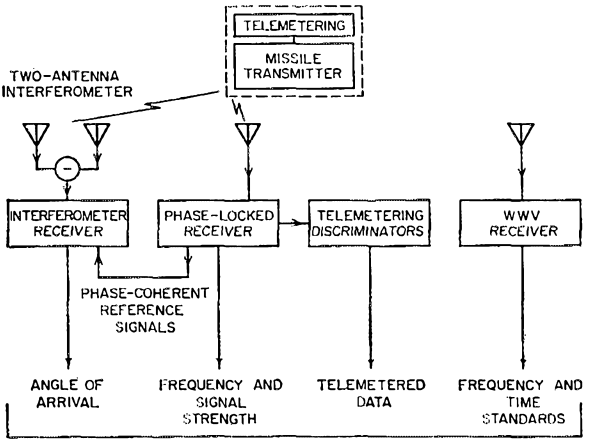


Fig. 1—Block diagram of the Microlock system.

nia Institute of Technology, Pasadena, California, under contract with the United States Army Ordnance Corps (Reference 2). The original receiver has a sensitivity of −150 dbm., corresponding to a sensitivity of 0.007 microvolts in 50 ohms. This high sensitivity is achieved by use of a narrow band width receiver system tracking the carrier frequency in phase. The receiver described has a radio frequency tracking band width of 10 cycles. A phase-locked system is used so that the 10-cycle band width always includes the carrier frequency. The receiver is able to shift this 10-cycle band automatically to follow such changes in carrier frequency as would be expected from the satellite Doppler shift or the transmitter frequency drift. The tracking rate of the narrow band width of the receiver is limited by the received power. Under conditions of threshold input signal (−150 dbm.), the maximum allowable tracking rate is something on the order of 25 cycles per second per second. At higher input signal levels the tracking rate can be quite rapid. The communications system was intended for use in tracking minimum-power transmitters at the extreme range line-of-sight distances attained by modern missiles.[2]

The main part of the receiving system shown in Fig. 1 is the phase-locked receiver which will demodulate the information on the carrier as well as supply phase-coherent signals to an interferometer receiver. A system of frequency and time standards has been worked out to measure both the carrier frequency of the satellite transmitter and to provide reference timing for the various recorded data.

The basic phase-locked loop is shown in Fig. 2.

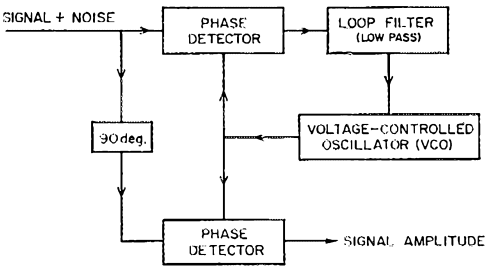


Fig. 2—Basic phase-locked loop.

A detailed explanation is contained in the appendix at the end of this article. The operation of this device is similar to that encountered in horizontal oscillators used in television receivers, which "lock on to" and reproduce a frequency indicated by a sync pulse.

Reference Channel

The full block diagram for the receiver developed by the San Gabriel Valley Radio Club is shown in Fig. 3. The phase-locked servo system is composed of blocks 2 through 6. Block 1 is a wide-band preamplifier located at the antenna to aid in overcoming cable losses. Block 2 is a mixer stage which is used to heterodyne the 108-Mc. signal to 19 Mc. using the 127-Mc. voltage-controlled oscillator (block 6). A stable communications receiver (block 3) is used as an i.f. strip. Block 4 is a phase detector, similar to that shown in Fig. 2, that compares the output of the receiver (455 kc.) with a 455 kc. signal generated by a reference crystal-controlled oscillator (block 7). If the 455-kc. output from the receiver does not agree exactly in frequency and phase with the reference oscillator, the phase detector produces an output proportional to the sine of the angle of phase difference between the two signals. This output is filtered (block 5) and applied to the voltage-controlled oscillator (block 6). The filtered phase-detector output will then control the 127-Mc. local oscillator to make the doubly converted input signal precisely 455 kc.

The loop filter (block 5) is in the circuit so that the voltage-controlled oscillator (v.c.o., block 6) will not follow rapid frequency or phase fluctuations of the signal. Thus the voltage-controlled oscillator output is a true replica of the input signal (removed 19 Mc. in frequency, however). The phase-locked servo system has a tracking band width of 10 cycles. This implies that changes in the carrier frequency that occur more rapidly than 10 cycles per second are not tracked. Any frequency or phase modulation of the input signal occurring at a rate faster than 10 cycles per second shows up as an error signal from phase detector 4, but since the error is not cancelled by frequency or phase shift of the v.c.o., the detector output contains the phase or frequency modulation of the signal. This output can be amplified and placed on a tape recorder for the purpose of recording frequency or phase modulation of the incoming carrier.

Phase detector 8 is included as a detector of signal strength or amplitude modulation. A 90° phase relationship exists between the inputs to phase detector 4 and phase detector 8. This is for the purpose of changing phase detector 8 from a sine function to a cosine function (which is not affected by changes in angle near zero degrees). The output of phase detector 8 is therefore not sensitive to small differences in phase between the reference oscillator and the converted incoming signal, but instead is proportional to the amplitude of the weaker of the two. The output of phase detector 8 thus contains amplitude modulation information; this output is filtered (block 9) for the purpose of obtaining signal strength information. A system is arranged so that the audio amplifier can select

[2] Another measure of the sensitivity is the following: Assuming isotropic (unity gain) antennas, the receiver has a capability of tracking a device radiating 1 milliwatt of power at 108 megacycles to a line-of-sight distance of over 3000 miles. With typical modulation indices, the corresponding information (or message-sending) band width for the threshold signal is one bit (or cycle) per second. Such a system would be useful for very slow c.w., but is hardly applicable for phone use. One way of looking at the one cycle per second information band width is to specify that information may be sent on events occurring no faster than one per second. The actual modulation-frequency range is a function of the receiving system itself.

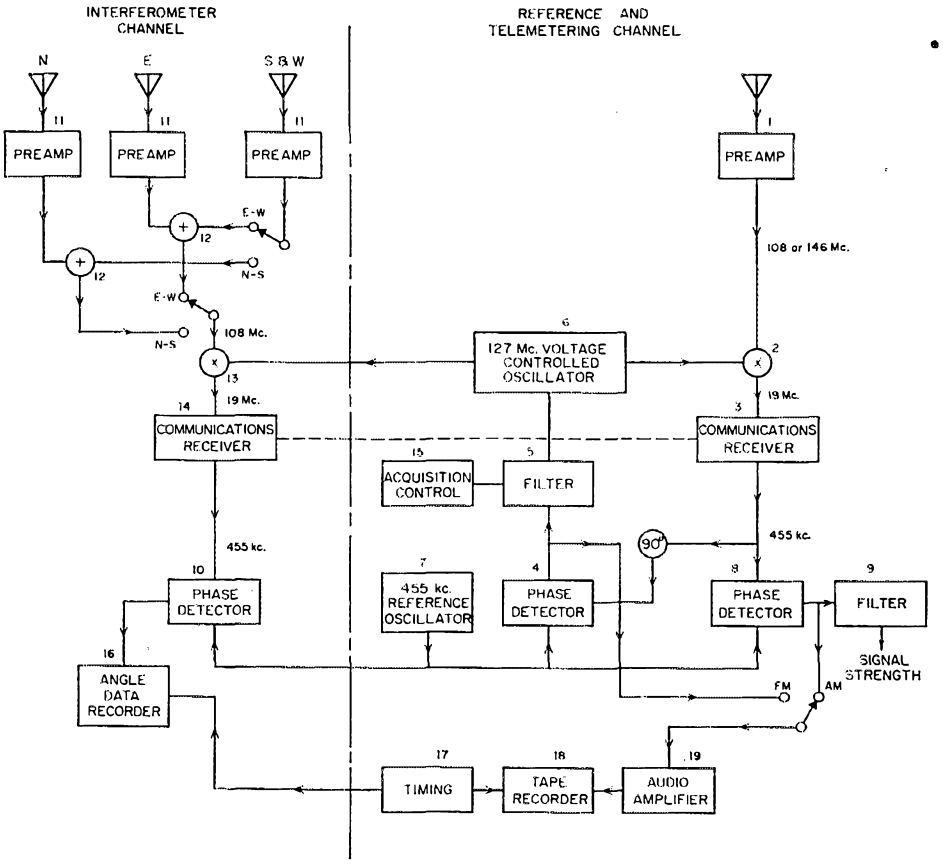


Fig. 3—Microlock receiver built by the San Gabriel Valley Radio Club.

outputs from either the f.m. or a.m. channels for the tape recorder.

When the converted incoming signal is not far in frequency from the reference oscillator, the voltage-controlled oscillator, depending on the signal strength, will move in such a direction as to acquire phase lock with the signal. However, if the signal is too far away for this to be accomplished some other means of "acquiring" the signal is required. Here the technique is to use an "acquisition control" circuit which slowly sweeps the frequency of the v.c.o. by introducing a small current into the capacitor in the loop filter (block 5). The frequency of the v.c.o. is slowly swept through its range until the signal has been acquired, at which time the phase detector output takes over and controls the v.c.o.

Interferometer Section

The section of the receiver to the left of the dotted line in Fig. 3 is the interferometer channel used for making measurements of the angle of arrival of the radio waves from the satellite. The principles governing the use of interferometer antennas have been well described previously (References 1 and 3). Several alternates are possible. Three antennas are involved for this channel, two of which are used at any one time. The antennas are arranged in the form of a right triangle so that one antenna serves as a common point and an east-west or north-south base line can be used depending on which of the other two antennas is selected. This is indicated in Fig. 3 with the switch in the east-west direction. As the satellite passes through the antenna pattern (a 200-foot base line gives 40 nulls in the antenna pattern) a varying signal is produced which is a combination of the satellite motion over the field of view, and the antenna pattern. As the satellite passes into an antenna null, the signal strength becomes very low. In a manner similar to that just described for the measurement of signal strength of the incoming signal (phase detector 8) another receiver channel and phase detector (blocks 10, 12, 13, and 14) is used to measure the strength of the signal from the combined interferometer antenna system. (Phase detectors 8 and 10 operate on the same phase in that they are signal-strength indicators; the quadrature relationship is necessary only so far as the relative phase of the signals entering phase detector 4 and phase detectors 8 and 10 is concerned.)

The record produced by the satellite passing through the antenna pattern is somewhat dif-

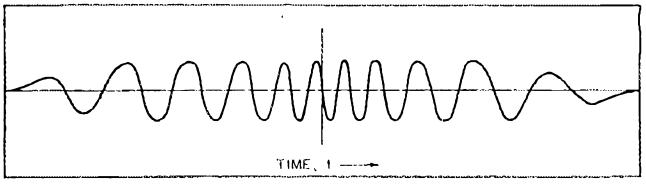


Fig. 4—Typical ink-recorder trace of satellite signal during transit.

ferent from that described in Reference 1, in that, since phase coherence is retained, the trace is of the type shown by Fig. 4. For the same reason, polarity of the angle-of-arrival data exists so only 20 ambiguous nulls (from a 40-null antenna) are obtained. The output of phase detector 10 is recorded on a pen-recording device for the purpose of rapid reduction of angle data. The timing channel is also put on the angle data recorder for the purpose of determining precise meridian-plane crossing time.

The interferometer channel of the receiver works similarly to that described for the reference channel. A preamplifier (block 11) is included in each antenna location. The antenna cabling system is arranged so that the output can be taken from either of two hybrid networks (block 12). The 108-Mc. signal is introduced into a mixer stage (block 13) which is also fed from the 127-Mc. v.c.o. (block 6). The output of this mixer will again be at 19 Mc. and is sent through a communications receiver (block 14) in the same manner as before (block 3). The signal is taken from the communications receiver at 455 kc. and introduced into a phase detector (block 10) which is also referenced by the 455-kc. reference oscillator (block 7). Signal strength is detected as described above. Since each of the communications receivers has a local oscillator, and since phase coherence must be retained between the two channels, the local oscillators of the two receivers must be locked together (dotted line between 3 and 14). Any drifts in the local oscillator in communications receiver 3 will be compensated since the servo loop is closed around this receiver. However, the other receiver (block 14) cannot introduce any phase or frequency deviations to the incoming signal, or the 455-kc. output will not be in phase synchronism with the reference oscillator.

The relative phasing of any two antennas of a given interferometer pair is accomplished by adjusting cable lengths. The antenna systems are balanced in amplitude by adjusting the gain of preamplifiers (block 11). This system is not as applicable to radio star calibration as the Mark II Minitrack system described previously (Reference 1) since the antenna system here is such that it sees from horizon to horizon. Several radio stars are usually simultaneously present in the sky, and discrimination cannot be made between them unless the antenna pattern is considerably narrowed.

It should be emphasized that although the interferometer antenna system mentioned here has a base line of 200 feet and an accuracy of 2 milliradians of arc, a much more precise system could be used (Reference 3), provided a very wide beam antenna were used as the reference antenna. The 200-foot system was used because of available space and because radio astronomers report random shifts of about 1 milliradian in the arrival direction of the signals from radio stars (which was used as a criterion of meaningful accuracy here).

Conclusion

The receiver just described uses two highly stable communications receivers complemented by several auxiliary circuits. A system using only one receiver will provide an indication that the satellite is present in the sky and will receive telemetering using a single antenna of low gain. However, the receiver as described provides both a telemetering receiver and an interferometer receiver for angle-of-arrival measurements of the satellite signal. Auxiliary equipment is needed which has not been discussed in this article: namely, a precision timing source and a calibration oscillator. Details of these pieces of equipment can be obtained directly by writing to the author. It is also requested that any amateur radio groups that are interested in building satellite-tracking stations of this variety communicate with the author to assure that they be kept up-to-date with the latest circuits and plans.

Although the sensitivity of the Microlock receiver is greater than that required to detect an 80-milliwatt satellite transmitter 300 miles overhead, this sensitivity will be required to track a satellite if either (1) the satellite transmitted power is decreased (as it may be for later satellite experiments to increase operating lifetime), or (2) it is desired to track the satellite in an orbit that is much farther than 300 miles from the earth or which does not pass much above the radio horizon.

Experiments are being started to explore the use of this receiver for amateur communications at 146 Mc. A system is presently being devised to permit the use of the two sections of the receiver to listen independently on the Russian satellite frequencies of 20 and 40 Mc. Since it has been indicated that the Russian satellites will use a one-watt transmitter, a receiver of high sensitivity will not be required.

Acknowledgments

The valuable assistance of Robert Legg, W6QYY, H. R. Mecke, W6ZGC, and Keith Bradshaw, W6DAO, all of the San Gabriel Valley Radio Club, Inc., is gratefully acknowledged. The author would also like to acknowledge

the assistance of several co-sponsors which have provided valuable aid to the San Gabriel Valley Radio Club in support of their tracking station: The Birtcher Corp., Caltech Jet Propulsion Laboratory, Consolidated Electrodynamics Corp., The Fluor Corp., Hoffman Laboratories, Inc., Hoffman Television, Inc., Specific Products, Inc., United States Naval Ordnance Test Station Annex. The author would also like to thank Mr. Roger Easton of the Naval Research Laboratory for his comments and suggestions.

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1) Easton, R., "Radio Tracking of the Earth Satellite," *QST*, July, 1956, p. 38.

2) Richter, H. L., Sampson, W. S., Stevens, R., "Microlock: A Minimum Weight Instrumentation System for a Satellite," *External Publication 376*, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, Calif., April 16, 1957.

3) Easton, R., "Mark II Minitrack Base-Line Components," *QST*, Sept., 1957, p. 37.

Appendix

Basic Lock-Loop Circuit — The basic phase lock-loop circuit is illustrated in Fig. 2. There are a number of ways explaining the operation of this circuit, and there are a number of names applied to it, such as synchronous detector, linear detector, phase locked-loop, tracking filter, and others. The operation of this device makes use of previously known information about the input signal. For example, it is known that the signal from the satellite transmitter will be a coherent sine wave. The side-band power will be reasonably low. The rates at which the carrier frequency will shift are known and the approximate frequency of the carrier is known. The phase-sensitive detector in Fig. 2 is a device for comparing two signals.

The output of the phase-sensitive detector is proportional to the sine of the phase difference between the two signals applied. In this case the two signals are, first, the input consisting of signal plus noise, and second, a local estimate of the signal generated by a stable sine-wave oscillator. The output of the phase-sensitive detector is filtered, and the loop closed to the local oscillator, which in this case is a voltage-controlled device. If the two input signals are approximately, but not exactly, equal in phase, an output will be produced by the phase-sensitive detector which will correct the local oscillator frequency and phase. By means of the closed servo loop just described, a tracking device is produced whereby the local oscillator is made to follow the applied signal not only in frequency but also closely in phase. The closed servo loop is a null-seeking system which operates in such a manner that the sine wave produced by the v.c.o. is 90° removed from the input signal. This results in the phase detector output being proportional to the sine of the phase difference between the input signal and the v.c.o.

The output of the phase-sensitive detector contains the product of the input and the locally generated sine wave and can be represented $(S + N)S^* = SS^* + S^*N$ (where S^* is the locally generated signal, S the input signal, and N the input noise). The output from a conventional square law or product detector (which multiplies the signal by itself using a nonlinear device) is mathematically $(S + N)^2 = S^2 + 2SN + N^2$. The advantage of the linear detector can now be seen when these two equations are compared. If S and S^* are much larger than N, the two equations reduce to S^2. However, when N becomes comparable with or greater than S, then the advantage of the linear detector becomes clear (the N^2 term in the latter equation becomes predominant).

The lower phase detector in Fig. 2 has an input signal shift of 90° from that entering the top phase detector. As was just mentioned, the upper phase detector is in quadrature with the voltage-controlled oscillator. The 90° phase shift introduced in the signal going to the lower phase detector is in such a direction as to bring the incoming signal into zero phase relationship with the v.c.o. The output of the phase detector, being proportional to the cosine of the phase difference between the two applied signals, now becomes proportional to the amplitude of the weaker signal.

Silent Keys

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

W1EK, Raymond D. Brewer, Newton, Mass.
W1LM, Frank E. McMaster, Chelmsford, Mass.
W1OHO, Willis M. Rayton, Hanover, N. H.
W1YGN, Clarence F. Sawtelle, Jr., Littleton, Mass.
W2AA, Harold Bunker, Merrick, N. Y.
W2KYJ, Charles W. Judge, Clinton, N. Y.
W2TOA, Martin M. Dwyer, Utica, N. Y.
W3CCH, Stanton L. Bast, West Reading, Pa.
ex-W3LYV, Allen B. Reppert, Silver Spring, Md.
W3MLU, George P. Kraft, Altoona, Pa.
W4EKX, Chloe A. Ragsdale, Tampa, Fla.
W4QEA, Maurice D. Corson, Sarasota, Fla.
K6JAL, Robert A. Richards, Van Nuys, Calif.
K6JFD, Roger H. Decker, Concord, Calif.
W6LVW, Henry F. Newbaumer, Sonora, Calif.
W7CKH, Frank F. Deane, Anacortes, Wash.
W7DVD, Joseph R. DeCordova, Miami, Ariz.
W8BYF, Raymond E. Weaver, Akron, Ohio
ex-W9CVR, Albert B. Marshall, Louisville, Ky.
W9EHL, John F. Curd, Mill Shoals, Ill.
K9GAR, Albert V. Martin, Glenview, Ill.
W9TPG, Rex H. Eyler, Monroe, Wis.
VE7CC, Raymond G. Bishop, North Burnaby, B. C.

Here is another problem from Ken Redick, ex-1DY of Newington, Conn. You would like to be able to obtain any value of resistance between 1 and 1000 ohms in 1-ohm steps (to use in a bridge or to compare with unknown resistors or to calibrate an ohmmeter). What is the minimum number of resistors that will permit you to do this and what are their values?

—...—

If you redrew last month's problem correctly, you found that it turned out to be a balanced bridge circuit in which the 3-ohm resistor is inactive. As a result it can be disregarded, and the net resistance works out easily to 2 ohms.

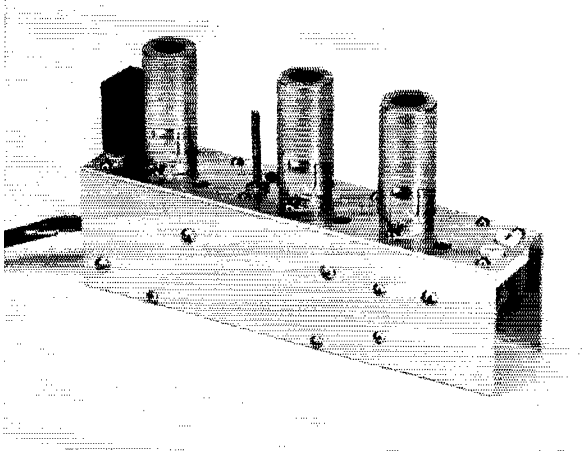
Strays

W3MSN has worked all states with a 20A exciter—on 20-meter *c.w.!*

Satellite 40-Mc. Converter

Sensitivity and Stability in a Design for Use with Amateur-Band Receivers

BY GEORGE GRAMMER,* W1DF



The chassis for the converter is made with simple folds in sheet aluminum. The crystal socket at the right is for a line plug for antenna input. Tubes, left to right, are the oscillator, mixer, and r.f. amplifier. Trimmer capacitor screws are reached through the small holes to the right of each tube.

Peering at man-made satellites by radio will probably be the coming year's No. 1 sport. For the 40-Mc. frequency to be used by the anticipated series of U.S.S.R. satellites, crystal control is a practical necessity. Here is a converter circuit that doesn't involve a major construction project, but which provides the sensitivity and stability necessary for good satellite observations.

For a good many observation purposes the 40-Mc. frequency used by the U.S.S.R. satellites has a number of advantages over 20 Mc. It is comparatively free from pronounced ionospheric effects, except occasionally in the daytime. This means that the times of appearance and disappearance of the signal at a given location can be tied in more accurately with a known orbit or, conversely, that observations of these times in the initial hours when the orbit is just being determined are very much more useful than observations made on a frequency that may carry halfway around the world. For the same reason, signal-strength observations have a relatively clean-cut meaning. Furthermore, the frequency is a better one for measuring Doppler shift, since the shift in cycles is twice as great at 40 Mc. as at 20 Mc. For all these reasons, should 20-Mc. observations also be made they become more meaningful in terms of propagation when compared with simultaneous observations made on 40 Mc.

Only a few types of communication receivers in amateur stations are capable of receiving the 40-Mc. signal. Of those that do, it is highly doubtful that the stability is good enough for even rough Doppler measurements. Crystal control of all of the oscillators in the receiver that could affect such measurements would seem to be a minimum requirement. (Even crystal control of the conventional type is not good enough for some experiments that depend on measuring deviations of the order of one cycle per second from the theoretical Doppler shift.) A crystal-controlled converter is certainly indicated, not only for these reasons but also for relieving the very real problem of finding the signal at the instant the satellite comes over the horizon — a thing that tends to become rather difficult at 40 Mc.

All-Crystal Frequency Control

Crystal control in the converter alone adds nothing to the stability of the receiver with which it is used, of course. For Doppler measurements, high stability has to be maintained right through to the final beat note so the only frequency variations to show up will be those actually in the signal itself. The question of receiver stability can be neatly solved by sidestepping it entirely — by using a frequency standard to supply the necessary beat frequency. The ordinary 100-kc. crystal-controlled standard will do very well.

In the case of 40 Mc., an obvious method would be to introduce the 40-Mc. harmonic of the standard into the front end of the converter. The frequency of the 100-kc. oscillator can be "swung" enough, if necessary, to give a satisfactory beat — say, 1000 cycles — with the mean frequency of the received signal. Such a beat is completely independent of the receiver stability; the receiver merely serves as an amplifier, and any drift or other instability of its internal oscillator or oscillators does not affect the beat frequency. The amplitude of the 40-Mc. harmonic from the frequency standard should be at least equal to the signal amplitude, for best results,

* Technical Editor, *QST*.

but should not be so strong as to tend to cause overloading anywhere in the receiver. Probably in most cases, with simple frequency standards, the problem will be to get a sufficiently strong harmonic rather than the opposite.

A convenient variation of this method is to beat the output frequency of the converter against a low-frequency harmonic of a 100-kc. standard. In order to bring the system within range of amateur-band-only receivers, the converter's nominal output frequency can be set at, for example, 7000 kc. The converter crystal frequency then must be chosen to produce an output frequency of approximately 7001 kc. from the mean frequency of the satellite signal. Introducing this along with the 7000-kc. harmonic of the frequency standard into the front end of the receiver still means that the ultimate audio beat-note output of the receiver is determined completely by the two crystal oscillators. The receiver's beat oscillator is not used.

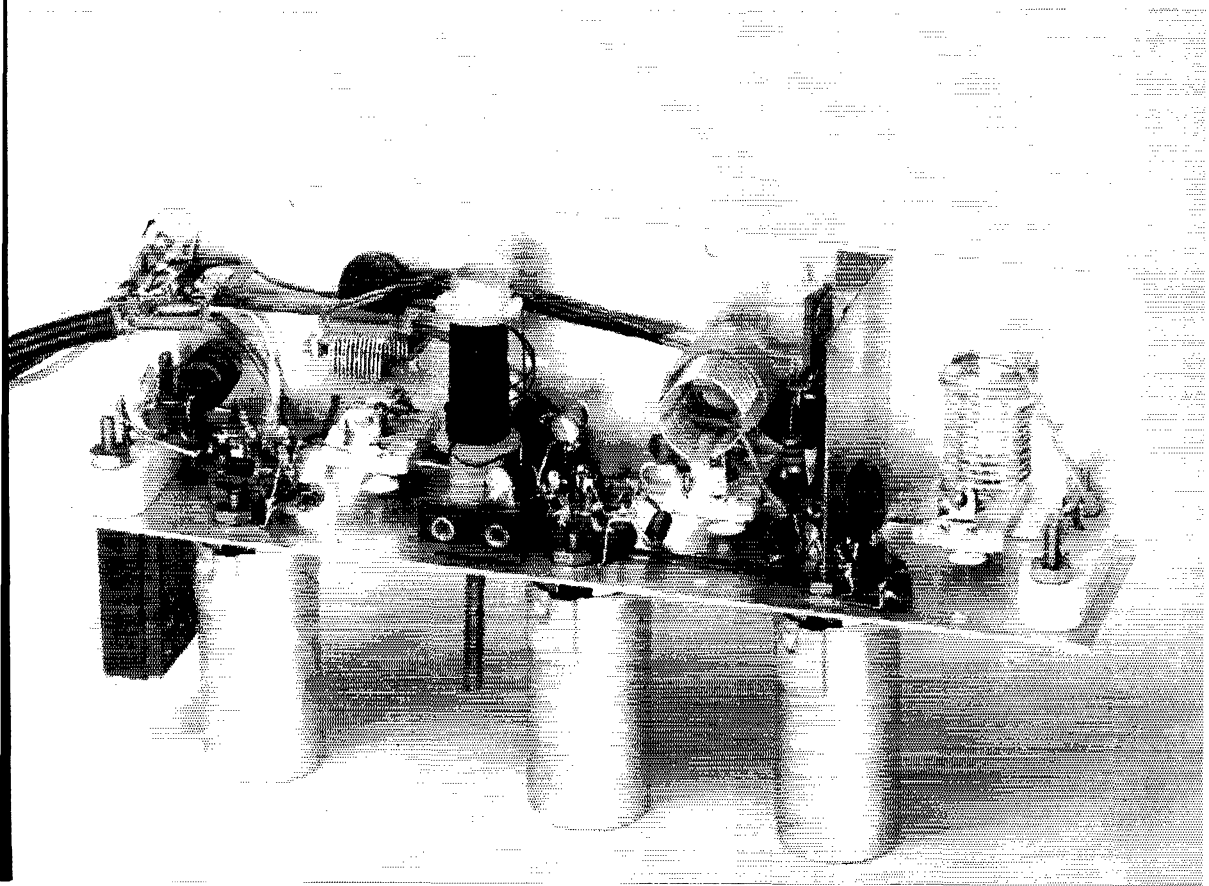
Converter Circuit

The converter shown in the accompanying photographs was designed along these lines. The r.f. and mixer circuits are basically similar to those used in the 50-Mc. crystal-controlled converter described in the *Handbook* (page 390, 1957 edition), the principal change being to substitute a tightly-coupled untuned primary (L_4 in Fig. 1) for the double-tuned interstage coupling arrangement used in the *Handbook* circuit. This was done in the interests of simplification.

The oscillator circuit is quite different from that in the *Handbook* unit. It is a grid-plate oscillator on the crystal side and a frequency quadrupler on the output side. Choice of this circuit was partly for simplification — only one tuned circuit is needed — and partly simple expediency; we had a handful of 8250-kc. surplus crystals available, just the right frequency to put the converter output frequency on 7000 kc. with four-times multiplication. There was some doubt when the unit was laid out as to whether such an oscillator would have enough fourth-harmonic output for good conversion, but the amount of 33-Mc. energy that could be coupled into the mixer grid circuit turned out to be ample for good sensitivity. An advantage of the circuit is that the oscillation frequency is not affected by tuning the plate tank circuit (L_8C_3) and so in turn will not be affected by any temperature drift in the constants of this circuit. As a further aid to stability the oscillator screen is fed from a 150-volt regulated source. C_4 should be a capacitor having a low or zero temperature coefficient, since the capacitance at this point does affect the frequency.

Returning to the crystals, there are still plenty of 8250-kc. surplus units available at low prices. In fact, there are several frequencies,

All components are mounted on a single aluminum piece having a cross section in the shape of an L. The r.f. amplifier grid circuit is the right-hand section in this view. The mixer grid circuit is just to the left of the vertical partition that straddles the r.f. tube socket. The crystal oscillator-quadrupler is at the left.



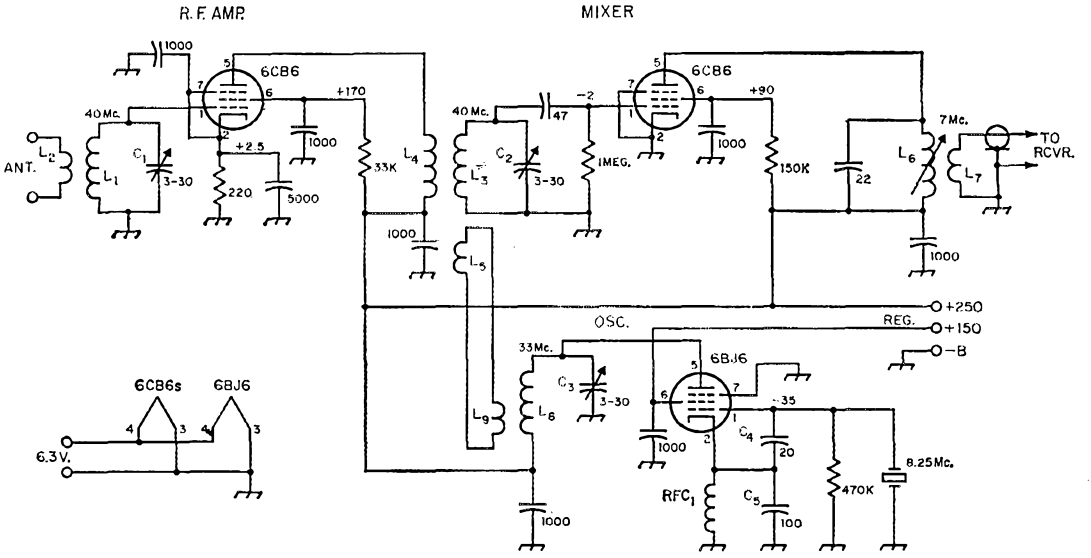


Fig. 1—Circuit of the 40-Mc. crystal-controlled converter. Unless otherwise indicated, capacitances are in $\mu\mu$f., resistances are in ohms, resistors are ½ watt. Capacitors not listed below are ceramic, disk type if 1000 $\mu\mu$f. or more. Voltages indicated at test points are measured with v.t. voltmeter, 11 megohms.

C_1, C_2, C_3—3-30-$\mu\mu$f. mica compression trimmer.
C_4—20-$\mu\mu$f. ceramic, preferably low temperature coefficient.
C_5—100-$\mu\mu$f. ceramic.
L_1—12 turns No. 20, ½-inch diam., 16 turns/inch.
L_2—2 turns hookup wire at cold end of L_1.
L_3—14 turns No. 20, ½-inch diam., 16 turns/inch.
L_4—6 turns hookup wire wound starting at cold end of L_3.
L_5, L_9—2 turns hookup wire approx. 5/16-inch diam., cemented inside L_3 and L_8, respectively, at cold ends.
L_6—No. 30 enam., close-wound to length of ⅞ inch on ⅜-inch diam. slug-tuned form (National XR-91).
L_7—15 turns No. 30 enam., close-wound over cold end of L_6.
L_8—13 turns No. 24, ½-inch diam., 32 turns/inch.
RFC_1—Pie-wound, 500 to 750 μh., ⅝ inch long (Millen 34300 or National R-33).
[L_1 and L_3 are B & W Miniductor No. 3003 or Air-Dux 416T; L_8 is B & W No. 3004 or Air-Dux 432T.]

all ending in multiples of 25 kc., available in this region. Any of these can be used, since multiplying by four will give an output frequency that is an even multiple of 100 kc., if the second of the two methods described above is to be used for getting an audible beat. (That is, the output frequency will be some multiple of 100 kc. in the 7-Mc. region, depending on the crystal frequency.) With the first method the crystal frequency does not matter so long as the converter output is within the tuning range of the receiver. However, the output frequency should not be too far above 7 Mc. or there may be some difficulty in getting sufficient injection voltage to the mixer grid with the method of coupling used.

The output circuit, L_6L_7, is connected to a length of RG-58/U which goes to the antenna input connections on the receiver. This circuit as specified tunes much more broadly than is necessary for a fixed-frequency converter, but there is no great need for high selectivity at this point. A shielded output cable is essential for eliminating stray pickup of 7-Mc. signals, and there should be no exposed wiring connected to the receiver's antenna post. A coax input arrangement at the receiver would be quite desirable for this reason. With such a receiver, we have had no trouble at all from 7-Mc. pickup when using the converter.

Layout

All components are mounted on a folded piece of aluminum as shown in one of the photographs. The length is 7 inches, and the side on which the tube sockets are mounted is 1½ inches wide. The remaining side is 2 inches deep. The trimmer capacitors are mounted on the latter side, using the outside-plate connection tab as a mounting foot. The adjusting screws are reached through ¼-inch holes drilled in the other side.

The interstage shield partition that cuts across the r.f. amplifier socket is made of thin copper sheet so it can be soldered to the socket center post and to the No. 3 socket pin, which is grounded to the chassis through a soldering lug. The partition has a lip along one edge so it can be bolted to the vertical side of the chassis.

The tuned-circuit coils are mounted by their leads on the trimmer capacitors. Single insulated tie points are used for anchoring d.c. leads.

In general, r.f. leads should be kept short, particularly when bypassing tube elements. Leave just enough leads on the ceramic disks for making soldered connections. The cathode and suppressor-grid pins on the r.f. amplifier socket are connected together at the socket, but each pin is bypassed on its side of the socket. This double bypassing seemed to be of some benefit in "cooling down" the amplifier.

The second vertical side of the chassis is simply a piece of aluminum 7 inches long, 2 inches high, and having a small lip which is fastened under the top of the first piece by machine screws. There is also a bottom plate which does not show in the pictures, but which is just wide enough to fit between the vertical members and extends between the oscillator end of the chassis and the copper partition. This has folded edges which are fastened to the two sides with machine screws, two of which can be seen at the lower edge in the outside view.

Other layouts may be used, of course, just so long as normal v.h.f. considerations are observed. A principal point is to prevent stray coupling between the input and output circuits of the r.f. stage and thus reduce the chances of instability.

Alignment

The circuit will take about 20 ma. at 250 volts and 2 or 3 ma. at 150 volts. (If a 150-volt regulated source is not available, the screen of the oscillator may be fed from the 250-volt line through a 47K ½-watt resistor.) Voltages measured with a v.t. voltmeter at various points are shown on the diagram.

Probably the best way to start out in aligning the circuit is to use a grid-dip meter to set L_1C_1 and L_2C_2 to 40 Mc. and L_3C_3 to 33 Mc. Then apply power and use the grid-dip meter as an indicating wavemeter tuned to 33 Mc., coupling it loosely to L_3C_3 while a fine adjustment is made to C_3 to maximize the oscillator output on that frequency. Then set the receiver to the expected output frequency at or near 7 Mc., short the r.f. amplifier grid to ground, and adjust L_3 for maximum noise. Similarly, adjust C_2 for maximum noise, and then touch up C_3 with the same object. Since there is a small amount of interlocking between these two circuits, repeak C_2 and C_3 a few times for maximum output.

Finally, connect the antenna to the converter, remove the short from the amplifier grid circuit, and adjust C_1 for maximum noise. The proper settings for all three trimmers should be toward the low-capacitance end.

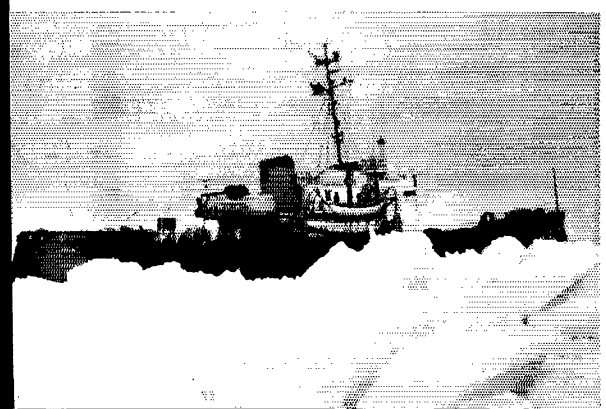
If reasonable care is used in isolating the r.f. and mixer grid circuits there should be no trouble from oscillation in the r.f. stage, even with the antenna disconnected. There should be a marked decrease in noise when the antenna plug is pulled out, and a still further decrease when the amplifier grid is shorted to chassis. The noise in normal operation should completely mask the residual noise with the amplifier grid shorted.

Like many others, the writer was without any means for listening on 40 Mc. when Sputnik was launched. There was no opportunity to do anything about it until the following week end, when this converter was built. It was expected that the surplus 8250-kc. crystals might have to be ground slightly to get the desired a.f. difference when the converter output was beat against 7000 kc. from the frequency standard, but this turned out to be unnecessary. In the ten days following, until the satellite's transmitter failed, the beat was right there on every pass at which we had a chance to listen.

It seems as though almost anything in the way of a random length of wire will bring in the 40-Mc. signal, but better results will be obtained with an antenna put up especially for the purpose. A simple folded dipole made from 300-ohm Twin-Lead is adequate, and the antenna input circuit of this converter was adjusted for use with such an antenna. The dipole length should be between 11.5 and 12 feet. If there is any choice, running the antenna on an east-west line would seem to be the optimum direction for receiving from a satellite having north-south as the principal direction component in its orbit.

Strays

W1TGD and W1MUL, both of the Bristol County Radio Ass'n (R.I.) maintained schedules with W1WIN aboard the *USCG Spar*, which is normally based in Bristol. As recently reported in QST, the *Spar* was engaged in the attempt to use the Northwest Passage (which was successful), and was one of several ships on board which the Director of Naval Communications authorized amateur radio stations.

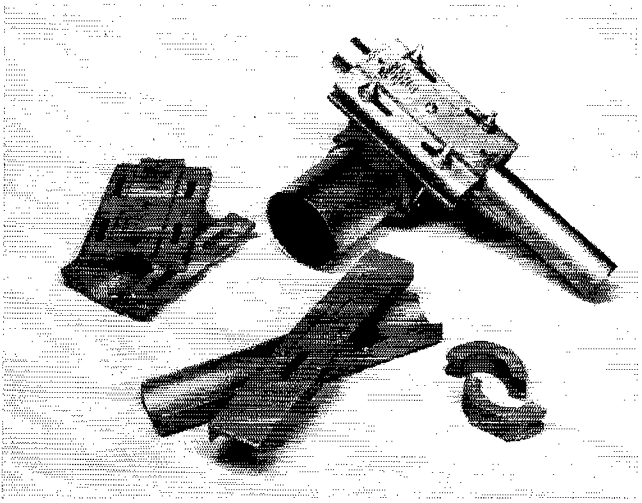


If you savor the Sweepstakes, the W/VE Contest and such, chances are you've heard or worked 17-year-old Tony Rogers, W3BFW. Two years ago (p. 57, February 1956 *QST*), he gained coast-to-coast publicity when Vice President Nixon dropped over to chat with Tony's Dad, his long-time friend, then decided to spend the night. According to the story, Mr. Nixon got precious little shut-eye as Tony pounded out contest contacts through the wee hours. Now the Rogers household is again prominently in the headlines. Mr. William P. Rogers (Dad) has just become U. S. Attorney General and, at 44, is the youngest member of President Eisenhower's Cabinet. Hearty congratulations, W3BFW Senior!

—•••—

What's in a name? C. W. Code works for the telephone company. Too bad he's not a ham!

• New Apparatus



Antenna Hardware

For those who like to build their own antennas and beams, the Continental Electronics and Sound Co. of 6151 Dayton Liberty Road, Dayton, Ohio, offers several pieces of hardware which will greatly facilitate the operation. A series of oxen yoke clamps will accommodate elements and booms up to three inches in diameter, and the selection of intermediate sizes appears rather complete. These oxen yoke clamps are made of cast aluminum, and then machined as necessary. Samples of these yokes are shown above. These yokes can also be used as boom mounting plates for water pipe masts.

Also available are a different type of clamp for smaller beam elements and for gamma-match construction (Fig. 1) and a fitting to be used with a coax-fed dipole (Fig. 2).

For further information, write directly to the manufacturer, at the address given above.

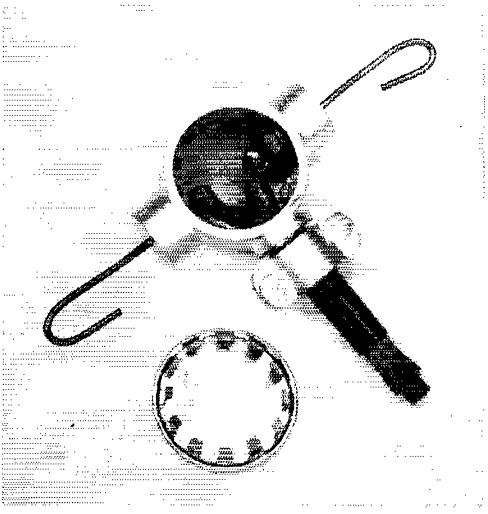


Fig. 2

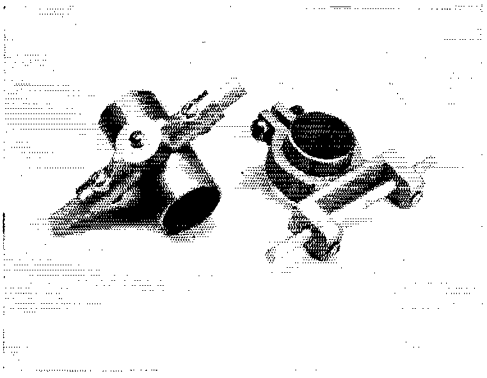
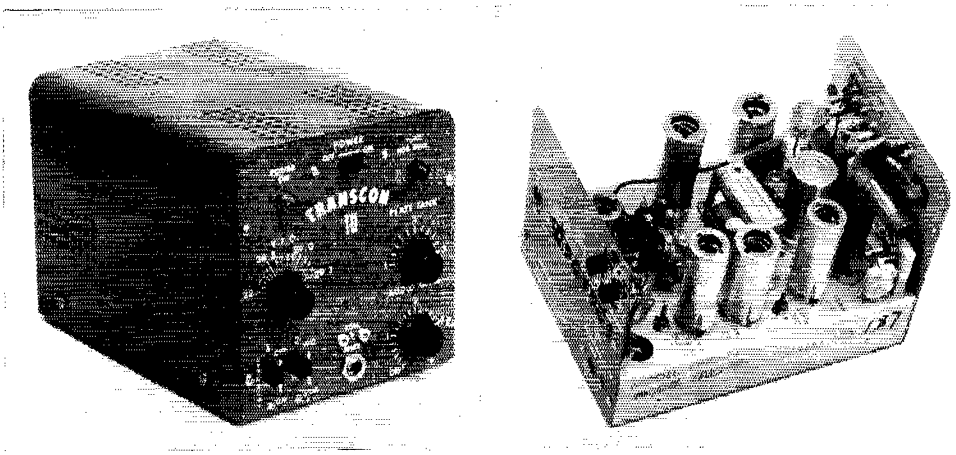


Fig. 1

Strays

KH6IJ, who pounds a mean key himself, refers to the Stray on page 39 of October *QST* and to the McCoy article on page 28 of November *QST* — and tells us that he has 200 "Navy knobs" to give away. He asks only that those who desire these genuine Navy knobs send him a stamped, self-addressed airmail envelope with 6¢ postage affixed. His QTH is simply Katashi Nose, Lihue, Kauai, T. H., and you'll probably hear him in the DX Test!

• Recent Equipment —



Left: View of a "Transcon 10". The zero-beat control, v.f.o.-crystal switch, microphone jack (with crystal socket directly above) and the audio gain control are in line across the bottom of the panel. The v.f.o. tuning knob is below the power-on indicator at the left side of the panel, and the amplifier plate circuit control is below the amplifier tuning indicator at the right. The power on-off switch is centered at the top of the panel. A hole in the left side of the cabinet provides access to the v.f.o. padder capacitor. A similar hole in the right side of the cabinet permits screw-driver adjustment of the link capacitor.

Right: Receptacles for the coaxial input and output cables are mounted on the rear wall of the unit along with the power terminal board. The microphone switch and the external power-supply switch are also located on the rear panel. The regulator, 12AX7 and oscillator tube are in line below the changeover relay and the modulation choke in this view. The v.f.o. main-tuning and padder capacitors are in the right-hand corner below the oscillator grid coil. V_6 and V_7 are between the rear wall and the relay. The modulator tube and r.f. output tube are near the amplifier plate coil at the upper right. Decoupling capacitors for the speech amplifier are in the metal can beside the modulation choke.

"Transcon" Mobile Converter-Transmitter Models 6 and 10

THE "Transcon" Models 6 and 10, made by Creative Electronics Corp., 94 Lincoln Ave., Stamford, Conn., are compact converter-transmitter units for 50 and 28 Mc., respectively. Both types include a complete phone-c.w. transmitter and a fixed-frequency converter that uses a car broadcast receiver as the tunable i.f. amplifier. Power may be obtained from the vibrator pack of a typical car receiver, thus eliminating the cost and bother of a special mobile supply. However, provision also is made for using a standard supply delivering up to 350 volts if it is desirable to operate the power amplifier and modulator tubes at maximum ratings.

"Transcons" have a built-in v.f.o. that can be switched to crystal-controlled operation. A zero-beat switch permits oscillator frequency checking with the car receiver while the r.f. amplifier and audio stages are turned off. The speech amplifier is designed for either carbon- or crystal-microphone input. Push-to-talk control of an internal antenna and power relay, terminals for keying and the control of an external relay, a tuning indicator and a calibrated v.f.o. dial are other features. The cabinet measures 5 by 5 by 7 inches. Models 6 and 10 are available for either 6- or 12-volt operation.

The Transmitters

The oscillator tube is a type 6AQ5 as shown in Fig. 1. The grid circuit for the Model 10 oscillator tunes 14 to 14.85 Mc., and the plate circuit is slug tuned to the center of the 28-Mc. band. Grid-circuit range of the 50-Mc. unit is 25 to 27 Mc., and the plate circuit is self-resonant at approximately 52 Mc. A regulator tube, V_5, stabilizes the screen voltage for the 6AQ5.

The final amplifier operates straight through and uses a parallel-tuned plate tank, link coupled to the antenna. A capacitor for tuning the link circuit is provided. Type 5763 and 6417 tubes are used in the 6- and 12-volt versions, respectively, of the amplifier. A neon lamp (NE-2) is coupled to the amplifier plate tank to indicate resonance.

A type 12AX7 dual triode is used in the speech amplifier circuits. The input stage may be coupled to either a carbon or a crystal microphone, and the audio gain control is in the grid circuit

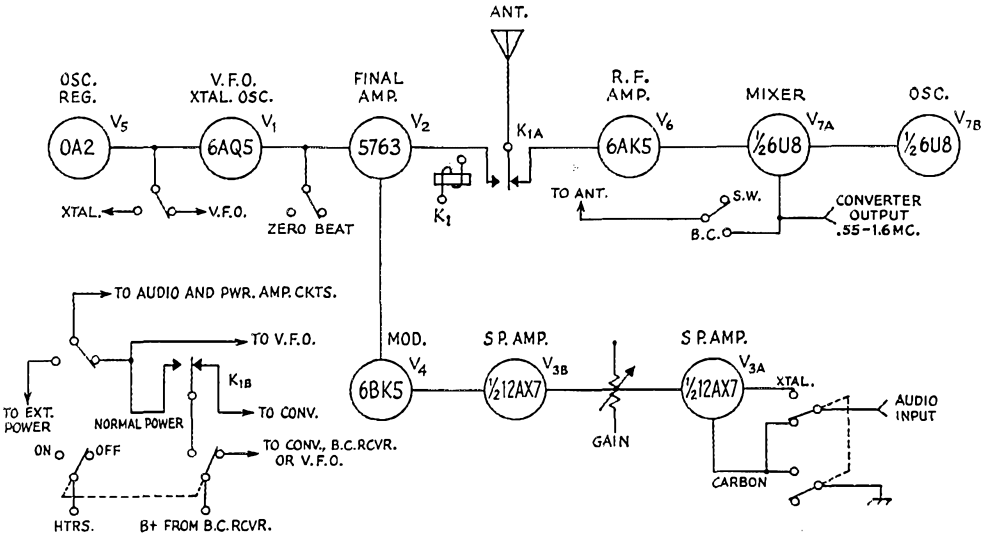


Fig. 1—Block diagram of the "Transcon". The tube lineup is the same for the 28- and 50-Mc. units.

of the second amplifier. The 6BK5 modulator tube (12BK5 for 12-volt operation) operates as a Class A amplifier coupled to the r.f. amplifier through a tapped choke.

The Converter

The r.f. amplifier tube, V_6 in Fig. 1, is usually a type 6AK5 (6BH6 in a few units) and has slug-tuned coils in both the grid and the plate circuits. Inductive coupling is used between the antenna and the grid circuit. The amplifier, as well as the other converter circuits, requires no adjustment as the associated broadcast receiver is tuned through the i.f. range.

The pentode section of a type 6U8 is used for the mixer and the triode section is in a Colpitts oscillator circuit that operates on the low side of the signal frequency. Oscillator voltage is coupled to the mixer through the interelectrode capacitance of the tube.

With the tuning range of the average broadcast receiver limited to 1.05 Mc. — 0.55 to 1.6 Mc. — the converters will not cover an entire amateur band with one swing of the receiver dial. Factory adjustments of the oscillators provide coverage of 50 to 51.05 Mc. with the Model 6, and 28.55 to 29.6 Mc. with the 10-meter unit. The effective tuning range of either converter may be shifted higher or lower in a band by resetting the frequency of the local oscillator.

Control Circuits

"Transcons" have a power-control system that permits feeding the output from a car-radio power supply either to the converter and broadcast receiver, to the transmitter, or directly back to the car radio for normal use. A d.p.d.t. relay controlled by a microphone push-to-talk button switches the plate voltage from the converter to the transmitter, and also performs the antenna change-over operation. Another switch permits connection of a separate power supply for the audio and the r.f. amplifier circuits: it removes these circuits from the car-radio pack, but allows output from the latter to be fed to the converter and the v.f.o. circuits. A switch that connects the antenna to either the converter or the broadcast receiver is operated by the audio gain control. A d.p.d.t. slide switch makes the necessary circuit changes when going from one type of microphone to the other. The v.f.o.-crystal and the zero-beat controls are s.p.s.t. panel-mounted switches.

Power Supply

Although satisfactory results can be secured with the transmitter powered by the few watts that a BC receiver supply will deliver, more "sock" can be obtained by using a separate supply for the audio and r.f. output tubes. A supply for this purpose should deliver approximately 110 milliamperes at no more than 350 volts. The v.f.o. and the converter are still operated from the broadcast receiver power pack when a separate supply is used for the final and modulator.

General

The instruction book supplied with each unit shows a method of connecting to a typical car radio vibrator supply. However, some of the modern BC receivers take plate and screen voltage for the audio output stage *ahead* of the supply filter and, as a result, the method suggested — opening the supply circuit *after* the filter — does not relieve the power pack of the audio tube current drain when the transmitter is turned on. This may be avoided by opening the +B circuit at the cathode of the rectifier, ahead of the tap running to the audio stage. This makes the full output of the supply available for the transmitter, but has the disadvantage that an outboard filter must be used. A 20- to 40-μf. 350-volt electro-

lytic capacitor usually will provide adequate filtering.

The manufacturer has received one or two reports of low modulation, apparently caused by the use of carbon microphones having less than normal output. In each case, the remedy was to increase the audio gain by connecting a 10-μf. 25-volt electrolytic capacitor in parallel with the 100-ohm cathode resistor in the modulator circuit.

— *C. V. C.*

The Telecom 2D11 Transistor Power Converter

THE Telecom 2D11 power converter brings to amateur service, particularly the mobile branch, another practical application of transistors. The 2D11 is a plate supply using a pair of power transistors in an oscillator-transformer-filter circuit to convert 12.6 volts d.c. (storage battery) to simultaneous power outputs of 500 volts at 200 ma. and 250 volts at 100 ma. The unit has no vacuum tubes, vibrators or moving parts. Conversion efficiency is approximately 80 per cent, with the pack drawing only 12.5 amperes when operated at the full rated output of 125 watts. Over-all measurements of 4 by 4¾ by 7¼ inches and a total weight of 3½ pounds are physical properties that will interest nearly every mobile fan.

The 2D11 is basically a transistor multivibrator using two Delco type 2N277 transistors operated at a frequency of approximately 1000 cycles per second. Fig. 1 is a schematic of the primary section of the supply. The power transformer has two special primary windings, *A* and *B*, that alternately provide properly phased feedback voltage for Q_1 and Q_2. Oscillatory conduction by the transistors switches the current in the main center-tapped primary winding in much the same way that the current is switched when a vibrator alternately connects the input voltage to one side and then the other of the transformer primary.

Output from the transformer secondary is applied to a standard half-wave voltage quadrupler circuit using four selenium rectifiers. The rectifier circuit uses typical values of filter capacitance and is tapped for 250-volt output.

The unit is self-protecting in the presence of short circuits or overloads since under such conditions there is not enough feedback for oscillation, thereby causing the transistors to return to the quiescent state in which they take a current of 500 milliamperes. Furthermore, there is no starting surge — a battery-saving feature that will be appreciated by those familiar with dynamotor operation — since the current build-up is gradual over a fraction of a second and never exceeds the full load value.

As is the case with most pieces of gear using power transistors, the 2D11 has definite limitations as to operating temperature. It is rated for

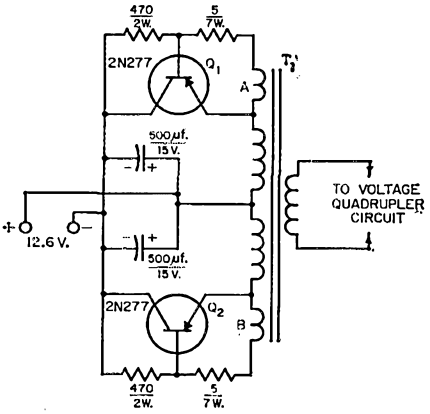
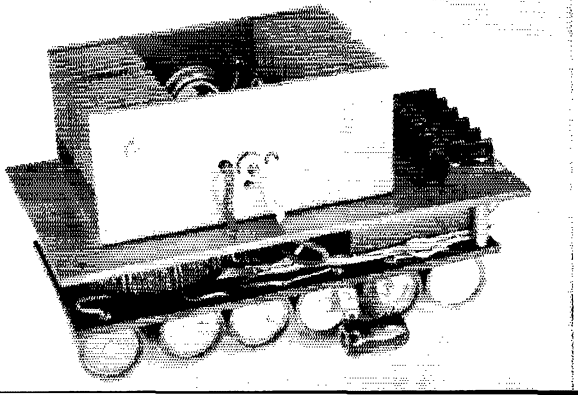


Fig. 1—Schematic of the primary circuit used in a type 2D11 transistor power converter. Resistances are in ohms. Capacitors are electrolytic. T_1 is a special transformer with feed-back windings, A and B, for maintaining oscillation in the transistor circuit. The rectifier system, not shown here, is a conventional half-wave quadrupler circuit similar to that shown in the power-supply chapter in *The Radio Amateurs' Handbook*.

continuous duty at full output in the temperature range from −20 degrees Fahrenheit to +104 degrees Fahrenheit. Operation at temperatures above 104 degrees should be on an intermittent basis, but is not so restricted as to hamper amateurs using the pack in warm climates. Operation, mounting and performance data are



Dust cover and housing have been removed in this view of the 2D11 transistor power converter. A heavy U-shaped aluminum bracket supports the selenium rectifiers and serves as a heat radiator for the transistors. The special toroidal-wound plate transformer is partially visible in between the two phenolic base plates. Input and output terminals are at the right end.

supplied with each unit.

Although the 2D11 does emit a rather faint audible tone of approximately 1000 cycles per second, it does not radiate the electrical hash or whine normally associated with dynamotors or vibrator-type supplies. When testing one of the transistorized packs in a typical mobile installation, we found that the sound from the unit was completely masked out by car noise and other background sounds, and that it did not modulate either the received or the transmitted signal. An interesting feature is that the voltage at either output terminal is almost completely unaffected by varying the load connected to the other tap.

The 2D11 is made by Telecom, Inc., 1019 Admiral Blvd., Kansas City, Mo.

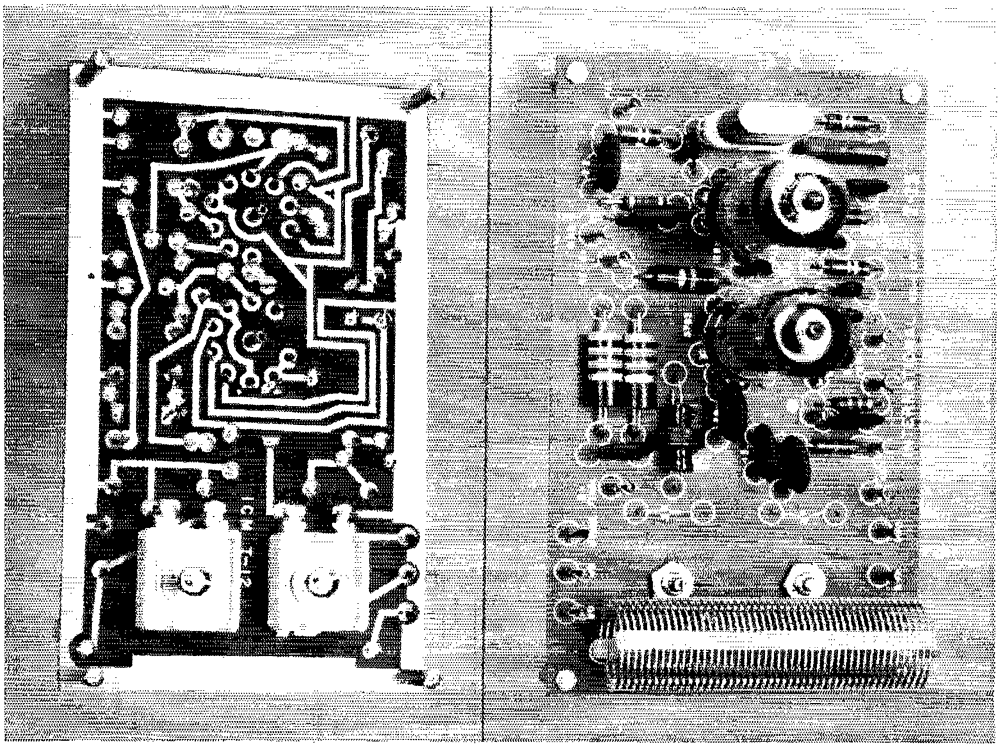
—*C. V. C.*

The T-12 Transmitter

FOR SOME TIME now the International Crystal Manufacturing Company, 18 North Lee Ave., Oklahoma City, Okla., has been promoting the sale of its crystals by offering, in kit form, 100-kc. calibration oscillators and v.h.f. converters and transmitters. Simplicity and low cost were features of these units, made possible through the use of etched circuits.

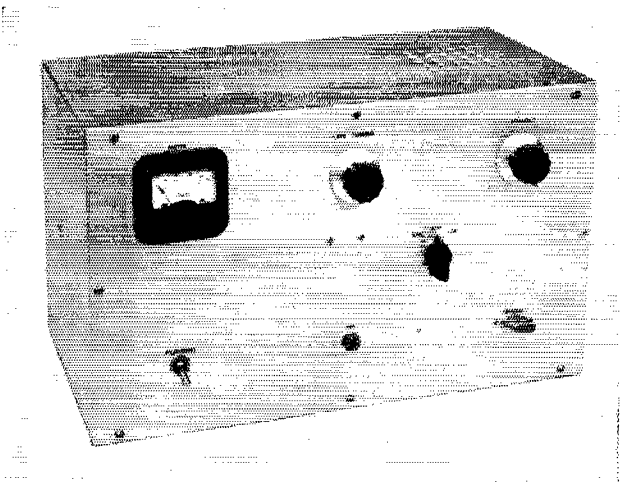
The T-12 is the first venture by the company into the field of low-frequency kits. This small transmitter covers the 80- and 40-meter bands and, although it can do this with 80-meter crystals only and frequency multiplying, the recommendation is that the transmitter be operated "straight through" with no frequency doubling. A 12BH7 dual triode serves as crystal oscillator and buffer stage to drive a 5763 output amplifier. The plate circuit of the 12BH7 buffer is tuned by screw-driver adjustment of a small coil, and the pi-network tuning of the output amplifier is handled by screw-driver adjustment of two mica compression capacitors. The power supply requirements are 350 volts at 60 ma. and 6.3 volts at 1.35 amperes; to put the rig on the air an operator needs a power supply that can handle these requirements, an antenna, key or modulator, and a multimeter of some kind. Test points are provided at the buffer and final cathodes (these stages have cathode bias) to make it a simple matter to check cathode currents by taking voltage readings. To change bands the operator changes two jumper wires;

(Continued on page 164)



These two views of the T-12 transmitter show how the etched-circuit technique contributes to the simplicity of the equipment. The compression-type mica capacitors tune the pi-network output circuit; the driver-stage tuning slug is partially visible to the right of the lower vacuum tube.

30 Watts Input on 80, 40, and 15 meters



This 30-watt three-band Novice transmitter is enclosed in a 7 × 9 × 15-inch aluminum box (Premier AC-1597) which furnishes adequate TVI shielding. A group of ¼-inch-diameter holes should be drilled in the top of the box over the oscillator and also in the back panel to provide ventilation.

A Three-Band One-Tube Novice Transmitter

BY LEWIS G. McCOY,* W1ICP

An inexpensive transmitter covering the three lowest-frequency Novice bands. Power supply and a keying monitor are included.

THE NOVICE TRANSMITTER described in this article has many features that make it especially appealing to the newcomer. First, and most important to the beginner, it is very easy to build and get working. The transmitter is a crystal-controlled, one-tube oscillator capable of running at 30 watts input on the 3.5-,7, and 21 Mc. Novice bands.

All of the components for the rig, including the power supply, are mounted on a 2 × 7 × 13-inch aluminum chassis that is enclosed in a 7 × 9 × 15-inch aluminum box. Enclosing the rig in a metal case practically eliminates the problem of TVI harmonic radiation. In addition, the tank circuit is a pi network designed to work into 50- or 75-ohm loads so it is a simple matter to install a low-pass filter if one is needed.

Another feature of the transmitter is a built-in keying monitor. The keying monitor permits the operator to listen to his own sending regardless of where his receiver is tuned. Special considerations were made in the design to insure the best keying characteristics. One of these is the use of regulated voltage on the screen of the oscillator. By doing this there is no supply voltage change between key-up and key-down conditions. Regulating the screen voltage minimizes frequency shift of the oscillator which is the cause of chirp. A look at Fig. 1 shows how the screen is regulated. In addition, a small amount of cathode bias is used on the oscillator (R_4). It has been found by experiment that using cathode bias tends to improve the keying characteristics in a cathode-keyed simple oscillator transmitter.

Circuit Details

The oscillator circuit used is the grid-plate type, and the tube is a 6LQ6A pentode. In a grid-plate oscillator where a screen-grid tube is used, the screen of the tube becomes the oscillator

* Technical Assistant, *QST*.

plate. The power output from the oscillator is taken from a separately-tuned tank circuit in the actual plate circuit of the tube. The 6DQ6A is an excellent tube for our purpose because it requires very little voltage, reducing the danger of fracturing the crystal.

For operation on 80 meters, an 80-meter crystal is needed. On 40, either 80- or 40-meter crystals can be used, although slightly more output will be obtained by using 40-meter crystals. To operate on 15 meters, a 40-meter crystal is used. A 10.5-Mc. crystal was tried in the circuit for 15-meter operation and although it worked O.K. there was no apparent advantage over a 40-meter crystal.

The tank circuit is in the form of a pi network. The plate tank capacitor is the variable C_6, and the tank inductance is L_2L_3. C_8 is a two-section variable, approximately 365 $\mu\mu$f. per section, with the stators connected together to give a total capacitance of about 730 $\mu\mu$f. This range of capacitance is adequate for loading into 50 or 75 ohms on 7 and 21 Mc. When operating on 3.5 Mc., an additional 1000 $\mu\mu$f. (C_7) is added to the circuit to furnish the needed range of capacitance. L_1 and R_2 are essential in suppressing v.h.f. parasitic oscillation.

Keying Monitor

The keying-monitor circuit is similar to the unit described in an earlier article.[1] A neon bulb (type NE-2) audio-frequency oscillator is connected to the cathode of the 6DQ6A at the key

[1] McCoy, "A $1.69 Keying Monitor," *QST*, Sept., 1957.

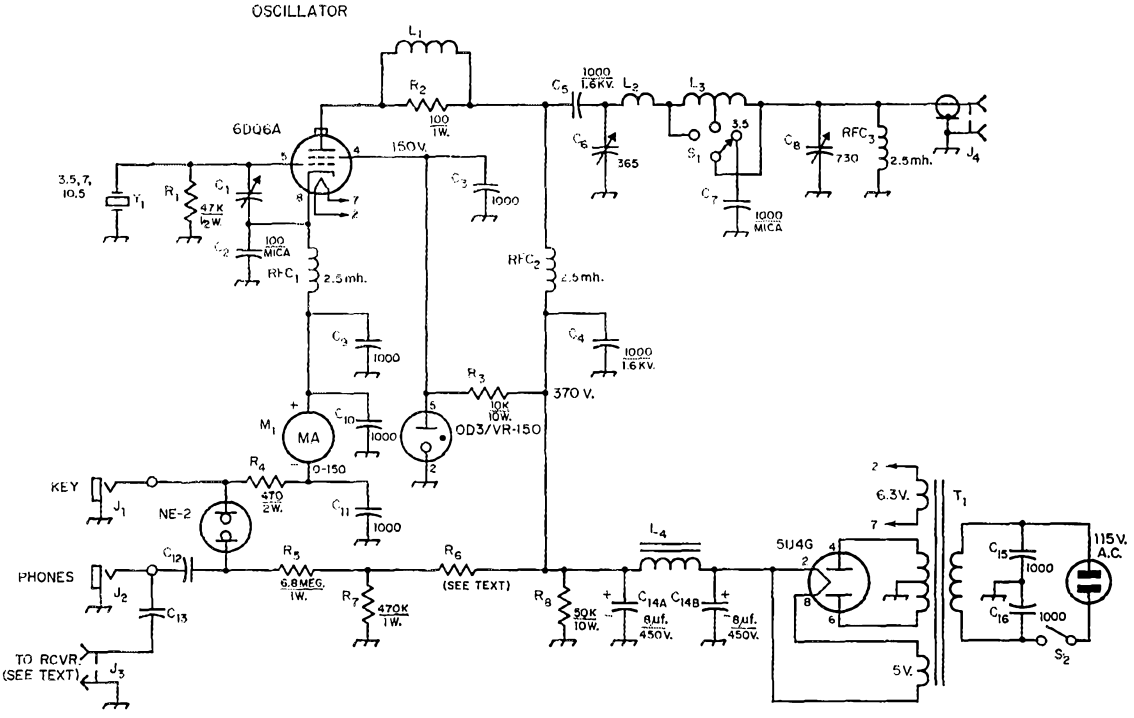


Fig. 1—Circuit diagram of the three-band transmitter. Capacitances are in $\mu\mu$f. Unless designated otherwise resistances are in ohms (K = 1000).

C_1—3-30-$\mu\mu$f. trimmer.
C_2—100-$\mu\mu$f. mica.
C_3, C_9, C_{10}, C_{11}, C_{15}, C_{16}—0.001-μf. disk ceramic.
C_4, C_5—0.001-μf. 1600-volt disk ceramic.
C_6—365-$\mu\mu$f. variable capacitor, single section, broadcast-replacement type.
C_7—0.001-μf. 600-volt mica.
C_8—365-$\mu\mu$f. variable capacitor, dual section, broadcast-replacement type.
C_{12}—500-$\mu\mu$f. mica or ceramic.
C_{13}—0.01-μf. disk ceramic.
C_{14}—8/8-μf. 450-volt dual electrolytic capacitor.
J_1, J_2—Open-circuit phone jack.
J_3—Phono jack, RCA type.
J_4—Coaxial chassis connector, SO-239.
L_1—10 turns No. 18 wire spaced on a 100-ohm 1-watt resistor.
L_2—6 turns No. 16 wire, 8 turns per inch, 1¼ inches diam. (B & W 3018).
L_3—23 turns No. 16 wire, 8 turns per inch, 1¼ inches diam. (B & W 3018). The 7-Mc. tap is 18 turns from the junction of L_2 and L_3.
L_4—8-h. 150-ma. filter choke (Thordarson 20C54).
M_1 — O — 150 ma. (Shurite Model).
R_1 — R_8 — As specified.
RFC_1, RFC_2, RFC_3 — 2.5-mh. r.f. choke (National R-50).
S_1—Single-pole 3-position switch (Centralab 1461).
S_2—Single-pole single-throw toggle switch.
T_1—Power transformer: 360-0-360 volts, 120 ma.; 6.3 volts, 3.5 amp.; 5 volts, 3 amp. (Stancor PM-8410).
Y_1—Crystal (see text).

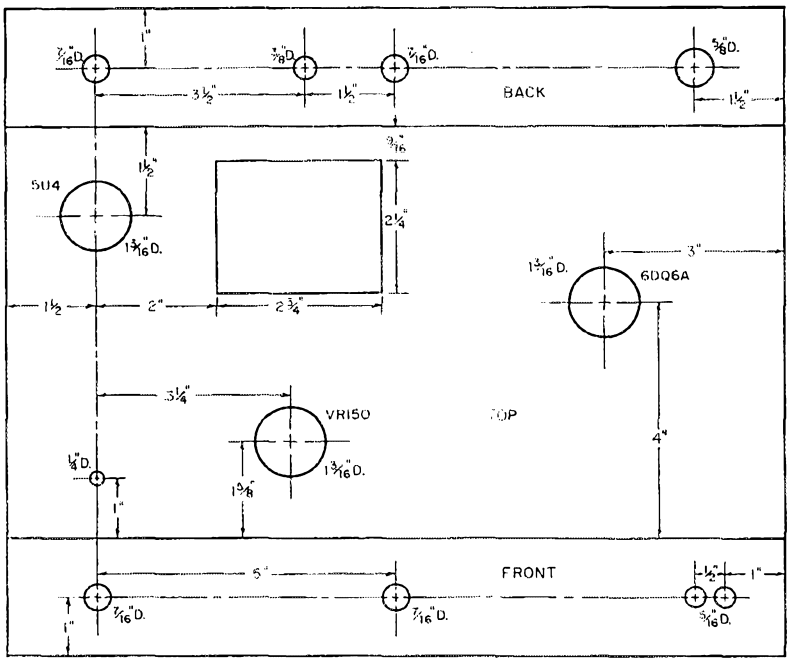


Fig. 2—This drawing gives the important dimensions for the holes on the top, front, and back of the 2 × 7 × 13-inch aluminum chassis

jack, J_1. When the key is open, the audio oscillator is silent, but when the key is closed an audio note is heard in the headphones. The headphones are plugged into J_2 which is a jack that is mounted on the back of the transmitter chassis. Another jack, J_3, is used as a connection terminal for one end of the lead that goes to the headphone jack on the receiver.

Power Supply

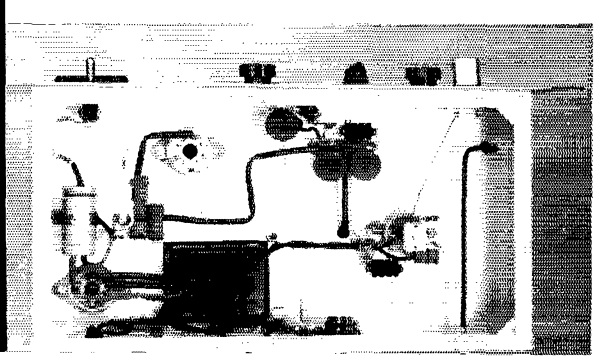
The power supply uses a 5U4G in a full-wave rectifier circuit. A capacitor-input filter is used and the output voltage is approximately 370 volts d.c. with a transmitter cathode current of 90 milliamperes. A 0–150 milliammeter reads cathode current. The screen and grid currents are approximately 4 ma. when the oscillator is loaded. This figure should be deducted from the total current reading to determine the amount of plate current.

Construction

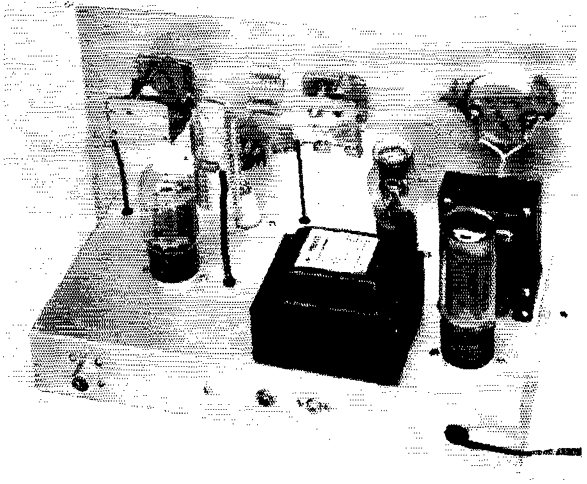
Before drilling any holes in the chassis, spend a little time studying the photographs, circuit diagram, and the dimension drawing, Fig. 2. Once you have familiarized yourself with the component layout you are ready to drill and punch out the necessary holes in the chassis.

If this is your first construction job you may not know how to make the rectangular hole for mounting the power transformer. There are two methods of doing the job with ordinary tools. The first consists of drilling a row of small holes along the inside dimensions of the hole and then knocking out the center piece with a cold chisel. A flat file can be used to clean up the edges. Another method consists of drilling ½-inch holes at diagonally opposite corners of the rectangle and then cutting out the piece with a hack-saw blade.

When the chassis holes are drilled, you are then ready to make up the front and back panels of the box. The box has a ½-inch lip around both openings, so the chassis must be mounted high enough on the panel to clear the lip. Lay the front panel on a flat surface and place the chassis front on the panel. The bottom edge of the chassis should be placed one inch from the bottom of the panel. The sides of the chassis are also one inch from the sides of the panel. Take a pencil or scribe and mark off the locations of the holes for S_2, V_1, and J_1, using the holes in the chassis front for a guide. There is nothing critical about the placement of the meter or the shafts for C_6, C_8 and S_1. The arrangement shown in the front-view photograph can be followed to



All of the power-supply components are mounted at the left-hand side of the chassis and the oscillator section is at the right-hand side. Mounted on the back wall of the chassis is the keying monitor. Although not visible in this view, the monitor components are mounted on a four-terminal tie point.



This rear view of the transmitter clearly shows the placement of all components above chassis. The loading capacitor, C_8, is at the left, L_3 is the vertical coil and L_2 the horizontal one. Rubber grommets are used to prevent chafing and to furnish additional insulation on the leads coming from below chassis.

give a balanced appearance. A procedure similar to the above should be followed for making the back panel. Dimensions from the bottom and sides of the rear panel are the same as at the front.

When all the holes are drilled you are ready to mount and wire the various components. There are several different types of broadcast-replacement variable capacitors on the market. Some of these have holes tapped in the front of the frame so that they may be mounted directly on the panel using machine screws and spacers. Others have mounting holes only in the bottom. In this case, the capacitor can be mounted on a pair of L-shaped brackets made from strips of aluminum.

Both L_2 and L_3 are supported by their leads. One end of L_3 is connected to the stator of C_8 and the other end to a junction on top of a one-inch-long steatite stand-off insulator. L_2 has one end connected to the stator of C_6 and the other end to one of the terminals on S_1.

Wiring

If this is your first construction job, there are a few points about soldering that will bear mentioning. Use rosin-core solder — not acid-core. Apply the tip of the soldering iron to the work, and let the work get hot enough to melt the solder. If you apply the solder to the end of the iron it will melt and get around the contact being soldered but may not make a good connection. The work should be hot enough to melt the solder. Always be sure that the contact or point being soldered is clean. (Many beginners make the mistake of trying to solder enameled-covered wire without first removing the enamel!) Never use more solder than necessary to cover the connection. Large gobs of solder are unsightly and contribute nothing to the connection and may cause shorts between wires or terminals.

In wiring gear, most builders start off by first wiring the power-supply circuit, including the filament wiring and the heater circuit. After that, it is a case of starting at the crystal and continuing through toward the output until the unit is wired.

The voltage-dividing network consisting of R_6 and R_7 provides the correct voltage for operating the keying monitor obtained at the junction of R_6 and R_7. R_6 is 1.65 megohms, and this value is obtained by using two 3.3-megohm 1-watt resistors in parallel. These resistors and other small components can be mounted most easily on insulating lug strips.

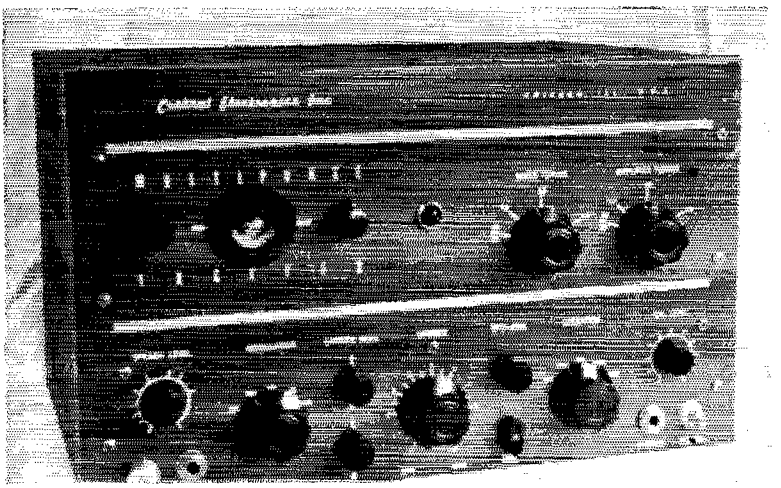
Adjustment and Testing

When the unit is ready for testing, a 15- or 25-watt electric light will serve as a dummy load. One side of the lamp should be connected to the output lead and the other side to chassis ground. An appropriate crystal should be plugged into the crystal socket, and a key connected to the key jack. S_2 may now be closed and the transmitter allowed to warm up.

Set C_8 at maximum capacitance (plates completely meshed) and close the key. Quickly tune C_6 to resonance, as indicated by a dip in the cathode-current reading. The reason we say "quickly" is because it is easy to damage a tube by running it out of resonance for too long a time. Gradually decrease the capacitance of C_8 and retouch the tuning of C_6 as you see the loading increase. The loading will be indicated by the lamp lighting and by larger values of cathode current. Once the load lamp lights up, you merely tune for maximum brilliance. The cathode current should read between 90 and 100 milliamperes when the oscillator is fully loaded. C_1 should be adjusted for best keying characteristics.

When you have satisfied yourself that the transmitter is working on each band, you are ready to put a signal on the air. The author has described some coax-fed antennas that are easy to construct and which present no problems in getting them to work properly. A one-element rotary for 15 meters was described in January, 1955, *QST*[2] and also appears in the 1956 and 1957 *Handbooks*. Another system which can be used for 80, 40, and 15 meters was described in February, 1957, *QST*.[3,4] When either of these antenna systems is substituted for the dummy load, the adjustment procedure is the same, and the cathode current at resonance will rise in the same manner as the loading is increased. If the builder lives in an area that has television channels where harmonic TVI is a possibility, a low-pass filter should be used with the transmitter.[5]

[2] "A One-Element Rotary for 21 Mc.," *QST*., Jan., 1955.
[3] "A Novice Three-Band Antenna System," *QST*. Feb. 1957.
[4] "The Evils of Multiband Antenna Systems — and The Cure," *QST*, March, 1957.
[5] McCoy, "The Tin-Can Low Pass," *QST*, Sept. 1954.



Something new has been added to this 10B: notice the tuning eye and the two knobs at the upper left.

Improved Control for C.W. Operation of 10B Exciters

This article describes two simple modifications of the 10B side-band exciter that will make it more versatile and convenient. One removes the keying function from the control relay to give a type of control on c.w. similar to voice-operated break-in on phone. The other involves the addition of a rectifier and tuning eye as a help in tuning the exciter.

Simple Additions to a Popular Transmitting Unit

BY RONALD E. DELP,* W6DAW

THE ABILITY to make and keep a contact on today's crowded amateur bands can be quite a problem at times. A few moments spent listening to the majority of side-band stations on 20 or 75 meters, however, should prove to the doubtful how much of a help good break-in can be. This advantage can be obtained with a.m. and c.w. transmission as well if used properly.

The Central Electronics 10B is an excellent and quite versatile piece of equipment, having been designed for several modes of transmission. However, the control circuit for relay K_1 (voice-controlled on side band) is activated directly by the key on c.w. and, although this gives true break-in, it was felt that operation on c.w. would be more comparable to the other modes of operation if K_1 and circuits or switching relays controlled by it were not made to follow the keying directly. The circuitry to be described here results in two modes of operation on c.w. rather than one and greatly improves the convenience of station control.

Although designed mainly with the owners of 10B equipment in mind, this circuitry is simple enough that adaptation to other types of existing or homemade equipment is quite feasible.

In designing this circuitry several things were kept in mind: control must be a positive quick action achieved with the existing relay, one triode tube and a minimum of new parts, and it must in no way detract from the existing control functions.

As can be seen from Fig. 1, one half of a triode is used as a d.c. amplifier to develop the control voltage for the existing relay amplifier tube. When the relay is deenergized, because the relay amplifier is being biased to cutoff, -100 volts is also applied to the grid of V_{1A} and cuts it off. When the key is closed, the d.c. amplifier grid is grounded and V_{1A} conducts, developing in its cathode circuit control voltage for the relay

* Field Engineering Force, Western Electric Co.
℅ 1280 El Mirador Drive,
Pasadena, Calif.

amplifier. This of course causes K_1 to pull in, putting the carrier on the air by removing the blocking bias on the r.f. stages.

When the key is opened, the control voltage decays slowly, depending on the time constant of the d.c. amplifier cathode circuit. The RC circuit is constantly being recharged during keying and will keep K_1 energized long enough to be used with slow as well as fast sending speeds.

Because the action is extremely fast and positive upon activation and does not depend upon the amplitude of rectified speech waveform for control, as during the VOX mode, there is no noticeable time lag in producing an r.f. output. Thus we have a "voice control" for c.w.

The −100 volt bias referred to is supplied by a built-in supply that is part of the 10B equipment. This voltage is available at several points, depending upon individual wiring practices.

Although a type 5814 dual triode is shown in Fig. 1, it is similar to the more common 12AU7 and was used because it was on hand at the time.

Incorporation into the 10B is quite simple and makes maximum use of the original layout. The "Operation" switch of the 10B has two "Standby" positions, and the ground was removed from one so the contacts could be used with the new circuitry to retain a "Manual" mode of operation.

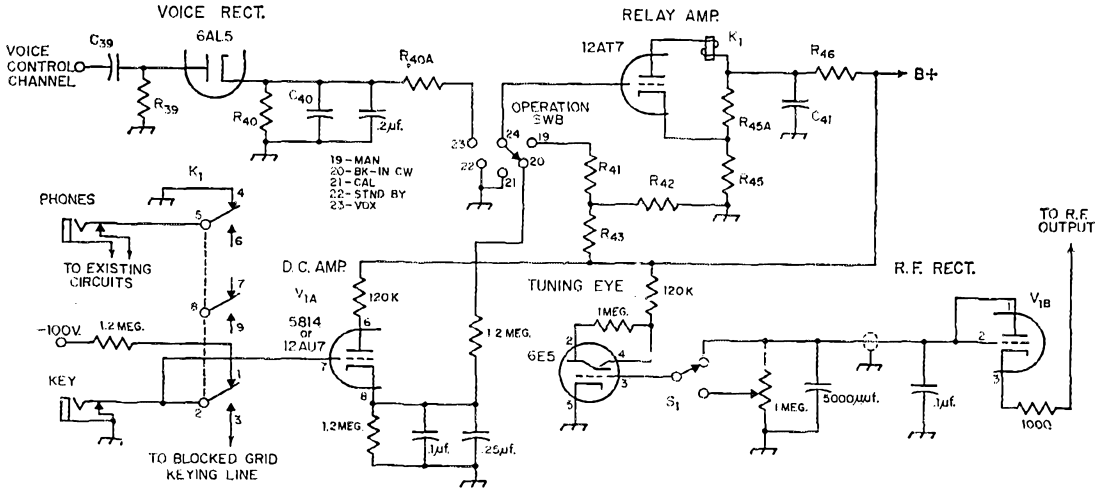
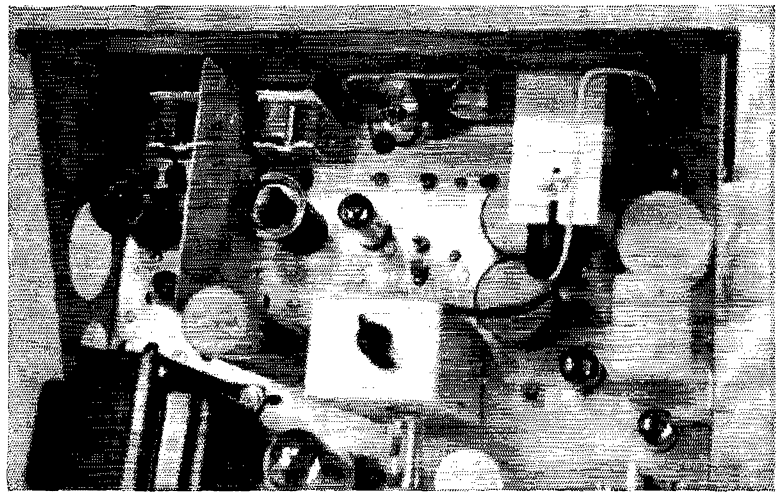


Fig. 1 — Schematic diagram of the revised 10B. Resistors are ½ watt. Where values of components are not given, the designations are those in the original 10B unit. S_1 — S.p.d.t. rotary switch

Reference to Fig. 1 and the accompanying photographs will indicate possible placement of parts. The dual-triode tube socket can be mounted by using an existing hole that is near the 6AG7 final. Resistor R_{44} (68K) can be removed as it is no longer needed and C_{42} (0.25 μf. from terminal 7 of the rear strip to ground) *must* be removed to prevent sparking at the key contacts. It will then be impossible to feel voltage across the key.

The 0.2 μf. capacitor in parallel with C_{40} was added in order to keep VOX relay K_1 energized for a slightly longer period of time when using the

(Continued on page 166)



The tuning-eye assembly is in the upper right in this picture, flanked by the 1-megohm potentiometer and the rotary switch. The additional tube (5814 or 12AU7) is at the left, between the power transformer and the output coil.

Frequency Changing and Mobile Antennas

A Symposium of Current Methods

For some time now there have been a number of band-switching mobile transmitters and receivers available to the ham fraternity. Armed with his new rig and visions of quick frequency changing, the new mobileer finds that the transmitter frequency can be changed quickly but the antenna won't take the power. However, progress is being made along the line of antenna tuning, and this article will review some of the methods. These will be methods that can be accomplished while you are moving; we suspect that everyone is familiar with the methods when the car is not in motion.

Those who haven't been interested in mobile work up to now may wonder why there is a special antenna problem in mobile work; after all, an antenna is an antenna, isn't it? To review the problem quickly, there isn't any problem with a full-sized antenna. This means that a quarter-wave-length whip on 10 or 6 meters or below behaves pretty much like any other quarter-wave antenna working against ground (car body). It looks like 30 or 40 ohms at the resonant frequency, and this value doesn't change too rapidly with frequency. The 30 or 40 ohms isn't too bad a load for a piece of 50-ohm coaxial line.

Limiting the antenna proper to an 8-foot whip, as we go to the lower-frequency bands, we have to resort to tricks to make the antenna effective as a radiator and as a good termination for the line. These tricks consist of using base- and center-loading inductors; the base loading isn't too bad on 15 and 20, but center loading is generally acknowledged to be more effective on 40 and 75. Unfortunately, by the time that little old 8-foot whip has been loaded to resonate in the 75-meter band, it has become a fairly selective proposition, and tuning that will work on 3990 kc. is far from right for 3850 kc.

The Johnson "Bi-Net"

One of the first methods for multiple-band operation involved the use of a center-loading trap in the antenna that made the antenna resonant at two harmonically-related frequencies. Called the "Bi-Net" by the manufacturer, it permitted operation on 10 or 20 meters without touching the antenna system in any way. Described in *QST* some years ago,[1] the two-band antenna uses the circuit shown in Fig. 1. A 29-Mc. whip can be broken in the center and short-circuited by a resonant series circuit, L_1C_1, with no change in performance. The same 29-Mc. whip requires a loading coil, L_2, to operate properly at 14 Mc. L_1C_1 shows capacitive reactance at this frequency, but an inductance, L_3, can be found that forms a parallel-resonant circuit with this capacitive reactance. The parallel-resonant circuit across L_2 has no effect. In a practical circuit, L_2 and L_3 are lumped in an equivalent inductance $L_{2'}$. $L_{2'}$ has no effect at 29 Mc. because it is short-circuited by the series-resonant circuit formed by L_1 and C_1. The *QST* article pointed out that the principle can be extended to include still more bands, but no commercial application of the principle has been made beyond the two-band Bi-Net.

Motor Tuning

At least two companies that we know of offer motor tuning of the antenna for getting optimum

[1] Pichitino, "Automatic Multiband Mobile Antennas and Mobile Antenna Characteristics," *QST*, June, 1953.

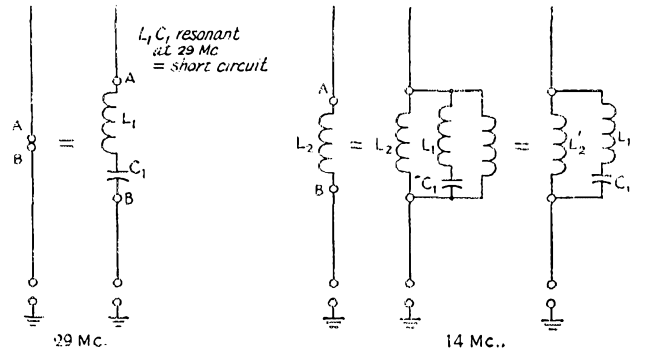
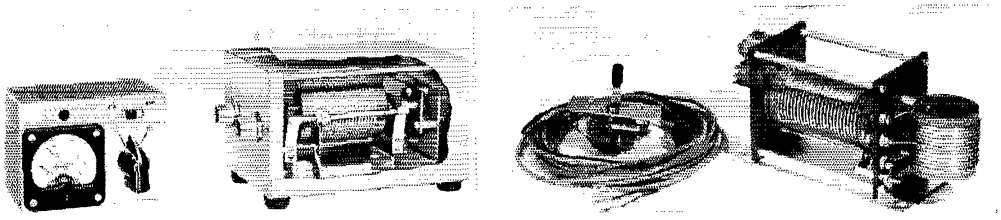


Fig. 1 — The principle of the two-band "Bi-Net" antenna is illustrated here. At the left, a 29-Mc. quarter-wave-length antenna can be opened at the center and reconnected with a series-resonant circuit, L_1C_1. The 29-Mc. quarter-wave-length antenna can be operated on 14 Mc. by using a center loading coil, L_2. L_3 tunes the net capacitive reactance of L_1C_1 out of the circuit, and L_2 and L_3 can be combined to form L_2.



Two examples of motor-tuned base-loading coils. The Master Matcher (left) includes a field-strength meter with the control box. The MLV-50-A (right) incorporates the motor-tuned base-loading coil and the shunt matching inductor (coil outside end plate).

performance over a low-frequency band. The Master Mobile Mounts "Master Matcher" is a motor-driven adjustable inductor intended to mount in the trunk close to the base of the antenna. A loading coil is used in the center of the antenna to bring the antenna to resonance at the high-frequency end of the band (80 or 40), and additional inductance is added at the base as the operator shifts to a lower frequency. Part of the Master Matcher package is a control switch and field-strength meter; the f.s. meter connects to the regular broadcast antenna of the car and indicates maximum radiation from the transmitting antenna. Shifting frequency within a band merely involves setting the transmitter frequency, turning on the transmitter, and holding the control switch on until the base loading coil is brought to the proper inductance value. The output stage tuning is then touched up if required. A separate device, the Micro-Z-Match, is available to provide a shunt matching inductor to provide a better match between the coaxial line and a base- or center-loaded antenna.

The Morrow MLV-50-A is a somewhat similar unit and is used in the same manner. It differs slightly, in that a matching inductor is included that helps to transform the base impedance up to 75 ohms on 75 and 40 meters. The package includes the control switch and cables (15 feet) but no field-strength meter. A field-strength meter, the FS-1, is available as a separate item.

The motor-driven base-loading inductors serve a very useful purpose at the lower frequencies where it is difficult to use a given center-loaded antenna effectively over much of the band without retuning. On the higher-frequency bands they are merely run down to their minimum-inductance setting so that they are effectively out of the circuit.

Motor-Driven Band Changing

A third approach to remote antenna-frequency changing can be found in The "Autenna" manufactured by Rafred Enterprises. This is a center-loaded antenna with a linear switch running up the center of the coil. The switch is motor-driven from *inside* the antenna, and it progressively shorts out the coil. Three inductance values are used to cover the 80-meter phone band, and the 40-, 20-, 15- and 10-meter bands are each covered by one position of the switch. The operator knows what band the antenna is on by reading a meter on the dashboard-mounted control panel, although if he is very far off the deadness of his receiver is a good indication as well.

The photograph on page 162 will give a fair idea of the drive mechanism. Unfortunately, we didn't have a photograph of the switch that runs up the center of the loading coil. The movable arm of the linear switch is connected to a string connected to the motor, as shown in Fig. 2. Running the motor in one direction moves the switch arm up into the coil and running it in the opposite direction pulls the switch arm out of

(*Continued on page 162*)

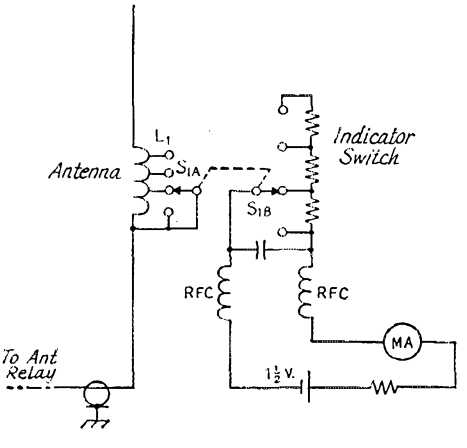


Fig. 2—Electrical diagram of the Antenna. The switch on the loading coil and the indicator switch are ganged and motor driven. The milliammeter reading shows what band the antenna is tuned to, and reads nothing unless the switches are stopped at spots that make contact.

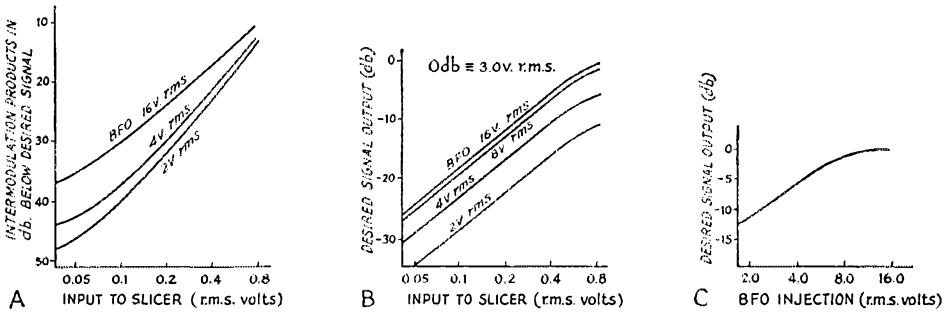


Fig. 1—Product-detector characteristics as observed by varying the signal input to a "Poor Man's Signal Slicer."

Notes on the Product Detector

Measurements on "The Poor Man's Signal Slicer"

BY DAN HEALEY,* W3HEC

This is an article describing some experiments with the product detector, and the conclusions may benefit your present or future receiver. Here again is a good demonstration of the fact that in radio the circuit isn't everything; it's the way that you use it.

SEVERAL local hams have shown considerable interest in the "Poor Man's Signal Slicer," [1] and many have reported improvement in receiver performance when using this device. After examining the original article, I concluded that the performance might not be as good as should be obtained, due primarily to excessive signal input. In addition, there has arisen a difference of opinion between certain hams as to whether W2CSY's circuit [2] is any better than a heterodyne detector (e.g., diode and b.f.o.).

When W3GKM constructed the circuit provided by Canter the opportunity was taken to make a few simple measurements to determine what demodulation characteristics are obtained.

An input signal of 455 kc., amplitude-modulated at 400 c.p.s., was applied to the input of the slicer, and the b.f.o. was adjusted so that the difference frequency between it and the signal carrier was 1000 c.p.s. A wave analyzer was used to measure the output of the slicer. If true product detection occurs the only output frequencies will be 600, 1000, and 1400 cycles per second. Nonlinearities of the type producing even harmonic distortion result in intermodulation components at 400 cycles per second and 800 cycles per second.

Intermodulation components occur in heterodyne linear detection, but they are primarily related to the size of the b.f.o. signal relative to the incoming signal and not to the detector characteristic.

Fig. 1 shows the results of the measurements. Fig. 1A shows the intermodulation components resulting from the a.m. signal side bands beating with the a.m. carrier and beating against one another. It is obvious that the signal input to the slicer must be maintained at a low level if such distortion is to be kept low. The b.f.o. signal likewise should be small for low distortion.

Fig. 1C indicates that the output is proportional to the b.f.o. signal when the b.f.o. signal is small; at maximum b.f.o. injection the demodulator is operating as a cathode-coupled heterodyne detector rather than as a product detector. Referring to Fig. 1A it is observed that product-detector operation produces about 10 db. less distortion than the heterodyne detector operation. When straining for QRP Europeans on 3.5 Mc. this 10 db. can be significant (if the receiver is linear up to the slicer).

The gain between the slicer input and the signal grid of the demodulator was 6⅔ for this particu-

* P.O. Box 746, Baltimore 3, Md.

[1] Canter, "The Poor Man's Signal Slicer," *QST*, Dec., 1956, and *QST*, Jan., 1957, p. 26. (The "slicer" is connected just ahead of the detector in an ordinary receiver's 455-kc. i.f. amplifier. A crystal-controlled 6BE6 converter in the slicer heterodynes the signals to 50 kc., where they pass through two tuned circuits and then go to a product detector. Resultant audio output is fed back to the receiver's audio amplifier.—*Ed.*).

[2] Crosby, "Reception with Product Detector," *QST*, May, 1956.

lar unit. Inputs to the product detector on the order of 2 volts r.m.s. for the b.f.o. and 0.1 to 0.3 volts r.m.s. for the signal are suggested. These voltages are somewhat lower than those recommended by Crosby, but are of the same order of magnitude. The corresponding level of the 455-kc. signal applied to the slicer will be 0.015 to 0.045 volts r.m.s. When proper input signal levels are employed the "Hybrid Detector" position of the slicer will not be of much use.

The usual communications receiver is designed to operate on a.m. with a normal signal level of 2 to 10 volts at the detector. An HRO-50 was to be used with the slicer. With the a.v.c. on, the voltage at the detector of the HRO was measured as 5 volts r.m.s. on strong signals. With the b.f.o. on, the a.v.c. is disconnected and the voltage exceeded 20 volts r.m.s. when the manual gain control was left at maximum. The b.f.o. injection voltage, however, was only 2 volts r.m.s.

At the plate of the last i.f. stage the voltage was between 10 and 20 volts r.m.s. on strong signals as the receiver was tuned across the 14-Mc. band. A 10 $\mu\mu$f. capacitor couples the i.f. signal from the last i.f. tube to the n.f.m. socket. The voltage at the n.f.m. socket was 3 to 6 volts r.m.s.; the reduction was due to the v.t.v.m. capacitance as well as the coax cable between the socket pin and the 10-$\mu\mu$f. capacitor. A shunt capacitor, C_2, was added to the input to the slicer to reduce the voltage, as shown in Fig. 2.

When this is done the receiver can be operated with the r.f. gain full on and a.v.c. "on." To avoid cross modulation caused by adjacent signals operating the a.v.c., the crystal filter should be used along with the signal slicer.

The a.v.c. circuits in the HRO are not entirely acceptable for s.s.b. and c.w. reception, but they do work to some degree in conjunction with the slicer when receiving such signals. A worthwhile modification to the HRO a.v.c. would be the circuit described by Luick.[3] This was not put in the HRO, but probably will be added at an early date.

One disadvantage of operating the signal slicer as a product detector is that the audio output is small. This results from the fact that the device is an inefficient converter, but this is the price paid for the low distortion. Crosby indicates that the conversion gain of his unit is unity.[4] However, for low distortion the conversion gain that was realized in W3GKM's unit was −16 db.

As noted on Fig. 1B, 0 db. was equivalent to 3 volts r.m.s. With the desired operating conditions for the slicer the audio output would only be about 60 millivolts for a 1000-cycle audio tone. With such a small signal hum problems may be encountered, and it is wise to add additional filtering on the voltage applied to the grounded grid amplifier. If the cathode capacitor in the grounded grid stage is increased in size, a worthwhile increase in audio is obtained.

In the plate of the grounded grid stage the 5000 $\mu\mu$f. filters the b.f.o. signal and i.f. signal components so that they do not saturate or introduce intermodulation distortion in the audio stages which follow the slicer. Such a capacitor, however, destroys the audio response. An increase in the size of the cathode capacitor reduces the the output impedance of the grounded grid stage so that a wider audio band width is obtained. Alternatively, some of the b.f.o. signal may be fed into the grid of the grounded grid stage[5] if still wider audio response is desired. The audio response, however, will be limited by the selectivity of the 50-kc. i.f. transformer.

B.F.O. Injection

The maximum b.f.o. signal obtained with 250 volts plate supply was 13 volts r.m.s. If a linear

[3] Luick, "Improved A.V.C. for Side Band and C.W," *QST*, Oct., 1957.

[4] Telephone conversation following MARS Technical Net broadcast on 7635 kc.

[5] Tech. Topic, "Transformerless Balanced Modulator for Single Side Band," *QST*, February, 1957.

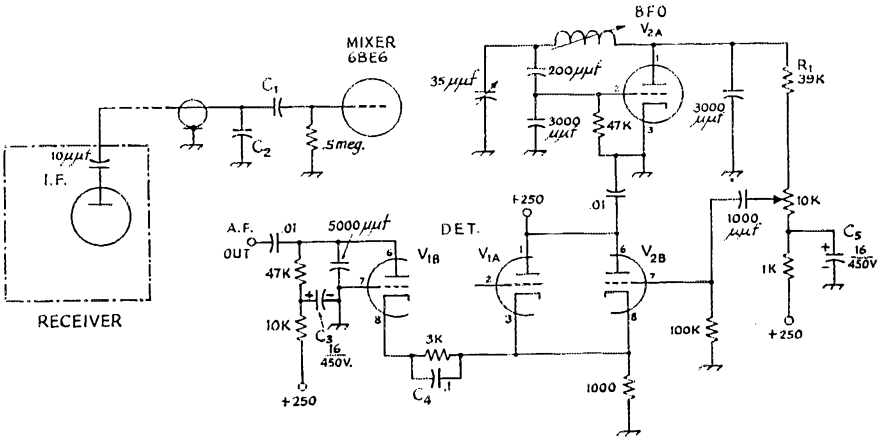


Fig. 2—Pertinent portions of the slicer discussed in the text. Values changed from the original are R_1 and C_1 through C_5. Unless otherwise indicated, capacitances are in μf., resistances are in ohms, resistors are ½ watt.

C_1 — 100 $\mu\mu$f.

C_2—1000 to 3000 $\mu\mu$f. Larger value will reduce distortion but also reduces output level.

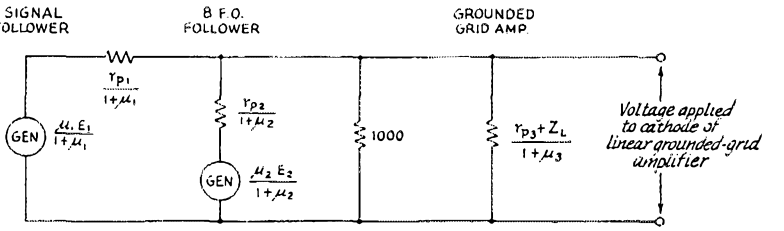


Fig. 3—The equivalent diagram of the product detector. The subscripts 1, 2 and 3 refer to the signal cathode follower, the b.f.o. cathode follower and the grounded-grid amplifier stage, respectively. Z_L is the plate load for the amplifier stage.

potentiometer is used for b.f.o. injection then about one eighth rotation will give the suggested injection voltage. If desired, an additional resistor, R_1, can be connected between the b.f.o. and the potentiometer, as shown in Fig. 2.

Operation of the Product Detector

If one signal is applied to a pair of resistors in series, and if the other signal (b.f.o.) varies one of the resistors so that its resistance is directly proportional to the instantaneous value of this signal (b.f.o.), the signal appearing across the variable resistor will be a modulated signal. If both signals are sinusoidal and if the variable resistance is very much lower than the fixed resistance, the resultant modulation will be distortionless. The product detector operates in such a fashion. The modulated signal consists of the i.f. signal modulating the b.f.o. signal. Side bands are generated, and if for simplicity we assume a single frequency in the i.f. signal, two side frequencies only are generated. One is the sum of the b.f.o. frequency and the i.f. signal; the other is the difference between the b.f.o. and the i.f. signal. The former is filtered out in the plate of the grounded grid stage, and the latter is the desired audio output.

An equivalent circuit for the product detector is shown in Fig. 3. The quantities r_{p3} and μ_3 are constant. r_{p1}, μ_1 and r_{p2}, μ_2 depend on the instantaneous values of the b.f.o. and i.f. signal respectively. At the positive peak of the b.f.o. signal r_{p2} is a minimum, and because of the additional bias appearing on V_1 due to the b.f.o. signal r_{p1} is a maximum. Similarly, at the negative peak of the b.f.o. signal, r_{p2} is a maximum and r_{p1} is a minimum. μ_1 and μ_2 also change slightly, but their effect is trivial. The i.f. signal also varies the r_p of the b.f.o. cathode follower, but its effect in the modulation process is much smaller than that of the b.f.o. signal. It is this variation of the plate resistance of one of the cathode followers by the signal from the other cathode follower that results in modulation. A linear variation in plate resistance with grid voltage implies that the relationship between the plate current and the grid voltage is square law. By critical adjustment of the operating point of the tubes in the product detector it is possible to realize this condition more closely and obtain somewhat greater efficiency for the same distortion.

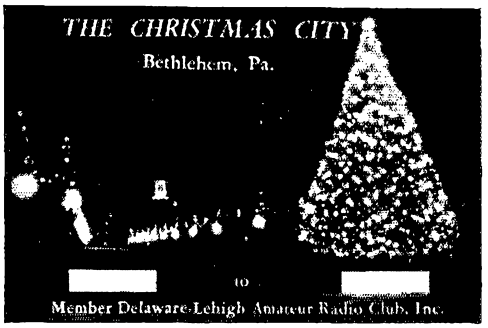
Admittedly, this is an inefficient detection process, but it does result in low distortion.

It is hoped that this note might result in a somewhat better performance of many of the "Poor Man's Signal Slicer" units that have been built. The measurements reported here have convinced the writer that the receiver to be used in the 1958 DX test should incorporate the triple triode detector.

Strays

What's in a name, or call? KØGUM is Carl Stamps.

—···—



W3LEZ finally qualified for the WAVE certificate, by working W9NLJ/VE1 in Prince Edward Island. Even more remarkable, W9NLJ was operating from the same QTH, building, room, and operating table that W3LEZ used when *he* was there in 1956.

—···—

One morning K6TRG worked K6RPJ. On the next morning at the exact same time, exact same frequency, entirely by chance, he worked K2RPJ.

—···—

Straight man: "What are you doing?"
W8SSA: "Adjusting my key."
S. m.: "Why don't you have it connected?"
W8SSA: "You don't have to connect it — it's a wireless key."

A Radio Club for Microwave Enthusiasts

San Bernadino Microwave Society Specializes in Work Above 1000 Mc.

BY W. H. BAIRD,* W6VIX

THE San Bernardino Microwave Society is perhaps unique, in that it was established especially to promote interest and activity in the amateur bands above 1000 Mc. Most of the members are technicians or engineers working in the electronics field at defense plants in the Los Angeles area.

One of our objectives has been to develop amateur-type communications systems for our microwave bands that could be duplicated without great expense by the average amateur. We have recognized for some time that interest in the microwave region was low because so many potential enthusiasts feel that a fully-equipped microwave laboratory is a prerequisite to successful amateur communication above 1000 Mc., even for short-distance work. One of our simpler microwave stations, now being used successfully, has only five tubes, including two rectifiers. It can be built for less than $30.00.

A Duplex System for 3300 Mc.

At present, members of the society use a duplex system, with a frequency difference of 30 Mc. The klystron runs all the time, serving as transmitter and local oscillator. Effort is concentrated on the 3300-Mc. band, because oscillators for it are readily available on the surplus market. The 726A and 2K28, with their cavities, are most easily obtained, and they are the least expensive. Cylindrical wave guide for 3300 Mc. can be made from an ordinary beer can. The half-quart size has adequate length for our purpose and it will pass frequencies between 2700 and 3500 Mc. in the $TE_{1,1}$ mode only.

One of our earliest efforts, and one of the best, was the "pola-plexer" shown in the photograph on page 46. This allows duplex communication with a 30-Mc. frequency difference, using mutually perpendicular wave guide feeds for transmission and reception.

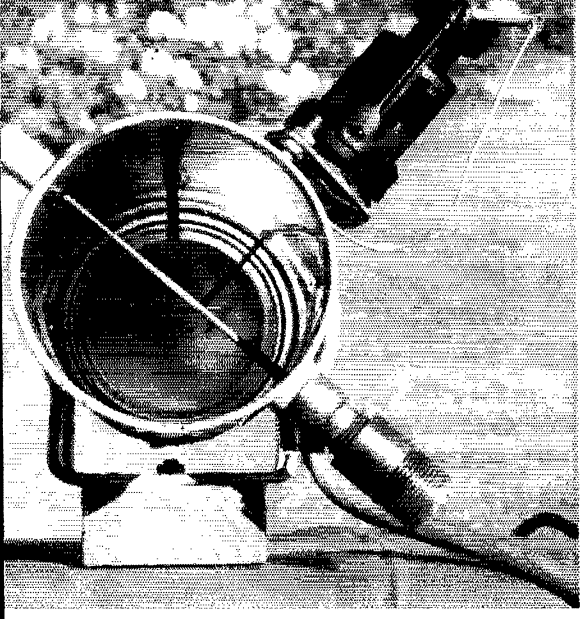
Polarization is neither horizontal nor vertical, but is at a 45-degree angle. The transmitted energy from each station is polarized 45 degrees to the right, looking down the line of propagation from the transmitter. The received energy is then polarized so that it may be received with maximum strength by a receiving probe at right angles to the one used for transmitting. A more detailed explanation of our pola-plexers follows.

A 726A klystron is mounted a quarter wavelength from the closed end of the beer can. A probe projects into the can through a small hole, and its length is adjusted for maximum radiation. It would be desirable to place the receiving probe at the same distance from the end, but this is not possible mechanically, so the receiving probe is mounted ¾ wave length from the closed end. This gives electrically identical results. These two probes are at an angle of 90 degrees, as may be seen in the photograph.

A third probe is placed between the transmitting and receiving probes in a vertical position. This is a convenient adjustment for local-oscillator injection. The receiving probe is tuned for

*609 West "J" St., Ontario, Calif.

Below: The 1200-Mc. antenna is shown here mounted in the same dish as was used at 3300 Mc. This arrangement was also employed in setting the 190-mile record on both 1200 and 3300 Mc. in 1956.



Above: Close-up of one of the San Bernardino Microwave Society's 3300-Mc. pola-plexers. Receiving probe and crystal mount show nearest the open end of the can. The klystron probe is perpendicular to the receiving probe, at a quarter wave length from the closed end. Vertical probe between the other two is local oscillator injection adjustment. Right: W6VIX operates beer-can pola-plexer on 3300 Mc. feeding a 4-foot dish. This equipment was used in making the 190-mile contact in June, 1956, that still stands as the world's record on that frequency. Below, right: Microwave mobile antenna mount used by W6VIX on 3300 and 10,000 Mc. in setting the 124-mile record on the higher frequency. Dish is 8 feet in diameter. Two-meter antenna showing over the top of the paraboloid is for liaison use.

optimum length, and a crystal connected at the upper end. The crystal mount may be seen at the upper left of the picture. Energy at an intermediate frequency of 30 Mc. may be taken off the crystal if the frequency separation of the two transmitters is maintained at 30 Mc. This i.f. energy is then amplified and detected by conventional methods.

The beam width of the pola-plexer is about 160 degrees, making it suitable for use with most parabolic reflectors. Use of one in this way is shown in another photograph. Constructional details of various types of pola-plexers, klystron power supplies and i.f. amplifiers will be provided at a later date by Dale Bredon, W6BGK.

124 Miles on 3300 and 10,000 Mc.!

The ARRL V.H.F. Parties provide excellent opportunities for field-testing new equipment. During the June V.H.F. Party we had such good results on 10,000 Mc. that we decided to try a longer path at the earliest opportunity. The equipment used had not been designed especially for DX work, but was merely an assembly of parts we had on hand, put together to gain additional multipliers and contacts in contest work.

On June 23, W6BGK went to the Green Valley Lake cabin of W6IHK, near San Bernardino, at

an elevation of 7200 feet. I went to Mt. Pinos, elevation 8800 feet, near Bakersfield. The airline distance between these two points is 124 miles. The path is just barely line-of-sight, skimming Mt. Frazier 10 miles from Mt. Pinos by 150 feet, and another hogback near the middle of the path, also by 150 feet.

Dale used a 27-inch paraboloid, with a standard X-band Cutler feed. The oscillator was a Varian X-13, feeding a magic T coupled to the *E* arm. The *H* arm was coupled to a tunable crystal mount, feeding a 30-Mc. i.f. system. My equipment was similar, except that I used a 2K39 klystron and a horn-fed 8-foot dish. Two-meter equipment was used for a liaison circuit.

Contact was established at noon on 144 Mc., and we went directly to 10,000 Mc. After about a half hour of panning with the dishes and much tuning, we gave up. The beam widths and equipment adjustments at 10,000 Mc. were just too critical to make the grade without some preliminaries on a lower microwave band. Accordingly, we removed our 10,000-Mc. feeds and replaced them with beer can pola-plexers on 3300 Mc. Using accurate compasses and levels to orient our dishes, we turned on our 3300-Mc. oscillators and within a few minutes had established good S9 communication on that frequency.

It was then possible to aim our antennas precisely for maximum signal, adjusting both in azimuth and elevation. There was plenty of time, so we talked for about an hour on 3300 Mc. to check signal quality. There was very little fading. We then changed back to 10,000 Mc., and after about 10 minutes I heard Dale calling me frantically. He had been trying to let me know that he heard me on 10,000 Mc. the moment I applied the voltages to the 2K39.

Signals faded quite a bit at first, but after half an hour of tuning at both ends we *attributed* most of this to klystron drift. Dale's signals peaked about S7, and he gave me a maximum report of S9. Later we calculated the signal paths and concluded that we were as close to the calculated signal strength as could be expected. Recalling the old polarization argument, we changed from vertical, which had been in use up to that time, to horizontal. After about the same length of time on both polarizations we concluded that there was no observable difference between them at this frequency.

Microwave Propaganda in Preparation

As the purpose of the San Bernardino Microwave Society is to promote greater interest in amateur work above 1000 Mc., we are getting together slides and talks on amateur equipment for microwave communication and will present this material before radio clubs of the Los Angeles areas. Another current project is construction of gear for the 5600-Mc. band.[1]

We plan to continue along these lines, building and improving equipment and promoting interest among the technically-inclined. Meetings of the San Bernardino Microwave Society are held the first Thursday of each month at the Chaffee College Annex in Ontario, at 7:30 P.M. Anyone interested in the frequencies above 1000 Mc. is welcome. Note that our society has nothing whatever to offer those interested in lower bands!

[1] Later word from W6VIX: On Oct. 13 W6VIX/6 and K6MBL (a Technician licensee) worked 2-way over a 34-mile path on 5650 Mc. This is the first amateur work reported on this new assignment. Previous work was done in the old band at 5250 Mc., the temporary postwar allocation.

FEEDBACK

WØCO has asked us to correct a number of typographical errors in connection with his "Foreword" to various volumes of *QST*.

a) October, 1954, *QST*, p. 43, line 6 — change the date to read August, 1915.

b) October, 1954, *QST*, p. 43, line 10 — change the date to read August 7, 1915.

c) October, 1954, *QST*, p. 43 — expand footnote 4 to read as follows:

"4 3 to 4, December 1915. The August 7th date (with no *year* mentioned) appears in the reply of Sec. Daniels on 4 December 1915. The year must have been 1915. Maxim's letter stated that the League (as of the time of writing) had been in operation one year. Sec. 3, December 1915. See, also, Clinton DeSoto's book, *Two Hundred Meters and Down*, at page 45 '. . . in the autumn of 1915 Hiram Percy Maxim addressed letters to the Secretary of War and the Secretary of the Navy offering the services of the A.R.R.L. and its members in case of emergency. . . .' "

d) October, 1957, *QST*, p. 70 — the Editor's Note at the bottom of the first column is incorrect. The reference to footnote 66 in July 1957 *QST* should have stated that the correct call was 2FP.

e) October, 1957, *QST*, p. 72 — first column, line 12 and line 16, correct the call to 2FP.

f) October, 1957, *QST*, p. 72, footnote 119 — change the call 2PF to 2FP, in three places.

—···—

Robert F. Tschannen, W9LUO, reports that he has been swamped by letters and telephone calls regarding his "Club-Saver Portable" 2-meter station described in October *QST*. Several errors were drawn into the schematic diagram as published. Corrections are as follows:

Add a 10-μf. 450-volt electrolytic capacitor to ground from the junction of the audio gain control and the 10K resistor. This capacitor is one section of the Mallory Type FP376.1 assembly used in the rig.

Coil L_9 is center-tapped. This is indicated on the drawing, but not mentioned in the cut label.

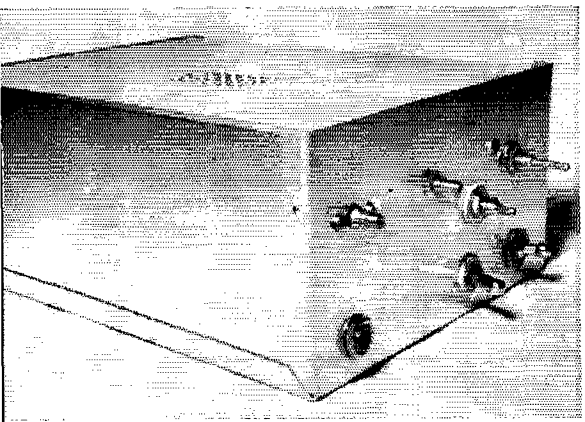
The 3900-ohm resistor in the oscillator plate lead, and the 2200-ohm resistor in the tripler plate lead will have a more satisfactory safety factor under mistuned conditions if the wattage rating is increased to 2 watts.

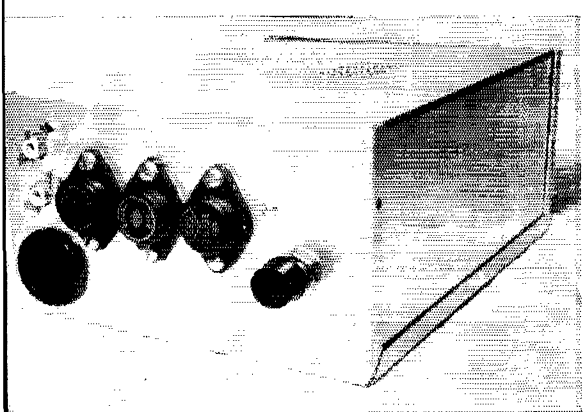
The two lower terminals of the microphone jack, J_2, should be connected together. This will give a somewhat better bias condition on the 6AQ5 when the microphone is not connected.

Transistor Audio for Mobile Rigs

A Compact 6-Meter Unit

BY JOHN O. GALLOUP, *W8PYQ





Top view:
Controls along the top, from left to right, are for C_2 and C_1, and the slugs of L_2 and L_1. The microphone jack and the two toggle switches are at the bottom.

Bottom view:
The three power transistors are mounted externally on the rear end of the aluminum enclosure. The phono connectors are for receiver input and antenna, with the r.f. power-supply connector below. The control to the right is for audio gain.

Although the 15-watt transmitter described here by W8PYQ is a 6-meter mobile job, the advantages of the 10-watt transistor modulator may be applied to any rig running up to 20 watts input. In mobile installations, power for the audio section is obtained directly from the car's 12-volt storage battery, leaving the power unit free to supply the r.f. section only.

ONE OF THE MOST immediate applications for transistors in ham radio is in mobile equipment where compactness is of more than ordinary importance. The practical possibilities have become definitely significant since transistors capable of handling 10 watts of audio were made available. Not only do the transistors themselves occupy little space, but the size of the power supply can be reduced since the transistors obtain their d.c. input power directly from a 12-volt car storage battery. An example of what can be done in the way of miniaturizing is illustrated in the photographs which show the details of a 15-watt 50-Mc. transmitter with an all-transistor audio section. The whole thing is contained in a $3 \times 5 \times 9$-inch aluminum box (a $3 \times 5 \times 9\frac{1}{2}$-inch aluminum chassis makes a satisfactory substitute). In my installation a Heath 260-volt 60-ma. vibrator unit supplies the r.f. section.

Circuits

The r.f. circuit shown in Fig. 1 is straightforward, beginning with a 25.1-Mc. third-overtone crystal and the first triode section of a 12AT7. The plate is slug-tuned to 25.1 Mc. and the output is fed to the grid of the other triode section of the tube which doubles frequency to 50.2 Mc. Ample drive is obtained at the grid of the 6417 for proper Class C operation. A balanced tank circuit is used in the output of the final so that neutralization may be easily added if found necessary. The output link circuit is tuned with a 100-$\mu\mu$f. variable.

The audio section is a modification of a design suggested by one of the transistor manufacturers for loudspeaker drive. The speech amplifier, which has three stages using 2N107s, has enough gain for a crystal or high-impedance dynamic microphone. The Class B modulator using a pair of 2N256s is driven by a 2N255. The third 2N107 is used with the collector grounded to match the low-impedance input of the 2N255.

*68 Garrison, Battle Creek, Mich.

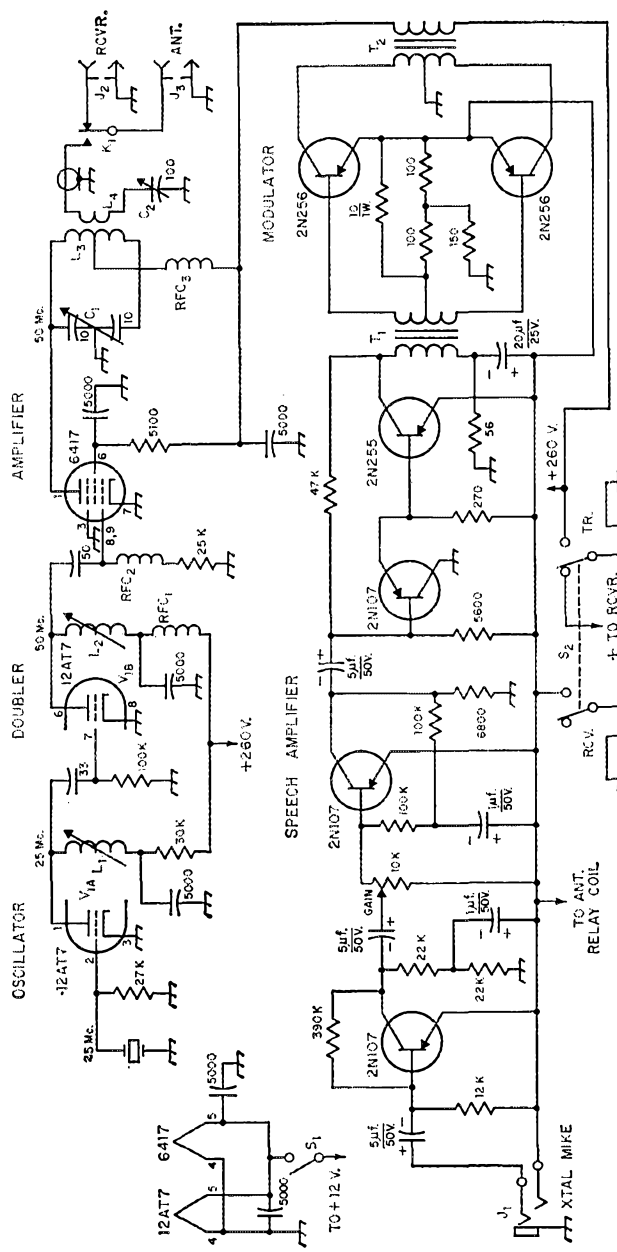


Fig. 1—Circuit of the 15-watt mobile rig with transistorized audio section. All r.f. bypasses are disk ceramic. R.f. coupling capacitors may be mica or ceramic. Capacitors marked with polarity are electrolytic. All resistors are ½ watt.

C_1—Miniature butterfly, 11 $\mu\mu$f. per section (Johnson (160–211).

C_2—Midget variable, 100 $\mu\mu$f. (Hammarlund MAPC-B-100).

J_1—3-circuit microphone jack (see text).

J_2, J_3—Phono jack.

K_1—Midget antenna relay (Advance AM2C or similar).

L_1—18 turns No. 18 enameled close-wound on ½-inch iron-slug form.

L_2—5 turns No. 18 enameled close-wound on ½-inch iron-slug form.

L_3—12 turns No. 12, ½-inch diam., self-supporting, tapped at center.

L_4—4 turns insulated hookup wire around center of L_3.

RFC_1, RFC_2, RFC_3—Approx. 7 μh. (Ohmite Z-50 or equivalent).

S_1—S.p.s.t. toggle switch.

S_2—D.p.d.t. toggle switch.

T_1—Transistor driver transformer (Triad TY61-X).

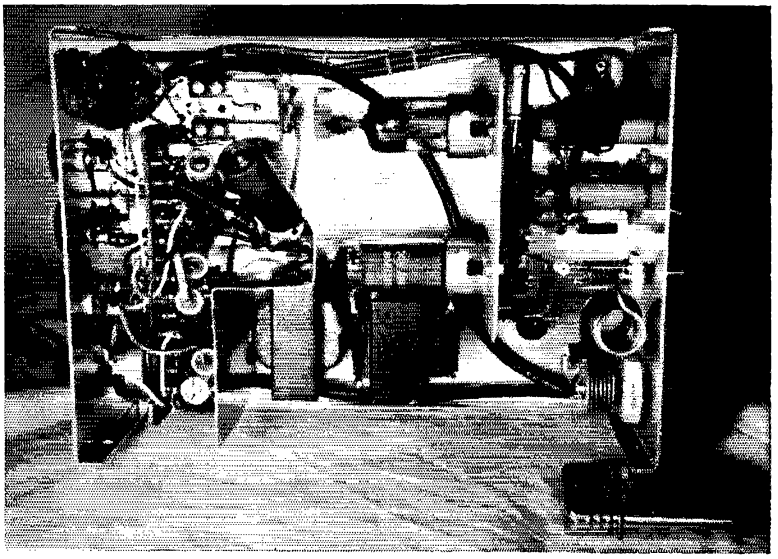
T_2—Modulation transformer—see text (Thordarson 24S71 speaker transformer in reverse).

Construction

Most of the constructional details will be evident from the photographs. There are doubtless some who will want to do a fancier job. The r.f. section is at the front, with the tubes mounted horizontally from an aluminum partition. This partition is spaced just far enough to the rear to make room for the slug-tuned coils and the output tank circuit. The crystal is soldered directly to the oscillator tube pins.

The audio section occupies the remainder of the space. Small components are supported on a terminal board. The two audio transformers are mounted alongside the 6417 with their windings at right angles. A Z-shaped shield separates them from the other audio components.

The three power transistors are mounted externally to provide as much cooling as possible. Since the collectors of the 2N255 and 2N256 are connected to the metal shells, these transistors cannot be mounted directly on the chassis. I insulated them with sheets of asbestos packing



Looking down into the transmitter enclosure. The r.f. section is to the right. The 12AT7 oscillator-doubler (above) and the 6417 final (below) are mounted horizontally from a shielding partition. The crystal is soldered directly to the oscillator-tube socket prongs. The antenna relay is in the upper left-hand corner.

about 1/16-inch thick. They could also be mounted on insulating studs to space them from the chassis. It should also be noted that both sides of the microphone circuit must be insulated from ground. The shield of the microphone cable is connected to the second insulated terminal of a "three-way" microphone plug.

A speaker transformer connected in reverse is used as the modulation transformer.[1] The 5000-ohm tap on the primary is used for the secondary. The 16-ohm secondary is used as the primary. The winding has taps at 4 and 8 ohms, and it should be noted that since the impedance ratio is proportional to the square of the number of turns the center tap will come at the 4-ohm tap, not the 8-ohm tap.

Adjustment

I did not include a meter, but adjusted the r.f. section for best output with a field-strength indicator. The oscillator and doubler can be checked by listening on a receiver while adjusting the slugs. There will be an increase in signal strength when the slug is adjusted through resonance. If there is any fundamental-frequency instability in the final amplifier, a small neutralizing capacitor made with twisted wire can be connected between the lower end of the tank and the grid of the tube. I didn't find neutralizing necessary.

Depending on the rating of the supply, the final may be loaded up to a plate current of 50 ma. The modulator should draw about 10 ma. idling and swing up to peaks of about 1 ampere on voice. It supplies more than adequate power for 100 per cent modulation of the final at full loading. It is important that the change-over switching system provide for turning off the 12-volt supply to the transistors during stand-by periods so that the transistors will have an opportunity to cool off. With the arrangement shown in Fig. 1, no difficulty from overheating has been experienced.

Using a vertical antenna on the car, ground-wave contacts as far as 20 miles have been made with S9 reports. The rig will fit neatly under the dash of most cars and will give many miles of mobile v.h.f. fun.

[1] Triad now makes an output transformer suitable for this purpose—the Type TY65Z—*Ed.*

Strays

One of the gals on our staff has looked at so many cards from the six continents that she says it is driving her WAC-ky!

—•••—

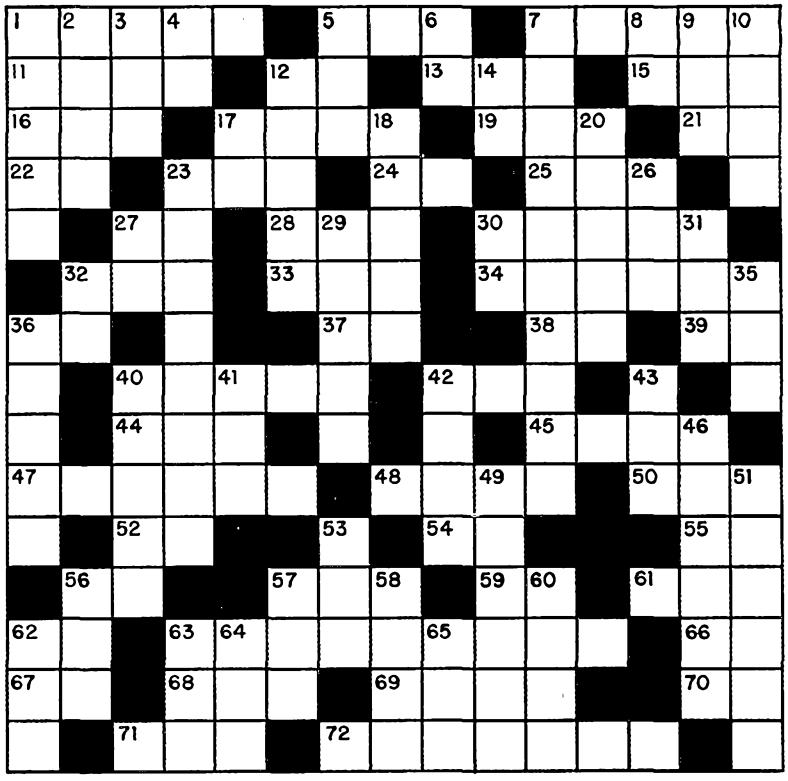
W6LHY reports that on a recent trip to Cuba by ferry from Key West he could not get his station wagon equipped with mobile gear through customs. He had to remove every piece of ham gear from the car and the car was searched thoroughly before he could proceed. The amateur gear was not returned to him until he arrived at Key West on the return trip. He suggests that amateurs making the trip should remove their gear before embarking.

—•••—

K6EIH, among others, sends us this one from the San Francisco *Call-Bulletin* — "Mrs. Lucille Morrison, a Los Angeles marriage expert, recommends husband-seekers to take up ham radio as a hobby, move away from home and family, and go to Wyoming where there is a woman shortage.

HAM CROSSWORD

By Terry Griner, W4ECP/3



Across

1. average sig has a larger - — on 20 than 40 meters
5. probably most popular award
7. finger used mostly on a straight key
11. HZ is this type of country
12. prefix of seven countries around Europe
13. to do or commit wrongly
15. used on all hi-fi record players
16. weep
17. an award very popular throughout the world
19. usually around 14.280 Mc.
21. letters placed on a lot of tubes
22. prefix to "Little America"
23. was mainly a headache to old timers
24. prefix to country U. S. hams can now work
25. united auto workers (abbr.)
27. symbol for calcium
28. Ham's abbr. for sorry
30. to approve of
32. he does not need a xmtr
33. similar to pitch used in dry cells
34. prefix of Aves Island
37. doubleplay (abbr.)
38. Chemical symbol for thulium
39. Abbr. for switch
40. its prefix contains more dots than any other prefix
42. all licensed hams have had at least one of these
44. American Red Cross (abbr.)
45. all active hams must have one (usually bought)
47. their famous saying "Pse QSL"
48. used in KL7's country
50. electrically charged particles
52. abbr. for ocean
54. prefix of country whose name is same as a fowl
55. chemical symbol for tantalum
56. represented by a sine curve
57. word hams use in place of "for"
59. one of three prefixs used by this country
61. DX
62. probably most used abbr. by hams
63. 5Y3
66. for of transportation (abbr.)
67. central America republic (prefix)
68. undesirable to see in a xmtr
69. a social group
70. Roumania
71. Cancel Nr——— *(Q sig.)*
72. Kenya is a ————

Down

1. Handles Traffic
2. Large radio organization
3. No
4. a c.w. goodby
5. popular award requiring 6 QSLs
6. popular contest for W and VE hams (abbr.)
7. part used in all ham units
8. District Attorney
9. one dyne • centimeter
10. abbr. for one of a ham's main units
12. in being
14. Hawaii
17. W3 (abbr.)
18. undesirable characteristics in a sig.
20. type of a coil
23. group of Spanish Islands
26. would be happy if we did this in FD
27. code
29. wave length which lies between .01 cm and 30 km
30. Ampere Hour (abbr.)
31. abbr. for weights
32. a nice European catch
35. standing wave ratio
36. — ——'s experiments or his modulus
40. general destruction
41. governmental agency controlling interstate commerce (abbr.)
42. QRT
43. a headache for hams
46. ——— beam
49. 57.3 degrees
51. ——— band fm
53. handles traffic
56. coulomb passing through given point in one second
57. forms of all radio regulations
58. second word in KP4's country
60. past part. of lend
62. its symbol is Greek letter omega
63. certain rodents
64. a stage in history
65. it is sweeping the country, hams included

(Turn to page 202 for solution)

11th V.H.F. Sweepstakes, Jan. 4 and 5

New Scoring System Adopted; Certificates to ARRL Section, Novice, Technician Winners; Gavel to Top Club

THE ELEVENTH ARRL V.H.F. Sweepstakes, open to all amateurs able to work 50 Mc. or higher, will bring excellent opportunities for new DX records, additional states, and making new v.h.f. acquaintances. The contest begins at 2:00 P.M. your local time Saturday, January 4, and continues until midnight Sunday, January 5.

Just call "CQ Sweepstakes" or "CQ SS" to get in touch with other contestants, then exchange SS information as shown in this announcement. This data is similar to a message preamble, with the ARRL section (see page six of this *QST*) substituted for the city and state, and the signal report replacing the "check." You can rework a station for credit on each v.h.f. band, so ability to work 50, 144, 220, etc., pays off in additional score points.

With one exception, the rules this year are the same as in previous contests. The exception is in computing the multiplier, which has formerly been the number of sections worked and now will be *the number of sections worked plus 10*. E.g., if 7 different ARRL sections are worked, the multiplier is 7 plus 10, or 17. The objective is to reduce slightly the advantage of more populated areas, such as the East Coast, in being able to work more nearby sections within normal (i.e., without a band opening) communications range. While it is impossible to set up rules for an amateur operating activity guaranteeing equal scoring opportunity for each part of the country, the ARRL Contest Committee does feel that this rules change is a desirable step in that direction. Because of the additional multiplier credit of 10, all scores will be higher, but scores from stations with a smaller number of sections worked, such as 4 or 5, will rise proportionately higher than those with a higher number of sections, such as 10 or 12. (An entrant interested in comparing his 1958 performance with previous years can easily do so by computing, for his own information, a comparable score using the former method.)

Here is a specific example to explain the new system of scoring. W8LPD, using 50, 144 and 220 Mc., makes 100 contacts in 17 different ARRL sections. He figures his total as follows:

100 QSOs
×2 (if all SS data exchanged in both directions)
200 (QSO points)
×27 (17 sections plus 10)
5400 (claimed score)

SUMMARY OF A.R.R.L. V.H.F. SWEEPSTAKES EXCHANGES

Station..... Class License..... ARRL Section.....

	SENT (1 point)						*RECEIVED (1 point)*							
Freq. Band (Mc.)	*NR*	*Stn.*	*CK-RST*	*Section*	*Time ..ST*	*Date (Jan.)*	*NR*	*Stn.*	*CK-RST*	*Section*	*Time*	*Date (Jan.)*	*Number of Each Different New Section as Worked*	
50	1	W1AW	57	Conn.	4:15 P.M.	4	3	W1PHR	47	Conn.	4:18 P.M.	4	1	2
50	2		43		4:35 P.M.	4	7	W1QAK/1	59	Conn.	4:40 P.M.	4	..	2
50	3		58		9:09 P.M.	4	6	W1KCS	359	R. I.	9:11 P.M.	4	2	2
144	4		49		9:30 P.M.	4	32	W1OOP	58	E. Mass.	9:36 P.M.	4	3	2
144	5		57		9:50 P.M.	4	15	KN1CAK	58	Conn.	9:46 P.M.	4	..	2
50	6		54		11:30 P.M.	4	11	K2EIJ/2	48	N. Y. C.-L. I.	11:32 P.M.	4	4	2
420	7		58		11:35 P.M.	4	30	W1PHR	57	Conn.	11:35 P.M.	4	..	2
144	8		57		11:45 P.M.	4	21	W3CGV	59	Md.-Del.-D. C.	11:56 P.M.	4	5	2
144	..	....	...	....	.....	..	18	W9WOK	449	Ill.	12:34 A.M.	5	6	1
144	9	W1AW	34	Conn.	8:50 A.M.	5	7	W1RFU	59	W. Mass.	8:47 A.M.	5	7	2
50	10		479		9:18 A.M.	5	12	W6AJF	379x	S.F.	6:20 A.M.	5	8	2
50	11		589		10:10 P.M.	5	20	VE3DIR	569	Ontario	10:35 P.M.	5	9	2

Claimed score: 23 points × 19 (9 + 10) = 437. Bands Used: 50, 144 and 420 Mc. 9 sections worked

Names and calls of operators having a share in above work.....

Participating for club award in the.....*(name of Club), of which I am a member.*

I hereby state that score and points set forth in the above summary are correct and true.

Tube line-up..... *Signature*.....

Number of QSOs..... *Address*.....

EXPLANATION OF V.H.F. SS CONTEST EXCHANGES

Send Like Standard NR Msg. Preamble		*Call*	*CK*	*Place*	*Time*	*Date*
Exchanges	Contest numbers 1, 2, 3, etc., a new NR for each station worked	Send your own call	CK (Readability and strength or RST of station worked)	Your ARRL section	Send time of transmitting this NR	Send date of QSO
Purpose (example)	QSO NR tells how you are doing (NR1)	Identification (W1AW)	RS or RST report (589)	See page six for section list (Conn.)	Time and date must fall in contest period (6:55 P.M. Jan. 4)	

Certificate awards will go to top-scorers in each of the 73 ARRL sections from which entries are forthcoming. In addition, a certificate will be given to the top Novice and Technician in each section where at least three such licensees submit valid logs. Clubs are invited to get their members on the air from their individual stations to compete for the certificate issued to the leading operator in each club. The club whose members pile up the top aggregate score will also receive a handsome cocobolo gavel with a sterling-silver band engraved with the name of the winner.

Contest reporting forms are now available from the ARRL Communications Department on request. If you don't use these log sheets, please follow the log arrangement shown. ARRL welcomes all contest reports to assist in the checking and to make complete results in *QST* possible. *Novices and Technicians:* be sure to report your totals, large or small, so that the license-class leader in your section can qualify for a certificate.

The 1957 V.H.F. Sweepstakes smashed all previous records with 837 stations reporting, and the 1958 version will probably be even bigger. Why not give your gear and antennas a real contest-type check on this January week end? Plan now to take part!

Rules

1) *Eligibility:* Amateur operators in any ARRL section (see page 6) operating at home, or mobile or portable *under one call* on or above 50 Mc. are invited to take part.

2) *Object:* Participants will attempt to contact as many other stations in as many ARRL sections as possible.

3) *Contest Periods:* The contest starts at 2:00 P.M. your local time, Saturday, Jan. 4, 1958, and ends at midnight, Sunday, Jan. 5, 1958.

4) *Exchanges:* Contest exchanges, including all data shown in the sample, must be transmitted and receipted for as a basis for each scored point.

5) *Scoring:* (a) Contacts count *one point* when the required exchange information has been received and acknowledged, a *second point* when exchange has been completed in both directions.

(b) Final score is obtained by multiplying total contact points by the sum of different ARRL sections worked (the number in each of which at least one SS point has been credited) plus 10.

6) *Conditions for Valid Contact Credit:* (a) Repeat contacts on other bands confirmed by completed exchanges of *up to two points per band* may be counted for *each different station* worked. (*Example:* W1HDQ works W1RFU on 50 and 144 Mc. for complete exchanges of 2 points on each band; 2 + 2 gives 4 points but only *one* section multiplier.)

(b) Cross-band work shall not count.

(c) Portable or mobile station operation under one call, from one location only, is permitted.

(d) A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

(e) Contacts with aircraft mobiles cannot be counted for section multipliers.

7) *Awards:* Entries will be classified as single- or multi-operator, a single-operator station being defined as one manned by an amateur who neither receives nor gives assistance to any person during the contest period. Certificates will be awarded in each ARRL section to the top-scoring amateur in the single-operator classification. In addition, a certificate will be awarded to the top Novice and Technician in each ARRL section where *at least three* such licensees submit valid contest logs. Multioperator work will be grouped separately in the official report of results in *QST*.

When three or more individual club members compete and submit logs naming the club with which they are identified, an ARRL certificate will be issued to the leading club member. When less than three individual logs are received there will be no club award or club mention.

A gavel with an engraved sterling-silver band will be offered the club whose secretary submits the greatest aggregate score, provided such scores are confirmed by receipt at ARRL of the *individual contest logs* from such members. Only the score of a bona fide club member, operating a station in local club territory, may be included in club entries. Claims from federations, radio club councils, or other combinations of radio clubs, will not be accepted, nor can special memberships granted for contest purposes be recognized.

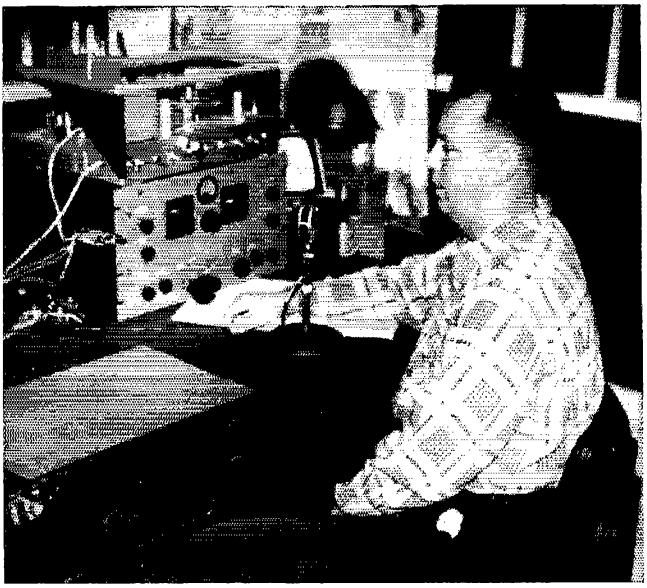
8) *Conditions of Entry:* Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Award Committee.

9) *Reporting:* Reports must be postmarked no later than January 20, 1958, to be considered for awards.

Strays

W2BZN says he has switched to safety by using three-wire grounding cords on his transmitters and receivers and on his power tools. He was bitten once, and so has seen the light.

We still don't have the most southerly ham in the United States spotted, but VE3AJR claims to be the most southerly in Canada, being 35 miles southeast of Detroit, Mich.



Leading the league is nothing new for W1RFU, Wilbraham, Mass. Bill did it again in the September V.h.f. Party, turning in the country's highest score for a single-operator station. Using 50, 144 and 220 Mc., W1RFU made 227 contacts, with a section multiplier of 44, for 10,868 points.

September V.H.F. Party Results

Auroral and Tropospheric Openings Send Scores Soaring

BY EDWARD P. TILTON,* W1HDQ

We've always wondered what a really good aurora would do to a v.h.f. contest. The week end of September 21–22 gave us a chance to find out. It didn't help stations in the southwest, but almost everywhere else section multipliers bounded to a new high for a fall v.h.f. operating activity. In between auroras on Saturday and Sunday, tropospheric conditions were good, to boost scoring still higher.

The aurora proved to be a great equalizer, for the operators who were equipped to take advantage of it, and scores throughout the Middle West came close to overhauling those of the populous and small-section East. Portable operation from choice locations was in evidence almost everywhere, and as always these portable and multi-operator stations were a considerable factor in the overall picture.

Top score in the country by a single operator was posted once again by W1RFU, Wilbraham, Mass., who made 227 contacts on 50, 144 and 220 Mc. His multiplier of 44 gave him 10,868 points. He was followed closely by W1HOY, Medfield, Mass., who made the country's top contact total for a single-operator station, 294, on 50, 220 and 420 Mc. Helen thus once again earned a Technician award with one of the contest's best efforts.

The mountains of West Virginia were the scene of some stiff competition in the group category. The Aero Amateur Radio Club of the Baltimore area pushed W3PGA/8 to the top spot in the contest with 395 contacts on 50, 144 and 220 Mc. With a multiplier of 43 this brought in 17,329 points. K2CEH/2 topped them all in the multiplier department, knocking off 54 sections on three bands. Their 244 contacts gave them 13,824 points. Both these scores were records for their respective ARRL Sections, West Virginia and Western New York.

W7VMP/9, Lafayette, Ind., W9ZIH, Chicago, and W8URO, Drayton Plains, Mich., showed what a propagation break can do for Middle Western stations. The Fenwick triplets, W7VMO-P-Q, tossed a coin and the operating privilege fell to Charlie, W7VMO. Using 50, 144, 220 and 420 Mc., he worked 154 stations, mostly on 50 and 144 Mc. A section multiplier of 36 gave him 5724 points. He says that if a higher percentage of the gang had been using c.w. during the aurora openings his score could have been much larger. W9ZIH ran up the country's highest 144-Mc. score by working the aurora to the limit. He had 117 contacts in 21 sections for 2457 points. W8URO also caught 21 sections on 2, with 105

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

contacts and 2205 points. W2ORI, Lockport, N. Y., with only a few hours to work the contest, concentrated on sections, working 23 on 144 Mc. only.

Some colossal scores were made on 50 Mc. only. W4UCH, Sterling, Va., worked 284 stations in 23 sections on 6, for 6523 points. K6UHS worked 203 different stations on 6, though with no break to distant sections his total score was lower. W8HXT, Mansfield, Ohio worked the aurora intensively on 6, catching 21 sections in 140 contacts, for 2940 points.

Top home-station score was made by the Taylor brothers, K2ITP-Q, who worked 309 stations on 50 and 144 Mc. from K2ITQ, Riverton, N. J. A multiplier of 36 gave them 11,124 points.

At this point we'd like to correct two errors made in the report on the June V.h.f. Party, published in September *QST*. We gave W1HOY credit for having made the country's top competitive score, whereas Helen was just nosed out by W1KCS, Providence, R. I., 8730 points to 8652. And we slighted W8RMH and W8NOH by declaring W8SDK to be the top man in the Michigan Section. Our apologies to all hands.

SCORES

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

ATLANTIC DIVISION

E. Pennsylvania

W3TDF...7092-197-36-AB
W3OLV/3
1180-118-10-B
WN3JCT...902- 82-11-B
W3SXD[1]...816- 68-12-A
W3JLU...810- 90- 9-B
KN3ALJ...752- 94- 8-B
W3PKI/3...700- 70-10-A
W3YNC...650- 65-10-A
W3YWW...600- 50-12-A
W3AMO...488- 61- 8-A
W3FEY...368- 46- 8-B
W3MFT...351- 27-13-B
W3UBO...350- 35-10-A
W3OSA...200- 40- 5-B
W3JUZ...80- 16- 5-A
W3CBH...30- 10- 3-B
K3GVB...9- 9- 1-A
W3FKJ/3...8- 8- 1-A
W3ARW[2] (W3s ARW LKI)
8424-144-52-ABC
W3LXM/3 (5 oprs.)
6244-223-28-AB
W3HZU/3 (7 oprs.)
3674-187-22-AB
K2LXI/3 (K2LXI, K6IBY)
3468-204-17-A
W3MUM (W3s AZQ JOH KAZ)...1218- 87-14-AB

Md.-Del.-D. C.

W3IIU...2800-140-20-A
W3CGV...2226-101-21-ABCD
W3PYW.1976-104-19-B
W3KMV.1358- 97-14-A
KN3ALB.1188-108-11-B
W3UCR.1001- 88-11-ABC
W3VAM..804- 67-12-AB
W3OTC...426- 42-10-A
W3GKP...286- 22-13-B
W3UJU...228- 38- 6-A
W3UJG...156- 13- 6-C
W3LCC...132- 11- 6-C
W3TFA...130- 22- 5-BC
W3AKP[2] (8 oprs.)
8148-269-28-ABCD
W3CJK/3 (W3s BZT CJK KN3ARN)
2159-127-17-AB
W3BPD (5 oprs.)
1261- 97-13-AB

S. New Jersey

W2BLV..4452-153-28-BD
K2JVX..2940-140-21-AB
W2ORA...748- 68-11-A
W2ADA...594- 33-18-AB
K2CRX...57- 19- 3-A
K2ITQ (K2s ITP ITQ)
11,124-309-36-AB

Western New York

W2ORI..2070- 90-23-B
K2ERQ[3].1232- 88-14-AB
K2MNE.1204- 86-14-AB
K2APS...680- 40-17-B
K2JLR...627- 57-11-B
K2LTW[1]..600- 60-10-A
W2QNA...511- 71- 7-ABC
K2JWE/2.407- 37-11-A
W2ELX...387- 43- 9-B
W2YIK...319- 29-11-A
W2GBN/2.272- 34- 8-B
W2ROA...240- 40- 6-B
W2BLN...126- 18- 7-A
K2QVC...115- 23- 5-A
K2AXA...90- 45- 2-B
W2MYN...60- 30- 2-B
K2CUQ...56- 14- 4-A
K2IXB...44- 22- 2-A
KN2CTH..21- 21- 1-B
K2QPC...17- 17- 1-A
K2CEH/2[2] (W2s ALL JTE K2s CEH HIT)
13,824-244-54-ABC
W2SPU (11 oprs.)
5148-156-33-AB
W2JGJ/2 (W2JGJ K2CVX)
4380-143-30-ABC
W2MAU/2 (W2WZR K2BZM) 1012- 92-11-A
K2YCU (W2s ICZ PPY)
672- 96- 7-AB
W2RAS (W2RAS K2YNW)
660- 55-12-A
K2MUI/2 (K2s MUI OAP)
336- 56- 6-A
K2ODL (K2s ODL SKB)
203- 29- 7-AB

W. Pennsylvania

W3OMY..2668-116-23-A
W3RUE...884- 52-17-AB
W3BWO..264- 44- 6-A
W3TIF...168- 24- 7-AB
W3EFW/3.21- 7- 3-A
W3KX/3 (5 oprs.)
4191-118-33-ABC

CENTRAL DIVISION

Illinois

W9ZIH..2457-117-21-B
W9ROS[1]..1992-158-12-AC
K9CNI...1240-155- 8-A
K9ANC..1140-114-10-A
W9EET...671- 61-11-AB
KN9/K9HWY
476- 68- 7-AB
W9DRN..430- 41-10-ABC
K9EWV...300- 75- 4-A
W9YYS...219- 73- 3-A
K9EEC...204- 51- 4-B
W9ZKQ...174- 58- 3-A
K9JFN/9 144- 48- 3-A
W9PPW...128- 64- 2-AB
K9BEO...111- 37- 3-A
W9RVG....84- 42- 2-A
K9AOG....84- 28- 3-A
K9HLA....81- 27- 3-A
W9DYX...44- 22- 2-A
W9CCX...22- 11- 2-B
W9RSU/9..13- 13- 1-A
KN9IRG (K9EEC KN9IRG)
144- 36- 4-B

Indiana

W7VMP/9[4]
5724-154-36-ABCD
W9APY..1104- 69-16-A
K9EEK[1]..264- 44- 6-A
W9EKO...192 48- 4-A
W9MHP..136- 34- 4-A
W9OZQ...130- 26- 5-B
W9MJJ....50- 25- 2-A
W9JRP (5 oprs.)
592- 74- 8-AB
K9ADJ (2 oprs.)
41- 41- 1-A

Wisconsin

W9JFP....644- 92- 7-A
W9VZP...256- 32- 8-A
W9TQ....225- 25- 9-AB
KN9HCT..96- 24- 4-B
K9HUI....8- 8- 1-A
W9JCI/9 (W9s JCI VBQ K9s AKI JSA)
2145-165-13-A
W9OYR (W9s BZU GXD RKT) 48- 12- 4-B

DAKOTA DIVISION

Minnesota

WØUBA.....5- 5- 1-B

DELTA DIVISION

Tennessee

W4HHK..912- 48-19-AB
K4DNG[1]..371- 53- 7-A
K4KYS...240- 48- 5-A
W4IKK...147- 21- 7-A
W4YRM...56- 14- 4-A
K4OSF/4 (K4s EPR OSF)
483- 69- 7-A
W4YSB/4 (7 oprs.)
182- 26- 7-B

GREAT LAKES DIVISION

Kentucky

W4KZF...120- 24- 5-A

Michigan

W8RMH.3944-116-34-AB
W8URO..2205-105-21-B
W8FEU..1660- 83-20-B
W8PT....1512- 70-21-BC
W8SDK[4].1414-101-14-A
W8NOH.1292- 76-17-AB
W8ARR.1280- 75-16-ABD
VE3ANY/W8
960- 80-12-A
W8HJR...720- 80- 9-A
W8CVQ...670- 67-10-AB
W8UML...155- 31- 5-A
W8NNF...88- 22- 4-B
W8PYQ....18- 6- 3-B

Ohio

W8HXT.2940-140-21-A
W8SRW.2704-104-26-AB
W8NRM.1944-104-18-ABE
W8BAX..1806- 81-21-ABCD
W8EPW.1616-101-16-AB
W8WRN.1050- 63-15-ABCD
W8GHX..696- 58-12-A
W8KDW..660- 60-11-AB
W8LOF...594- 54-11-AB
W8GFN...558- 62- 9-B
W8BMO..546- 76- 7-ABCD
W8SVW...460- 92- 5-A
W8NFE...132- 66- 6-ACD
W8UMF..410- 82- 5-A
W8DPW..184- 46- 4-AB
W8TEX...164- 41- 4-AB
W8IPT....138- 46- 3-B
K8B8C....135- 45- 3-A
W8MVL..128- 64- 2-AB
W8AAL...123- 41- 3-AB
W8NAF...106- 53- 2-A
W8PLQ...100- 25- 4-AB
K8BUG....82- 41- 2-B
W8K8E....27- 27- 1-A
W8QDI....21- 21- 1-B
W8KOT....13- 13- 1-B
W8RLY.....9- 9- 1-B

HUDSON DIVISION

Eastern New York

W2WHX.3105-115-27-AB
W2HBC...912- 62-14-ABCD
W2HF/2..572- 44-13-B
W2IP.....324- 36- 9-B
K2QIX....160- 40- 4-B
W2CJS.....92- 23- 4-B
W2HZZ....90- 15- 6-B
W2TMM...36- 18- 2-B
W2LWI/2[2] (6 oprs.)
8401-271-31-AB
W2NQW (4 oprs.)
6390-213-30-AB
W2M8J/2 (W2M8J K2DLB)
750- 50-15-AB
K2KXE/2 (W1OQC K2YRZ)
100- 25- 4-B

N. Y. C.-L. I.

KN2/K2VIX[1]
2100-140-15-AB
W2AOC...816- 34-12-C
K2AZT...792- 72-11-A
K2UZA...702- 78- 9-A
W2AOD...576- 41-12-BD
K2BAW...540- 54-10-A
KN2VDR.400- 80- 5-B
K2TGR...342- 57- 6-A
K2HTO...165- 33- 5-B
K2MYS....60- 20- 3-B
K2CTK....18- 9- 2-B
W2MFN/2 (W2MFN K2s IEJ WLC)7761-199-39-AB
W2DYM/2 (K2s IDD KFV WN2HLL)
1946-137-14-ABD

Northern New Jersey

W2DZA..2232- 70-24-ABCD
W2BDL..1950- 75-26-AB
K2KIB..1030-103-10-B
K2PRR...825- 75-11-B
K2ICE....370- 37-10-B
W2SJU....364- 52- 7-A
WN2NKB.329- 47- 7-B
K2VZP....318- 53- 6-AB
K2DIG....308- 32- 7-AC
K2HTR...273- 39- 7-B
K2BHQ...155- 31- 5-B
W2CBB...150- 15-10-B
W2HDT...135- 45- 3-B
W2EGQ....30- 15- 2-B
W2PRF (7 oprs.)
19,461-486-39-ABCD
W2AFU/2 (4 oprs.)
1742-108-17-AB

MIDWEST DIVISION

Iowa

KØEMQ...780- 52-15-B

Kansas

WØCIK....64- 16- 4-AB

Nebraska

WØBTG...279- 31- 9-AB
WØRYG...192- 24- 8-B
WØWRT...168- 28- 6-AB
WØFCN.....5- 5- 1-A

NEW ENGLAND DIVISION

Connecticut

W1RJA..7095-215-33-AB
W1HDQ[3].3270-109-30-AB
W1LGE..3171-151 21-A
W1PHR..2448-102-24-AB
W1OAX..1751-103-17-B
W1VSE...1328- 83-16-B
KN1CRQ[6]1092- 91-12-B

W1TCJ...900- 60-15-B
W1GKR...854- 61-14-A
KN1BWC.690- 69-10-B
W1MEK...600- 50-12-B
KN1CAE/1
520- 65- 8-B
KN1DAY.336- 48- 7-B
W1YDS...330- 55- 6-AB
W1AW[5,7].154- 22- 7-AB
W1JJO/1...119- 17- 7-B
KN1CAK...66- 33- 2-B
W1ANE....65- 31- 5-A
KN1DCX/1
32- 16- 2-B
W1RFJ....28- 14- 2-B
W1CUT[5]...24- 12- 2-AB
W1QAK/1[2] (8 oprs.)
12,240-340-36-AB
W1LAS/1 (7 oprs.)
2684-122-22-AB
K1BML (2 oprs.)
2033-107-19-AB
W1ORS (11 oprs.)
1218- 87-14-AB
K1APP/1 (W1FBD K1APP)
280- 35- 8-B

E. Massachusetts

W1HOY 10,164-294-33-ACD
W1OOP..7315-184-35-ABCD
W1AQE..3504-146-24-AB
W1QXX.2516-140-17-ABC
W1EUJ..1836-102-18-AB
W1AAI..1168- 73-16-B
W1DDN.1040- 80-13-A
W1JBM...868- 62-14-B
W1KBN...420- 60- 7-AB
W1WEW..405- 45- 9-B
W1MEG...378- 42- 9-AB
W1LMZ...310- 62- 5-B
W1LUW..288- 36- 8-AB
W1NYL...200- 50- 4-B
W1BCN...152- 19- 8-B
W1LMU...124- 31- 4-A
KN1CZP/1
108- 36- 3-B
K1AIO....84- 28- 3-B
W1KVV[3] (4 oprs.)
1750-125-14-AB
W1ILW/1 (10 oprs.)
504- 63- 8-B
KN1AIU (KN1s AIU AUR BTP).....244- 61- 4-B

W. Massachusetts

W1RFU
10,868-227-44-ABC
KN1AIC/1
1414-101-14-B
W1ZWL...975- 75-13-A
W1UCB....36- 12- 3-A
W1OAZ/1 (multiopr.)
5918-269-22-AB

New Hampshire

W1AZK..2324- 72-28-BC
W1HGV/1 (6 oprs.)
7992-296-27-AB

Rhode Island

W1KCS..7524-162-44-ABCD
W1UBE.1088- 57-16-AC

W1FVZ...330- 33-10-A

Vermont

W1MMN.731- 43-17-B
W1MEP..636- 53-12-AB
W1EXZ....60- 10- 6-A

NORTHWESTERN DIVISION

Oregon

W7HBH...87- 29- 3-AB
KN7BED..30- 15- 2-B

Washington

W7BJW...288- 48- 6-A
W7RPD...128- 32- 4-A
W7UGV....12- 12- 1-B
W7PUA/7 (6 oprs.)
856- 97- 8-ABCD

PACIFIC DIVISION

Hawaii

KH6EE.....5- 5- 1-B
KH6OS.....4- 4- 1-B

Nevada

K6KFF/7 228- 38- 6-A
W6GCG/7.186- 31- 6-B
W7JU.....10- 5- 2-B

Santa Clara Valley

K6DTR..1708-116-14-ABD
W6ASH...330- 66- 5-B
W6AOF/6.265- 53- 5-B
K6JKQ....115- 23- 5-A
K6HYX....18- 9- 2-B
W6VMY/6 (W6VMY K6TAO).1904-130-14-ABD
K6JFS (K6s ERN HHL HYW JFS)714-102- 7-A

East Bay

K6IIN....560- 70- 8-AB
K6AOM...415- 83- 5-B

San Francisco

W6AJF..1680-100-15-ABD
K6VXL...320- 64- 5-A
W6BAZ....140- 28- 5-A
W6CQC....104- 26- 4-A
K6GOW (K6s EOW GOW)
1342-122-11-AB

Sacramento Valley

W6BUR/6
1703-131-13-AB
K6GIJ....312- 52- 6-A
W6LSK/6 (W6s LSK MLN)
1918- 132- 14- ABD

San Joaquin Valley

W6GQZ...440- 40-11-AB
W6FZA/6 (W6s FZA K6s CRO ZEH)
598- 46-13-AB
K6RPL/6 (5 oprs.)
360- 72- 5-B

ROANOKE DIVISION

North Carolina

K4EUD....64- 16- 4-B

South Carolina

W2BHS/4.154- 22- 7-AB
W4AIB...128- 16- 8-B
W4TLC....72- 18- 4-A
K4KSU....44- 11- 4-A

Virginia

W4UCH.6523-284-23-A
W4ZZ/4...210- 30- 7-AB
W3MSR/4.104- 26- 4-B
W4WSF/4..18- 6- 3-B
KN4LLL/4.15- 5- 3-B
W4JCJ/4 (W4s CCJ JCJ SRD)....2358-131-18-AB

West Virginia

K8AON...270- 54- 5-A
W3PGA/8[2] (8 oprs.)
17,329-395-43-ABC
W3MPT/8 (8 oprs.)
8250-238-33-ABC
W3KLA/8 (W3s BAG KLA YQD).....15- 5- 3-AB

ROCKY MOUNTAIN DIVISION

Colorado

W0TII.....51- 17- 3-A
K0CLJ.....14- 14- 1-A

SOUTHEASTERN DIVISION

Alabama

W4CTG...488- 61- 8-AB
W4AZC....96- 32- 3-A
K4IQU.....87- 29- 3-A
K4GQK....80- 16- 5-AB
K4KQH....18- 9- 2-A
W4LEN.....6- 6- 1-A
K4BEI/4 (W4AKX K4BEI)
220- 55- 4-A

Eastern Florida

W4LTU...150- 30- 5-B
W4RMU..105- 15- 7-A
W4GJO....52- 26- 2-AB
K4IXG....51- 17- 3-AB
W4KKU...26- 26- 1-AB

Western Florida

W4MS.....3- 3- 1-A

Georgia

W4GIS....115- 23- 5-AB
W4VZR...110- 22- 5-AB
W4LNG....64- 16- 4-AB
K4DLE....64- 16- 4-A
W4ABP....18- 6- 3-B

SOUTHWESTERN DIVISION

Los Angeles

W6NLZ..1168- 60-16-ABCD
K6UHS...812-203- 4-A
W6SDW/6
128- 32- 4-AB
K6SVL....116- 29- 4-A
K6KCX[2] (W6OJN, K6KCX)
1378- 91-13-ABCD
W6GQR/6 (W6s GQR MLA PFE SDI)
1351-193- 7-AB
K6GHJ/6 (8 oprs.)
460- 92- 5-AB

Arizona

W7JBX....24- 24- 1-A
K7BAM....12- 12- 1-A
W7QLZ..... 4- 2- 2-A

San Diego

K6COE/6.876-146- 6-AB
W6ZOP/6.856-107- 8-AB
K6UJL...183- 61- 3-A
K6VOB....51- 17- 3-A
K6UJM....14- 7- 2-A

Santa Barbara

W6WRQ/6 (6 oprs.)
536- 67- 8-A

Northern Texas

K5DCQ....12- 12- 1-A

WEST GULF DIVISION

Oklahoma

W5DFU....95- 19- 5-B
W5PZ.....57- 19- 3-B

New Mexico

W5LEF.....4- 4- 1-B

CANADIAN DIVISION

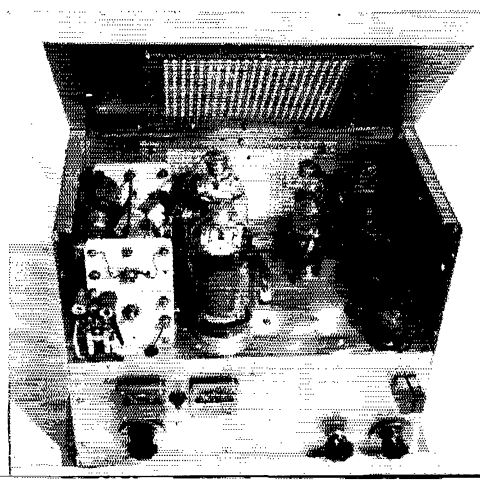
Ontario

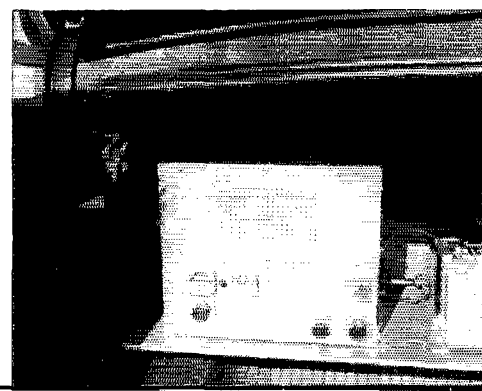
VE3AIH.2208- 91-23-ABC
VE3DSU.2125- 85-25-AB
VE3BQN.2020- 96-20-ABC
VE3HW...450- 50- 9-B
VE3AQG..366- 61- 6-B
VE3BPR..259- 37- 7-A
VE3DUH 120- 10- 3-B
W9NLJ/VE3
12- 6- 2-B

[1] Technician award winner; [2] Multioperator award winner; [3] W2YLM, opr.; [4] W7VMO, opr.; [5] Hq. Staff, not eligible for award; [6] Novice award winner; [7] W1QIS, opr.

Strays

W6NFH has a mighty slick mobile rig that puts out a lot of power without taking up too much of the trunk. In a package 8 × 11 × 12 he has constructed a crystal controlled job using parallel 813s in the final, modulated with push-pull 811s. Although W6NFH has on occasion loaded it to one kw., he normally holds the input down to about 600 watts maximum. For around-town operation one 813 is removed and the rig run at 300 watts. High voltage comes from dynamotors and a 12-volt primary source. Operation is limited to 75- and 40-meter phone at present.





BREAK, BREAK, BREAK!

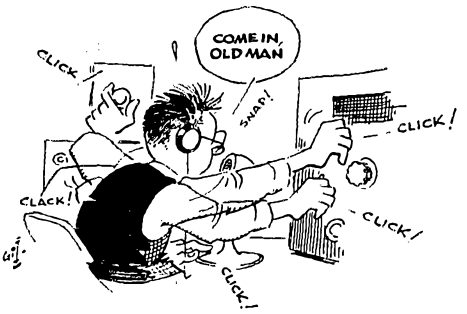
What "Break-In" Is and How To Use It

BY JEAN A. GMELIN,* W6ZRJ

THE WORD "break" or "break-in" as used in amateur radio has become, during the past several years, an accepted part of our jargon. Numerous articles have been written on break-in and keying systems of one sort or another using tubes, relays, t.r. switches, and other monitor keying systems.[1] One section of the ARRL *Handbook* deals with break-in and gives several simple systems for setting up this type of operation.[2]

Yet a great number of amateur operators know little of how full break-in works and indeed there is little information available on how to use the numerous systems, or for what purpose an amateur would wish to set up a break-in system. Many amateurs have misconceptions of how break-in works in actual practice. A listen on many of the amateur phone bands leads one to believe that "break" or more often "break, break" is rapidly replacing the traditional "over" or "go ahead."

As the expression signifies, break-in is the ability to cut in on someone who is talking, just as we do in normal conversation. But in radio



operation, if you operate on the same frequency as you receive, and this is true in much amateur operation today and especially of traffic nets, it is not possible to have both the transmitter and receiver on at the same time, without the resulting squeal and blocking by the proximity of the transmitter to the sensitive receiver. When an amateur first gets his ticket and goes on the air, if it is on c.w. or phone, in many cases his first station has a transmitter and receiver, both of which have a B+ switch. When the operator wishes to listen he turns the transmitter B+ off and the receiver B+ on. When he wishes to transmit he reverses the process. In many cases he may even have to throw an antenna switch and even have two or three power supply switches on the transmitter. This can be tiring, and soon the operator will try to set up a relay system whereby he needs only one switch for the whole operation.

In phone operation, such a system is called a "push-to-talk" system. *It is not break-in.* Since an ordinary a.m. phone transmitter runs all of the time while the transmitting operator talks, the receiving station cannot break-in until the transmitting station turns it over. This is not normal conversation, thereby introducing some inconvenience especially for the uninitiated. Voice control, especially adaptable to s.s.b. but also possible with ordinary a.m., can obviate most of this difficulty, but even with voice control the system is seldom sensitive enough to permit mid-sentence interruption, so real break-in on phone is impossible, and "break" and "break, break" are misnomers of a sort.

In c.w. operation, however, full break-in is entirely possible. It can be done only when the receiver is in full operation at all instants that the key is not pressed. Break-in on your transmitter frequency additionally is not possible unless the transmitter emits no key-up signal strong enough to interfere with the one being received. In other words, you must be able to hear the other signal even between your own dots and dashes. Only this is full break-in.

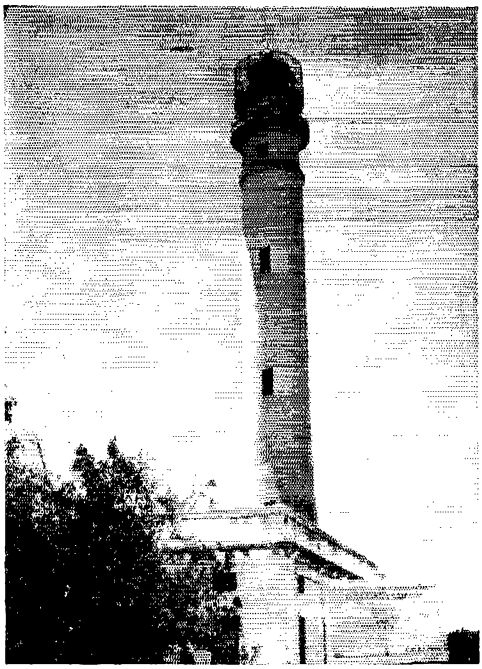
The first major use of such a system comes from the fact that long calls are not necessary. Instead of having to turn on the transmitter and give the other fellow's call a dozen times, a station with full break-in need only give a short call if the other station is listening on that

(*Continued on page 208*)

* 872 Myrtle St., San Jose, Calif.

[1] Sabaroff, "A Novel Electronic Transmit-Receive Switch," *QST* June 1957; Leslie, "Combined Keyer and Control Circuit," *QST* February 1957; Herzog, "The Cathode Follower T-R Switch," *QST*, May 1956; Campbell, "Little Oskey—A Monitoring Oscillator and Keyer," *QST* October 1955; Puckett, "A CW Man's Control Unit," *QST* February 1955.

[2] *The Radio Amateur's Handbook*, 1957 Edition, Chapter 8, "Keying and Break-in,"



The lighthouse on Navassa is maintained by the U. S. Coast Guard. The island is stragically located in the middle of the shipping lanes between the Panama Canal and the East Coast of the United States.

Navassa—1957

BY FRED CAPOSSELA*, W2IWC
JOSEPH REISERT**, W2HQL

After encountering and solving many problems concerning the choice of a location for a DXpedition and the means of transportation to that location, the authors chose Navassa, a tiny island in the Carribean one hundred miles south of Cuba and forty miles west of Haiti.

THE MEANS of our transportation to Navassa was to be a United States Coast Guard cutter that makes a trip from Miami to the island every six months in order to maintain the lighthouse there and refurbish its supply of acetylene gas. Upon receiving permission to accompany the *USCG Walnut* on its June 1957 cruise to Navassa island, we were informed that the Coast Guard considered our request completely out of order and entirely extraordinary, and that permission was granted only under the provision that we interpret it as such.

We spent the few days before going down to Miami, where the cutter was stationed, collecting the needed equipment. The equipment had to be as small, light, and efficient as possible in order to scale Navassa's cliffs. With the help of friends and the aid of our club, the Order of the Boiled Owls, we succeeded in working out our equipment problems. From Bil Harrison we obtained two Globe Scouts, fifty watts, fone and c.w., small and light; and a one-hundred pound, 350-watt generator. Hammarlund offered two of their new HQ-100 series: sensitive, compact, and ideal. Since we had agreed to operate 20 c.w. and 15 fone, we decided to use 14,024 and 21,378, answering all calls 10 kc. and up on 20 and below 21,350 on 15.

Before we left for Miami, all gear was set up to simulate conditions on Navassa. After the usual "field day" malfunctions were cleared up, everything fired beautifully, and all the equipment was piled into our car. The evening before leaving for Miami we contacted the skipper of the cutter, Captain Eaton, who spoke gravely of the treacherous waters of Navassa and tried his best to dissuade us from going. The captain described the complete landing procedure and, as a result, we cut our equipment back to include only one transmitter and receiver.

On June 3, we arrived at the Coast Guard base at Miami Beach and boarded the *Walnut*. The gear was brought aboard and stored down below. At 2100 GMT, June 4, the cutter departed from Miami Beach on its way to Navassa.

On the morning of June 7, we got our first look at Navassa. The island is two miles long with a uniform elevation of about 400 feet. The shore consists exclusively of 60- to 80-foot sheer walls of coral rock, which rise to a plateau some 125 yards wide that rings the island, similar to a running track. With this kind of shoreline landing was treacherous, to say the least. A small boat was lowered and the crew went over to the mainland, six at a time, ascending the rock walls by a Jacob's ladder that hangs suspended from a platform over the cliff. We followed, dragging our equipment behind us. Slowly and cautiously we scaled the ladder and at last planted our feet on Navassa island. It took 45 anxiety-filled minutes with the help of the crew to hoist the radio gear up the rock wall.

We set up our operating position some 100 feet back from the landing platform, in an open,

* 15 Rose Blvd., Baldwin, N. Y.
** 3077 Ewell Place, Wantagh, N. Y.

semi-level area. The station was set up on a table-like slab of coral, and the generator was placed under some low-hanging trees. Our first call brought an immediate reply from W2HMJ, who had been monitoring regularly. After a ten-minute QSO with him, the following were worked in rapid succession: KV4AA, W5ABY, W8FGX, W5LUU, W6ADP, W8EWS, W6NZW, W6OME, and W4ML. Within 5 QSOs the band broke loose and it seemed that everyone was calling W2HQL/KC4. The band was beginning to move out but the W6s still had terrific signals. The generator for a while gave indications of quitting and our signals at that time were unreadable, but after a few kicks and curses it returned to normal. All of our brother members of the Order of the Boiled Owls were able to pick up Navassa.

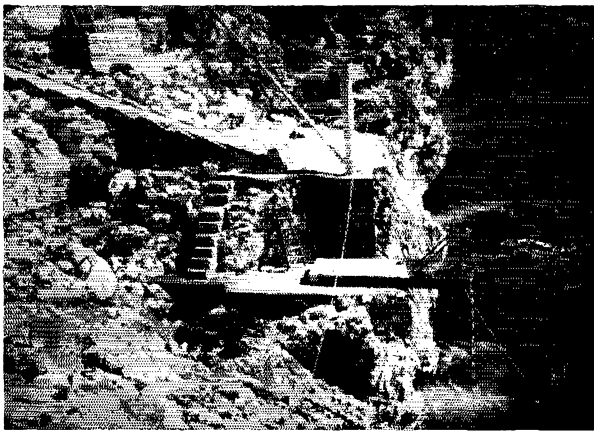
Once on the air, preset tactics of operating were employed: A CQ or QRZ 10U would be sent, we would tune 10 kc. up, and grab the first station whose call we could read and who broke us the quickest. The station was then answered by repeating his call twice, his report sent twice, followed by his call again once and then BK; our own calls were sent only after 10 QSOs or so; or if business was good, they were forgotten. This procedure in operating is superior to any other either suggested or asked, for it makes definite what station is being worked with minimum confusion and maximum speed. When we sent BK, everyone knew who was being worked because of the call sent once after the report; hence we weren't bothered by the "who me?" type of query. After receiving our report, a simple QSL was sent followed by 10 U and BK; the procedure then started again.

As one can see, tail-enders couldn't fare with this technique. Since, however, this practice is so common in DXing today, we were quite interested to view it from the other end.

Here is what we found: If only one station sent DE as the station worked signed, the procedure would be fine. But when anywhere from five to fifty guys have the same idea, the frequency is sliced to ribbons and no call can be distinguished, least of all the fellow sending TU 73.

In regard to the stations worked who did use the tail-end process, the ideal happened; they were the only stations who broke. This occurred exactly three times in 307 QSOs! For those reasons we believe DE to be unusable, but since many foreign stations continue to use it, it remains one of the banes of DXing. Stations can be worked just as rapidly by picking up a new one each time. The procedure we used could have handled 70 to 100 contacts per hour with ease. Our rate of approximately 35 per hour was only due to the fact that everyone was at work, the band was closed to all but the States, there were periods when no stations were heard calling, and long CQs had to be used to drum up business.

(*Continued on page 170*)



Navassa's "shore" consists of walls of coral rock. Ascent to the mainland is made possible by the Jacob's Ladder that hangs suspended from a platform over the cliff.

The operating position was set up about one hundred feet back from the landing platform in an open area with no protection from the sun, and the station put on a slab of coral.

With the help of the crew, we managed to get all our equipment safely on the island.

Heavenly Reward

BY DALE L. HILEMAN,* K9JNY

"Name?"
"Leopold Bedfellow."
"Age?"
"Thirty-six."
"Marital status?"
"Single."
"Family?"
"Living."
"Lifelong ambition?"
"To TVI-proof a command set."

"Oh, you must be an amateur radio operator," said St. Peter. "Report to Gate 13."

Gate 1, where St. Peter was stationed, bore the inscription "ORIENTATION." Each of the succeeding gates was labeled with the name of a hobby or occupation. Gate 3, for example, was labeled "PHOTOGRAPHY," and many of the applicants carried their favorite cameras. Gate 9 was labeled "HOT RODDERS." There stood a line of teen-agers: one was carrying a defunct carburetor; from the hand of another dangled a broken steering wheel. Still another carried a plastic gearshift knob containing a photograph of Marilyn Monroe.

Each of the lines was quiet and orderly, but as Leo approached Gate 13, he noticed considerable activity. A p.a. system was blaring, "Your last chance to sign up for the All-Heaven Hamfest! Free of charge — sponsored by the All-Heaven Amateur Association — ten big door prizes, including a 75A-4, an HRO-60, and two BC-610s! Many more valuable prizes! Sign up now!"

Off to one side of Gate 13 was a desk marked "WELCOMING COMMITTEE." Here a winged gentleman was serving coffee and donuts to a group of newcomers engaged in a vigorous

A WINGED GENTLEMAN WAS SERVING COFFEE AND DONUTS TO A GROUP OF NEWCOMERS

single-side-band bull session. Leo heard one of them cry, "How can you have anything at all without a carrier?" Another replied, "What good is a carrier? It doesn't say anything — it just whistles!" Someone else shouted, "Yeah, but what are you gonna do for a.v.c.?"

Another group surrounded a table at which a demonstration was being conducted. "Sixty milliwatts," shouted the demonstrator as he held a tiny gadget above his head. "With this transistor rig all you need is sixty milliwatts to the final and you can work all corners of Heaven on six meters — and look here." He withdrew another object from his coat pocket and held it up for the inspection of the crowd. "A dynamotor no larger than a matchbox."

As Leo walked into the crowd at Gate 13, a man carrying a transceiver grasped his hand and said, "Welcome to Ham Heaven, OM. My name's Marconi. What's your handle, your call, and where do you hail from?"

"Leo Bedfellow. W6CRUD. Los Angeles."

Mr. Marconi smiled broadly. "Well," he said, "same district as the Old Man. Just a minute." He slapped the transceiver to his head, pushed the button, and said, "Say, Al, got a guy here from W6 land — Leo Bedfellow — See if you can get him in without red tape. He's an O.K. guy."

"Are you really Gugliemo Marconi . . . himself?" asked Leo hesitantly.

"No, my name's Sam Marconi — out of Pittsburgh — used to work 160 a lot. Gug is Chief Engineer up here. You'll probably meet him one of these days. Well, got to be getting along. If you need anything, drop in on me. I'm district QSL manager. Cloud 463. Seventy-three, OM. Be seein' you!"

Just to the right of Gate 13 was a desk marked "CALL LETTER BUREAU." Leo notified the Bureau of his call. He was informed that his new call would be assigned when his wings were issued.

On his way to the main desk, he was intercepted by a little man with a red face and horns. "Hey, bud, c'mere a minute," said the little man, "You been overmodulating lately? If you have, my boss would like to see you."

"I use low-level clipping and high-level low-pass filtering," replied Leo emphatically, whereupon the little man vanished in a cloud of sulphurous vapor.

At the main desk, a bewhiskered angel wearing headsets peered over the top of a control board and said to Leo, "Oh, yes. Sam spoke to me about you. What brings you here, my lad?"

"About 2100 volts," said Leo. "Guess the bleeder must've opened up."

"Won't you people ever learn not to trust bleeders? Always short the filter capacitors before you work on a power supply," admonished the aged angel. "Oh well, it's too late now."

The old man then opened a large book and ran his finger through a column of names. "Hmm," he said. "Leopold Bedfellow. Your record is pretty clean. Wait — it says here that you caused TVI for two weeks during the month of March, 1951. Can you explain that?"

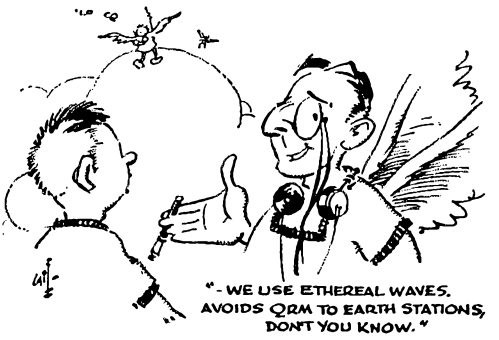
"Poor front ends in the TV receivers," said Leo. "Cleaned it up with a bunch of high-pass filters. My own expense, too."

* 4503 N. Clifton Ave., Chicago 40, Ill.

"All right," said the aged angel. "I think we can let you in. Sir Heathekit Featherblossom will show you around."

Leo shook hands with Sir Heathekit, who escorted him through the Pearly Gates (except that Gate 13 was not pearly — instead, it was decorated with miniature tubes, pilot light jewels, transistors, plugs, jacks, and nickel-plated hardware).

"We don't use ordinary ether waves for communication," said Sir Heathekit as he preened his left wing. "We use ethereal waves. Avoids QRM to Earth stations, don't you know."



The two men stopped at a cloud in which was mounted a display cabinet. Inside the cabinet was a 304TL and a sign which read:

THIS 304TL WAS INSTRUMENTAL IN SAVING 3400 LIVES DURING THE GREAT 'QUAKE OF 1952

"Do you really have earthquakes in Heaven?" asked Leo.

"Gad, no," said Sir Heathekit. "It was a cloudquake. We stage a 'quake annually just to test emergency communication. No one is ever hurt."

"Then how can it be an emergency?" asked Leo.

"Pity, it isn't," said Sir Heathekit as he preened his right wing, "but so many of us continually anticipate emergencies, that we can hardly be disappointed, can we now? Are you interested in emergency communications, old chap?"

"Indeed I am."

"Shame — if we knew you were coming, we'd have faked a quake."

Featherblossom then led Leo to cloud 223, upon which rested a 28-foot work bench equipped with a multitude of 'scopes, v.t.v.m.'s, signal generators, grid-dip meters, and bins filled with resistors, capacitors inductors, tie points, and other small parts. Gathered around the table was a group of 10 men, each industriously at work on some item of ham gear.

"I rather want you meet the fellows," said Featherblossom, whereupon he introduced Leo to each member of the group. He then told Leo, "You'll work about two hours a day, during which time you may build whatever gear you need. Rest period lasts one hour, and there'll be tea and crumpets — or-ahem — coffee and donuts, if you prefer." When you're *not working*, you may do whatever you like; the test equipment and tools are always at your disposal."

Featherblossom then escorted Leo to the Stockroom, which was located in a pink cloud two blocks long and about 200 feet wide, as nearly as Leo could estimate. Fifteen aisles running the length of the stockroom were flanked by rows of parts bins, each bin stacked with a different kind of electronic component from germanium diodes to 1-kw. plate transformers. "Take whatever you need," said Featherblossom.

Leo and Sir Heathekit then returned to the work table. "If you can't think of anything else you'd like to do," said Featherblossom, "you might finish up this power supply." He peered through his monocle at a unit containing a power transformer the size of a small television set and two gigantic rectifier tubes each the size of a two-quart beer bottle. Leo remarked about the size of the rectifier tubes and Featherblossom said that we don't drink beer in Heaven but that sometimes he wished we did on those warm summer nights when hot convection currents invaded the Ham Section from the Politicians' Section.

"Just when I was ready to wire this ruddy power supply," continued Featherblossom, "I was promoted to the Administrative Division of the Ham Section, and the power supply was left quite unfinished."

"I'd be glad to finish it," said Leo, "but what is it for?"

"A no-side-band rig," replied Featherblossom as he adjusted his halo. "We've been hearing odd signals from what we think to be Mars' Heaven, and we've concluded that they're using no-side-band transmission. We've been trying to communicate with them, but we've been completely unable to do so with conventional single-side-band operation; not enough effective power. So we decided to run about 5 kw. no-side-band. The power supply you're about to work on will provide filament and plate potentials for the no-side-band rig."

"I see," said Leo, although he really didn't.

Eager to see a no-side-band rig in operation, Leo worked overtime on the power supply, working even during rest periods. Sir Heathekit warned Leo not to overwork, that one hour a day was quite sufficient.

(*Continued on page 172*)

Antenna Farmer — That's Me

BY W. R. CARRUTHERS,* VE3CEA

IT WAS VERY easy! Let me tell you about it. I started in the old wireless days of 1912 when spark coils were wound by hand — no one had enough money to buy one of Mr. Gernsbach's products — and carborundum detectors were quite the thing. The green color was nice too.

Over the years I grew up, without the aid of Wheaties and became one of the early members of the ARRL and read with awe in *QST* about the new Audions — oh boy! By working after school and on weekends I finally saved enough to buy one, scrounged enough batteries to operate it and I remember the thrill of building loose couplers and loading coils.

The house is very quiet now — the kids are grown up and there was nothing much to do but garden, read and watch TV. I got itchy. So I bought the latest (1955) *Handbook*, scrounged parts from my friends and built the little 1 tube receiver. My code was as rusty as last year's chrome but the ARRL code sessions came to my rescue and I was soon up to 10 words per minute. Had a session with the Radio Inspector one day, sent, received, answered questions, wrote papers. After a bit he allowed as how I passed — gave me some call letters very close to those I'd had 30 years ago and a long official looking diploma and a nice certificate with a beautiful red seal on it. I was back in business! That's how I started in the antenna farm business. It was that easy!

By this time I'd graduated to a surplus receiver and had got myself a Viking Adventurer and a v.f.o. I was in business or I thought I was. The book on the transmitter said to hang up a wire 75′ long, load it up and call Australia.

I envy these fellows with back yards 300′ deep or who have acres and acres of space. They put up ideal antennas and sound like it. But I live on a corner lot. By the time the house takes up its space there is a clear distance of 35′ from my chimney to the neighbor's chimney. By speaking nicely to him (the box of cigars helped) he gave me permission to hang up a wire. With the aid of the local painter and his 30′ aluminum ladder we put up the wire and it seemed to load fairly well. Its direction seemed a bit off though — it put a pretty good signal to the North Pole but there aren't many people up there so I was a bit disappointed. In the other direction it went out to sea somewhere. One lobe seemed glued on Kansas.

So like little Albert — "seeking further amusement," I tried a dipole — lovely little thing but same results. North Pole and the sea — looked nice though. I could sit out in the garden and admire it and think of those fellows in Texas with 60′ towers and rotary beams. My little farm had now grown to two antennas — one single wire, one dipole. See how easy it was? (Fig. 1).

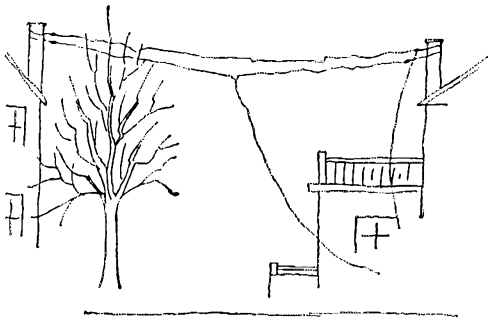


Fig. 1

About this time I read about the vertical. Ah! Solution to the corner lot problem. Brother-in-law didn't mind me borrowing his old TV mast and I got some aluminum pipe through the back door of — well you know — coupled it together with pipe fittings and hoisted it up. It was 45′ high and my wife never seems to be around when a hoisting event takes place. It didn't cost me much to have the TV aerial repaired when the mast fell on it but I thought the pipe couplings could have done a better job and not broken in the middle when the mast was nearly up. Finally I did get it up. Found a use for one of my friends — he had a post hole auger and dug the hole for the post which carries the box that houses the loading coil. This antenna didn't work too well and the experts said it needed a good ground. My wife says the back yard is wired for sound, but I will admit the grass looks better now since its grown over all the trenches I dug for the radials. But they did make the vertical work better and I was now getting out several hundred miles. My wife gets kind of sticky at times, won't let me cut down the trees which I claim absorb most of the signal.

Then I heard about how a trap was the very latest thing. So down the big mast came, in went a trap and added to the top was a 15′ whip. My, it did look nice waving around in the breeze up there 55′. The neighbors were impressed but the dog-gone thing didn't work worth a hoot. (Fig. 2).

Someone put in a plug for ground plane antennas and I thought — "just the thing for me." So I got some nice cheap aluminum TV ground wire, sharpened up my pencil, pored over the *Handbook* section on ground planes, made marks on paper, ordered a piece of pine 2″ x 2″ x 16′ and I was in the ground plane antenna business. Seems like the boys have something there — first

* 46 Whitemore Avenue, Toronto, Ontario, Canada.

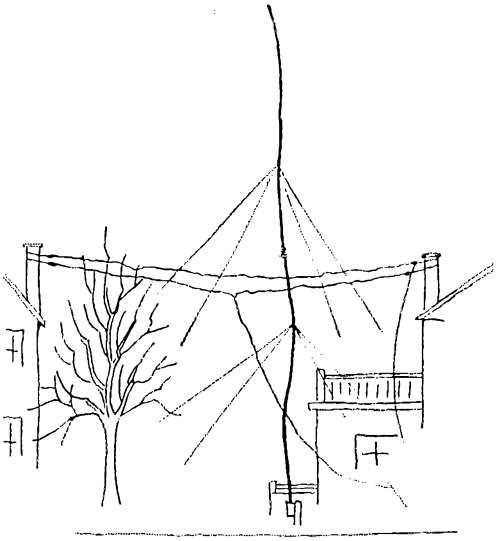


Fig. 2

time I fired it up a chap in Oklahoma gave me an S9 report so I had to dash up to my wife to tell her at last I was getting some DX. Next week got some heavy stranded Air Force copper wire, took the antenna down and put it up again exactly the same but using all copper. Fired it up and by pure coincidence got the same fellow in Oklahoma and he gave me a 20 over 9 report. For my $3.70 expense for the 15 meter ground

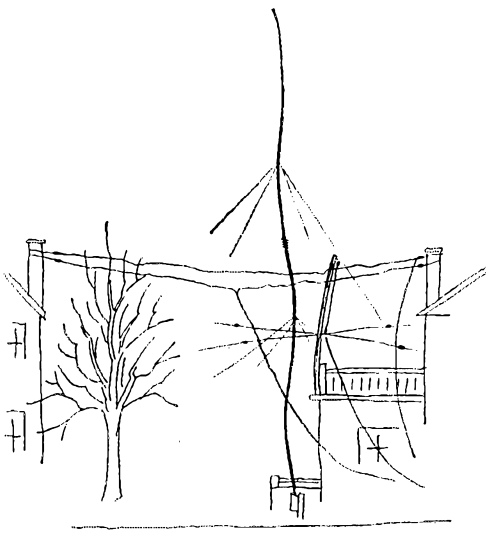


Fig. 3

plane antenna, I sure did feel good. Even got down into South America. (Fig. 3).

Broke down and bought a grid dipper (my, how the art has changed — got to have a lot of test equipment around, these days). The g.d. said the frequency was too high so had to lengthen the vertical a little until the frequency came out O.K. Worked better than ever!

My wife says even a butterfly has trouble getting through our back yard and I do notice there are a lot of tired robins sitting around on the various wires. A helicopter certainly could never land in our back yard. The 15 meter ground plane is such a tidy little item, even if I did have to hang the guys on a tree on the street, the clothesline pole and I got the bricks in the house repaired, that got cracked up, putting in the guy hooks —

The little 15 meter job works so well, S8 in Europe, that I decided I should have a 20 meter ground plane job. The *Handbook* showed a neat job which sat on the roof of a single garage. I was out of luck there because our garage is built into the house. I decided to try it anyway. So down came the big vertical (it did give the place such an air) out came the hacksaw and presto, we have a 20 meter ground plane. Looks like a cross between a taxi radio transmitter and some sort of DEW line equipment. I give everything a professional look though, such as painting the 2"x4' wood that holds the vertical, a nice shade of brown. (Fig. 4)

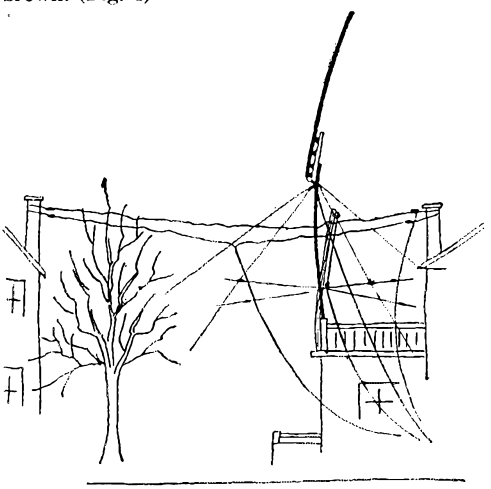


Fig. 4

Fired it up, fair results. Got out the grid dipper and it says the resonant point is 16.0 Mc. My, how far can you get away from what you want? Now I'll have to get it down, inch by inch, I suppose — that's the way I got it up. I can't afford one of those derrick things so I'll just have to take it slow and easy and hope for the best.

By this time you see how easy it was to get to be an antenna farmer — I've got four antennas right now — it doesn't cost much either — except for the additional hazard insurance.

I see in the *Antenna Book* where there is a nice design for a rotatable dipole. Let's see now, who do I know who has two lengths of ½" thin wall steel conduit? I'll also need four standoff insulators and about 18" of ⅛" copper tubing to make the coil. I have some 2" x 2" pine . . .

Editor's Note — Since this article was written, he did build the rotatable dipole. It's attached to the pipe holding the 20 meter ground plane. That makes five antennas on his "farm"!

Strays

If anyone heard the *first* USSR satellite after midnight (EST) Friday, October 25, please let us have the details.

—•••—

The South East Amateur Radio Club of Cleveland, Ohio, has started a radio library of Braille transcriptions and tape recordings of electronics literature. A sightless person may obtain stock items on loan, or for a nominal charge the library will read any electronics article on the applicant's tape. For further information send a stamped, self-addressed envelope to Warren Sladky, Librarian, SEARC Radio Library for the Blind, 11519 Parkview Ave., Cleveland 4, Ohio.

—•••—

What's in a call? K4LEG is a YL. (And the FCC keeps insisting that these calls are assigned by random!) — *K2QHT.*

—•••—

What's in a name? The fellow who sent in the above Stray about K4LEG being a YL is named Freud!

KOREA OFF BANNED LIST

As of October 18, FCC announced receipt of notice from the International Telecommunications Union that Korea has withdrawn its objections to international amateur communication. Contacts with HL stations are now permissible. Remaining on the banned list are Cambodia, Indonesia, Iran, and Viet Nam.

HAMS AT HEADQUARTERS

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W1AW, ARRL Headquarters Station

•

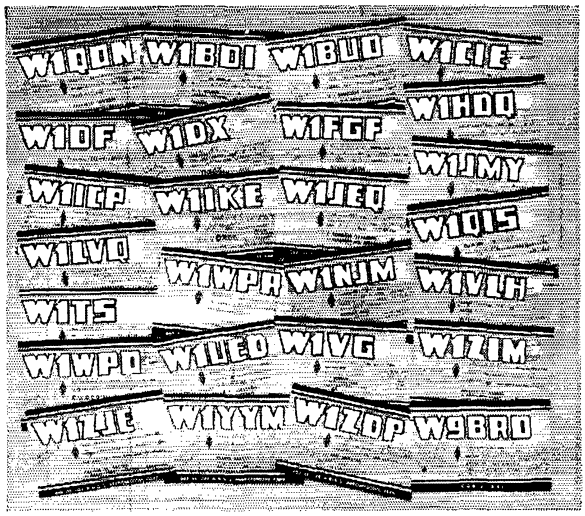
The following calls and personal sines belong to members of the following Headquarters gang:

W1BDI	F. E. Handy, "fh"
W1BUD	A. L. Budlong, "bud"
W1CUT	E. Laird Campbell, "tex"
W1DF	George Grammer, "gg"
W1DX	Byron Goodman, "by"
W1FGF	Ronnie Gann, "ron"
W1HDQ	E. P. Tilton, "ed"
W1ICP	L. G. McCoy, "lew"
W1IKE	Richard L. Baldwin "ike"
W1JEQ	C. V. Chambers, "ve"
W1JMY	J. A. Moskey, "joe"
W1LVQ	John Huntoon, "jh"
W1NJM	George Hart, "geo"
W1QIS	Murray Powell, "mp"
W1TS	D. H. Mix, "don"
W1TUW	David Cabaniss, "dave"
W1UED	Perry Williams, "pw"
W1VG	L. A. Morrow, "pete"
W1VLH	Mason P. Southworth "ms"
W1WPO	R. L. White, "bob"
W1WPR	C. R. Bender, "cr"
W1WRV	Edward White, "ed"
W1YYM	Ellen White, "ln"
W1ZDP	Phil Simmons, "phil"
W1ZIF	Kenneth Lamson, "ken"
W1ZIM	Miriam Knapp, "kp"
W1ZJE	Lillian M. Salter, "lil"

KØDDB's dad is a funeral director. The day that KØDDB's ticket arrived he rushed upstairs and put out a CQ. Unfortunately, his message came in loud and clear over the p.a. system downstairs, drowning out the organ music being played during a funeral service!

—•••—

The Black Diamond Radio Club has two members named Bennett — one is K8GEP and the other W8GEP.



How many of these cards have you been able to collect? As of early this fall, this display represented all of the hams at Headquarters, except for W1CUT. This collection belongs to W1CUT, who succeeded in working all of the other members of the Headquarters staff. It wasn't an easy trick, he tells us, for he had to use all bands from 80 to 2 meters, on phone (a.m. and s.s.b.) and c.w. One contact should have been easy to arrange— W1CIE is Mrs. W1CUT!

Strays

If you have an unusual hobby or occupation (something *really* out of the ordinary), drop a line to ARRL, describing briefly the nature of your livelihood or hobby. For example, K4INN is Flash Gordon, TV wrestler. W1FGF is a Judo instructor. What's odd about *you*?

—•••—

K6CCT called CQ Ft. Smith, Ark., and raised K5DET. The K6 wanted someone with a phone patch, but K5DET doesn't have one and W5EUQ (also of Ft. Smith and who was standing by) couldn't get his working. K5DET then asked the K6 if he (K5DET) could be patched through to his brother, whose temporary QTH was only five miles away from the K6. However, K6CCT had a phone patch but no phone. Now, if you'll read this through again you'll be as confused as we are!

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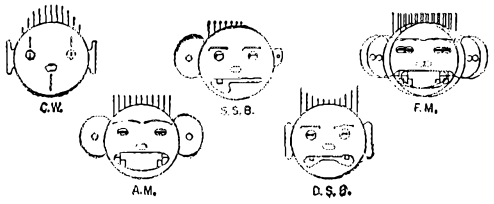

No explanation needed.

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Winzen Research Inc., of Minneapolis, advised us in early November that it was planning a transcontinental manned balloon flight, starting from San Diego about Nov. 15. So, unless the departure was delayed, this word is too late. However, a W1AW bulletin will have brought you the word that one of the crew members is Major Simons, W5ZRZ, who set the recent balloon altitude record at 101,000 feet. W5ZRZ will be working on 3831 kc. for general contacts and for QSOs with Winzen's chief electronics engineer WØSYN.

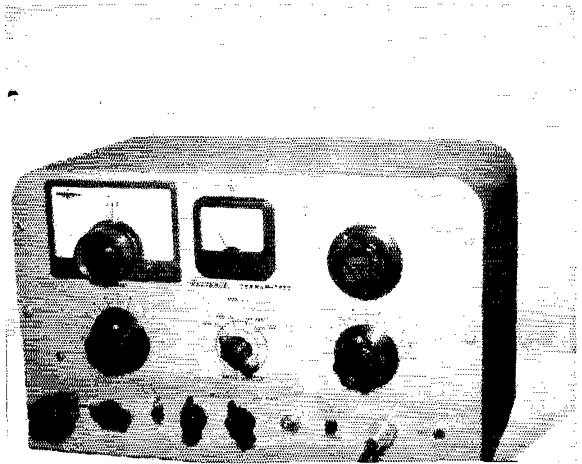
W2RUF (above, left) has been instrumental in helping young Lynn Nichols, KN2DGU, get his Novice license after he suffered a most unfortunate accident last July. Both arms had to be amputated after he came in contact with a high tension line while putting up a ham antenna. The photo above shows some of the hundreds of cards that have been sent to him by sympathetic fellow amateurs. Anyone else who wishes to send him a word of encouragement may do so to 63 Larch Road, Eggertsville, N. Y.

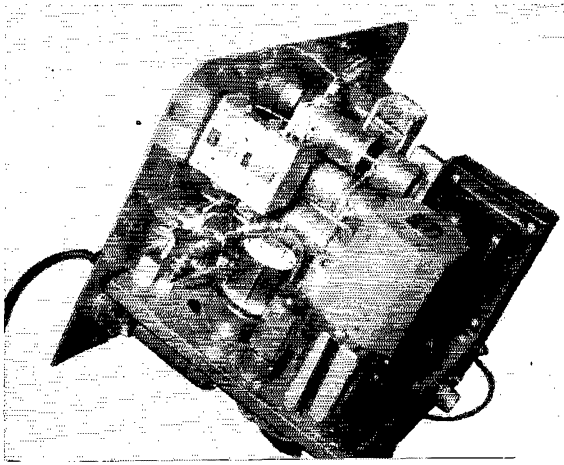
Some ingenious BCL tied a wire for his crystal set onto one end of K2UEJ's 80-meter dipole. The additional 50 feet of wire completely fouled up the loading. K2UEJ figures this character was just practicing up for Hallowe'en!

—•••—

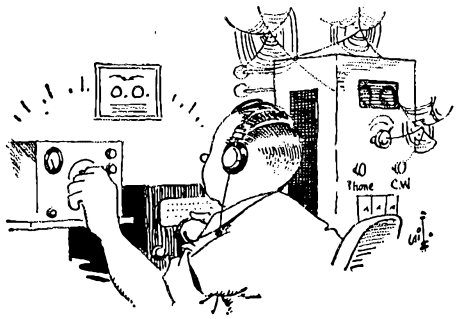
This'll teach 'em to leave the transmitter door open! W9YCR's transmitter went off the air with a puff of smoke, and investigation showed that a mouse had crept in and got lodged between the plate switch and the push-to-talk switch.

W6VS is the sort of man who likes to take a good thing and make it better. He took a Heath AT-1 kit and modified it to include a neutralized 6146 final, a multiple crystal and v.f.o. switch, an auxiliary filament transformer, a v.f.o., a three-stage speech amplifier, a 5763 Class B modulator, and an antenna relay with receiver silencing circuit. And he did all this without adding anything outboard. The photos show the new W6VX AT-1.





Official Observers



Fellows Who Devote Their Time to Helping You

BY DAVIS A. HELTON,* WØPME

FOR the benefit of the erring amateur the ARRL maintains the Official Observer program. The avowed aim of the OO is to identify and notify the ham of his shortcomings *before* the FCC does. This can save the amateur a good deal of embarrassment if he takes the notification in the spirit in which it is sent.

Over the past few years I have concentrated on the problem of Novice harmonics. This is probably the greatest problem we amateurs face today in upholding our "self-policing" policy. It is a never-ending one because as soon as the OOs run through one crop of new Novices and start them down the straight-and-narrow, another crop of Novices with still newer calls comes along and the same rat race starts all over again.

If you are interested in doing OO work, here's what to look for and a few suggestions as to what to do. The most fertile band of all is the 7400–7500 kc. segment. Here, assuming normal conditions, one can find at least a few Novice harmonics at any hour of the day. And, unless the OOs are hard at work, the same calls, day after day. Here, on an average winter evening, despite the heavy commercial QRM, one can pick out from 25 to 30 identifiable calls, plus probably an equal number which cannot be positively identified.

Another good band to monitor is 20 meters. (Hunt DX at the same time.) You can watch 14,060 to 14,160 for those who are using 40-meter rocks and *think* they are tripling to 21 Mc., and from 14,300 to 14,600 kc. to catch the 2nd harmonics of the 40-meter Novice and 40 fone gang. You can, of course find harmonics on other bands, but the ones mentioned are the most productive.

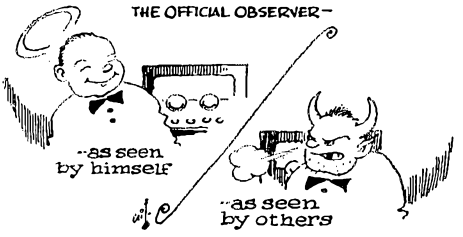
It serves no good to notify a ham of his harmonic one night, then notify him of the same one three nights later. However, should you hear him two or three weeks later, another notice is justified. This tells him, in effect, "That didn't work; try again!" Or, "You didn't do anything yet, and I still hear you."

Normally, when working the 40-meter harmonic band (7400–7500 kc.), it is possible to locate a half-dozen readable calls working at once. Since they are Novices, the irregular, uneasy, faltering fists will stand out against the commercials. I normally pick out a few, log their frequencies and start swinging the dial back across until I hear one of them start the inevitable closure, "Nw Bk u OM hw cpy AR KNØ — de de KN5 — KKK." I listen on the frequency or within a few kilocycles of it for about 10 seconds to see if his buddy has a harmonic, too. If so, I stick around to confirm his call. It's not good practice to depend on the copying ability of another Novice to identify a new harmonic. If you do, you're in for trouble. In about 10% of the Novice QSOs I hear, one of the stations at least is sending the other's call incorrectly. (For you Novices, here may be the reason that the fellow in state #47 never replied to your QSL. You may have sent it to the wrong station.) After knocking off this group I shift to the next frequency and see if the "bk to u . . ." has started. If it hasn't, I go on to the next group, and so forth. Due to the slow working speed of the Novices and the greater length of their transmissions, this is quite the easiest method, and, I hope, the most efficient. It is not at all unusual to hear both sides of a QSO. On several occasions last winter I heard half the stations reporting in to one of the Novice nets in this region. I know I had half of them because the NCS had the strongest harmonic signal in here and I could check the others off as he did.

For those of you who wonder how OO cards are delivered when the Novice call is too new for the *Call Book*, ARRL aids the OO by taking these cards and forwarding them when and if they can from their own files. In the case of brand new calls, they may be stumped, too, but I get enough letters from brand-new Novices to know that most of the cards are going through. If it weren't for this help, the OO would often fail to reach the very class of ham that needs the most help.

Although they prove by far the greatest problem, Novices aren't the only villains. Some of

(*Continued on page 176*)



*601 West Spring St., Fayette, Mo.

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

IF THERE IS one thing that is guaranteed to raise the temperature of the true v.h.f. enthusiast it is use of the term "all-band" to describe transmitters and receivers that cover 80 through 10 meters. How many amateurs who use the expression so glibly have any conception of the bands that lie beyond the range of their expensive band-switching talk-boxes?

Do they realize, for instance, that our three v.h.f. bands provide more than three times as many kilocycles of high-priority territory than all the bands from 1.8 to 30 Mc. combined? Did they ever stop to think of the potential for future amateur occupancy that the 420-Mc. band holds? Here we have, in one amateur band, more frequency spread than the entire spectrum from d.c. through the top of the 10-meter band! With amateur radio growing the way it is, this is an asset that should not be taken lightly.

Above 1000 Mc., where pressure for more frequencies for services never dreamed of years ago is as high as anywhere in the radio-frequency spectrum, we have 2210 *megacycles* of amateur assignments. Can you even name our microwave bands, without recourse to the *Handbook* or the *License Manual*?[1] Probably not one ham in a hundred could, but there are people outside of amateur radio who know them well. In fact, there are proposals before FCC right now that would eliminate or seriously cut at least two of these bands.

Are you one of the vast majority of hams who think that we would never miss all the bands above 500 Mc.? Or even 30 Mc.? If you are so inclined, think again. Every indication shows that amateur radio is growing at an ever-increasing rate. We have about four times as many hams as we had before World War II, when congestion in the amateur bands was already reaching intolerable proportions. Where has the new growth gone? Where will the thousands of new hams of years to come turn for space in which to enjoy our hobby?

Much of the postwar increase was absorbed by the v.h.f. bands. We have far more activity on both 50 and 144 Mc. today than ever before, and it is spread much more evenly across the country. The 220- and 420-Mc. bands are also showing significant gains. All these bands are fine beginner's territory, but they became attractive to the newcomer only when a high level of activity was established there, so that the neophyte could find someone to talk to. The Technician Class license was designed to help populate our higher bands, but Technicians will not and cannot do the job alone.

We have done well enough in all our bands below 500 Mc. so that we can make a good case for retention of them, in the inquiry into frequency usage now being conducted under FCC auspices. The record of amateur pioneering in the world above 50 Mc., particularly in connection with the discovery and exploitation of new forms of long-distance propagation, is one in which we may take some pride.

But how about the bands above 1000 Mc., also currently being subjected to intensive study by FCC, with a view to establishing new and more realistic allocations for the many services now clamoring for frequency assignments there? Fortunately for a generation of amateurs yet to come, we may not have done too badly there, either. In terms of numbers, our employment of the 1215-, 2300, 3300- 5650-, 10,000- and 21,000-Mc. bands has not been impressive — but all those bands have been used for amateur communication, and in most instances rather well.

Look down through the table of DX records reproduced herewith and you'll see that, with the exception of the 5650- and 21,000-Mc.

[1] Or see Nov. 1957 *QST*, p. 70.

50 Mc. Opens to Europe—EI, LA and SM Work Ws.

The earliest in the fall it ever happened, the 50-Mc. band opened to Europe Oct. 25. G3COJ heard American 50-Mc. signals on that date, but the first transatlantic 50-Mc. work was done the following morning, when SM5CHH worked W4UMF at 0928 EST. This was the first SM — W 50-Mc. QSO, and the first two-way work across the Atlantic on this solar cycle. K2ITP was worked immediately after. On the 27th SM5CHH worked many Ws on 6, and LA9T joined the fun, for the first contacts between America and Norway on 6. EI2W is worked W2JTE, W2UTH and W8CMS two-way, and numerous European stations were working crossband. Calls heard working American 50-Mc. stations crossband from 28 Mc. included OH5NW, PAØFM, F9BG, G3s COJ FIH FXB IUD IGK XC, G4LX, G4HQ and G5BD. Commercial signals of European origin were heard in the 50-Mc. band as early as 0642 EST on the 27th, the earliest transatlantic opening on record. The band remained open for nearly 5 hours.

bands, every amateur assignment has been used for two-way communication over distances in excess of 100 miles. When the nature of equipment available for use on these frequencies is taken into account, this is no mean accomplishment.

An outstanding example of amateur effort in the microwave region is the work of the San Bernardino Microwave Society, whose program and current accomplishments are described elsewhere in this issue by W6VIX, one of its founders. It will be seen that while the equipment used by these fellows bears little resemblance to that employed on 3.5 to 30 Mc., it is still true ham gear. Much of it was picked up on the surplus market, but making it serve amateur purposes involved plenty of typical ham improvisations. Take that beer-can "polaplexer" for example. Beer cans, it seems, are good for something other than 40-meter vertical antennas. Look over the mobile microwave station of W6VIX. Bill adapted a house trailer mount for his purposes and equipped it with an 8-foot parabolic reflector. The antenna has gear drives for changing its position in either azimuth or elevation. R.f. units can be changed at will to utilize the various microwave bands. Is this the first "all-band" microwave mobile?

1 WØZJB	8 WØINI	15 WØWKB	22 W5SFW
2 WØBJV	9 W1HDQ	16 WØSMJ	23 WØORE
3 WØCJS	10 W5MJD	17 WØOGW	24 W9ALU
4 W5AJG	11 W2IDZ	18 W7ERA	25 W8CMS
5 W9ZHL	12 W1LLL	19 W3OKU	26 WØMVG
6 W9OCA	13 WØDZM	20 W6TMI	27 WØCNM
7 W6OB	14 WØHVW	21 K6EDX	28 W1VNH

W1CLS	47	W4LNG	45	W6ANN	45	W9MHP	43
W1CGY	46	W4CPZ	45	W6NDP	45	W9JCI	42
W1LSN	46	W4UCH	45	K6GTC	44	W9MFH	42
W1AEP	46	W4FLW	45	W6GCG	43	W9SWH	42
W1FOS	45	W4IKK	44	K6HYY	43	K9EID	41
W1RFU	44	W4QN	44	W6ABN	43	W9EPT	41
W1SUZ	44	W4RFR	42	W6NIT	42	W9IMG	40
W1KHL	42	W4MS	42	W6IWS	41	W9KLR	36
W1ELP	41	K4DNG	41	W6CAN	40		
W1MFM	39	W4OXC	41	W6BWG	39	WØQIN	47
W1SPX	36	W4ZBQ	41	K6RNQ	38	WØNFM	47
W1UHE	35	W4FNR	40	W6ERG	38	WØTKX	47
W1FMK	34	W4AYV	38	W6OJF	31	WØKYF	47
W1LGE	33	W4IUJ	38			KØGQG	47
W1FVZ	32	W4YRM	38	W7FFE	48	WØJOL	46
W1FTF	31	W4HHK	37	W7HEA	47	WØUSQ	45
W1WAS	31	W4AKX	36	W7BQX	47	WØFKY	45
		W4GJO	35	W7DYD	47	WØPFP	45
W2MEU	47	W4ZD	35	W7ACD	46	WØQVZ	45
W2RGV	47	K4AGM	35	W7FDJ	46	WØOFZ	44
K2JNS	46	W4MI	35	W7JRG	44	WØYJF	44
W2AMJ	46	W4HZG	34	W7INX	44	WØURQ	44
W2BYM	46	W4RLG	34	W7BOC	42	WØJHS	43
W2FHJ	45			W7JPA	42	WØIPI	43
K2ITP	43	W5VY	48	W7FIV	41	WØWNU	42
K2ITQ	43	W5LFQ	47	W7CAM	40	KØDXS	42
W2SHV	43	W5GNQ	46	W7MKW	40	KØGKR	41
K2CBA	42	W5FSC	45	W7YJE	38	WØPKD	41
K2AXQ	42	W5ONS	45	W7QDJ	34	WØZTW	41
W2GYV	40	W5JLY	45	W7UFB	33	WØYZZ	38
K2HPN	39	W5ML	44			WØZKD	37
W2ORA	39	W5EXZ	43	W8OJN	46	WØVIK	36
W2QVH	38	W5VV	43	W8SQU	46	KØBPM	35
K2HRB	37	W5FXN	43	W8HXT	46	KØCLJ	35
K2LTW	37	W5JME	42	W8NQD	45	WØIJR	35
K2YWH	34	W5CVW	41	W8UZ	45		
		W5FAL	41	W8RFW	45	VE3AET	46
W3TIF	47	W5HEZ	41	W8LPD	44	VE1EF	38
W3KKN	45	W5BXA	41	W8HJR	44	VE3AIB	37
W3KMV	44	K5ABW	40	W8WPD	43	VE3BBX	33
W3RUE	42	W5EXZ	38	K8ACC	43	VE1QY	32
W3NKM	41	W5EUQ	38	K8CIC	42	VE2AOM	31
W3MQU	41	K5ABW	38	W8EVH	42	VE3DER	31
W3MXW	41	W5HFF	38	W8YLS	41	VE3BH	30
W3OTC	41	K5CYK	38	W8INQ	40	XE1GE	27
W3FPH	40	W5FRK	38	W8PCK	38	CO2ZX	24
W3LFC	40	W5NSJ	36	W8NOH	34	VE1PQ	23
W3AMO	36	W5WZF	33			VE3OJ	22
W3TDF	36	K5AJW	33	WØBRN	48	VE1WL	21
W3JBA	34	W5ZUL	33	W8ZHB	48	CO6WW	21
W3UQJ	32	K5EWB	32	W9QUV	48	VE4HS	20
		W5ZVF	31	W9VZP	47	LU9MA	16
W4EQM	47	W5LFM	26	W9RQM	47	PZ1AE	15
W4FBH	46			W9QKM	47	CO2WL	10
K4DJO	46	W6WNN	48	W9JFF	47	KL7VT	9
W4UMF	46	W6UXN	48	W9AAG	46	JA1AUH	5
W4EQR	45	W6BAZ	47	WØUIA	45	VQ2PL	5
W4AZC	45	W6HJI	46	W9UNS	45		

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

Activity on our microwave bands is no one-shot proposition. It is unlikely that we shall soon reach the point of being able to call CQ and tune the band for answers in many of our microwave assignments, but they are being used effectively and frequently. With the single exception of the 21,000-Mc. band, the DX records have changed hands many times, the distances having been stepped up gradually from a few miles to as much as 190. In several cases the records are well beyond line-of-sight, something we didn't look for in the microwave region. Ham history on lower frequencies is repeating itself.

That history, being written by today's pioneers in the bands above 1000 Mc., may well assume an importance that few of us have accorded it thus far. In 1920 the frequencies above about 2000 kc. were so lightly regarded that hams could roam them at will. In the early '30s everyone looked down his nose at the "useless" frequencies above 30 Mc. Let nobody think that the same mistake will be made about the frequencies above 1000 Mc. Many people want them, and for many purposes, but even now their full potential is far from being realized. There is gold in them thar hills, too, and if we are to live up to our reputation we'd better get about finding it!

We like the punch line in W6VIX's little story: "Please note that our society has nothing whatever to offer hams interested in lower frequencies!" That spirit is a good omen for the future of amateur radio in that vast territory that too many hams have hardly more than heard of!

50-Mc. DX Starts Early

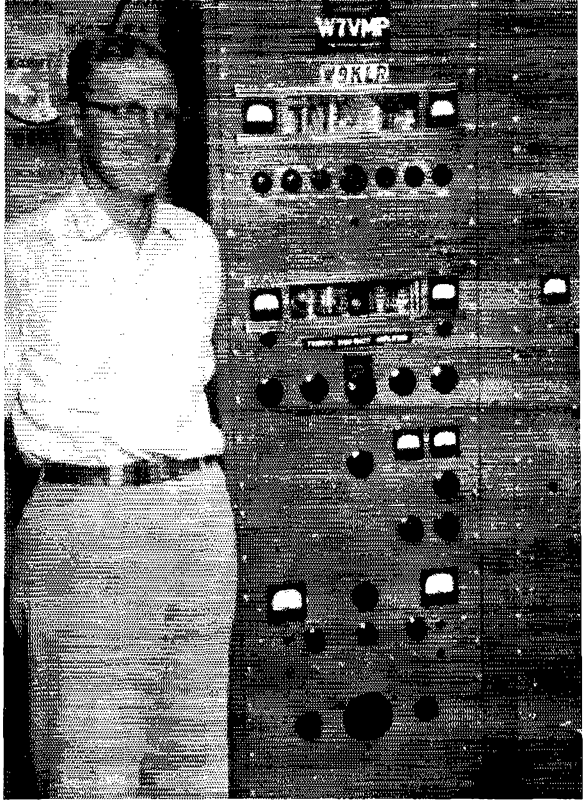
You'd never have been looking for it if you relied on the *CRPL Predictions*, but F_2-layer DX generally started earlier this fall than in 1956. Though the predicted m.u.f. for work between the East and West Coasts was only 41 Mc. for October (42 Mc. for November and December), the first transcontinental contacts of the 1957 season were made Oct. 20. The first similar contacts in 1956 were made Nov. 3. South American DX got under way this year early in September; last year's first break was Sept. 30. Nothing has been reported across the North Atlantic as we write, but the first transatlantic work from South America (first ever) was done Sept. 19, when LU3EX in Argentina worked *CT3AE*, Madeira Islands, around 2215 LU time.

South America continues to enjoy 50-Mc. DX of greater

proportions than almost any other area of the world, unless it be Japan. LU3EX and LU4FBN raised another new country in FF8AP, French West Africa, Oct. 7, around 2220 LU time. Some idea of what 50-Mc. work is like for the LUs can be drawn from the PRP report of LU3EX for the latter half of September. In five days, he worked ZP5EA, Paraguay, KP4ACH, Puerto Rico, CO2XZ Cuba, CE1AH, Chile, several JAs, XE1GE, Mexico, PY6HT, Brazil, W4KKU, W4BLW and W4GJO, OA4C, Peru, TG9JW,

2-METER STANDINGS

	U.S. States	Areas	Miles
W1REZ	28	8	1080
W1FZJ	21	6	1120
W1KCS	21	7	1150
W1RFU	21	7	1120
W1AZK	21	6	1160
W1HDQ	20	6	1020
W1AJR	20	6	810
W1OAX	19	6	800
W1MMN	18	6	800
W1IZY	17	6	750
W1UIZ	17	5	680
W1BCN	16	5	650
W1KHL	16	5	540
W1AFO	16	5	810
W2CXY	34	8	1200
W2NLY	33	8	1390
W2ORI	33	8	1200
W2AZL	28	8	1050
W2BLV	23	7	1020
K2GQI	23	6	935
K2IEJ	23	7	1060
W2SMX	22	6	905
W2AMJ	21	6	960
W2KIR	21	7	880
W2DWJ	21	6	720
K2CEH	21	8	910
K2IXJ	21	6	925
W2AOC	20	7	770
W2OPQ	20	6	970
W2PAU	20	6	880
W2CBB	20	6	740
W2UTH	19	7	880
W2AZP	19	7	650
W2RGV	19	6	720
W2LHI	18	7	620
W2SHT	16	6	650
W2PCQ	16	5	650
W3RUE	29	8	950
W3BGT	28	8	740
W3TDF	27	8	880
W3GKP	27	7	1020
W3SGA	26	6	550
W3IBH	23	7	650
W3FPH	21	8	—
W3KCA	21	7	—
W3LNA	20	7	720
W3LZD	20	7	—
W3KWL	19	7	740
W3NKM	19	8	660
W3BNC	18	7	750
W4HHK	33	9	1280
W4HJQ	30	8	825
W4AO	29	8	1100
W4UMF	26	8	1110
W4LTU	24	8	1160
W4MKJ	24	8	725
W4JCJ	22	6	660
W4EQM	21	8	900
W4DWU	20	6	675
W4OLK	19	6	720
W4TLV	18	7	1000
W4JFV	18	7	850
W4IKZ	18	6	720
W4VLA	17	7	825
W4WNH	17	7	750
W4CLV	15	5	720
W4ZBU	14	5	800
W4AIB	14	5	705
W4TCR	14	5	720
W4SOP	13	5	680
W4CPZ	12	5	650
W4UDQ	11	5	850
W4MDA	11	5	860
W4KCQ	10	4	860
W4LNG	9	4	800
W4GIS	9	2	335
W5RCI	30	9	1215
W5DFU	25	9	1300
W5AJG	19	8	1280
W5JWL	18	6	1150
W5HEH	15	7	830
W5MMW	14	5	700
W5FSC	12	5	1390
W5ABN	12	5	780
W5PZ	11	4	650
W5QNL	10	5	1400
W5CVW	10	5	1180
W5SWV	10	3	600
W5ML	9	3	700
W5NDE	8	3	520
W5FEK	8	2	580
W5VY	7	3	1200
W6NLZ	9	3	2540
W6DNG	7	3	1030
W6WSQ	5	3	1380
W6AJF	5	2	640
W6RRZ	4	2	360
W6PJA	4	3	1390
W6ZL	3	2	1400
W6BAZ	3	2	400
W6MMU	3	2	388
W6ORS	3	2	365
W6LSB	2	2	360
W7VMP	11	5	1280
W7LEE	6	3	1020
W7JRG	4	3	1040
W7LHL	4	2	1050
W7JIP	4	2	900
W7JU	4	2	353
W7YZU	3	2	240
W8KAY	36	8	1020
W8WXV	35	8	1200
W8LOF	30	8	1060
W8RMH	29	8	800
W8PT	28	8	985
W8SRW	27	7	850
W8SFG	26	7	850
W8ILC	25	8	800
W8LPD	25	8	750
W8DX	25	8	720
W8EHW	24	8	860
W8WRN	24	8	680
W8BAX	23	8	675
W8SVI	22	8	725
W8JWV	22	8	710
W8LCY	18	7	610
W8EP	18	7	800
W8ZCV	17	7	970
W8RWW	17	7	630
W9KLR	36	8	1160
W9WOK	32	9	1050
W9REM	27	8	850
W9UCH	27	8	750
W9EVJ	26	8	850
W9ZIH	26	8	830
W9EQC	26	8	820
W9ZHL	25	8	760
W9GAB	24	7	1100
W9EHX	24	7	725
W9HPV	23	7	1000
W9UED	22	7	960
W9KPS	21	7	690
W9PBP	20	8	820
W9MUD	19	7	640
W9LF	19	6	—
W9ALU	18	7	800
W9JGA	18	6	720
W8MBI	16	7	660
W9DDG	16	6	700
W8JYI	15	7	560
W9LEE	15	6	720
W9DSP	15	6	760
WØIHD	27	7	890
WØGUD	25	7	1065
KØDOK	22	8	930
WØTGC	20	7	860
WØINL	20	6	830
WØUOP	18	6	—
WØONQ	17	6	1000
WØSMJ	16	6	1000
WØUSO	14	6	750
WØLFS	14	5	—
WØOAC	14	5	725
WØRYG	14	5	600
WØMVG	13	5	700
WØTJF	13	4	—
WØZJB	11	4	650
VE3D1R	26	8	915
VE3AIB	26	8	910
VE3BQN	17	7	790
VE3DER	16	7	820
VE3BPB	13	6	715
VE2AQK	12	5	550
VE3AQF	11	7	800
VE1QY	11	4	900
VE7EFJ	2	1	365



The broad smile on the face of W9KLR is the result of his having worked State No. 36 on 144 Mc., thus tying with W8KAY in the race for a 144-Mc. WAS. Rig is the "Fenwick Kilowatt" built by W7VMO-P-Q, brought east when the Fenwick triplets enrolled at Purdue University. The powerhouse works into a 64-element array, 85 feet above ground.

Guatemala, YV5BI, Venezuela, PJ2AO, Aruba, T12CV, Costa Rica, and KH6s CCZ NS and PP, Hawaiian Islands. There are 16 countries there, and they do not include LU and CX, both local in category!

No African contacts have been reported by U. S. stations as we write, but K8CIC and K8AHX both heard FF8AC on Oct. 3, at 1118 and 1002 EST, respectively. Here are African countries known to be active on 50 Mc.: Northern and Southern Rhodesia, VQ and ZE, South Africa, ZS, Tanganyika, VQ3, Kenya, VQ4, Uganda, VQ5, Southwest Africa, ZS3, and the FF8 and CT3 already listed.

MP4BBL and MP4BBW, Bahrain Island, and ZC4IP, Cyprus (both count for Asia for WAC purposes) are working crossband from 28 Mc. Transequatorial scatter of amazing reliability is reported by ZC4IP. Working on 28 Mc. he has had daily QSOs with many African 50-Mc. stations, often duplex. His list includes VQ2PL, ZEs 1JN 2JV 2JE 2JK 5JB, ZS3G and ZS5s and ZS6s. This transequatorial scatter peaks around 1700 to 1800 GMT, and seems to work equally well on 28 and 50 Mc. Several African stations report very high m.u.f. for the TE mode, and there is some hope that the 72-Mc. band may be open on peak days. ZE2JV and F9BG, Toulon, France, are reported to be checking for DX possibilities on 72 Mc.

Australian stations, moved out of the 50-Mc. region by the imminence of television in that band, are being allowed to operate on 6 again, where such operation will not cause interference to commercial services. One now working on 6 regularly is VK4NG, who is on 50.24 Mc. for the duration of IGY, barring interference. He is having daily success with Japan. VS6CJ, Hong Kong, is sending in PRP reception reports, and should be on 50 Mc. before this appears in print.

Other DX calls appearing in the PRP file include KZ5JS,

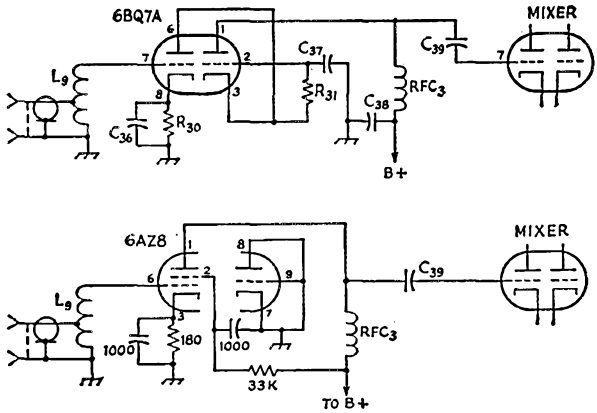


Fig. 1—Circuit changes for converting the 6-meter Communicator to a pentode front end. Upper circuit is the original.

Canal Zone, KL7TOB, Anchorage, Alaska, and representatives of practically all South American countries. Is this the "World Above 50 Mc." or How's DX"?"

Just how widely the band was open for east-west DX on Oct. 20 is not known as yet, but here are some contacts reported: K2CBA, Troy, N. Y., and K6RNQ, Oakland, Cal.; W4UCH, Sterling, Va., and W6BAZ, Santa Rosa; W6ABN, Long Beach, and VE1EF and W1QCC/VE1. W6NLZ, Palos Verdes Estates, made what may be the first two-way s.s.b. contact on 6 between W6 and VE1 with W1QCC/VE1. W6ABN's QSO was also s.s.b. both ways. VE1EF was also worked by W6BJI, Fresno. The band was open between W1 and W6 again briefly on Oct. 25, around 1130 EST.

Aurora Breaks Out All Over

The aurora of Sept. 22–23 will not soon be forgotten by 2-meter DX enthusiasts. Visible observation of this one was possible in just about every part of the United States, and v.h.f. coverage was the widest on record. Coming as it did near the closing time of the September V.H.F. Party, the aurora found more stations ready for business than perhaps any previous late-evening session. Some reports have it starting as early as 2200 EST, and it ran through the following morning almost unabated.

The visible display was reported as directly overhead south of the Washington area, and 2-meter DX was heard as far south as Orlando, Fla., where W4LTU tried vainly to raise several stations he heard. New Mexico was represented for probably the first time in aurora history, by W5VWU. DX was worked on 50 Mc. as far south as Fresno, Cal., but no 2-meter DX was reported from California, though the aurora was seen as far down as Los Angeles. Could it be wrong polarization in some instances? All aurora DX is worked with horizontal, though vertical would probably work equally well if vertical arrays could be found anywhere else in the country.

W4UMF reports reception of every state east of the Mississippi except Florida, plus Oklahoma, Arkansas, Missouri, Iowa and Minnesota. W8WXV lists 26 states heard during this one session. WØRYG, Lincoln, Neb., heard signals from as far east as W2BLV, Haddonfield, N. J., and W2OPQ, Amsterdam, N. Y., and as far southwest as W5VWU Albuquerque, N. Mex. W7LHL, Kirkland, Wash., worked W7JIP and W7WSB in Oregon, but could hear no other DX, despite the most brilliant visible display he'd seen since 1947. WØIC, ARRL Rocky Mountain Division Director, Denver, heard W9KLR, W4HHK, WØMVG and W5VWU, but could attract no attention. Colorado contacts going begging on 144 Mc.!

Aurora of similar magnitude developed again Sept. 29. K2ITP, Riverton, N. J., says that this was the longest continuous session he's seen, running through almost the entire day, from 0900 to 2040 EST. This one is something special, in that it was observed simultaneously in Europe. Aurora openings on 144 Mc. have been rather rare in Europe heretofore, but this one was widely observed. PAØFB reports contacts with G, GM, OZ and SM stations, and he says that HB, GW, ON, DL, GI and F were also active. G5YV is reported to have worked two Swiss stations. Peak times were 1415 to 1630 and 2245 to 2340 GMT.

Aurora DX was workable in both Europe and this country at the same time, raising the question of the east-west limit of working range. PAØFB is going to concentrate on attempting reception of W and VE signals whenever he hears aurora activity again. On the 29th, at 2040 GMT, he heard an S5 aurora signal signing TF2GD. We have no call-book listing for this station. Dos anyone have information on him? Iceland would be a nice haul from Holland, and also a fair indicator of potential DX across the Atlantic. We should not overlook directions *east* of north during aurora openings, now that we know there will be European activity. Don't forget the RSGB beacon, GB3-IGY, on 145.5 Mc.

Many newcomers to the game have written to ask if there is any way to tell when aurora openings are due. There are many ways. Since aurora outbreaks are associated with ionospheric disturbances, you merely have to know when such disturbances are expected. WWV is one source of such information. W1AW is another. Nightly propagation forecasts are given on all amateur bands from 144 to 1.8 Mc. on W1AW, immediately following the usual bulletin transmissions. (See W1AW schedule published regularly in *QST*.) Just listening on lower frequencies gives good clues. If there is a disturbance developing, the frequencies above the broadcast band develop poor transmission characteristics, with weak signals and lots of flutter fading. The 75-meter phone band is an excellent indicator, particularly in the late afternoon, when auroras so often develop. If you hear 75 going to pot, there may be no more than a few minutes time lag before aurora DX begins to show on 50 or 144 Mc.

TV signals provide strong evidence of aurora under certain conditions. If your TV array has any directivity at all, turn it north. If the picture on any of the low channels shows grey streaks, and the audio is distorted, you should be chasing aurora on 50, 144 or 220. Strong aurora reflections are often visible with the TV antenna in any position, particularly if the TV signal is relatively weak under normal conditions.

W3TDF, Langhorne, Pa., has a special method. The telephone company measures earth potential on east-west lines on a 50-mile path. This is an unfailing indicator of aurora, when the reading is more than 8 to 10 volts. On Sept. 13 it reached 90 volts. When it is over 30 an automatic alarm is set off, and this is a good time to go to work on the v.h.f. bands, too. All you need is a friend posted near the alarm system.

Cutting Down Overloading in the 6-Meter Communicator

The front end of the 6-meter Gonset Communicator has a good noise figure, but it is fairly susceptible to overloading from strong local signals. This can be corrected, to a considerable degree, by replacing the dual-triode r.f. amplifier with a single pentode stage. Fortunately, there is a tube

(*Continued on page 200*)

Hints and Kinks For the Experimenter

MODIFIED RECEIVER TUNING RATE FOR S.S.B. RECEPTION

In converting conventional receivers for improved s.s.b. operation, it is desirable to effectively reduce the bandspread tuning range. This is often done by substituting a large diameter knob for the original bandspread control knob. However, in receivers such as the S-40 series, a neater and superior job will result if the bandspread shaft is removed from the set, and the central portion in which the dial cord rides is further reduced in diameter to about 1/16 inch. This is best done on a lathe, or (with care) by placing the shaft in the chuck of an electric drill and using a small flat file, with the drill running. The reduction of shaft diameter decreases the contract area between the shaft and the dial cord, so it may be necessary to wrap the cord around a few extra turns to prevent slippage.

— *Richard A. Schomburg, W7WUM*

CONTROLLED CHARGE-UP TIME FOR HIGH-VOLTAGE FILTER CAPACITORS

Many high-voltage supplies using large values of filter capacitance draw a heavy surge of current from the line and through the rectifiers when the supplies are turned on. Should this condition be serious enough to warrant remedy, it may be almost completely eliminated by installing a simple *time-delay* circuit in the supply.

Fig. 1 shows how three time-delay components, C_1, K_1 and R_1, are connected into a typical 1000-volt choke-input supply. For the sake of simplicity in the diagram, the primary windings of the transformers and the control switches are not shown. Notice that R_1 is connected between the plate-transformer (T_1) center tap and ground, and that it is in parallel with the contacts of K_1. K_1 is connected between the bottom end of the bleeder resistor (R_2) and ground and is shunted by the 100-μf. capacitor, C_1.

In operation, K_1 does not close until after the supply has been turned on and C_1 has charged through the bleeder. With the 200-ohm relay and the other supply-components used here at W2LYH, the actual *delay-time* is approximately one half second. With K_1 open, R_1 is effectively in series with the filter capacitors (C_2 and C_3) and, as a result, the capacitors charge at a relatively slow rate. Just as soon as K_1 closes, the limiting resistor is shorted and the supply is back in normal operation.

— *R. V. McGraw, W2LYH*

[*Caution:* The bleeder circuit becomes *inoperative* if the relay winding opens up! — Ed.]

SOLDERING TAPS ON SMALL SPACE-WOUND INDUCTORS

It is always a nerve-racking chore to solder taps on small space-wound inductors without soldering adjacent turns together. Since commercial air-wound coils are widely used, the following hint may be of value to many.

The idea is to isolate the selected turn on which the tap is to be attached. This can be done quite effectively by inserting ½-inch wide strips of Reynolds Aluminum Wrap on either side of the tap point. The aluminum foil keeps the solder where you want it, protects the supporting bars by rapid dissipation of heat, and prevents that *messy* appearance that usually goes hand in hand with the operation. The strips can be removed with ease after the solder has hardened.

— *Ray Naab, W9GNX*

Editor's Note: Although W9GNX got here first with the above hint, we wish to thank Ralph Steinberg, K6GKX, for submitting the idea at a somewhat later date.

USING THE GRID-DIPPER AS A CONELRAD MONITOR

Here is another conelrad idea that puts a piece of test gear to work almost "full time." I've been using my B & W grid-dipper as an audible/visual conelrad monitor and find that it works

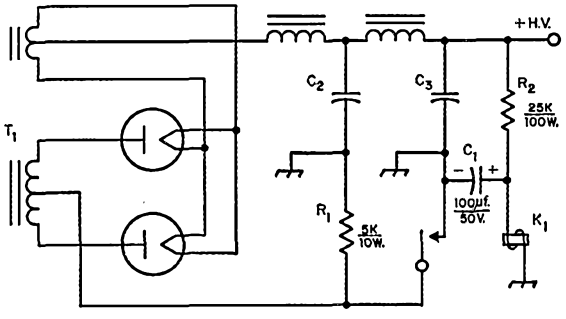


Fig. 1 — Schematic diagram showing W2LYH's controlled charge-up-time arrangement installed in a typical 1000-volt power supply. K_1 is a s.p.s.t. normally-open relay having a 200-ohm winding.

quite satisfactorily when tuned to a local broadcast carrier of reasonable strength.

The only work involved in preparing the meter for conelrad operation is the winding of a broadcast-band coil. The tuning range of the meter is not wide enough to cover the complete band, but will cover better than 700 kc. with one swing of the main-tuning dial. An inductor of fair size — both in value and physical shape — is required. A form similar to the now obsolete National type XR-6, having a diameter and winding length of 1½ and 2¼ inches, respectively, is ideal for the job after all but two of the prongs have been removed.

The inductor-meter combination used here at W2TJX rides the local 1210-kc. channel for continuous monitoring. It takes only a second to slide up to the 1240-kc. conelrad frequency whenever the shift is warranted.

— *Wilbur C. Stevens, W2TJX*

(To assist anyone who wishes to try W2TJX's idea, we made some capacitance checks on Barker & Williamson, Heathkit and Millen grid-dip meters. Approximate values of minimum and maximum tuning capacitances for the three meters tested are as follows:

Type	Min. μμf.	Max. μμf.
B & W 1600	6	55
Heathkit GD-1B	8	75
Millen 90651	7	50

[From the above, and with the aid of an ARRL Type A "*Lightning Calculator*," it is a simple matter to determine that any one of the three meters will cover the 700- to 1600-kc. range with a 1-mh. inductor in use. And a few seconds more with the *Calculator* shows that the 1-mh. coil may be made with 215 turns of No. 32 enameled wire, close-wound to a length of 1⅞ inches on a 1½-inch diameter form. — *Ed.*]

USING THE BC-459 WITH THE V.H.F. OVERTONE OSCILLATOR

ALTHOUGH USING THE BC-459 (7 to 9 Mc.) as the v.f.o. for a 50-Mc. transmitter may be old stuff to many v.h.f. men, it is possible that some newcomers to the World Above 50 Mc. may not realize how easy it is to couple one of these Command transmitters to the ever-popular overtone crystal oscillator.

Fig. 2 shows the method of coupling a BC-459 to the grid of a triode overtone oscillator. The oscillator portion of the circuit (components to the right of the dashed line) is identical to that used in simple transmitters described in the V.H.F. Transmitters chapter of recent editions of the *Handbook*. To the left of the dashed line, we see the coaxial line from the v.f.o., a 220-μμf. coupling capacitor and the connections to the transmitter crystal socket. All connections at the transmitter end of the coaxial line should be as short as possible.

One interesting feature of the arrangement is that the overtone circuit takes on an entirely new look merely by replacing the crystal with the v.f.o. connections. The instant that the crystal is removed and a ground connection provided at the crystal socket, the circuit becomes that of a frequency multiplier. In this case the stage becomes a frequency tripler using 8-Mc. excitation for 25-Mc. output. Incidentally, the stages that follow the 12AT7 oscillator are also of *Handbook* design.

The required v.f.o. range for covering the entire 50-Mc. band is 8.333 to 9 Mc. Stable output throughout this range is obtained here at W9DRY by operating with only 105 volts applied to the oscillator and both the plates and screens of the amplifier tubes of a BC-459. The Heathkit v.f.o. also works well with the arrangement after the 7-Mc. range has been pulled up into the 8-Mc. region, but does not offer the advantage of oscillator-frequency calibration.

— *Ray L. Sherwood, W9DRY*

NOVEL PUSH-TO-TALK CIRCUIT

IMPULSE or latching relays are a handy means of providing push-to-talk operation without need for holding the talk button down during transmissions. The button, in such applications, is pushed momentarily to turn the transmitter on and pushed momentarily again to turn it off. The main disadvantage of such relays is the price tag, which generally starts at about eight dollars and goes up. However, a simple counting circuit using two surplus relays can be employed to achieve the same end.

Fig. 3 shows the circuit with the two relays energized. Here's how it works: When the button is pushed, K_1 is grounded through the normally-closed contacts of K_2. When K_1 operates, the transmitter control circuit is completed through contacts K_{1B} and the top end of K_2 is grounded through contacts K_{1A}. Notice that the bottom end of K_2 is permanently grounded and that the return supplied through K_{1A} does not cause the relay to close. Nothing further happens until the push button is released.

Releasing the button removes the ground

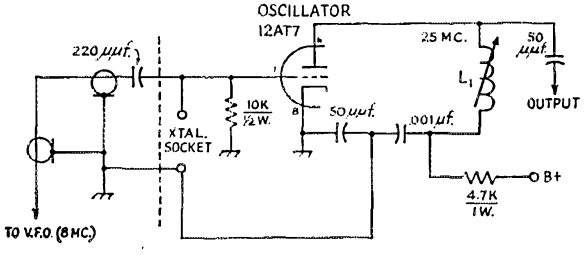


Fig. 2 — Circuit diagram of a v.h.f. overtone oscillator driven by a Command transmitter. W9DRY uses a BC-459 (7 to 9 Mc.) as the v.f.o. and drives a 50-Mc. frequency multiplier with 25-Mc. excitation obtained from the 12AT7. L_1 is 24 turns No. 30 enam. close-wound on a ⅜-inch slug-tuned form (National XR-91).

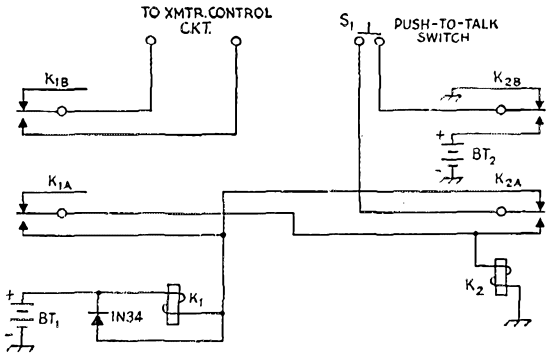


Fig. 3—Schematic diagram of WØLOV's push-to-talk circuit. See text for component specifications. S1 is the push-to-talk switch or microphone button of the momentary contact type.

from the junction of K_1 and K_2, leaving the two relays in series across battery BT_1. K_2 now operates. Contacts K_{2A} transfer one side of the button to the coil of relay K_2, while contacts K_{2B} connect the other side of the button to battery BT_2. Nothing comes of this since both relays are locked in the "operate" position and the push-button is released.

When the push-button switch is again closed, voltage from BT_2 is applied to both relays through contacts K_{1A}, K_{2A} and K_{2B}. K_2 will "hold," but K_1 will open because it now has plus-voltage at both ends of its solenoid. When the button is released, voltage from BT_2 is removed from K_2, the relay opens and the circuit is ready for another complete cycle.

Proper operation of the circuit necessitates that both relays have the same coil resistance and current rating, and that the supply voltage be twice the rated voltage of a single relay (24 volts for two 12-volt relays, 12 volts for two 6-volt relays). One other requirement is apparent from close examination of the circuit: with the button released after having turned the transmitter on, it is essential that contacts K_{1A} must maintain a voltage path (from BT_1) for K_2 long enough for the current to build up to the point where the resultant voltage drop will hold both relays closed. Should K_1 open before this happens, K_{1A} will remove voltage from K_2 and *both* relays will open. This means that relay K_1 should have a reasonably long time constant, which most relays have. If both relays drop out after the button is released, the release time of K_1 is too short and the effect can be remedied by connecting a crystal diode across the coil. Also, the spring tension can be reduced for increased "hold" time.

For the purpose of description, it was assumed that d.c. relays would be used. A.c. relays would do just as well as long as the above requirements are met. — *Robert S. McMullen, WØLOV*

MODIFIED "LITTLE MONSTER" AUTOMATIC KEY

BEING an ardent "Goat" (an endearing term traffic men know each other by) in the National Traffic System explains why I wish to pass along a suggestion concerning the "Little Monster" automatic key.

The idea is that of eliminating need for the second winding on the relay for the W1GQJ circuit (*QST*, Nov., 1956). After one of the RN6 operators reported difficulty in winding the second coil — and to make matters worse, the eventual burn-out of same — I decided that a *single-winding* arrangement such as shown in Fig. 4 might appeal to some of the gang.

The circuit uses two type 1N34A crystal diodes, a pair of electrolytic capacitors, a sensitive relay, and a battery supply as did W1GQJ's

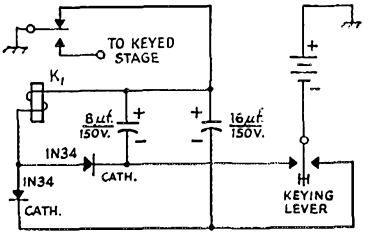


Fig. 4 — Schematic diagram of W6IPW's "Little Monster."

circuit. In connecting the components be certain to observe the polarities indicated on the diagram. A surplus BK-35 relay in the 10,000-ohm class works well in the circuit, but other types may be satisfactory after adjustment of the spring tension and contact spacing.

— *Gene Dotsin, W6IPW*

[Just in case you missed the Stray on page 72, *QST*, December, 1956: Sigma makes several dual-coil relays that may be used in the original "Little Monster." — *Ed.*]

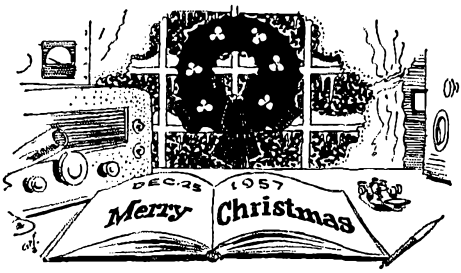
ADAPTER SOCKETS FOR RECEIVING MODIFICATIONS

OWNERS of old receivers using metal or glass tubes sometimes get the urge to replace one or more of the tubes with modern miniature types. The job of changing the sockets can be simplified by using Amphenol 78-A7P or 78-A9P adapter sockets for the 7- or 9-pin miniature tubes. Be sure to ground to the inner retaining ring and the inner shield tube; I ran into serious regeneration and oscillation effects in my HRO-5 until these connections were made.

— *William Bringier, K5CSJ*

YL News and Views

BY ELEANOR WILSON,* W1QON



YL CLUBS

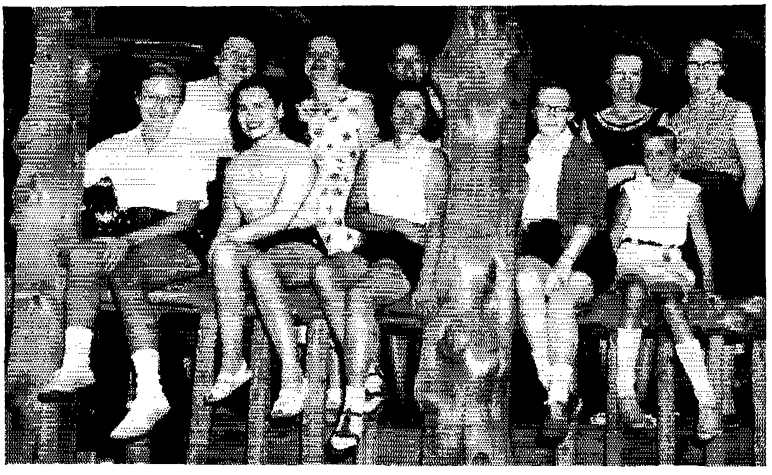
RESPONSE to the request for information about the various YL clubs, which appeared in the August 1957 column, was very good. For further particulars on any of the clubs listed below, please write directly to the club presidents.

Replies to the query, what is the purpose of your club? were varied and interesting. Generally, however, the purpose of most of the clubs, as set forth in the various constitutions, is to stimulate friendship and cooperation among women amateur radio operators, to develop efficiency in operating, and to promote greater interest in amateur radio. To assist with emergency communications, to participate as a group in various events and activities, and to assist newcomers obtain licenses were additional purposes stated. Certainly all are commendable reasons for forming a club.

The spirit of enthusiasm and helpfulness and friendliness underlying all of the clubs is reflected in the words of the President of the Texas YL Round-Up Net, Doris Anderson, K5BNQ: "We do feel that we give the newly-licensed YLs a warm welcome to the air and an indoctrination into this wonderful hobby of amateur radio. All too often the OMs, after coaching, coaxing, and coercing their XYLs into getting their licenses, relax the moment the licenses arrive and leave the poor girls feeling bewildered and wondering what they are going to do with said licenses. We take them from there. The girls are invited to check into the net and to meet other women with similar interests. Thursday is the day we just drop everything and get together and visit on the air. We have a wonderful time, get to know each other, and learn a little bit about operating procedure, we hope."

International

Young Ladies Radio League — organized 1939;



All of the YL clubs schedule at least one "social" a year, formal or informal. The annual outing of the Rhode Island Young Ladies Radio Club calls for casual clothes, preferably shorts. Here are ten of the eighteen club members who enjoyed a full day of ragchewing at a Lincoln Woods, R. I. picnic site: (front row, l. to r.) W1s VXC, WED, KN1???, W1ZOK, KN1CBK; (back row) W1s CEW, JHY, KN1AAK, WN1OTI and WN1JJH.

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

has a number of affiliated clubs; approximately 600 members, all licensed women amateurs, including novices; dues $2.00 per year; Pres. for 1958 — Beth Taylor, W7NJS, Manzanita, Oregon; publishes *YL Harmonics* bi-monthly; sponsors YL-OM Contest and YLRL Anniversary Party annually; conducts phone and c.w. nets (see complete schedule); issues YL-WAS, YL-WAC, and YLCC certificates; sponsors international YL conventions.

YLRL Nets

Here is the new schedule of nets registered with the YLRL for the 1957–58 term. Please address inquiries direct to Vice President Kay Anderson, W4BLR, 5210 Raleigh Road, Richmond, Virginia.

PHONE

Freq.(kc.)	*Day*	*Time*	*NCS*
3980	Mon.	3:00 P.M. PST	W7HHH Monday YL Net
3900	Tues.	8:30 A.M. EST	K4CZP Blue Ridge Net
3838	Tues.	9:00 A.M. EST	WØKJZ Pi-Net
3900	Wed.	8:30 A.M. EST	W1TRE Yankee Lassies
3900	Wed.	9:30 A.M. EST	W8ATB
3915	Wed.	9:00 A.M. PST	W6PJF Ironing Board Net
7215	Thurs.	9:00 A.M. EST	W3UUG Friendly Forty
14,240	Thurs.	2:00 P.M. EST	W9RUJ Tangle Net
21,390	Fri.	2:30 P.M. EST	KZ5VR Cross Country Net
28,800	Mon.	8:00 P.M. EST	W1RLQ
29,000	Tues.	1:00 P.M. EST	K6EXQ Hair Pin Net

C.W.

3610	Wed.	9:00 P.M. EST	W1YPH East Coast YL Net

East

Women Radio Operators of New England — organized 1955; approximately 60 licensed members; meets two or three times annually; dues $1.00; Executive Committee: Barbara Harrington, W1TRE, Haverhill Rd., Topsfield, Mass., Chairman; W1s QON, RYJ, SVN, VOS, members; conducts net Mon. 8:00 P.M. EST 28,800 kc., W1RLQ NCS; Wed. 8:30 A.M. EST 3900 kc., W1TRE NCS.

Rhode Island Young Ladies Radio Club — organized 1955; approximately 16 licensed members; meets four times annually; 50¢ dues; Pres. Mary Hinterland, W1CEW, 187 Garden St., Cranston, R. I.; conducts R. I. YL C.W. Net Wed. 1:30 P.M. EST 3743 kc., W1VXC NCS; also Two Meter Phone Net Thurs. 8:00 P.M. 145.3 Mc., W1WPX NCS; issues R. I. YLRC certificate.

New York City Young Ladies Radio League — a YLRL affiliate; reorganized 1942; 21 licensed members; meets once a month; dues $1.00; Pres. Ruth Kalish, W2IGA, Wingate Rd., Parsippany, N. J.

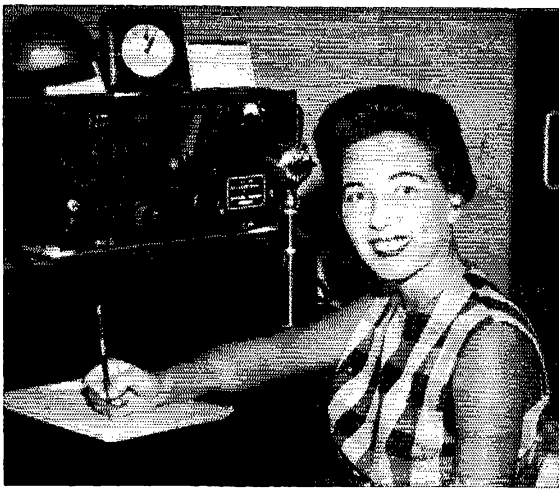
Penn-Jersey YL Club — organized 1956; approximately 21 members; meetings the second Friday each month; dues $2.50; Pres. Evelyn Wikoff, W4VCB/3, 941 Huntingdon Pike, Huntingdon Valley, Pa.

Washington Young Ladies Amateur Radio Club — organized 1955; YLRL affiliated; approximately 20 licensed members; meets bi-monthly, the second Saturday, at Rector's Restaurant, Washington, D. C.; dues $1.00; Pres. Irene Akers, W3RXJ, 5943 St. Clair Drive, Washington, D. C.; a member of The Foundation of Radio Amateur Clubs, Inc. of the Washington area; sponsors YL programs at local hamfests and conventions.

Georgia Peaches — organized 1957; 17 licensed members; dues $1.00; Pres. Peggy Butterfield, K4KKR, 2203 Terry Mill Rd., Atlanta, Ga.; club net meets Thurs. at 9:00 A.M. EST, 3985 kc.; all YLs invited to check into the net altho only YLs residing in Georgia are eligible for club membership; offers Georgia Peach YL Certificate to YLs and OMs.

St. Petersburg Amateur Radio Club YLs — organized 1954; a YLRL affiliate; meets first Wednesday each month; 14 members; Pres. Catherine Seeds, W4BAV, 829 21st Ave. North, St. Petersburg; dues $1.50; conducts Bustle Net Fri. on 29,000 kc.; sponsors foreign YLs.

Floridora YLs — organized 1957; dues $1.00; Pres. Fran Foley, W4BIL, 3726 19th St. North, St. Petersburg; conducts net Mon. at 9:00 A.M. EST on 7225 kc. and c.w. net Wed. at 2:00 P.M. EST on 7104 kc.; offers Floridora YL certificate.



Kay Anderson, W4BLR, of Richmond, Virginia, is the new Vice President of the YLRL for 1958. Licensed in 1953, Kay was YLRL fourth district chairman in 1955 and 56. Her certificates include an A-1 Op., CPC-30, and YLCC/150. Kay and her OM W4BVB have four jr. ops, ages 8, 7, 6, and 2.

Mid-West

Ladies Amateur Radio Klub — organized 1952; a YLRL affiliate; meets first Wed. monthly at Austin YMCA, Chicago; dues $3.00 for active members, $2.00 for out-of-state members; 44 members; Pres. Evelyn Tibbits, 1329 Walnut St., Western Springs, Ill.; conducts phone net Fri. at 10:00 P.M. CDST, 29,640 kc. and c.w. net Wed. at 1:00 P.M. CDST, 3750 kc.; issues LARK certificate; publishes *Pinfeathers* newspaper monthly; participates in RACES; conducts code and theory classes for beginners.

Chicago Young Ladies Radio League — a YLRL affiliate; organized 1953; 16 members; meets fourth Saturday monthly at Club room, 4222 West Foster Ave., Chicago; dues $1.00; Pres. June Todd, K9CQF, 601 Elsie Drive, Melrose Park, Ill.; assists prospective amateurs; operates club station W9DEQ; publishes *Queen's Key*.

During the annual training period of the National Guard three Vermont YLs maintained daily contact with an amateur station at Camp Drum, New York. Handling personal messages between guardsmen and their families were Muriel Moreau, W1KDY, Marlene Preston, W1DAP, and Marion Lauzon, W1CMY (left to right in the picture). The girls plan a repeat of their activities next year. Photo courtesy Burlington Free Press and W1KJG.

Hoosier Amateur Woman's Klub — organized 1957; a YLRL affiliate; approximately 10 members, Pres. Adah Elliott, W9RTH, 721 Centennial St., Seymour, Indiana.

North Star Young Ladies Club — organized 1955; 14 members; meets second Tuesday monthly at members' homes; Pres. Nell Coil, WØMSW, 1664 Thomas Ave., St. Paul, Minn.; conducts Pi-Net Tues. 9:00 A.M. CST, 3838 kc., WØKJZ NCS.

Texas

Texas YL Round-Up Net — organized 1954; 77 net members; dues $1.00; Pres. Doris Anderson, K5BNQ, 509 East Elgin, Broken Arrow, Oklahoma; meets on air each Thurs. at 8:00 A.M. CST, 3880 kc. and at 10:00 A.M. CST, 7235 kc. with K5BNQ, NCS; conducts annual get-together in November; requirement for membership is five consecutive check-ins to one of nets.

Women Ham Operators of Texas (Dallas) — organized 1956; meets second Friday monthly at members' homes; dues $1.00; Pres. Hazel Thompson, W5KEC, 7018 Pasadena, Dallas; active in local C. D. and RACES programs.

Women Ham Operators (Ft. Worth) — organized 1957. (Information incomplete.)

Jeanne Pavek, W9OMZ, was awarded her DXCC certificate at the recent National Convention by W1WPO of ARRL Hq. W9OMZ, whose OM is W9FDX and quite a DXer himself, is the only gal in Wisconsin to make DXCC.

West

Portland Roses — organized 1955; approximately 11 members; meets first Monday monthly at members' homes; dues $1.00; Pres. Jean Lucas, W7SPC, 708 S. W. Maplecrest Court, Portland, Oregon; conducts local get-togethers.

Young Ladies Radio Club of San Francisco — a YLRL affiliate; organized 1954; approximately 25 members; dues $4.00 annually, pro-rated quarterly; meets third Friday monthly at members' homes; Pres. Kathleen, MacGillivray, K6HIW, 2183 44th Ave., San Francisco; conducts classes for beginners.

Los Angeles Young Ladies Radio Club — a YLRL affiliate; organized 1946; approximately 75 licensed members; meets second Saturday monthly at Schabers Cafeteria, 720 S. Hill St., Los Angeles; dues $2.00; Pres. Gladys Eastman, W6DXI, 735 Glen Ave., Glendale, Calif.; issues Lads 'N Lassies Certificate; sponsors annual YL-OM Valentine Dinner; club net meets Wed. at 7:00 P.M. PST on 146.1 Mc.

Young Ladies Radio Club of San Diego — a YLRL affiliate; organized 1947; approximately ten members.

Alaska and So. Africa

Polar Amateur Radio Klub of Alaska — organized 1955; meets monthly at members' homes; dues $1.00; 24 members, with membership restricted to Alaskan YLs; Pres. Geraldine Nichols, KL7ALZ, The Alaska Railroad, Anchorage; offers certificate to all amateurs.

South African Women's Radio Club — organized 1952; approximately 100 members; Pres. Pat Woodland, ZS1MU, QRZ, Tiberton Rd., Plumstead, C.P.; publishes *YL Beam* bi-monthly; conducts nets; issues Worked ZS YL certificate; welcomes overseas members.

KEEPING UP WITH THE GIRLS

The 20 meter YL SSBandettes have resumed their net at 10:30 A.M. EST on 14,269 kc. W8RIR says that if sufficient interest is expressed in an afternoon net, one will be started. . . . OM JA8AA looks particularly for YLs on 14,080 kc. daily at 1500 GMT. Takeo has worked 47 YLs in the past few months (item via K6DV). . . . Lenore, W6NAZ, whiled away a slow trip by freighter to KH6 land and back by taking a few turns as the ship's radio operator. . . . While dashing to the transmitter to answer an unexpected call on 75, K5DVE, Lou, collided with a chair in her trailer and broke a toe. . . . OM W4ZMC has WAC-YL certificate No. 93. . . . Evelyn, W6NZP, and her OM left Sept. 17th for Samoa, where they expect to operate 20 meters for two or three months with a KS6 call. . . . W6UHA, assisted by K6BUS and W6AKE, entertained travelers Prince Talal, HZ1TA, and his wife, Princess Mona, of Saudi Arabia, at a luncheon at her home. Maxine reports that her guests were "most interesting and very keen about amateur radio". . . . W5SNL, Fran, of Ardmore, Oklahoma, was voted the title "Mrs. Ardmore of 1957" in the Mrs. America contest. . . . Graduates of W9SJR's code and theory classes presented Bernice with an engraved charm bracelet as a token of their appreciation. . . . Ex-XE1MM, Marina Marquez, has moved from Vera Cruz, Mexico, to Chicago. . . . From the 15th of October to the middle of January 1958, W6GAI expects to be operating maritime mobile aboard the S.S. Flying Enterprise II, commanded by W2ZXM, Captain Kurt Carlsen, during an around the world cruise. Fran promises to QSL 100%. . . . In September KN9JEC left for Addis Ababa, Ethiopia, to assume a post on the staff of the U. S. Embassy there. Barbara reported to Ed Collins of *QST* that Haile Selassie's government encourages amateur radio, and she expects to use a Collins KWM-1 for numerous QSOs. . . . Wedding bells chimed recently for W5CXM, Phyllis, and W5HUX, Don. Ushers at the ceremony were W5HTS and W5VWF, with K5CUY as best man. The guest list included YLs K5ALF, K5BJU, and W5ZPD. . . . We regret to report the death by automobile accident of Mrs. Nettie Grady, KN6VCC, of Hemet, California. A picture of KN6VCC, who was 81 years old, appeared in the May 1957 column.

NEW BOOK

Isle Royale Calling by Helen H. Cloutier, W8GJX. Published by Dodd, Mead & Co., New York. 215 pages. 5½ by 8 inches, cloth cover. Price, $2.75.

This novel should appeal to teen-agers, particularly boys. It follows the publication a few years ago of the author's other teen-age novel designed primarily for girls, *Sim Barton Calls CQ*. Action and humor enliven the story of a Forest Ranger and his three young sons who share interesting experiences in the lonely wilderness of Isle Royale in Michigan. Seventeen-year-old Jim St. Cyr encounters kind but firm parental opposition to his plans to carry his hobby of amateur radio over into a future career.

For her tale, the author draws upon twenty-seven years of experience as an amateur radio operator herself. Licensed in 1929 she became the first woman member of the Quarter Century Wireless Association in 1954. She operates phone and c.w. on several bands, fixed and mobile, from her home in Escanaba, Michigan.

A free-lance writer and photographer, Helen Cloutier has published a variety of articles and has engaged in several

(*Continued on page 206*)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Whew:

What a year *this* has been! Man-made moons, a sunspot record, Asian flu, Milwaukee's Braves—what next? . . .

Hamdom's happy wanderers, the DXpeditioners, must be captivated by volcanic Azores fireworks which began September 29. Well covered in the daily press, a brand new island was born almost overnight near Fayal. Not a bad radio location, either, after things cool off; the newcomer already is some 150 feet above sea level.

Just another chunk of CT2, this one, but such geological outcroppings occur in other regions from time to time. One of these days we may have a truly *new* one for the List — hi! The Azores, by the way, aren't far from the guesstimated vicinity of Plato's Lost Atlantis. With terra not so firma lately we'd better keep an eye on the place.

—•••—

JT1AA makes the largest Mongolian noise since Genghis Khan rode out after DXCC some 750 years ago, so far as DX men are concerned. This station's activation appears to leave Wrangel Island and the Aldabras as the least-worked entities on your ARRL DXCC Countries List. Wrangel QSO possibilities exist; the island is known to be the site of U.S.S.R. meteorological studies. The Aldabras? A different matter.

Cocos Island has its treasure lure, Nepal has its growing tourist trade, and the Vatican has its hopeful accessibility. The Aldabras, however, have nothing to attract attention but the academic significance of unusual geology, flora and fauna. The first DXpedition to reach the place will find an atoll of reddish hue whose vitrified coral limestone sings when walked upon, a flock of strange giant turtles and a wealth of peculiar birds. So disregarded are the Aldabras that their generally accepted population figure of 101 natives derives from a census taken over 25 years ago.

DXpedition departure date, anyone?

—•••—

Time not only flies — it goes *pfft!* The caboose of this particular DX digest confirms that Jeeves and his current sidekick now enter their second decade of monthly "How's" perpetrations. (If we had to sit right down and dream up those 120 cartoon plots all over again — yikes!)

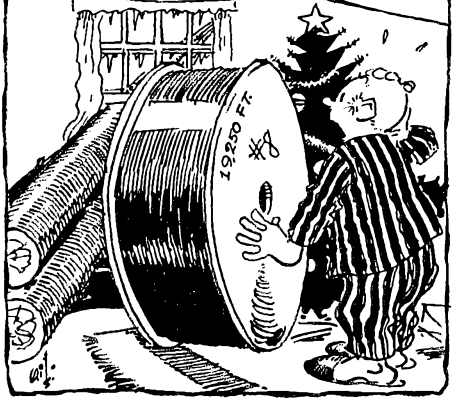
Glancing back a bit, we discern with little pride our biggest booboo: running a pictorial eulogy of DXdom's foxiest hoax, PX1A. (Remember? He was finally triangulated and brought to book in Mexico.) W1CJD's most provocative Jeevesie: the guywire-splice deal in December 1949 *QST*. (No one seemed to care whether or not the poor guy escaped alive, but more than a few inquirers demanded to know how he got into such a fix in the first place.)

Ah well, *nil desperandum*, Jeeves. The first fifty years are the rough ones, they say. Lead on, DX! . . .

What:

The world-wide DX crowd periodically turned s.w.l. under the spell of that celebrated October-launched Muscovite moon. And what a switch to hear some rare DX without a pile-up! For the record, W9JJN hit the "How's" desk first with reports of satellite reception shortly after the beams were spilled. And if you have a fine radio location like W1EKU's quiet Vermont QTH you might have logged "Sput" all the way around its orbit as Vern did more than once (20 Mc.). Good sport! *Now* how about a space job remotely keyed for cross-band two-ways? . . . Between those thrilling 20- and 40-Mc. listening stints the gang managed a smattering of somewhat less spectacular terrestrial DX. First let's check booming

10 phone, whereon antennas are short and the skip is long. Check-off lists are delightfully long, too. For examples, *W1ECH:* CN2AK, CR7IT, GD3UB, HP3FL, SVØWP, 4X4FV, 5As 1TJ 4TT on a new 4-element Gotham. *W2EKU:* DU6IV, HA5DG (28,550) 1 GMT, KA7LB, KH6CV/KW6, UA1BE, UB5s FG UW, VP8BM (425) 21 of Grahamland, VQ6ST (350-450) 12-14, ZC4IP, ZD4s CH CN; heard CT3AN, VR1A (450) 11. *W1PWK:* dates the season's first *real* 28-Mc. breakthrough as early September; since then several WACs, GC2RS, KA2KS, HI7LMQ, IS1ZDT, SVØWS VQ4ASC, 5A3TH were worked; CR5AC, FF8AP, KA5CM, LX1DC, MP4BBL, VQ2GR, VR2BC, UC2KAB, ZD3BFC were heard. *W2VCZ:* EA8BF (255), OE1BB, SVØWQ, UB5KAA (501) YU1AG (330), UA UC2. *K2BZT:* EA8AI 14, OQ5BK 22, VQ4AQ 20, 4X4IX 15, GD UA UB5, Crete. *W3LUD:* KL7BXS. *W4HVH:* ZB1BQ (380) 12, ZC4JU (310) 11, *lones* those 28-Mc. morning sessions. *W4YQB:* leaped to 94/69 via EL2F, FA3OA, HE9LAA, IT1SMO, KG1CH, OQ5AG, TF2WCK, VQ4EF VQ5GJ, ZS8I, FQ8 UC2 VQ6 ZC4, Crete, uses Viking II and 4-el. spinner. *W5ERY:* CT3AE, KA2JO, KG6NAC, KJ6BU, KX6AF, PI1RRS in



*4822 West Berteau Avenue, Chicago 41, Ill.

Holland, VPs 8BF of Grahamland, 9DM, YU1FC, 4X4CW, HA HE LX UC2 ZS8, Crete. *W6ZZ:* HC2AGI, KR6BH, numerous VKs. *K6SRZ:* KX6. *W9FTL:* EA8CC, FO8AC, HC7WK, KW6CA, VE8PB, VQ4RF, YU3JN, ZE6JY, 5A5TE, FP8 HE KA LX on DX-100 and 4-el. rotary for 70 worked. *K9GZK:* KX6, *WØETV:* CN8FV, EA9AZ, HP2TP, KG4AL, CN2 FP 8 5A all 15-17 for a 90/65 total. *W0QGI:* ZS8. *KØGZY:* HP2ON, VP6s UN US, YN1MAC.

10 c.w.'s tide is in for sure. *W1ECH:* OA8B, OQ5GU, UA1AU. *W1PWK:* CX9AJ, F9QV/FC, FA8JO, HA5s AM BW, LZ1WD, UA3AC, 4X4IH; heard CR7LU, FA8RJ, FF8AJ, VS9s AG AI. *K2BZT:* CR6AI (50) 14, VQ2RG (111) 15, CR7. *K6QHC:* JA3AB, UC2AF, ZSs. *W7DJU.* VP7NM. *W8GKB:* CR6CS, OK1KCF. *W8IBX:* OA4BP, ZL4MK, CN8 JA. *K9GZK:* YO2KAB, EI. *WØETV:* JA1CO, OQ5RU, SPs 2AP 8CK, UAs 1AU 1DZ 3AC, VP7NO, YO8MS, YU2DU, 3V8AB, FP8 CR7, Crete, has Viking I and 3-el. beam. *KØBQM:* CX ZS, Euros, heard FO8AC. *KØGZY:* CN8CR, CE4AD, DM3s KCI KML, HA5DU, SPs 2EQ 6EG, CR7 OA OE YU ZSs to near the 50 mark.

15 phone tidings are at flood stage, too. Reversing the line-up, first *KØGJD:* HC1s OW RY, HIs 7LMQ 8RM, HP1LO, KG1HL, TI2RLA, YV5FR, 5A1TA, reached 73/52. *W9FPZ:* EL2F. *K9GZK:* CE3AE, CN8DT, VP5RS. *W6ZZ:* VKs 2AKV 3ALZ 4TN, ZK1BS, ZLs 1HA 2AHZ 4HE 4KE. *K6KYH:* CE2HX, KB6BH, OA4DZ, PJ2AV 3, VR2BC 6, YN1JW 4, now 72/43. *K6SRZ:* W6MIZV/MM on the Pacific-plying *Lurline*. *W4HKJ:* FP8AR. *W4HVH:* nifties VQ6ST (210) 7, long-path ZD6DT (230) 16. *W4ZMC:* two-way s.s.b. with CX5AF, KA2MA, KC4USW, KR6DR, KØHJK/KL7, VP2AZ, ZL3IA. *K4HQD:* HI7LS, KGs 1CB (340) 18, 1JA 4AM, OQ5HM (240) 21, SVØFR. VP6ZX, ZD4BV (200) 21, has all continents on phone with his 50-watter. *K4KHG:* CN8 OY. *W3LUD:* VP6US. *K2IVB:* CN8s GS GX, W2SJL/EL, YN1CJ, 4X4FQ, 5A5TV, VP6: nailed W5EMB, K2SEX and K8EPH all slant-VO1 up north. *K2SIF:* tried his DX-100 and new beam on VPs 2GC 7NM 9DM, 5A1TA and FB8AR. *HR1JH:* CN2AK (375), HC2s AF KU, ZP5CF (230). *KL7CDF:* gorgeous VS4JT.

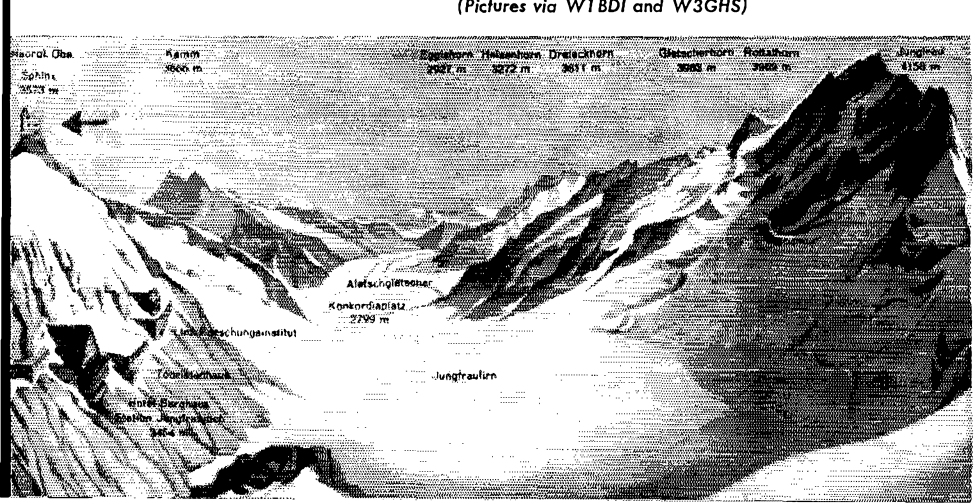
15 c.w. sees almost everybody getting into the act, and W6RZS says that "Fifteen opens up like a hungry clam" out his way. Around the circuit we find, at *WØQGI:* Crete's SVØWQ for No. 196 via his single-2E26 final. *WØIWHW:* CR4AS, EA8BF, FE8AH, FQ8AG and curious VR6EC for 108 bagged. *KØDMY:* cleaned up on CR6AI, EA9BK, F9QV/FC, ET2US, KG6IG of the Bonins, OX3AY, TF3SG, UA9CR, UO5AA, VR1A, ZS3AG, EA8 VR6 UAs UB5s to make it 118. *KØGJD:* GD4VH, HA5BW, OQ5GU, VQ4CC, YO3RF, 9S4CM, ET2. *W9FPZ:* CN2AQ, SVØWP, 4X4FR. *K9GZK:* CXs 1FB 2FD, F2BV (just France), HA8WS, OA4PA, OY1R, SPs 1KAA 3PL 5KAD. TI2LA, W7ZCZ/KL7, WH6CIZ, YU3ET, 9S4CH, finds 17-18 GMT period frightfully fruitful. *K9HCP:* WH6CKK, Europeans. *W8CSK:* hit 51/21 on CEs 2DH 3RE, CN8JX, YU2DU, ZLs 1MQ 2GS 4BO. *W8IBX:* OE8KI, UA9CM. *W8YGR:* F2AN, HC1RY c.w.-to-phone, HE9LAC, OE6HV, SPs 2CX 6EG, UA1DH (55), UB5UW (10), ZB1BJ (60), ZL1FS, CE VP2. *W7GYR:* JA7AD, LA1K. *W7YAQ:* DM2AEO, PJ2ME (40) 1, SM1BSA (30) 21 for Sweden certification, SP5AA, SVØWY (15) 19, UA4IF (50) 3, VQ4GR (90) 21 CN2 CX FP8 ZS. *W6RZS:* PJ5AA (see "Whence"), XW8AG, GD, Crete, Liechtenstein. *W6UQF:* UAØ KFG 2. *W6ZZ:* DU7SV, SP. *K6QHC:* JA2UW, KW6CA. *K6SRZ:* JA. *W4GST:* 77/46 thanks to GD3FXN, SP8CK, TF UO5 9S4 and other Euros, now QRL with college chores. *W4HKJ:* FC FP8 UO5. *K4DRO:* CE9AE of Chilean Antarctica, VQ2RG, UA1 SP ZS, Alands. *K4HMS:* OA4IGY, OEs 5GD 6HV, PZ1AQ, UA9CM, ZL2PG, CN2 SP, Alands. *K4HQD:* OA4FU (75) 3, VK3TX, ZL1NX, GD, heard UA6KOB (25) 18. *K4IEX:* F2BC (125) 21 claiming QTH as Corsica. *W3GRO:* DM2AMN, OA4EY (30) 18, OE5PV, UA4KCE (29) 17, VE8MA, YV5HR (100) 16, OA SP for 44/27. *W3LUD:* concentrates on 21 Mc. because of such game as CN8FM, SP6KBE, SV1AB, TF3KG, VE8OW, ZG4IP, 4X4IM, 9S4DL, CE KW6 PJ HE VQ2 and Crete, likes new triband quad. *W3WPG:* CP1CJ (57) 20, plus Crete. *K2PTS:* HA5BW, ZS6AJO, GD. *K2RQC:* FA9VJ, VP6GC. *K2SIF:* HA1KSA, HI7LMQ, UAs 1AW ØSK, UC2CB, ZB1CR, ZD1PW, 4X4IO, HE SP. *K2UPD:* FA3OA, HA5KBP, LZ1KPZ, OQ5EH, PJ2ME, UB5KIA, UQ2AS, UR2AM, 3V8CY, 5A2TY, CE OHØ SP UC2 VP2, Crete. *W1ETV:* DU6IV, SP6KA, UC2AX, UR2KAA, 9S4CH, DM OA UB5, EA9EH. *HR1JH:* KG4AI (65). *I1ER:* three dozen Yanks in all W/K call areas, JA1CO, VK3ZM. *KL7BPK:* CE LU and PY, a tough path from Alaska. *KL7CDF:* CX6CM.

15 Novice competitors look forward to a DXtraordinary Christmas school vacation on 15 but those books come first. Anyway, KN1CCA's Adventurer and SX-99 caught up with HB9CQ, PAØZV, SM5DX, UO5AA and other Continentals . . . . . WN2HSG's first long-haul trophy is WP4AIL — "I'm now all-out for DX!" . . . . . KN2UPD (now N-less) collected EA8BF, GM3KDT, HB9s J and K, SP6KBE, UA1s BE DZ KAP, YUs 1AG 3KS and ZE6JY to make it 48 Novice countries . . . . . DM2ACM, KL7FAR, WP4AKP, YVs 2AM and 5HL bounced back to the 25-watter and 40-meter doublet of KN3AXR . . . . . KN5AGQ (now K5AGQ) clicked with CE3s DZ RE, HC1LE, KH6AIK/KG6, KZ5KK, VKs 2AM 2QL 3TX 7CH, XE1RM, WH6BXZ, ZLs 1APM 2PG and 3AB. That ZL1APM certainly gets a kick from the WN/KN trade . . . . . From W2EQS (FP8AS): "Trying desperately to scrounge up just a few more contacts to make it an even 800 I even QSYd down into the 15-meter Novice band to answer a CQ by WN3KJN. I imagine he's still getting over the shock of having a rather rare DX station QSY to his frequency and call him! He happened to be the only signal coming through on any band at the time." Get that man's antenna!

20 c.w., the DX world's amazing amalgam of Times Square, the Rose Bowl and the U.N. General Assembly, turns temperamental after fulfilling its fall promise. Our Canadian confederates commence the roll call with *VE1PQ:* JT1AA (60) 0, one MP4KAC (320) 23, UJ8AG (25) 1, UPOL6 (75) 11, VK9XK (70) 11, VR4CW (15) 10, VU2CK (45) 1, 4X4DH (50) 0, hears HL2AM (35) 10, made it 200/173. *VE3EGG:* GD3UB, SP2BE, VP9DB. *VE8OJ:* EA8BF, FB8XX, FF8AC, FK8AS, TI2WR, UN1AE, VS2DW (no change in DXCC List status, by the way). ZK2AD, ZM6AS, ZP5AW, 9S4AZ, had fun in U.S./Canada Contest. *W1BDI:* FY7YE (70) 22-23, 3V8CY (80), Crete. *W1DBA:* CE9AE (20) 1, DM3KEN (45) 23-0, LZ1s AH KPZ, OX3DL (60) 1, PJ2SA (50) 2, SPs 5GX 9EU, SVØWZ (40) 20, TF3AB (40) 20, UAs 1CC 1OE 6UG 9OK (40) 2, UQ2s AH (60) 22, BA (20) 23, VP6AF (15) 23, 4X4II (35) 1, only 12 prints short of DXCC. *W2HMJ:* UI8s KAA (70) 2-3, KAE (42) 3-4, UJ8AF (87) 12, UN1AA (109) 3-4, VSs 1JF (15) 11, 2EV (24) 11, VU2CR (73) 11-12, ZD4CM (28) 21, ZKs 1AS (56) 9-10, 2AD (45) 20, ZM6AS (155) 9-10, now 239 verified, awaits JT1 pasteboard. *W2KAN:* HA5BZ (90) 7. *K2BZT:* nice bag in CR6AI (21) 21, FQ8AP (88) 3, HE9LAC (5) 3,

Our QTH of the month—and there's certainly something DXotic about Valais canton in Switzerland's majestic Alps. HB9CZ thinks so, too, for he regularly sets up HB1CZ/vs in the Sphinx observatory (arrow and right) at the 11,723-foot level of craggy Jungfraujoch. In this year's May Helvetia-22 DX contest Hans scored 209 contacts, including 100 W/K QSOs, from this location using the neat 7-watt portable outfit pictured on page 67 of your November 1956 QST.

(Pictures via W1BDI and W3GHS)



JA3AF (68) 22, KA3JL (40) 11, KW6CA (10) 12, MP4BBE (6) 4, OD5LX (50) 3, UAs 9KJB (42) 0, 9VB (50) 0, 6KJA (75) 11. UF6s AE (40) 2, AM (82) 23, KAC (42) 3, ZB2I (79) 22, ZC4AM (40) 23, 4X4GS (22) 23, FP8 HE JT1 UI8, Crete, a Saba PJ2. *K2QXG:* FK8AS (35) 4; VK9VM (40) 6-7, ZC4BX (20) 15-16, now giving s.s.b. a whirl. *K2RQC:* EA9AP (26) 0, HK3TH (7) 20, KV4AA (80) 20-23. VPs 2LU (10) 21, 6PJ (25). SPs YUs on 150 watts and trapper. *W3CAZ:* CE5DT, CN8HK, CX7CK, JA2AT (20) 13, HK3LS (75) 24, KR6QW (56) 12, OE6RF, SP8HU, VKØAB (32) 13, FP8. *W3IZI:* VPs 5BL 9Y, YU3EI, YV5HL. *W3LUD:* tried new triband quad on CE3CU, HA5DH, SP2CJ, TI2PZ, UA2KAW, UB5KIC, XE1B, YO8CF, ZS3Q, FP8 ZC4, Crete. *W3WYG:* DU7SV (82) 2, F9QV/FC (25) 1, FK8AT (10) 9, JA8AA (60) 11, KG6AAY (60) 11, UAØs FR (25) 11, KAR (80) 2, KJA (60) 11, KQB (90) 10, Caicos VP5AB (60) 2 VS1HU (25) 11 ZM6 FF8 KW6, now 149/135 and setting up at new acreage. *W4GSP:* UB5AQ 6. *W4HKJ:* LU5ZD (90) 0-1, UO5PK (63) 4, enjoyed LABRE and Pan-Am tests. *K4DKO:* OE6HV, UAØOM (who says W4CYY, pleads for an Alabama QSO to complete WAS), VE8PB, FC HE. *K4HQD:* K2QOO VE8. *K4IEX:* SP7HX, UB5KCA (84) 2, YU4ML, ZS8s. *K4IGD:* CN8FI), DM3AEB, EL2P (40), FY7YF (4), HC1HL (105), OE6ED, PJ2ME (14), SP6BY, XE1H, VE8NS (122), 4X4FA (84), FP8 YO, has fun with aeronautical-mobile 20-meter work now and then. *W6KG:* CN8FW, CR7FC (60) 16, Japan's antarctic entry JA1JG (14) 16 at Syowo Base, KS6AD (40) 9, PJ5CA (29) 5 and see "Whence", SVØWR (99) 3, UC2AX (80) 4, VP8CW (25) 8-9, VR3A (40) 4, VU2JA (25) 16, ZP5HK (77) 3-4, FF8 FP8 HE ODS SP ZM6, Caicos VP5, took time out for a jaunt to KH6. *W6RLP:* pegged 152/118 by way of FA8RJ, IS1FIC (43) 15, UL7s FA KAD KBK, UM8KAA, VU2s JG RM, W4FCB/KS4, FQ8 JT1 UI8 UJ8 UN1 ZM6, Crete. *W6RZS:* FO8AG, UR2AK (35) for 120/107, heads daily dogfights over HS1SR (60). *W6UQF:* KA4TF 10-15. *W6ZZ:* CE2DH, FO8s AC (18) 4, AO (330) 4, JA7BO, KA9RQ, KR6AC, OA4FT, SP8AG, UA9KYE (21) 16, UB5KAG, UQ2BA (92) 7, YV5BX, 3V8AB (342) 8, 9S4CH, FF8 FP8 KS6 PJ5 YO, added a baker's dozen Gs to his tremendous British collection. *K6QHC:* JAØGG, VSs 4FC 6AE, DU UAØ. *K6SHJ:* CE1AD, EL2S (40) 2-3, UAs 1AS 3AH 3IX, KV4. *K6SRK:* CN8BK, KA2OZ, KG6AHA, UAs 1CG 3KAA, VE8CA, OE SP, plus a W9 on Prince Edward. *W7DKH:* CE9. *W7FBD:* XZ2TH, ZDs 2DCP 4CM to reach 192, hears ACs 3SQ (21) 5, 4LP (16) 5. *W7GYR:* JAs 1BIQ 2RC 6AO 6MW 8BL. *W7YAQ:* UAØs KAD (90) 7, KKB (40) 7, UI8 ZSs. *W8GKB:* rose to 74 with CN8ID, FP8AP, GD3FBS, HK3s AE JC, KC4USA, UA3EK. *W8IBX:* UA4IF, EA8 FY7 OA. *W8WOJ:* SP3PL, UAs 3KNB 4IF, UB5ND, YO2KAB, 5A2TY, EA8 FK8 KS4, Prince Edward Isle. *W8YGR:* YO6XU (45), SP. *W8ZNH:* HA5DH, 9S4CM (110). *W9FPZ:* Liechtenstein. *W9JJN:* LZ1WD (65) 4, FY7. *W9MAK:* UA1KAP, FC OE OHØ. *KØDMY:* EA6AW, FP8 VR3. *HR1JH:* JAs 1AL 2NX 6MW, KA2UW (43), OE1CZ, UA ZM6. *I1ER:* all Yank call areas save No. 1, *KL7CDF:* must have Alaska's hottest radio spot because of BV1US, CE9AH, DU1CV, FA9VH, FBBs BC ZZ, FK8s AH AS, HAs 1KSA 2MF 5AL 5DR 5KBP 5DQ 7KLZ 8CZ 8WZ, HI8BE, HP1BR, HR1JH, KH6BZZ/KJ6, LZ1s AH AM KBA KNB KPC KSZ UR, LZ2s KAC KBA KBR KDK KST, OA4AQ, OQØVN, PZ1AP, SVØWS, *forty* UB5s, UC2s AD AF AR AU KAB, UD6KAB, UF6AE, UG6AB, UH8s BA KAA, UJ8KAA, UL7s DA GN HB KAA, UO5PW, UP2AT, UPOL7, VK9s AT HT NM, VKØs AS CJ, VQ4s AQ GP KRL, VR4JB, VS1s BB GL GX GY HJ, VS6DX, XZ2AD, XW8AB, YV4AU, ZC5AL, ZL5AA of New Zealand's antarctic, 4X4s CJ HK IL, now at the 135-country mark after 4.5 months of operation. *KL7BPK:* KA8RA (72), LU VK ZL. *KH6CMM:* K2ILQ and K4AQL both slant-KG6, KA4AS, KC4USA, KP6AL, KR6RY, UA9KCE, UAØs JF KDA KOA, VSs 1HX 6DV, VP8CC, XE1AX . . . . . CR8AC (49) 12, 10, ZD8JP (21) 19-21, CR10AA, FW8AA, FB8CD of the Comoros and VQ9HAY eluded W2HMJ's big net . . . . . The c.w. trend to 20's high end is noticeable in this month's mail sack — but there are an awful lot of 14-Mc. beams painstakingly pruned and tuned for the low side.

20 phone's share in this monthly "How's" Bandwagon trek could stand enlargement. But for the following reports we'd draw a blank — *K2BZT:* KS6AF (225) 12, SP7HX 2, SVØWQ of Crete fame. *K2QXG:* tuned around one morning with the b.f.o. on and logged s.s.b. proponents KA2NY, KC4s USA USH, KG6NAA, KH6s AHQ AW, KL7SLA, KR6s IL SW, VKs and ZLs. *W4HKJ:* HKØAI (170) 20, 3A2BF (185) 5. *W6OBH:* UB5WF, VE3AHU/SU, ZB2I. *K6KYH:* CN8FQ 1, HH5GR 6, KR6CP 16, VK9YT (180) 14, VSs 1EW 1HC 6AE 14-15. *W8VIN:* wrapped his s.s.b. HT-32 around AP2BP 1, FP8AR (W2HTI), OH2OJ/OHØ, SVØWE of Rhodes 18-20, VR2BC, KS6, wants to work 100 on side band, reports Canberra's VK1BP pouring in on 2.5 watts of s.s.b., hears that MP4KAC is putting an HT-33 on the air, has 227/214 all told. *WØQGI:* s.s.b.er KAØSC (305) on Iwo for 139 on phone. *HR1JH:* ZC4CN (160). *KL7CDF:* BV1US, KC6UZ, KG6IG of Bonins-Volcanoes, KX6s BQ BU, VR2s CV DA DC

PJ2AX is a familiar bandmark on 21 and 28 Mc. with his Globe Champion, HRO-50T/DB-23 and Globe Spanner spinner. Pop also shoots for 6- and 2-meter "firsts" from San Nicholas and he frequently splashes about in a home-built speedboat when DX is slow.
(Photo via K2LHW)

. . . . . Our September DXhortation re single-side-band reports paid off moderately. Let's have more!

40 c.w. has interesting possibilities this time of year although digging deep between the locals is an auricular ordeal. Here and there, luck at *W1ETV:* VP9DL, *W2HUG:* IT1AGA, OK1MB, LZ1KRU, TI2VA, VE8MX, YO2BA, YU3DBC, KH6s PYs VKs, heard KR6AK, VE3AHU/SU, opines that "October conditions seemed poorer than July and August." *W2JBL:* OK3AL (15), TI2LA (13), VE8s OJ PB, personally visited ARRL's W1WPO for DXCC certification. *K2PTS:* DM2AGB, OK1GV, PY, other Euros. *W3GRO:* VP9MM (36) 21. *K4HMS:* LU1ZE of Argentina's far south. *K5BGV:* broke the ice with CO2QR. *W6UQF:* JAs 8AE 14, 9BB 13, KL7KK in the Pribilofs 9, KR6, heard CE9AH 9. *K6QHC:* DU7SV, JAs 1AEA 1EF 1MQ 3AEB. *K6RGO:* JAs 2UW 3TT 7IW on a mere but potent AT-1. *K6SRZ:* JA4HM c.w.-to-s.s.b., VE8OW, XEØRDD/m, XE2FB, other JAs, KR6. *W7DJU:* DU VKs. *W8GKB:* heard UB5KF. *W9FPZ:* SM8AIG/MM, OK. *4X4CJ:* logged W6s HIZ MOJ RNC UF, K6s HQF JBP KMR from 14 to 15 GMT, calls CQ W6 on 7020 kc. every Saturday around that time with new multiband vertical radiator . . . . . Novice Fives like 40; here's KN5LNN hooking WV4BW 10 with Globe Scout, S-85 and folded dipole, and KN5IFT grabbing KH6BLP and XE2F . . . . . Forty phone helped K6QHC to DU7SV and JA1EF, while K6RGO vocalized with KH6CAG by cathode-modulating his AT-1 . . . . . W7DJU raised ZL4IE on **80** c.w. and that's about it for late fall 3.5-Mc. contribs. KN2LBZ (now K2LBZ) was pleasantly surprised to receive an LZ1KNV s.w.l. report for his QSOs with WNs 1EGX and 9PSB on 3710 kc. in May. Don't sell OM Eighty short!

160 c.w. DX efforts become systemized this month by announcement of 1957-'58 160-Meter DX Test dates as chosen by W1BB and friends. Special efforts will be made for transoceanic 1.8-Mc. contracts between 0500 and 0730 GMT on the following dates: December 9th and 23rd, January 6th and 20th, February 10th and 24th. Stew writes, "Most W/K/VEs will operate in the 1800-1825-kc. segment (1975-2000 west of the Mississippi) and most DX will be found between 1800 and 1900 kc., especially 1800-1835. . . . It is suggested that W/K/VE stations call CQ DX TEST during the first five minutes of each hour, the third five-minute period, etc., listening in the alternate priods. This procedure applies only when no DX is being heard or worked — when the signals are coming through, work them regardless of timing. . . . The second W/VE WAC on 160 is yet to be made [W1BB has No. 1. — Ed.]. You'll find DX on 160 challenging and very interesting. Static, BC harmonics, Loran, QRM, etc., require patience, perseverance, a top-notch station and first-class operating techniques." These annual affairs — not contests, mind you — have adorned our DX scene since 1932 and all amateurs are invited to participate. W1BB will appreciate notification of *your* results . . . . . "One-sixty was a great surprise, 22 QSOs with 16 different stations," writes FP8AS (W2EQS) of his September St. Pierre session. "They were WIs BB JNO LYV PPN VDB WY, W2s QHH UWD, W3RGQ, W4KVM/3, W8s ANO GDQ KIX, W9s NH PNE and K9DCF. All stations heard on 160 were worked. Too bad no Europeans were on during the morning of September 16th as conditions were terrific — not even one burst of static. W9PNE peaked at RST579,

a tremendous signal!" . . . . . KH6CMM desires U. S. A. schedules with stations in the 1975-2000-kc. range, cross-band as necessary. Any candidates?

Where:

Oceania — ZM6AS's present assignee, Hip Fenton, desires it clarified that the call's previous holder, Les Reid, now is in New Zealand. Also, that surface mail reaches Paleolo almost as expeditiously as fortnightly air mail . . . . . W4TAJ commendably offered QSL-chores assistance to VR6TC. If the deal goes through we'll clew you in . . . . . From KH6CMM: KB6AQ becomes KB6AQ/KH6 on Lanai for the present, intending to catch up on Canton QSL matters directly . . . . . Reference our July listing, ZK1BS tells W8EKW that he also replies to QSLs received via his *Call Book* address . . . . . VS4JT's QSL output averages around 300 per month, 500 at peak. At the end of each month his backlog is cleared. "If I receive a card with return postage my QSL is returned in the appropriate fashion." . . . . . WGDXC has it that a 15-cent U. S. stamp accompanying your QSL to VK9AD will earn reply by air.

Africa — Old French Togoland now is the Republic of Togo, and Uncle Sam's P. O. would appreciate that your mail be addressed accordingly. No specification of an FD-supplanting prefix as yet . . . . . VE3BQL/SU, via W1YBH, assures that "100-per-cent QSL will be the policy for all stations worked." . . . . . "I suppose that most DX countries adopt the system of waiting for cards before sending them, as I do now," comments ZD6RM. True — but it's an economic peck-order proposition; ZD6s can wait out W/K cards confidently but not, say, ZD7 or ZD8 QSLs! . . . . . Through W7FBD, EL1R promises a fat shipment of outstanding QSLs immediately if not sooner.

Europe — From G6LX, who has been doing his best to keep the 3A2 QSL business solvent: "Phonies again are at work and many QSLs are coming in to the Monaco government or to 3A2AH and myself, for stations that are unlicensed or inactive." G6LX now suggests that all cards for 3A2s be sent via 3A2AH who will ensure that QSLs for genuine Monaco stations are relayed and that cards for ungoodies are returned to senders . . . . . Several HA5s have specified P. O. Box 185, Budapest 4, as QSL ingress. You might give this address a try in cases of unavailable Hungarian QTH . . . . . As you may know, operators of Russian and most satellite "K" club stations are assigned serial numbers. W6RLP and others stress that the inclusion of such op-serials on your QSLs to these stations will enhance your chances of speedy reply.

Asia — W6UF advises that OK1MB is QSL manager for YK1AT. Cards should go via the CAV (Czechoslovakia) bureau marked for Beda's attention . . . . . After 21 recent mailings ZC4IP tells WGDXC informants that his QSL hook is clear . . . . . Hint-hint from KR6BW: "Air mail takes about six days to reach Okinawa, surface mail from three to six weeks." . . . . . "IRCs are of no use to me here," writes AP2BP from Hazara. "The local post office does not recognize them. Maybe if I sent them on to Karachi or some other civilized place they could be used, but not here."

Hereabouts — St. Pierre QSLs are sagging mailsacks from Turkey to Albuquerque upon conclusion of the FP8 tourist season. K2CPR (FP8AA) fully accounted for his 1020 July QSOs, finding it necessary to mail about two dozen W/K-destined cards via bureaus for lack of *Call Book* listings . . . . . W2EQS (FP8AS) whipped 792 QSLs into circulation via bureau routes except where s.a.s.e. and/or IRCs occasioned direct replies . . . . . "If you want to see some high-speed QSLing try HP1GP, KA2KS, OA4DW, OQ5EI and 5A3TH," enthuses W1PWK. "All came through within one week of QSO, 5A3TH in three days. *Man*, do we need more of *these* types!" . . . . . KH6CMM is given to understand that a large batch of VP8CC confirmations will depart for the outside world next month. Summertime down south is mail-boat time — got all *your* VP8, LU-Z, CE9, KC4, etc., QSLs on the road? . . . . . W4FCB/KS4's QSL credo is clear enough: "Mail boats are slow coming and going down here so it will take a long time to handle the QSL situation. I will QSL W/K/VE stations after receiving their cards, DX stations as soon as possible." . . . . . A bumper QTH crop comes to us through the good offices of W1s BDI EKU UED VG WPO YBH, W2s HMJ JBL SUC, K2QXG, W3s SOH WPG, W4s HKJ PNK, K4s IEX IGD, W5ERY, W6s QNA RLP RZS ZZ, W7s FBD YAQ, W8s CSK EKW FPR YGR YIN, W9s JJN MFY, K9AXE, W6QGI, KØDMY, HI8BE, HR1JH, KL7CDF, OH2XK, VE1PQ; clubs ISWL, JDXRC, MARTS, NCDXC, NNRC, SCDXC, WGDXC, WVDXC and WIA:

AC4AX (to VU2AX)
AP2PR (via AP2AD)
CE9AE, E. Ossa, Lyon 3296, Santiago, Chile
CN8GR, S. Allen, Det. Alpha, VP-5, FPO, New York, N. Y.
CN8ID (to K2DNW)
CN8IF (to W2SGC)
CR8AC, 32 Vasco da Gama, Goa, Portuguese India
F2AN, J. D'Arsonval, 13 Pl. Leon-Bourgeois, nr. Melon, nr. Reims, France
F9LT/MM (via F9TB)
FG7XG, c/o G. Serge, 4074 Scotten, Detroit 10, Mich.
HA5DG, P. O. Box 185, Budapest 4, Hungary
HC1HL, P. O. Box 691, Quito, Ecuador
HE9LAC, Schaan, Liechtenstein
HK6AI, Victor Abrahams, Isla San Andres, Colombia
ex-JZ8PC, E. Walsh, c/o Decca Navigator, Wymondley House, Little Wymondley, Herts., England
K2UPD/VE1, P.E.I. (to K2UPD)
KA2DE, D. Eaton, 35th TAC Hosp., APO 328, San Francisco, Calif.
KA8JT, 39th Air Divn., APO 919, San Francisco, Calif.
ex-KC6RK, Fr. R. J. Keck, S. J., Woodstock, Md.
KG1AJ (to K5JCE)

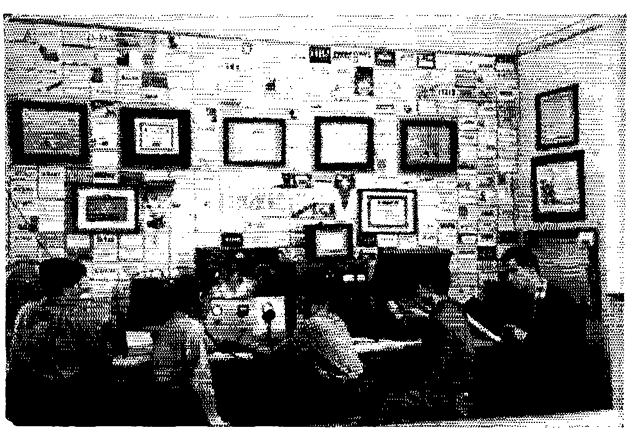
KOREA OFF BAN LIST

Effective October 18, 1957, FCC-licensed amateurs are free to engage in communications with amateurs in Korea (HL prefix).

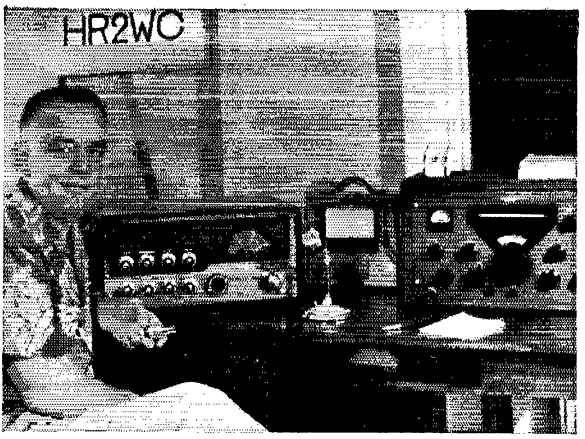
Under this country's treaty obligations and on formal notice received from other nations, FCC-licensed amateurs are warned to engage in no communications with stations in the countries listed below. This is in accordance with FCC Public Notice of December 21, 1950 (p. 23, Feb., 1951 *QST*), and as since revised.

Cambodia (FI8, XU), Indonesia (PK, YB-YH), Iran (EP-EQ), and Vietnam (FI8, XV, 3W).

For those whose *QST* files do not go back to 1950 we will gladly supply, upon request, literature describing the circumstances of this prohibition.



Roumanian club-collective station YO2KAC of Timisoara is well manned and widely worked on DX bands. An e.c.o.-f.d.-p.a. transmitter runs 80 watts c.w. and 60 watts phone, the antenna is a long-wire, and that receiver you'll recognize as a BC-348. YO2KAC's staff ranges in age from 12 to 16 years and are all out to add more trophies to that impressive wall display.



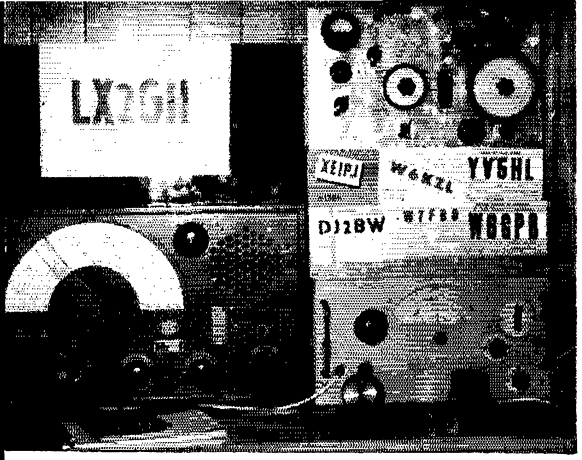
One doesn't work much s.s.b. these days without encountering HR2WC of La Lima. That HT-32 drives an out-of-view final, a 75A-3 receives, and doublet skyhooks are preferred. Formerly W6EWC for 27 years, Wayne busies himself as radio engineer for Tropical Radio and now approaches the two-way side-band 100-country mark.

ex-KH6BZZ/KJ6 (to KJ6BU)
KH6CNY, W. D. Rourke, Jr., ex-K2GNY (via KH6BA)
KJ6BU, APO 105, San Francisco, Calif.
KL7CCF, J. Mundy, Federal Electric, Box 487, Fairbanks, Alaska
KL7CEQ, W. Beakley (via KL7CCF)
KR6BW, F. A. Reed, Jr., 51st Comm. Sqdn., APO 235, San Francisco, Calif.
KR6LB, H. LaBritto, 6318th A&E Sqdn., APO 239, San Francisco, Calif.
KV4BY, P. O. Box 788, Frederiksted, St. Croix, V. I.
LU5ZD (via RCA)
LZ1KBA, Box 547, Sofia, Bulgaria
OA4IGY, Tracking Station, U. S. Embassy, Lima, Peru
OX3DL (via EDR)
PJ5s AA AC, L. Varney (G5RV), Box 3964, Caracas, Venezuela
PY3AOF, E. Grochau, Vitor Barreto 2958, Canoas, Rio Grande do Sul, Brazil
SM8FK (to SM5FK)
SV0WE, Box 564, Athens, Greece
UB5DW, A. Chicko, Box 58, Kiev 1, Ukrainian S.S.R.
VE3BQL/SU, Sgt. E. C. Veale, 56th Canadian Signal Sqdn., CAPO 5049, UNEF (or via VE3QE)
VE8NS, Alert Weather Stn., c/o Eastern Arctic Patrol, RMS, Ottawa, Ont., Canada
ex-VE8OJ, D. Brabner, VE7CQ, 2890 W. 11th Ave., Vancouver, B. C., Canada
VK9DX, Rabaul Amateur Radio Club, Park St., Rabaul, T.N.G.
ex-VO6N (to VO2NA)
VP5AB, c/o PAA, South Caicos, B.W.I.
VP8BM (via RSGB)
VP9DB (to W1EOL)
VP9DL, J. R. Swainson, P. O. Box 275, Hamilton, Bermuda
VQ2VG, V. Gough, Box 21, Pvt. Bag, Nchanga Mine Club, Chingola, No. Rhodesia
VQ3GC, N. Jackson, OIC, Songea Airport, Songea, Tanganyika
VQ6ST, S. W. Townsend, Collector of Customs and Excise, Berbera, British Somaliland
VR4CW, Box 49, Honiara, British Solomons
VS1HZ, P. H. Rich, 4 Court Rd., Serangoon Estates, Singapore 19
ex-VS6DA, S. Green, 18 Gloucester Rd., Newbury, Berks., England
VS6DV (via HKARTS)
VS6DX (via HKARTS)
ex-VS9AS-G3ANK, VK3AKQ, 5 Olive Grove, Pascoe Vale, Melbourne, Vic., Australia
W4FCB/KS4, W. T. McClain, Box 235, Tamiami Stn., Miami 44, Fla.
WG6AHI, D. M. Stevenson, Lot No. 2112A, Guam, M. I.
WG6AHJ, W. W. Repper, PH-73, Fleming Hts., Guam, M. I.
YK1AT (see text preceding)
YO2KAB, A. Sahleanu, Str. Bogdanestilov 11, Timisoara, Roumania
YO2KAC, G. Pataky, Pioneer's Palace, Timisoara, Roumania
YV5ABH (via RCV)
ex-ZB2R, G. C. Wallis, 91 Swiss Ave., Chelmsford, Essex, England
ZC4CD, C. Barrett, c/o Police Hq., Paphos, Cyprus
ex-ZC4FB, E. H. Ross, FIDS, via Port Stanley, Falklands
ex-ZC4II (G3III, via RSGB)
ZD1NWW (to ZD2NWW)
ZD2WCP (via ZD2DCP)
ZD4CP, R. F. Oxley, P. O. Box 971, Accra, Ghana
ZS3AG (to DJ3KP)
3A2BT (G3FPK or via 3A2AH)
3V8CY, Box 303, Tunis, Tunisia
ex-5A2TL (to F7AX)

Whence:

Africa — VE3BQL/SU fires up from Gaza Strip, replacing popular VE3AHU/SU. "Fifteen- and 20-meter phone and c.w. traffic skeds with Canada and the U. S. A. will be maintained, as well as DX sessions. All stations are requested not to call during traffic contacts." VE3BQL/SU looks forward to a solid year of Levant activity . . . . . ZD6RM of Blantyre collected his DXCC credentials from W1WPO & Co. after rolling up a 165/122 record. "As you may guess, it is easy meat working DX with a call like mine, but collecting the cards is an entirely different story." ZD6RM, formerly GM3EAK, states that he works phone and c.w. on 3.5 through 28 Mc., mostly phone on favorites 21 and 28 Mc.; neighbor ZD6JL likes phone and c.w. on 7, 14 and 28 Mc., mostly phone on 10 meters, but anticipates more 15-meter A3 action; and friend ZD6DT prefers phone on 14 through 28 Mc. Phased rotaries are spun at all three stations . . . . . W3SOH finds that ZD1NWW was transferred back to Lagos and becomes a Two once more. ZD2NWW often hits 20 c.w. around 1800–1900 GMT. Sierra Leone actives include ZD1s PW on 10 and 15 meters, AE on 10 phone . . . . . CN8ML, of WAK (Worked All Keels) fame, is twisting knobs as F9GN. W1BDI reports that another Keel, HB9P, paid a fall visit Stateside . . . . . Busy ZS4PB is only eleven tickets shy of DXCC membership with 120 worked. Peter's Vryburg 90-watt 814 rig and SX-42 inhaler already have scored WBE. You'll hear a lot from ZS4PB with 10- and 15-meter African paths in such fine fettle . . . . . WGDXC sources hold that VQ9HAY prospects will brighten with the arrival of a new 75-watt sender . . . . . FE8AK intends to keep his 25-watter and 2-element whirler active in the Cameroons well into 1958. SCDXC informants find him most workable on 21 Mc. during week ends around 2300 GMT.

Asia — CR8s AC and AD vigorously stir the DX stew from Goa airport on 20 meters. W2HMJ learns they're CR4s AL and AG using a 14,049-kc. rock supplied by W6YY . . . . . W3SOH has it that revised ham regs in Iraq will result in the issuance of new HN-prefixed call signs . . . . . "YK1AT will be found every morning on the low edge of the 14-Mc. band, 0400–0600 GMT. His power is 500 watts." This from a CAV (Czechoslovakia) release. Like JT1AA, Bohous is a roving Czech with a hot electronic bug — and a distinctive note . . . . . W6RLP, and lines from OK1JX to W1BDI, imply that JT1AA will be available from the M.P.R. at least until September of next year. Ludvik has an aversion to the "listen for my phone" genre and, unfamiliar with English to begin with, may cling to c.w. for some time to come . . . . . W6PWQ expects to sign KR6BW for several years on 20, 15 and 10 meters, voice and code, plus some 40-meter c.w. The XYL will help with the pitch. "QRM from commercial stations here is quite bad at times and makes operating on 40 almost impossible." . . . . . AP2BP writes, "Today I received another dollar bill for a QSL and I'm beginning to wonder whether I am in fact still an amateur. . . . I'm afraid I'm old-fashioned enough to view this as charity, especially when the value is about three times that of postage required." Bob, who is ex-GW3ECH-SU1VL, is among the majority of overseas hams who understandably object to being treated as mendicants . . . . . MARTS's *Malayan Radio Amateur* reports that C3WH is a college proctor in south China; also that VS2s BD EC EN and EP have left Malaya . . . . . Club Asian diggings: (WGDXC) VS1HX is expected to follow in VS1HJ/VS9's Maldives footsteps. . . . (SCDXC) At this



More than a few North American DXers owe their Luxembourg DXCC credits to the interesting nonprofessional layout at LX2GH. This Esch-sur-Alzette installation, active on 10, 15 and 20, is one of those rare c.w. exceptions to the current LX phone rule. *(Photo via W1VG)*

time XW8 is the only Asian element available for REF's DUF-4 certification.

Oceania — ZK2AB returns to Niue this month from his New Zealand holiday and W6ZEN hears that Charles will display a rebuilt transmitter with heftier sock and modulation. ZL1PA assisted in the modifications and ZK2AB also plans the addition of beam antennae for 21- and 28-Mc. business . . . . . VR2BC, ex-VP1GG, closes in on DXCC with a 110/87 tally and still needs Del., Me., N. H. and N. Dak. for WAS on each of 21 and 28 Mc. "The trip to Rotuma will come off in the next few months, delayed by the stranding of one of our boats on a reef. Gear will be taken for 10, 15 and 20 meters. A trip to VR5 also is in prospect but not in 'final date' shape as yet. . . . VR2s BC and DA got pats on the back for helping in some Pitcairn Island SOS doings a few weeks back." Greg and W6UOU had a dandy transcoffee QSO during Ted's recent Samoa DXcursion, and W6HS also dropped in . . . . . KH6s CMM and CNU keep their heads together, bent on Johnston Island action next month. KH6CMM describes the tribulations of Hawaiian hams who try to hook a little rare stuff on the side. The swarms of heckling W/K/VEs are much more bemusing than amusing . . . . . K2QXG says that briefie KS6AF is about to wrap it up.

Europe — In this year's PACC DX Contest, sponsored by VERON (Netherlands) it was PAØLZ by a mile on c.w., PAØHBO by several lengths on phone. C.w. highs by continent: DL2PJ, VE1EK, LU6DXJ, FA9VN, 3W8AA (!) and ZL4CK. No North American phone entries showed . . . . . W1BDI learns that mariner VP2VB is readying a 50-foot diesel yawl in the British Isles for another solo try at the Magellan trick . . . . . SVØWQ put Crete on the 14-Mc. October menu, receiving repeated entreaties to serve Rhodes with the cuisine. W8NGO describes the SVØWQ chef's special as a 500-watter feeding an end-fed 135-foot wire about 15 feet high . . . . . G6LX adds his amen to our September s.s.b. prologue which agitated for a higher competitive spirit among suppressed-carrier protagonists . . . . . HB9RS joined the 1957 DX pilgrimage to Liechtenstein as HB1RS/FL in October. Max catered mainly to 14-, 21- and 28-Mc. voice customers, according to W6ZEN . . . . . OH2s XK and YV plan to conclude their Alands visit on the 2nd of this month after giving OH2YV's 150-watter quite a workout on 3.5 through 28 Mc., phone and c.w. A Geloso sender and receiver also are on hand, plus the clipper-filter unit described by W1CUT in the December 1956 *QST* . . . . . G3FPK made his successful October 3A2BT sortie with a flexible c.w.-n.b.f.m. 100-watter . . . . . Don't forget that Czech DX contest which runs for 12 hours beginning 0000 GMT on the 8th of this month, gang. It's a c.w.-only affair in which the bands 80 through 10 (less 11) meters are to be used. Call "CQ TEST OK" and swap the customary 579001, 449002, etc. exchanges. Logs go to Czechoslovak Central Radio Club, Box 69, Prague 1 . . . . . Yank call-area toppers in the 1956-'57 DARC (Germany) WAE DX Contest, c.w. section, are Ws IJYH 2WZ 3FYS 4TM 5KC 6YMD 7PQE 8RQ 9ZTD and ØIUB, with VE3IR the Canadian leader. Ws 1FZ and 8NWO headed the sparse North American phone turnout. DL1FF scampered off with homeland c.w. honors, while OK1FF, W2WZ, PY2OE, CR6AI, OD5LX and VK2GW scored continental highs.

Hereabouts — DX stations hungering for South Dakota QSOs are hereby informed that WarWhoop, an organization of S. Dak. net control operators, is sponsoring a South Dakota DX Day for January 24-26, 1958. DXdom's juiciest U. S. Zeroes will infest the lower 25 kc. of each band on c.w., and the lower 25 kc. of each phone subband on 80, 40, 20, 15 and 10 meters from 2300 GMT on the 24th to 2300 on the 26th. South Dakota WØ KØs will name their state on CQs and will hearken for weakies calling CQ South Dakota. ARRL Dakota Division Director WØPHR and member L. R. Lauritzen are behind this contribution to the overseas WAS cause . . . . . WØLNI, Sioux City, Ia., Central High, scheduled a similar enterprise for late November. Club advisor WØDSP writes that a Viking-500 was moved across the border into South Dakota for the purpose of supplying overseas WAS-hunters with a batch of WØLNI/Ø pasteboards. WØDSP also mentions that his gang of DX diggers quadrupled their 1955 ARRL DX Contest score in this year's scuffle . . . . . W4FCB/KS4 maintains CAA gear on Swan Isle and expects to finish the assignment this month or next. While mostly on 20 Mac hopes to hit all bands 3.5 through 28 Mc. before leaving (no authorization for 160). "It seems to me that some hams would cut their granny's throat for a new country and I have pleaded with certain DX hogs to no avail. So I've decided to put outstanding offenders on a list and refuse to QSO them while I'm here." W4FCB/KS4's coolness under fire moved W6RLP to dub Mac the "Smartest DX op I've heard so far." . . . . . More commentary on the status of the swine market from here and there: "Lids surely take the fun out of DX chasing these days, calling CQs on the frequency, calling and calling while the rare one is on, *ad nauseam*." — *W8NGO* . . . . . "Would have caught VU2CR's full QTH if the boys with itchy fingers hadn't climbed on before we finished. I'm making a list of fellows who 'can't wait' and I'll make sure I *don't* QSO them." — *HI8BE*. . . . "Operating courtesy on 14 Mc. certainly doesn't compare with that on 21 Mc. It's hard to complete a QSO on 20 meters

(Continued on page 164)

3rd European (WAE) DX Contest

Via DX Manager DL7AA, Germany's DARC invites worldwide participation in its 1958 WAEDC Contest, scheduled for (c.w.) 1800 Jan. 3 to 2400 Jan. 5, and (phone) the same hours April 4-6, all times GMT. Europeans will contact non-Europeans on 80-40-20-15-10 c.w. and 20-15-10 phone, trading the usual five- and six-digit control numbers, RST001, RST002, etc. The general call is CQ WAE. Each station may be worked once per band in each contest section. SCORING (for non-European entries): Each completed contact counts one point, except that 3.5-Mc. exchanges count two points. *Additional points* can be earned (on c.w. only) by transmitting "QSO reports" to European stations, these designated as "QTC" at one point each. Each QTC consists of three parts: (1) time in GMT, (2) station call, and (3) QSO number, of any previous WAE Test QSO. For example, W9XXX lands DL7AA and earns a contact point; W9XXX previously worked G5RI at 1207 for G5RI's 86th Test QSO. So, besides the QSO point for his DL7AA contact, W9XXX garners another point if he sends 1207/G5RI/086 to DL7AA. As many as ten QTCs can be sent per QSO but each QTC can be sent but once. Therefore, the more QSOs you make, the more you have available to parlay into additional points. *Multipliers*, which stem from DARC's WAE Country List, are as follows: CT1 CT2 DL/DJ/DM EA EA6 EI F FC G GC GD GI GM GW HA HB HE HV I IS IT LA LX LZ M1 OE OH OHØ OK ON OY OZ PA PX SM SP SV TF UA1-6 UB UC UN UO UP UQ UR YO YU ZA ZB1 ZB2 3A, GM Shetland, LA/P Jan Mayen, LA/P Spitzbergen, LA/P Bear Island, SV Crete, SV Rhodes, TA/Europe, UA Franz Josef Land. *For final score*, multiply combined QSO and QTC points by the combined numbers of multipliers collected on all bands. *Awards* will be given to the highest scoring amateur in his continent, country or district; where there is sufficient participation, second and third place awards will also be considered. For DARC log forms, send one IRC (airmail, five IRCs), stating the number of sheets needed, to DARC DX Bureau, Fuchsienweg 51, Berlin-Rudow, Germany. After the shindig, mail your contest logs to the same address, making sure c.w. reports are postmarked by Feb. 28 and phones by May 31.

Correspondence From Members-

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

SPUTNIK . . .

RFD #8, Box 743-B
Charleston, S. C.

Editor, *QST:*

I hope I wasn't the only ham to get one thrill after another while that out-of-this-world UA/Space Mobile was going 'round on 20.005 Mc. The DXer in me did a double-take with my discovery I could hear it for up to 40 minutes at a stretch, an 11,000-mile trip that meant at least 5,500-mile DX. And what a kick to hear the signal come up out of the noise with that badly scattered sound, then in a few minutes bloom into a pretty peachy T9 tone. Oops, I forgot the key clicks! When overheard, the making contacts resembled those of an earthbound ham I know down the street.

While listening to several millions of those beeps, some thoughts occurred about getting more out of the next satellite. Besides a good receiver for all possible frequencies, have something around to help locate exact channels quickly. Obtain a tape recorder of reliable speed to preserve the reception for later detailed study and talk the correct time right onto the tape for reference. And, for accurate Doppler observation, arrange for a reference signal of crystal-standard stability with which to beat the incoming signal. Then you know any drift is Doppler, assuming the satellite has a perfect frequency control.

I have some beautiful tapes showing transmission oddities, but I'm coming back for more!

— *David W. Jefferies, W4ZQ/W8PA*

. . . AND A DONKEY

448 Hazel St.
Lyndhurst, N. J.

Editor, *QST:*

This is directed to the fool that loaded up on 20.005 Mc. Oct. 7 at about 5:28 P.M. EDST, and let go with such lidisms as "This is the moon speaking," sending the safety signal, and signing UA3ABD, etc. I hope that donkey realizes that he is on tapes all across the country.

— *Dave Harris, K2RKH*

CQ-CQ-CQ-CQ

Box 101, MCSC
Albany, Georgia

Editor, *QST:*

Please, please fellows, stop those cotton-pickin', long-winded CQ calls. You *must stop* and *listen* once in a while and see if someone is answering you. So it would be much better to make short calls and listen more. Let me cite you an example: The other night I was tuning the 40-meter Novice band looking for a rag chew with someone. I heard a KN9 calling CQ GA. I thought I would give him his new state and have a rag chew at the same time but would you believe it, he called CQ GA 76 times and signed his call about 19 times before he signed K. That was before I started counting them. So I called him 8 times, signed my call 4 times and K. I listened and there he was calling CQ GA again — good gosh! So I checked my v.f.o. setting and patiently waited until he signed again, called him, and there he was still calling CQ GA.

Apparently he never did move his receiver setting. So I gave up. Then I heard another KN9 calling CQ near the frequency I was on. He called 6 times, signed 4 times, then K. I gave him a call and we had a rag chew. Honestly men, something must be done.

I enjoy working in the Novice part of the band, but golly I get exasperated when half my operating time is spent listening to a bunch of jokers calling CQ.

— *Merle D. Fleming, K4KVY*

60 DB. OVER S9!

1000 Overlook Avenue
Chattanooga, Tennessee

Editor, *QST:*

Webster's definition of "extreme" being what it is I would assume an "extremely strong signal" is a real doozie, perhaps cracking the plaster and knocking the membership certificate off the wall. At least, I would say that greater strength couldn't be tolerated and we would shut the box off and get under the bed until the skip changed.

Nevertheless, it is common to give and receive reports of 40 to 50 over 9 and if you tell some fellow he is putting in an S-7 (moderately strong) signal he goes outside to see what happened to his antenna.

Now, you can't supply new scales for all the screwy S-meters so let's give up that outmoded chart in the log book. Instead, I recommend that we officially adopt the reporting system originated several years ago by the Confederate Signal Corps: "You are loud and clear, Old Man." (If he isn't loud and clear you wouldn't bother to work him.)

For those meticulous persons who insist upon a graduated scale ranging from non-existence to an overpowering and terrifying level of sound presaging total destruction of the universe we might adopt a set of indices something like that shown below. In using this system you apply the reports yourself, based upon the results obtained from operation of the transmitter. You are spared the embarrassment of having your reports revealed to everybody who happens to be listening and it might promote honesty in putting the dope in the log.

S-1 Transmitter under construction; will be on air in two weeks.
S-2 Tubes light up, but no plate current.
S-3 Some r.f. in tank but no soup in antenna.
S-4 Weak signal heard by ham across town.
S-5 Gets into your own picture but no complaint from next door.
S-6 Neighbors become offensive.
S-7 Guy in Montana comes back, but gets call fouled up.
S-8 Worked two stations same evening.
S-9 Got promise of card from Pennsylvania.
10 over 9 Guy took message with only 14 repeats.
20 over 9 Had solid QSO; encouraged, decide to make payment on receiver.
30 over 9 NCS with BC-348 explains importance of tfc he is trying to copy 50 kc. from your frequency.
40 over 9 GI in Unter-Snittzen on Blieweis, near Hoopenhollerblatz, Bavaria, wants to talk on patch to Mathilde Auckvardsnootzen in Cul-de-sac, Manitoba.
50 over 9 Guy asks if you will sell 304-TLs you gave up when you raised power.
60 over 9 Neighbors cut down your wire.

— *Colonel Ward, W4QT*

ANY DX RAGCHEWERS?

18 Landing Trail
Denville, N. J.

Editor, *QST:*

I have just recently returned to the 20-meter c.w. band. After a few months of operation on this band, I would like to ask why the average DX c.w. operator apparently finds it more satisfactory or exciting to have 25 or so rubber-stamp QSOs with W stations when he could have some interesting rag-chews with assuredly less W stations. At least when he signed off he would have some idea of what the other guy was like. If I was operating from some DX location, I would get mighty bored after 20 or 30 stereo-

(*Continued on page 196*)

I.A.R.U. News

TOURIST OPERATION IN MEXICO

Amateurs of the United States and other countries touring Mexico may secure mobile licenses with XEØ calls by following certain procedures. Application must be made through the *Liga Mexicana de Radio Experimentadores*. Visitors have to be members of LMRE before their application can be forwarded to the Director of Telecommunications; dues are 50 pesos a year. Documents required include photostatic copies of the amateur's home license, and title of ownership to the automobile in which the equipment is installed. A letter in which the amateur renounces the protection of his country's laws, in matters of radio communication, and agrees to abide by the rules and regulations of the Federal Communications Act of Mexico must be attached, together with the tourist permit or permit of the Mexican Department of State certifying his status as visitor. The amateur also must attach a money order made out to the "Direccion General de Telecommuniciones" in the amount of 100 pesos. Amateurs interested in operating mobile in Mexico should get in touch with LMRE, Liverpool 195-A, Mexico City 6 D.F., Mexico.

THE PHILIPPINES

Amateurs in the Philippines ordinarily are permitted to work foreign amateurs only in the fourteen countries which have treaties of friendship and amity with the Republic of the Philippines. We now have information that communications are henceforth permitted between amateurs in the Philippines and those in Australia. Others who can be worked by DUs include: W/K, BV, HC, AP, EA, I1, F, PK, HS, VU, CO, TI, TA, and SV.

QSL BUREAUS OF THE WORLD

For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below. Cards for territories and possessions not listed separately can be mailed to the bureau in the parent country; e.g., cards for French Cameroons (FE8) go to REF in France; cards for VP8s go to RSGB in England. W, K, VE and VO stations only may send foreign cards for which no bureau is listed to ARRL.

For service on incoming foreign cards, see list of domestic bureaus in most *QST*s under "ARRL QSL Bureau."

Algeria: G. Deville, FA9RW, Box 21, Maison-Carree, Alger
Angola: L.A.R.A., P.O. Box 484, Luanda
Argentina: R.C.A., Carlos Calvo 1424, Buenos Aires
Australia: W.I.A., Box 2611 W, G.P.O., Melbourne
Austria: Oe. V.S.V. P.O. Box 15, Klosterneuberg, 2
Azores: Via Portugal
Bahamas: C. N. Albury, Telecommunications Dept., Nassau
Barbados: Arthur St.C. Farmer, Storms Gift, Brandons, Deacons Road, St. Michael
Belgian Congo: P.O. Box 2696, Elisabethville
Belgium: U.B.A., Postbox 634, Brussels
Bermuda: **R.S.B., P.O. Box 275, Hamilton**
Bolivia: R.C.B., Casilla 2111, La Paz
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro
British Guiana: D. E. Yong, VP3YG, Box 325, Georgetown
British Honduras: **L. H. Alpuche**, VP1HA, **P.O. Box 1, El Cayo**
Bulgaria: Box 830, Sofia
Burma: XZ2OM, P.O. Box 1490, Rangoon
Canton Island: H. B. Johnson, KB6BA, U.S.P.O. 06-50000, Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Box 761, Santiago
China: M. T. Young, P.O. Box 16, Taichung, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: Radio Club of Costa Rica, Box 2412, San Jose
Cuba: Radio Club de Cuba, QSL Bureau, Ayestaran 629, Altos Cerro, Habana
Cyprus: Mrs. E. Barrett, P.O. Box 219, Limassol
Czechoslovakia: C.A.V., P.O. Box 69, Prague I
Denmark: P. Heinemann, OZ4H, Vanlose Alle 100, Copenhagen
Dominica: VP2DA, Box 64 Roseau, Dominica, Windward Islands
Dominican Republic: Calle Duarte #76, C. Trujillo
East Africa: (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony
Ecuador: Guayaquil Radio Club, Casilla 784, Guayaquil
Eire: J. Corcoran, EI5M, 194 Collins Ave., Whitehall Co. Dublin
Ethiopia: **Telecommunications Amateur Radio Club, P.O. Box 1047, Addis Ababa**
Fiji: S H. Mayne, VS,R2A Victoria Paraed, Suva
Finland: SRAL, Box 306, Helsinki
Formosa: **Hq MAAG, APO 63, San Francisco, California**
France: R.E.F., BP 26, Versailles (S & O);
France (F7 calls only):
A 1C Thomas J. Shytle, F7EZ, Hq., US Eucom Mars Radio, APO 128, % P.M., New York, New York
Germany (DL2 calls only): Via Great Britain
Germany (DL4 calls only): DL4 QSL Bureau, % Mars Radio DL4HAB, 7425th Air Base Group, APO 109, N. Y., N. Y.
Germany (DL5 calls only): Via France
Germany (other than above): D.A.R.C., Box 99, Munich 27
Gibraltar: E. D. Wills, ZB2I, 9 Naval Hospital Road
Ghana: E. L. Lloyd, ZD4BL, P.O. Box 565, Kumasi, Ashanti
Great Britain (and British Empire): A. Milne, 29 Kechill Gardens, Hayes, Bromley, Kent
Greece: George Zarifis, **P.O. Box 564, Athens**

Greece (Unlisted SVØs only): **USASG, APO 206, New York, N. Y.**
Greenland: APO 858, % Postmaster, New York, N. Y.
Grenada: VP2GE, St. Georges
Guam: G.R.A.L., Box 145, Agana, Guam, Marianas Islands
Guantanamo Bay: Guantanamo Amateur Radio Club, Box 55, NAS, Navy 115, F.P.O., New York, N. Y.
Guatemala: Manuel Gomez de Leon, **P.O. Box 115,** Guatemala City
Haiti: Radio Club d'Haiti, Box 943, Port-au-Prince
Honduras: O. A. Trochez, **P.O. Box 244, Tegucigalpa, D. C.**
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong
Hungary: H.S.R.L., Postbox 185, Budapest 4
Iceland: Islenzkir Radio Amatorar, Box 1058, Reykjavik
India: **P.O. Box 534, New Delhi**
Indonesia: P.A.R.I., P.O. Box 222, Surabaja, Java
Israel: I.A.R.C., P.O. Box 4099, Tel-Aviv
Italy: A.R.I., Via San Tomaso 3, Milano
Jamaica: QSL Bureau, 5 Braemer Ave., Half-Way-Tree P.O.
Japan (JA): J.A.R.L., Box 377, Tokyo
Japan (KA): F.E.A.R.L., P.O. Box 111, APO 500, % Postmaster, San Francisco, Calif.
Kenya: **East Africa QSL Bureau, Box 1313, Nairobi**
Kuwait: William N. Burgess, MP4KAC, % Kuwait Oil Co., Kuwait, Persian Gulf
Lebanon: R.A.L. B.P. 3245, Beyrouth
Libya: **5A2TZ, Box 372, Tripoli**
Liechtenstein: **via Switzerland**
Luxembourg: G. Berger, 40 Rue Trevires, Luxembourg
Macao: Via Hong Kong
Madagascar: **P.O. Box 587, Tannarive**
Madeira Island: P.O. Box 257, Funchal
Malaya: QSL Manager, Box 777, Kuala Lumpur
Malta: R. F. Galea, ZB1E, "Casa Galea", Railway Road, Birkirkara
Mauritius: V. de Robillard, Box 155, Port Louis
Mexico: L.M.R.E., Liverpool 195-A, Mexico, D.F.
Montserrat: VP2MY, Plymouth
Morocco: A.A.E.M., P.O. Box 2060, Casablanca
Morocco: (Tangier International Zone only): Box 150, Tangier
Mozambique: Liga dos Radio-Emissores, P.O. Box 812, Lourenco Marques
Netherlands: V.E.R.O.N., Postbox 400, Rotterdam
Netherlands Antilles (Aruba): Postbox 392, San Nicolas, Aruba
Netherlands Antilles (Curacao): Postbox 383, Willemstad, Curacao
New Guinea: **Via Papua**
New Zealand: N.Z.A.R.T., P.O. Box 489, Wellington C1
Nicaragua: YN1RA, Apartado Postal 555, Managua
Northern Rhodesia: N.R.A.R.S., P.O. Box 332, Kitwe
Norway: N.R.R.L., P.O. Box 898, Oslo
Okinawa: O.A.R.C., P.O. Box 739, APO 331, % Postmaster San Francisco, Calif.
Pakistan: Box 4074, Karachi
Panama, Republic of: L.P.R.A., P.O. Box 1622, Panama
Paraguay: R.C.P., P.O. Box 512, Asuncion
Papua: **VK9 QSL Officer, P.O. Box 204,** Port Moresby
Peru: R.C.P., Box 538, Lima
Philippine Islands: Elpidio G. DeCastro, Philippine Assn. for Radio Advancement, 2046 Taft Ave., Pasay City
Poland: Polish QSL Bureau, P.O. Box 320, Warsaw 2
Portugal: Rua de D. Pedro V., 7–4, Lisbon
Roumania: A.R.E.R., P.O. Box 95, Bucharest
Saar: P.O. Box 310, Saarbrucken
Salvador: YS1O, Apartado 329, San Salvador
Singapore: P.O. Box 2394, Singapore, Malaya
South Africa: S.A.R.L., P.O. Box 3037, Capetown
Southern Rhodesia: R.S.S.R., Box 2377, Salisbury
Spain: U.R.E., P.O. Box 220, Madrid
St. Vincent: VP2SA, Kingstown
Sweden: S.S.A., Stockholm 4
Switzerland: U.S.K.A., Knutwil
Syria: P.O. Box 35, Damascus
Trieste: P.O. Box 301, Trieste, F.T.T.
Trinidad: John A. Hoford, VP4TT, Box 554, Port-of-Spain
Tunisia: **Francois DeVichi, 5 Rue Can Robert, Tunis**
Uganda: P.O. Box 1803, Kampala
Uruguay: R.C.U., P.O. Box 37, Montevideo
U.S.S.R.: Central Radio Club, Postbox N-88, Moscow
Venezuela: R.C.V., P.O. Box 2285, Caracas
Virgin Islands: Richard Spenceley, Box 403, St. Thomas
Wake Island: **T. D. Musson, P.O. Box 127**
Yugoslavia: S.R.J., Postbox 48, Belgrade

Strays

W8CUP, *QST* author of "Simplified CRPL DX Predictions," in the July, 1957 issue, is now offering expanded instructions and maps for $2.00 per set.

—·—

On the day that KN3BTM received his ticket, W3CHC moved in on one side of him and W3MTF moved in on the other side. It is reported that all three are happy neighbors and that they all have solid QRM-free QSOs — with each other!

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K2QIJ, at Burlington (N. J.) Senior High School, has had lockers numbered 220, A3, 160, and 75. He also reports that K2QPN and WN2JUG occupy locker A2. (Say, fellows, are you sure you didn't assign these locker numbers yourselves?)

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The Radio Amateur Mobile Society, Inc., of Sacramento, Calif., meets in the Marconi School, on Marconi Ave., just east of Watt Ave., northeast of Edison School.

Uncledave W2APF made a special landing at Okinawa, on his recent round the world trip, where he was presented an honorary membership in the Okinawa Radio Club together with an award for being the first ham to work five stations there. On the left is Sgt. Straker, secretary of the club, making the presentation to coolie Uncledave 'midst the exotic atmosphere of the *Tea House of the August Moon*

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.
ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Fixed Text Messages and Christmas. Each year amateur radio accomplishes some wonderful personal services at the Christmas Season by the exchange of domestic greetings by amateur radio. Above and beyond the personal contacts that take place between separated members of families having radio enthusiasts, the message files of netters become jammed with the formal exchanges filed appropriate to the season. Besides all this, there's the communications to and from overseas-GIs transferred between military and amateur frequencies, and there can be direct relaying with amateurs in the nine countries having special agreements under the telecommunications treaties that permit such, i.e., Canada, Chile, Costa Rica, Cuba, Ecuador, Liberia, Nicaragua, Panama and Peru.

The volume of Christmas traffic is the problem for our networks. To cut down on the amount of transmission required is very important where several message relays are involved. To help accomplish this ARRL has a complete list of fixed or standardized texts. These are all on a sheet bound into each ARRL log book (or ask for a CD Form 3, gratis from ARRL). This is the month when a refresher on the use of this fixed-text procedure should be useful.

ARL? means, "Do you have the list of ARRL Numbered Radiograms, and are you ready for such a message?"

ARL (reply) then means, "I have the ARRL Numbered Radiogram list. I am ready for such a message."

A sample message illustrating the use of the indicator ARL (in check and text) follows:

NR 215 K6GZ CK ARL 6 San Mateo Calif 2100 Dec 12
To Jack E Smith AA
21 Apple Blossom St AA
Paducah Fla BT
ARL FIFTY ONE ARL SIXTY SIX BT
Esther AR

The given message, expanded for delivery purposes (always the amateur operator's responsibility) would read "Love and best wishes. Most sincere wishes for health, happiness and prosperity on this Christmas Day." Most such messages refer to a *single* numbered text and therefore have a check of two or three instead of six. Some originators will want to send individual messages, even though we have several good greeting type seasonal message texts so that a choice of one should do the job. Always *spell out* any numerals or punctuation. It is not essential or desirable to send punctuation marks in text, except for necessary clarification. The use of code and ciphers is prohibited in texts or casual work by FCC Section 12.105. Our ARRL fixed-texts are a list of abbreviations in common distribution and known to FCC. They are to facilitate communications rather than to obscure meanings and are therefore entirely permissable — and at this season desirable in messages on heavily loaded circuits.

In the above please note that *each* fixed text is identified as such by putting the key designation ARL ahead of it. If there were no such indicator, different texts identified by a single numeral might mistakenly be run together. An incorrect text might as a consequence be delivered! *Accuracy first* must be the aim always. Whenever in any radio operation there is a condensation or shortening by use of abbreviations, numbered texts, or figures not spelled out, it becomes *more* important to use every precaution to insure accuracy. Spelling out numerals is always the best way to get them over the hurdles of poor radio conditions or the hazards of phonetic similarities. The fixed-text type of messages have been found helpful for years. Should you drop some names off your Christmas card list, it still may not be too late to send friends some of the greeting and seasonal messages in our list (50–70); such amateur provisions can help you. Usually we all use these means to help others . . . with a side thank you earned for amateur radio.

IGY and PRP. July 1st marked the formal start of the International Geophysical Year. If you were present to hear W1VLH's talk at the National Convention, you will know all about the ARRL Propagation Research Project. Or you may refer to page 15, September 1956 *QST* for information. It is *not* too late to make an individual enlistment in that operation, if you can operate and make v.h.f. notations with fair observing consistency. A card to W1VLH will bring you the forms, and a sample copy of the monthly "*PRP News*."

OES Appointments for All Active VHFers. Quite separate from IGY considerations there's an Official Experimental Station ARRL-SCM appointment for every active experimenting amateur working v.h.f. Any operator *consistently active* and having something to report on his progress each month ought to be lined up with his SCM (address page 6 *QST*) for an OES appointment. Having the appointment often brings you a card-notice from headquarters relative to new records, band openings, special transmissions to listen for, etc. Then from time to

time there's a special bulletin showing what other OES are doing. To be an OES you have to be operating on one or more bands *on or above 50 Mc.* ARRL recommends IGY-enlistment to OES. The observations of propagation phenomena on the part of active operators are equally valuable in either group. An overlapping in the personnel of the two programs is indicated in that in certain sections we find 25% to 33% of the OES also are IGY reporters. Numerous OES are listed in the 2-meter and WAS standings published with "The World Above . . ." 150 stations have now worked over 40 states on 6 meters; 67 stations have over 20 states confirmed on two meters. This v.h.f. part of our spectrum is capable of fine day to day work. So ARRL provides full recognition as OES for active v.h.f. members working toward definite objective results. If interested get more information or an OES application form from your SCM today.

Fraternity above Group Interests. "In 25 years on the air I have had many RCC-type contacts. Sure would like to find a way to get all hams to realize they are radio amateurs first, and proud of it. Wonder if there'll be a time when one will say over the air "I'm an amateur using c.w." or "I'm a ham working s.s.b." instead of trying so hard to be exclusive. Personally I have no favorites. I work phone, a.m., s.s.b. and n.b.f.m. as well as c.w. and v.h.f. up to 220 Mc. I like to be known as a ham, *not* by what type equipment I happen to be running. . . . Just because I have s.s.b. I'm not dropping old friends like hot potatoes. I like equally to have them work me on a.m. . . . or *any* way they happen to be operating." — W8BJD.

Amateur Calling Practice. *Ham Fax*, edited by W8OPC, is issued monthly by the South East Amateur Radio Club of Cleveland. In a recent number, W8CTZ reviewed several operating problems and the pertinent FCC regulations. Some excerpts may be found helpful. Judgment in *calling* in order to save transmission time when calling mobiles, a note on use of the separator sign, and how to give your call properly to keep out of FCC trouble are covered in his following remarks.

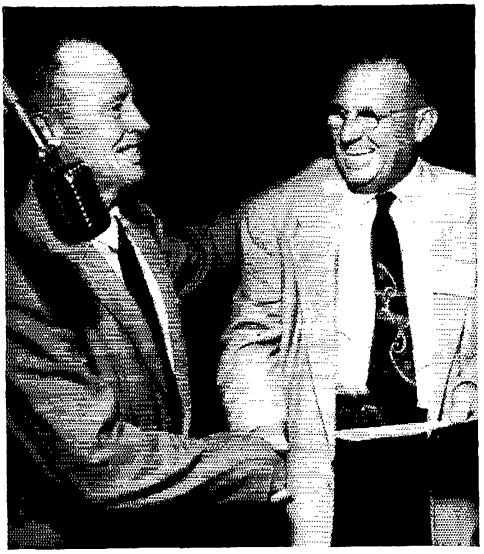
(1) "If the station you're calling is on your frequency or right close to it, why use a 30-to-40 second call when 10 seconds will just as easily do the job? . . . Also, how many times have you heard operators waste breath and time calling a mobile or portable station 'W8LJI *mobile*, W8LJI *mobile*, this is . . .'? It is required *only* that mobile stations in answering indicate *their* status as mobile, or portable. In the call up to the mobile, operators with experience seldom, if ever, transmit such indications. Save the slant signs and mobile indications until *you* are mobile and it is required.

(2) "FCC specifies only two phone equivalents of DE, mainly, THIS IS or FROM. Use of the separator sign is necessary to separate the called from the calling station. About identifying: Your call signal and that on every license consists of prefix letter(s), numeral and additional identifying letters. These letters and numerals are what FCC requires and others expect to hear in identifying your call. Don't therefore phoneticize to the exclusion of correct identification. FCC has cited amateurs for omitting letters and substituting phonetics, for transmitting 'double' or 'triple' (a certain letter) instead of *naming* the letter as it appears, repeated more than once as part of a call signal. When you sign with someone be sure to indicate in positive fashion (and abide by this) that your contact is finished, whether you will listen for a final transmission or are closing station. 'Signing off and over' or 'signing and by for your final' both correctly indicate that you are expecting some final comments. 'Signing off' or 'signing clear' spells out that the contact is finished. If the other operator then comes back to you for a final-final, *you owe it to the listening operators to check the band for calls.* If *not* planning to tune, say 'signing clear and leaving the air' or 'signing off and closing station.' "

Perhaps it should be added also that you have to identify the station or net you are working in, as well as your own call . . . as covered explicitly on page 9, June *QST*.

More About ARRL's Code Proficiency Certifications. The League's Certificate Awards and endorsement stickers *for increases from the original word speed* are available to all those who care to follow the daily tape-sent code practice and once-a-month qualifying runs, sending copy to ARRL for correction. *QST* each month also gives the advance list of certain texts to be used

On August 31 and Sept. 1, 28 amateurs assisted in communications for the Sports Car Race at the Akron, Ohio, Municipal Airport. Operation was under the direction of Walter Ermer, W8AEU, Cuyahoga County EC. These are the hams and their mobile units lined up near the start-finish line after the race.



One of the Oklahoma Weather Net's sparkplugs is Sandy, W5AZO. At a meeting of the Net on Sept. 29 attended by 70 amateurs, Weather Bureau Chief John Hamilton surprised Sandy with a special certificate of appreciation for his service in the net. ***(Daily Oklahoma staff photo by John Gumm)***

on *some* of the practice runs. This is to make it possible to directly compare one's own fist and tape-sending. Besides helping the new man get the hang of perfect spacing of characters by listening, it is possible for you to arrange a setup to do some sending at the same time. It is an additional learning technique to try to superimpose your own sending on the tape-sent copy that is being received. See *QST* references to locate what copy will be sent on given dates.

Consistent practice is the essential ingredient in acquiring the proficiency-level for our ARRL certifications or to pass FCC's license examinations. In submitting copy, we ask participants in our program to mark the *particular one minute of solid copy* which it is believed is qualifying. For five-character words and spaces between them qualification requires (for ten-to-35 w.p.m.) 59, 89, 119, 149, 179 or 209 consecutive correct characters-and-spaces. After certification we are occasionally asked to duplicate lost or damaged certificates and we are glad to do this from our records of those issued. However, this is an extremely popular program and we deal with such a volume of papers that we can check and certify copy only at the highest perfect speed (where several speeds of copy are submitted). The stickers are given *only for advancement* from a given speed at which you first qualified and which speed is written into the basic certificate you receive on qualifying. Copy cannot be checked on *practice* runs, only on monthly *qualifying* runs from W6OWP or W1AW.

The surest way to qualify for an FCC ticket, we think, is to be able first to get our certificate at one (or preferably two) speeds above the FCC examination speed you are out for. This will take care of any initial nervousness. Some 30,000 amateurs have now been certified in this ARRL program. If you or any reader hasn't been certified or endorsed *all* the way up to the top of this CP program, we cordially invite you to try every W1AW and W6OWP monthly qualifying run as these come along until you have our very-top, 35 w.p.m.

On Calling CQ and Good Operating. The Oak Ridge (Tenn.) Radio Operator Club's September bulletin includes suggestions on operating for maximum results. K4LPW (ex-W3DGM) points out that if we want another station to hear our CQ, we must send clean signals at a comfortable speed and make the transmission short. Analyzing his own CQ, he finds that a 3 × 3 K4LPW CQ advertises his desire for general contact but 36% of the sending time. A 5 × 2 CQ, for him, works out to give 55%-CQ and 45%-identification, close to the desirable 50–50 ratio. He writes further: "If we send this (five by two) combination twice a minute we are sending 11 w.p.m.; three times a minute is 17 w.p.m., four times 23 w.p.m. Take your choice. Don't make calls of over one minute duration. Listen. If there are no answers, call again. Additionally 'How can I become a good c.w. operator?' is a question often asked. The answer is *practice*. There are no short cuts. A new general class operator would do well to join a traffic net. Here he can hobnob with good operators, and some of that stuff is bound to rub off."

A Word to Newcomers. Most all amateurs will tell you that falling in love with the idea of amateur radio is not enough. It takes a bit of industry on your part to get the ticket. To get that code or CP award will take some practice and patience. But worthwhile results in all branches of amateur radio reflect effort, study and sacrifice. For superior results on some bands you should put up a simple beam instead of a dipole, for example. You can take honest pride in your achievement when you get that ticket. From there we want to help you go on to greater results, such as come from the ability to operate in nets and work traffic and DX. The use of leisure time palls, for one thing, unless put to worthwhile ends. For those who have just received the General Class License, we want you to look forward to continuing accomplishment and proficiency. Earning an appointment post, a BPL award, a Net certificate, becoming part of an emergency-dedicated group (AREC-RACES) will all help establish your stature and expand your ability to do things. Whatever your kind of operating, send a concise report of your over-the-air results direct to your SCM each month in accordance with his invitation on page 6 of *QST*. There's a whole array of regular and special operating things to be done. More information about this in January *QST*. We hope to work you in some of the coming activities.

Looking ahead a couple of months we are going to devote the first half of February to another *Novice Roundup*. This is an activity in

which you can more quickly work other novices to expand your number of states worked, and at the same time get good on-the-air practice preparatory to going up for the General Class ticket and full amateur privileges. Elsewhere in these pages we present a listing of affiliated radio clubs that have study courses covering theory and code. We hope that helps. Get next to such instruction if you can. Also drop a line to ARRL for the list of amateur stations that have volunteered to send over-the-air code practice or for Navy and press stations also listed in CD-139. We want to send what photo-lith information we have in that line to help you. We want you to use the W1AW-W6OWP program too.

— *F. E. H.*

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

These frequencies are employed throughout the United States by amateurs using radioteletype.

NET DIRECTORY INFO

We were going to call this "Net Directory Rules," but decided against it. We have too many too complicated rules already. The purpose of this column is simply to acquaint you with some of our procedures in getting up the net directory, both the bi-monthly *QST* listings (from November through May) and the annual cross-indexed printed directory. Knowing this will help you know how to submit your registration info, and how often and when to submit it.

First of all, we'd like to mention that we have a card file. This file is divided into five parts, marked "By name," "By Freq.," "By State," "Inactive Nets" and "Obsolete Nets." The first part is alphabetical by the name of the net, containing a card for each active net. On this card we have the following information: the name of the net, its common designation (e.g., CN for Connecticut Net), its frequency in kc., the days of the week on which it meets, the time of meeting both in local standard time and in GMT, its area of coverage, the length of time in minutes it remains in session, the call of the net manager, the net's purpose (traffic, emergency, or both), the call of the person submitting the information and the date on which it was entered on the card.

The second part, "By Freq.," has a card for each frequency on which a net has ever been registered, starting with 1800 kc. and going all the way through 148 Mc., and even a card or two in the 220-Mc. range. The frequency appears on the upper left corner of the card, and below are entered the name of all nets on that frequency and information on the meeting days and time of each in abbreviated form. Naturally, since we do not change cards each year, we have to have some way of knowing which of the nets on each frequency card are active or current, and which are old listings — so we simply put a code mark of some kind after each listing, changing the code mark every year. These cards are very useful because a glance at any particular frequency card will show which net or nets operate thereon, if any, and the days and times they meet; if further info on any listed net is needed, you can refer to the "By Name" listing.

The "By State" listing contains a card for each state, each Canadian province and each U. S. possession. Nets whose operations are confined within state, provincial or territory boundaries are listed on the proper card, as are nets whose names indicate their connection with one particular state, province or possession; for example, the "Wyoming CW Net" would be listed under Wyoming even if its coverage included several other states, but if its *name* included other states it would not be listed under any state.

On August 1 of each year all nets are automatically transferred to the fourth listing, labeled "Inactive Nets," and there they remain until they are reregistered. Thus, every net must register every year if it is to remain in the active list. Also on August 1, nets already on the "Inactive" list are moved to the fifth listing labeled "Obsolete Nets." Cards for nets already in the "Obsolete" part of the file are discarded.

The maintenance of this card file is quite a chore, especially during the reregistration period from August 1 to the end of the year. *QST* net lists in the November, January, March and May issues are supplementary (i.e., each list contains nets not listed in previous issues or corrections from previous listings) and are taken directly from the card file. Because of the *QST* publication lag, deadlines for each issue are nominally Sept. 15, Nov. 15, Jan. 15 and Mar. 15 respectively. On about the first of November we will start compiling the annual printed cross-indexed net directory (what a job!), and hope that this task can be finished, put on stencils, printed, collected and made ready for distribution by the first of December. This has to be sandwiched into regular work and sometimes has to be delayed. This year we have high hopes of getting it out on schedule. By the time you read this, it *should* be in distribution.

The net directory seems to serve a very useful purpose, and we want to continue and even improve on it. *You* can help make it a complete directory of information on all nets if you will register your net completely, promptly and accurately next year. If you have not yet done so you probably have missed the printed directory, but you can still get into the March or May lists in *QST*. Information just received at ARRL causes us to reverse the disqualification of W1MXX; we therefore take pleasure in reinstating his E. Mass. phone score of 39,615 points.

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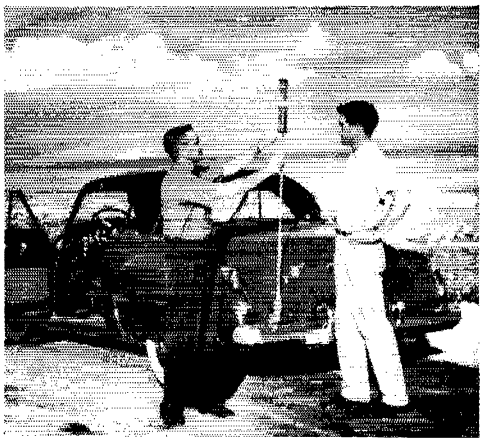
CONTEST CORRECTIONS: In the summary of the June V.H.F. QSO Party, September *QST*, K6UJL should have been identified as Technician award winner, San Diego Section.

In the Field Day results in the October issue, these two scores were inadvertently omitted: the Class D entry of W6LS, Lockheed Employees Amateur Radio Club, 202 points; the Class E entry of K2MWK, 200 points.

In the final standings of the 1957 ARRL DX Competition, last month's *QST*, the phone score of KH6PM should have been shown as disqualified, not that of KH6MG.

To all concerned, our sincere apologies for the slips.



Bill Snider, W6HQN, watches as Robert Richardson, K5EXZ, adjusts antenna loading coil during ARRL's 1957 Field Day. Under the call K5EXZ/5, the pair joined forces to lead all mobile entries with 4131 points and 281 contacts, 60 per cent of which were registered on c.w. The QTH was an El Paso mountain-top, elevation 4500 feet. Equipment in the rolling ham shack included a v.f.o.-driven Commander and a Super-6 into a Super-ceiver, all of Gonset design.

During the SET, while we were copying a few messages addressed to ARRL and wondering why there weren't more, we got to thinking up some ways in which the SET could be made more popular and thus better attended. Look at the Field Day, for example. Phil's write-up in October *QST* showed a participation of 10,264 souls (some lost, probably, but still souls). Last year's SET showed participation by 2276 amateurs. Field Day logs received go over a thousand, but SET reports have never hit 300.

What's the difference? Well, it's not too hard to find. The Field Day, once an emergency exercise, has been expanded in scope and size principally through glamorization, through addition of a combination of the fraternal aspect and cut-throat rivalry and competition. Even more than that, FD is an exercise, if you want to call it that, in which amateur groups can go where they please, set up their equipment however they please, and in which the group has no one to serve but itself, in addition to having a good time. In other words, the principal difference is that FD is *fun*, the SET *work*.

Don't get us wrong. We're not running down FD (we should live so long!). Neither are we about to propose that the SET be made the second ARRL FD of the year — although many FD enthusiasts would go for the idea (the *real* crazy ones!). We're just wondering if some of the things that make FD so popular could not somehow be injected into our annual SET to increase its attractiveness to the community AREC group and bring out increased participation both in terms of groups and individuals, without detracting from the service aspect which is our primary *raison d'etre*.

The first possibility that comes to mind in this connection is a competitive scoring system. We have always emphasized that the SET is not a competitive activity, except that each group competes with its own previous years' scores. But experience has shown that the more competition is emphasized, the greater is the participation. Of course it also leads to abuses, opens the field for loophole lawyers and brings in some types of participation that are not especially desirable from a service standpoint. If our present SET participation is comparatively low, at least what we do have is dedicated. Our thought revolves primarily around the scoring of points on the basis of proof of the ability to render service — to the Red Cross, civil defense, or other community agencies. Such a scoring system will be difficult, if not impossible (in which case it will take longer), to devise, but we'd like to give it a try if you like the idea and will give us some help on how to dood it.

NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

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

The following are the National Calling and Emergency Frequencies for Canada: *c.w.* — 3535, 7050, 14,060; *phone* — 3765, 14,160, 28,250 kc.

Aside from this, what other incentives do we have? Certificates to participating groups? Individual acknowledgments of messages received? An "honor roll" *QST* listing or bulletin listing of stations who sent messages? There must be plenty of ways in which our SET can be made more popular without detracting from its primary objective. What are a few of them?

Is there a psychiatrist among the readers? Please sign me up for an early consultation. Here I am making more work for myself!

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Another Hurricane Audrey supplement. Members of the Orange (Texas) Amateur Radio Club who cooperated with civil defense and handled traffic with the Cameron area during the June storm included *K5s* BJB and HNB, and *W5s* JMX NMV LJJ and QLE. We just want to give these boys credit on the record.

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Orange ARC amateurs also operated with the civil defense organization during Hurricane Bertha in August on 40 and 6 meters. Those listed by EC K5BJB as having been active: *K5s* HNB LNV and W5ND with operators K5BJB K5EVE W5JMX and W5NMV.

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Amateurs of the Orange (Texas) AREC assisted in the search, on Aug. 26-27, for Dianna Burch, age 5, who was lost during a picnic at Evadale, Texas. W5NMV operated the club control station (W5ND) at Orange while W5JMX and EC K5BJB were mobile on 6 meters. W5EXK brought along four hand-carried units, one to each of three search parties which reported to him who in turn maintained contact with the mobiles. The mobiles put up a fixed antenna and kept contact with W5ND. W5SON served as a relief operator at W5ND. Although the search had a sad ending (the little girl was found drowned on Aug. 27), the amateurs did an effective job of organizing and operating the communications facilities. The hand-carried units were supplied by the Navy through W5EXK, a Navy chief, and 160 Navy men participated in the search. — *K5BJB, EC Orange, Texas.*

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Amateur operators in the New Bedford, Mass., area turned out on Sept. 15 when an airliner carrying 24 passengers crashed in a swamp just short of the New Bedford municipal airport. Mobile units were in continuous operation until 0330 Sept. 16, located at the scene of the crash and at various other key points throughout the area. W1CZW was NCS from the fixed station and the following mobiles participated: *W1s* CNT AZY DIR TZU UID HXA AGG ZHC VDF DIY ONK and K1BBE. Rescue information was passed to W1DXQ in Quincy who had direct telephone communication with the airline office in Boston. Traffic was handled for civil defense, municipal officials and the Red Cross. Information was also relayed from the mobile units to the local radio station for rebroadcast to the public. — *W1CZW, EC New Bedford, Mass.*

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While driving from Haddam to Middletown, Conn., on his way home on Sept. 20, W1DEX saw the glow of a fire. He fired up his mobile rig on 29,580 kc., the local established calling frequency, and put out an emergency call. He was answered by W1WRO and W1QMB, who immediately summoned the fire and police departments. W1DEX then broke out a red signal lantern to flag down approaching fire apparatus and aroused the neighborhood in which the fire (which turned out to be a big one resulting in two deaths) was raging. A good night's work for amateur radio!

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During the APCO convention in Daytona Beach, Fla., on June 26-29, amateur radio facilities were installed and operated by the Daytona Beach Amateur Radio Association. A rig was installed overlooking the exhibit room at the convention hotel and operation was maintained on 75, 40 and 20 meters. W4SDR began operating at noon the day before the convention began, funneling traffic into the Florida Midday Traffic Net and the Tropical Phone Net, and the facilities were available for individual rag-chew sessions an 14,250 kc. at other times. Completely unscheduled was the emergency traffic handled by W4SDR/4 in connection with Hurricane Audrey; the station handled Red Cross traffic into the disaster area and inquiries from those in attendance at the convention. Altogether, W4SDR/4

logged 19 hours and 37 minutes of operation, handled 47 messages, used nine operators.

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On July 4 the AREC of Northern Kentucky assisted the Northern Kentucky Auxiliary Police by providing communication to direct parking at a large festival near Cincinnati. Automobiles had to be directed quickly to several small lots on the grounds, and by using the amateur facilities police were able to cut off traffic when a lot became full and divert it to another lot. The net was in operation for almost 7 hours; five stations participated. The idea proved very successful and will probably be continued next year. — *W4BZY.*

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Worcester County amateurs participated in the communications aspects of the North Medford Relay Runners Club race on September 7. Runners were tracked all the way from Mt. Tom to Waltham by amateur radio. The race began at 0720 and lasted until 1420 when the net was secured. Mobiles followed the various runners to keep W1SPF informed of their positions, relaying information on availability of police escorts and condition of the runners. Operation was mostly on 10 meters, with some six meter crossband operation taking place.

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We hit the jackpot with August SEC reports, recording a total of 27, the highest in history, representing 7006 AREC members. This is ten more reports than August 1956 and over 2000 more AREC members. A new section, Nevada, was represented among the August roll call, making our total sections so far this year 35, just half of all ARRL sections. August reports: Ala., Ga., W.N.Y., Conn., N. Mex., Minn., Colo., San Joaquin Valley, Iowa, E. Fla., Santa Clara Valley, Santa Barbara, Ont., Wash., Ore., NYC-LI, Wis., Md.-Del.-D. C., Maritime, Mont., Nebr., S. Texas, Mo., R. I., N. Texas, W. Va., Nevada. Things are looking up, fellows. Let's keep that total climbing.

Don't know how it happened that W3PKC's Maryland-Del.-D. C. reports were omitted for two consecutive months, but they were and it wasn't his fault, so we apologize to John, whose reporting record is 100 per cent for this year, as it was in 1956.

RACES News

Our thinly veiled threat to discontinue the RACES column produced some copy this month, so we won't chop it off yet. But don't relax. Keep the stuff coming. Let's begin by summarizing some of the short items. FCDA tells us that there are now 950 RACES plans on file or pending; of this total, 250 are new plans filed since January 1. Got your plan in? The new RACES RO at FCDA Region 4 is John Galloup, W8PYQ. W6EBK informs us, as RO for Baldwin Park, Calif., that that city received its RACES approval on Sept. 9. Another state, Georgia, has joined the United States Civil Defense Amateur Radio Alliance; the delegate will be Jack Farr, W4TJS, who is state radio officer.

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New York State Radio Officer W2BGO has announced that certificates of commendation are being issued to amateurs by the State Civil Defense Commission in recognition of "Outstanding Dependability and Contribution to Civil Defense." Handsome certificates, too, with a background of an atomic explosion over which is printed the RACES emblem. About 75 such certificates have been awarded in the first issue, and more will undoubtedly follow.

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Radio Officer (and EC) W8HUF of Howard County, Ind., reports on the results of a civil defense simulated bombing at Greentown called "Operation Eastern" on July 24. The Ground Observer Corps issued an alert at 1600, and at 1810 a two-engine bomber dropped a bomb and flare, then another bomb at 1815. The RACES net was activated at 1816. Operation was on 75 and 6 meters. All operation was mobile to mobile, the noise level being too high at the control center to allow fixed station operation on 75 meters. Mobiles were parked two blocks away to act as relay to the control center. Other mobiles were dispatched to various locations in the bombed area to relay messages from field units to the control center. All calling in of outside units from assembly points to the bombed area and all dispatching of fire trucks, ambulances and rescue trucks on each individual run were handled by the RACES network. All c.d. units were in Greentown by 1915, the total demonstration period lasting another two hours. Howard County RACES furnished 11 stations, Miami County 2, Cass County 1 and Madison County 2. Although the operation was not perfect, W9HUF says he is proud of the job done and particularly of the help given by other counties.

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.

East Bay	B. N. Southwell, W6OJW	Oct. 14, 1957
San Diego	Don Stansifer, W6LRU	Oct. 15, 1957
Western Florida	Frank M. Butler, jr., W4RKH	Dec. 15, 1957
Quebec	C. W. Skarstedt, VE2DR	Dec. 15, 1957

In the Utah Section of the Rocky Mountain Division, Mr. Thomas H. Miller, W7QWH, and Col. John H. Sampson, jr., W7OCX, were nominated. Mr. Miller received 60 votes and Col. Sampson received 35 votes. Mr. Miller's term of office began Oct. 28, 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 ob-

Fifteen of the 32 regular members of the New England Weather Net got together for the net's first person-to-person meeting at the home of W1YCR in Framingham on Sept. 28. Standing (l. to r.) we have W1s MSF ATX YCR NR WXI UZX OJM UHI FTB; kneeling: W1SDX W1RPK W2LIY W2FTV and W1RJL. *(Photo by K1BEN)*

tained, 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.

— *F. E. Handy, Communications Manager*

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon *	Dec. 10, 1957	W. R. Williamson	Mar. 17, 1949
Virginia	Dec. 10, 1957	John Carl Morgan	Feb. 11, 1958
North Carolina	Dec. 10, 1957	B. Riley Fowler	Feb. 15, 1958
Maritime *	Dec. 10, 1957	D. E. Weeks	Feb. 15, 1958
Georgia	Jan. 10, 1958	William E. Kennedy	Mar. 18, 1958
Washington	Feb. 10, 1958	V. S. Gish	Apr. 15, 1958
Tennessee	Feb. 10, 1958	Harry C. Simpson	Apr. 15, 1958
Arizona	Feb. 10, 1958	Cameron A. Allen	Apr. 15, 1958
Alberta *	Feb. 10, 1958	Sydney T. Jones	May 1, 1958
Louisiana	Mar. 10, 1958	Thomas J. Morgavi	May 31, 1958

* In Canadian Sections nominating petitions for Section Manager 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

Somewhere in the Ham Ads section of this issue of *QST* you will find a paid announcement of a Traffic Hounds Roundup on January 1, sponsored by the Traffic Hounds Morning Watch. The sponsors have asked us to mention this and to urge all traffic men to take part. We are happy to do so. Traffic handling, in its pure form, can be a pretty impersonal, sometimes dull, sometimes actually monotonous pursuit if the fraternal element is not encouraged in its proper place. Ordinarily, this place is not when there is traffic to be handled, and ofttimes newcomers to traffic find us a somewhat unsociable lot and soon leave us for the glamor of DX or the chumminess of casual ragchewing.

But there is no group more fraternal, in the end reckoning, than a group of individuals who are proud of themselves and proud of each other in the realization of a service performed. Such a group are the traffic men. Let's all take the first day of the year to gather in the neighborhood of 3540, 7080, 14,090 and 21,090 kc. for a bit of fraternalism among the traffic gang. Regarding phone, W4IA says "No special phone frequencies are suggested, since concentration of activity in already crowded phone bands would bring unfavorable reaction from non-traffickers. When using phone, spread out and try to avoid concentration of QRM."

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K4BVX suggests that we cover the topics of receipting for messages, the proper way to report into a net and methods for sending stations up and down with traffic. Okay, let's cover them:

Receipting for messages: all the sending station requires is some indication that you received the message. You don't have to make a project of it. Experienced c.w. operators will simply hit their key once and produce a dit or a dah, or maybe a couple of dits: this is especially useful if a string of traffic is being sent. Nothing wrong with saying "QSL UR NR 5 QRV," but it's a waste of time and always unnecessary. When full break-in is used, it is necessary to indicate receipt only at the end of the string of messages. AARS operators before the war used to rap out as many as 40 or 50 messages at a time with nary a break, then have them acknowledged by the receiving station with a single dit. This is probably a little extreme for our normal crop of traffic handlers today, but in any case the greatest necessity is to say "R K" or just "R" if the sending station has no more. On phone, any vocal acknowledgement is sufficient, the shorter the better, such as a "roger" or, if you prefer, a (ugh!) "romeo." Just remember one important thing: you *don't* receipt for a message unless you *received* it, in *full*.

Reporting into nets: First, wait until the net control calls you (if a roll-call net), or until he indicates he wants stations to report in (QNI on c.w.). Then call him very briefly, sign your own call. On c.w., where complete break-in is used, it is often convenient just to call him, then wait until he indicates he has heard you before you sign your own call, but this depends to a great extent on adopted net procedure. Give (1) your location or the place or area for which you will accept traffic, and (2) the list of traffic on your own hook, broken down in accordance with net procedure. Procedures for reporting in vary with different types of nets. CD-24 outlines the procedure at all three levels of NTS nets.

Clearing traffic off frequency: The first rule to observe is *not* to use adjacent frequencies unless the volume of traffic reported requires it. The second is not to use adjacent frequencies that are occupied by other nets at that time. Net control should indicate which two stations are to QNY, where they are to go, and what traffic they are to clear. The frequency or deviation from net frequency can be only approximate, of course, since stations may find the exact designated spot occupied by a rock-crushing signal, in which case they would make their contact a little to one side or the other of him. Who calls first? The Virginia Net has a rule that the station to *receive* traffic should call first, the sending station to zero on him; this is because the receiving station, being the one to do the copying, should be the one to pick the exact spot. If both stations have traffic to send, the one in the lowest call letter numeral or designated call letter alphabetical sequence should call first. For example, K1XYZ should call W2ABC, but W1ABC should call K1XYZ. After clearing traffic return *at once* to the net

The Ohio Buckeye Net (BN) had a picnic on August 30. Some of these are the same faces you saw in November *QST* (p. 98), but also there are a few new ones. Top row: W8s HXB, CSK, CGF, VTP, WE, DSX (8RN mgr.), VWX; bottom row: K8BPX, K8DDG, W8AL (SCM), W8OPU and W8VDA.

frequency and report back in. If for any reason all traffic was not cleared, inform the NCS because he has to keep track of it.

A lot of little "gimmicks" are used on many nets to speed up the procedure. No room to go into detail here. If you are thoroughly familiar with a particular net's procedure, you'll know just what to do when reporting in. If you aren't, it is best to listen a while and see if you can figure out how they operate before you QNI.

— ... —

During a July session of the MDD Net (Md.-Del.-D. C. section), W3WV received a message for Chile. Having previously worked CE3DZ on several occasions, Leo went down to 20 meters, squatted on the approximate frequency of their previous QSP and gave CE3DZ a blind call. CE3DZ answered the first call, QSP'd the message; seems he just happened to have his receiver tuned to that frequency. If this were fiction, we'd have tossed it out as too ridiculous.

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Miscellaneous net reports: TCPN reports that the first call area handled 1265, second call area 1298, 4th, 9th and 0th call areas 1065 for a grand total of 3626. North Texas/Oklahoma Net had 30 sessions, 970 check-ins, traffic total of 265. Early Bird Transcontinental Net reports traffic total of 366.

— ... —

National Traffic System. Once in a while we receive a complaint that although we say that section nets are the foundation of NTS, we devote most of our space to regional and area nets and the TCC in this column. We can't deny that. There are fifty-odd section nets, with a potential of over a hundred, but only fourteen nets at regional and area level. If we started giving details on section net operation, there just wouldn't be enough room. For example, 27 section nets reported this month. Such coverage can be effected in the SCM's column at his discretion. Regional and area nets, which transcend section boundaries, are dependent on the amount of coverage that can be afforded them right here in this column. While it is true that section nets are the foundation of the system, this is not to say that a section net is more important than a regional net. All parts of the system are important, just as are all links of a chain, be they big or little, so let's not get into any ridiculous discussions about whether your net is more important than mine or vice versa.

Nevertheless, when a section net comes up with a good idea that has a national application, there is no reason why we cannot present it here. A particular case in point is the Washington Section Net (WSN) which is a real live-wire setup under the direction of RM W7AIB. WSN elects its manager each year from among regular participants who have three minimum qualifications: (1) Been an active amateur of general class or higher for at least three years. (2) Been active on an NTS net not less than 2 years. (3) Been an active member of WSN for at least one year. W7AIB has also put out a detailed instruction manual for new members, giving full information on the purpose of the net, its NTS status, and complete instructions for reporting in, handling traffic, frequency tolerance, closing the net, traffic policy and operating aids available. It's an admirable job that many section nets could do well to emulate, and maybe if you'll ask W7AIB real nice he'll send you a copy.

The point he makes in a letter of transmittal is that ARRL should have some similar kind of manual for section nets. It is quite true that CD-24 does not cover all the above details and in that respect might be considered to fall short in giving full info. But consider this: even in the excellent WSN manual, the details of net operation do not agree entirely with those given in CD-24. There is no slightest doubt that other section-prescribed procedures would disagree in other respects. So in order not to be disagreed with at least 90 per cent, your headquarters has always limited its suggestions, for the most part, to broad general principles and let individual organizations adopt their own details using the general principles as a guide. Sure, we could get out something showing in detail one way in which it could be done, but most of the nets who already have established operating procedure wouldn't do it exactly this way and moreover would strongly disagree with our recommendations. Each net has a tendency to think that it is the best in the country and that its procedures should be universally adopted; but each net has some slightly different circumstance which will make its procedure differ from any or most others. This is truer of section nets than of regional nets, truer of regional nets than area nets, but even at top echelon there are differences in procedural detail.

This is Vi, WØZWG, a regular on the Nebr. Morning Net, the Nebr. CW Net and the Tenth Regional Net. She is one of an all-ham family, the OM being WØVGH and the junior op. being WØZWF.

No, the section net must devise its own procedure. General principles of net operation are given in *Operating an Amateur Radio Station*. A few recommendations on NTS section net operation are given in CD-24. The section level takes it from there. There seems to be no other practical solution.

September reports:

Net	Sessions	Traffic	Rate	Average	Representation %
EAN	19	664	.692	39.7	97.6
CAN	29	763	.448	29.3	100
PAN	28	995	.344	35.5	100
1RN	24	279	....	11.6	89.8[1]
2RN	44	294	.253	6.7	87.1
3RN	42	265	.268	6.3	88.9
4RN	42	259	....	6.2	45.2
RN5	50	531	.355	10.6	86.1
RN7	39	159	....	4.1	....
8RN	29	185	....	6.4	88.5
9RN	50	583	.291	11.7	76.5
TEN	90	1397	.431	15.5	51.0
ECN	17	80	....	4.7	76.5[1]
Sections[2]	639	4110		6.4	
TCC Eastern	45[3]	115			
TCC Central		668			
TCC Pacific	75[3]	1012			
Total/Summary	1142	12369	EAN	9.3	CAN/PAN
Record	1142	12369	....	15.4	100
Late reports:					
RN7 (July)	43	198	....	4.1	....
RN7 (Aug.)	47	187		4.0	....

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

[2] Section nets reporting: ILN (Ill.); GSN (Ga.); S. Dak. 75 Phone & S. Dak. 40 Phone; CN & CPN (Conn.); Iowa 75 Phone; OSN/PQN (Ont.-Que.); AENB, AENP & AENT (Ala.); SCN (Calif.); TLCN (Iowa); NJN (N. J.); QKS, QKS SS & QKN (Kans.); KYN & KPN (Ky.); WVN (W. Va.); WSN (Wash.); Minn. Noon Phone; MSN (Minn.); Tenn. CW; SCN (S. C.); STS (S. Texas); MDD (Md.-Del.-D. C.).

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

W1EMG did a fine job as acting 1RN Manager during W1BVR's absence. W2ZRC reports 2RN now on 3690 kc. for both sessions. W4SHJ is the new manager of 4RN, replacing W4LAP who has resigned; thanks to W4AKC for holding the net together. The morale of RN5 has improved under new manager W5RCF. Congrats to 8RN Manager W8DSX on birth of a new baby boy. TEN certificates have been earned by KØDGW, WØEGQ and WØQXF; WØEGQ uses braille for all copy. Honorable mention to WØZJF for a perfect NCS record during the past couple of years. VE3AUU has taken over the ECN reins from VE3GI.

Transcontinental Corps. There are still some vacancies which slow down transcontinental traffic flow through the system. Any interested traffic men can get full information from W3WG (Eastern Time Zone), WØBDR (Central Time Zone) or WØKQD (Mountain and Pacific Time Zones).

Area	*Functions*	*% Successful*	*Traffic*	*Out-Of-Net Traffic*
Eastern	45	82.2	588	115
Pacific	75	89.3	2014	1012

The TCC roster: Eastern Area — *W1s* AW BDI EMG NJM TYQ, *W2s* HDW ZRC, *W3s* COK WG, W4ZDB, W8ELW, W9CXY DO. Central Area — *W9s* CXY DO, *WØs* BDR LCX LGG SCA. Pacific Area — *W6s* ADB GIW VZT PLG EOT BPT HC, *K6s* DYX GZ ORT, W7GMC, WØKQD.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for September traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W7BA	20	1116	1079	34	2249
W2KEB	89	876	995	201	2161
W3CUL	151	844	541	271	1807
WØBDR	26	887	834	2	1749
WØSCA	2	592	587	1	1182
W3WIQ	165	410	540	35	1150
W5RCF	4	544	487	57	1092
W4PL	10	528	489	12	1039
WØLGG	27	495	468	23	1013
WØCPI	5	473	429	44	951
WØBJP	10	445	433	12	900
W7PGY	29	414	373	39	855
W8ELW	10	380	369	8	767
W9NZZ	226	259	0	258	743
W9CXY	6	366	354	12	738
K4EZL	81	331	273	5	690
W6GYH	359	167	140	17	683
WØPZO	7	321	312	3	643
W1ARR	58	280	254	13	605
WØKQD	19	297	270	19	605
W9DO	24	278	261	41	604
K6SXA	59	265	193	86	603
W9JOZ	15	283	299	5	602
K6GZ	464	60	45	13	582
W9IDA	12	283	278	2	575
WØCZ	4	280	240	40	564
W7VAZ	28	258	202	56	544
KØBCQ	4	324	308	4	540
K6GK	15	230	230	56	531
W3AFF	29	251	203	42	525
W1UEQ	3	252	221	33	509
K6OZJ	9	249	226	23	507
WØCAR	4	251	249	1	505
Late Reports:					
W3AFF (Aug.)	623	207	62	1	893
K2PHF (Aug.)	109	276	214	50	649
W7TLC (Aug.)	187	200	104	86	577
W3AFF (July)	407	106	57	2	572
W7VAZ (Aug.)	23	257	232	25	537

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Del.*	*Rel.*	*Total*
K5WAB	62	810	730	80	1682
W3PQT	21	580	559	12	1172
K5FHR	54	321	297	24	696
K9USN	137	279	260	2	678
K6MCA	163	265	206	0	634
KGIDT	146	234	1	216	597
K7FAE	55	229	200	29	513
Late Report:					
K5WAB (Aug.)	58	710	659	51	1478

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

K9GDF	174	W5SMK	102	Late Reports:	
W8FGB	173	K6OQD	102	W9PCQ (May)	121
W8SCS	126	WØVPQ	102	W9PCQ (June)	104
W9ETM	119	VE2ATL	102	W3WHK (May)	102
W9EJW	110	K6YBV	101	W3WHK (Aug.)	102
KØCLS	106				

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W1TYQ, K2MMM, W8CSK, W8FWQ, KØCVD.

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

RTTY RADIO BULLETINS

ARRL bulletins are sent on both phone and c.w. twice each evening from W1AW, the full detailed schedule as given in November *QST*. Additional radio bulletins of ARRL and FCC information are addressed to amateur attention by six to seven Official Bulletin Station SCM-appointees in *each* of the 73 ARRL Sections. These for the most part use either A-1 or A-3 emission and put out information on v.h.f. bands as well as h.f. In the past year the growing group interested in RTTY likewise includes several SCM-appointed OBS. RTTY is of course an ideal method, with data received in a nice form all printed and ready to post or file as desired. The regular RTTY Nets that operate on the East Coast, midwest, far west etc. usually have a bulletin period conducted by an appointee, during weekly sessions. The setup at OBS W6VPC for RTTY operation was pictured in a recent quarterly CD Bulletin. We summarize herewith some RTTY OBS-schedule information that may be of interest and should especially benefit amateurs with newly acquired teletype equipment who would like to get the bulletins.

W6VPC (Oakland)	8 P.M. PST Wed., 3620 kc. and 147.29 Mc.
K6KFF (Berkeley)	8 P.M. PST Wed., Six meters.
W6VPC	5 P.M. PST Fri., 14,330 kc. and 147.29 Mc.
W6ASJ (Piedmont)	2 P.M. PST Sat.-Sun. 7140 kc. and 147.29 Mc.
W6FZC (El Cerrito)	1 P.M. PST Sat., 14120 kc. 11 A.M. PST Sun., 14120 kc. 11:30 A.M. PST Sun., 144.27 Mc.
W6ITH (Moraga)	10 A.M. PST Sun., 7140
VE7KX (Vancouver BC)	8:15 P.M. PST Tues.-Fri., 3624, 7144 kc.

SCMs (addresses on page 6) welcome applications from active member-stations who can volunteer a reliable service and good OBS coverage for modes or bands *not* now covered by appointees. Station power, number of times each week OBS information can be sent, and the proposed frequency and mode, all have to be considered by an SCM in connection with each application. In general the OBS system is full-up. To extend coverage in new bands or replace vacancies as they occur, SCMs of course will consider OBS applications.

A.R.R.L. ACTIVITIES CALENDAR

Dec. 4: CP Qualifying Run — W6OWP
Dec. 20: CP Qualifying Run — W1AW
Jan. 2: CP Qualifying Run — W6OWP
Jan. 4–5: V.H.F. Sweepstakes
Jan. 11–12: CD QSO Party (c.w.)
Jan. 18–19: CD QSO Party (phone)
Jan. 20: CP Qualifying Run — W1AW
Feb. 1–16: Novice Round-up
Feb. 5: CP Qualifying Run — W6OWP
Feb. 7–9: DX Competition (phone)
Feb. 14: Frequency Measuring Test
Feb. 18: CP Qualifying Run — W1AW
Feb. 21–23: DX Competition (c.w.)
Mar. 7–9: DX Competition (phone)
Mar. 21–23: DX Competition (c.w.)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

Nov. 23–24: 21/28 Mc. Telephony Contest, RSGB (page 75, last month's issue).

Dec. 6–8, 13–15: QCWA QSO Party, Quarter Century Wireless Assn., Northwest Chapter (page 110, this issue).

Dec. 7–8: OK DX Contest (c.w.), Czechoslovak Central Radio Club (page 82, this issue).

Dec. 8: Wisconsin QSO Party, Milwaukee Radio Amateurs' Club (page 116, this issue).

Jan. 3–5: WAE DX Contest (c.w.), DARC (page 82, this issue).

A.R.R.L. CLUB CLASS INSTRUCTION

The following is a list of radio clubs holding code and/or theory classes. Further details can be obtained by contacting the individual club through the address given in the "information" column.

Location	*City*	*Radio Club*	*Information*	*Code*	*Theory*
Alabama	Anniston	Anniston Radio Club	Hubert Feazell, c/o P.O. Box 489, Blue Mountain	X	
	Birmingham	Birmingham Amateur Radio Club	Aubrey White, Jr., Box 603	X	X
	Florence	MuscleShoals Amateur Radio Club, Inc.	Don Smith, 300 Robbins St., Tuscumbia	X	X
	Gadsden	Gadsden Amateur Radio Club	D. W. Byneem, Moragne Park	X	X
California	Culver City	Hea Amateur Radio Club	Ruth Wentworth, P.O. Box 1133	X	X
	Dunsmuir	Dunsmuir Amateur Radio Club	Raymond Rains, c/o Box 692	X	X
	Red Bluff	Tehama Co. Amateur Radio Club	W. K. McIntosh, 1855 Douglass St.	X	
	Salinas	Monterey Bay Radio Club	Harold Ebury, 1151 Alma Ave.	X	X
	San Gabriel	Ramona Radio Club	Tom Casacky, 605 S. Del Mar Ave.	X	X
	San Jose	SCCARA	D. T. Burbank, P.O. Box 6	X	X
	South Gate	Southeast Radio Club	J. Larsen, 10870 Alexander Ave., Lynwood	X	X
	Stanford	Stanford Radio Club	G. Deley, Box 2187	X	X
	Northridge	West Valley Radio Club	Mrs. J. Ceccio, 8921 Geyser Ave.	X	X
	Whittier	Rio Hondo Radio Club	Lee Heath, 10560 Ceres Ave.	X	X
Colorado	Boulder	Boulder Amateur Radio Club	J. V. Walsh, 2825 11th St.	X	X
	Denver	Denver Radio Club	H. L. Waters, 730 Hooker St.	X	X
	Fort Collins	Larimer Co. A.R.C.	Irma Michaud, 312 Park St.	X	X
Conn.	Manchester	Manchester Radio Club	R. Reichenbach, 406 Woodland St.	X	X
	Meriden	Meriden A.R.C.	A. Jankowski, Oregon Rd.	X	X
	Stamford	Stamford A.R.C.	C. Salzman, 28 Knollwood Ave.	X	X
	Storrs	University of Conn. A.R.C.	P. Paul, Engineering Bldg.	X	X
	Torrington	CQ Radio Club	P. Edlstein, 39 Park Dr.	X	X
	Wallingford	Choate School Radio Club	J. Underwood, Choate School	X	X
Florida	Daytona Beach	Daytona Beach A.R.A.	C. Mashburn, 520 Glenview Blvd.	X	X
	Eglin AF Base	Eglin Amateur Radio Soc.	F. M. Butler, 28 South Elliot Rd., Fort Walton Beach	X	
	Ft. Lauderdale	Broward Amateur Radio Club	F. Sultan, 2024 Hollywood Blvd., Hollywood, Fla.	X	X
	Gainesville	Gainesville A.R. Soc.	D. C. Bunting, 2038 NW 3rd Ave.	X	X
	Lakeland	Lakeland A.R. Soc.	W. H. Prescott, Jr., 2410 Lakeview St.	X	X
	Leesburg	Lake Amateur Radio Assn.	R. O. Martin, P.O. Box 1023, Tavares	X	X
	Miami Springs	Miami Springs Radio Club	Elizabeth Clark, 41 Lenape Dr.	X	X
Georgia	Augusta	A.R.C. of Augusta	B. Frizzell, 1304 Monte Savo Ave.	X	X
Illinois	Bloomington	Central Illinois R.C.	L. E. Hill, 1304 West Jackson St.	X	X
	Chicago	Hamfesters Radio Club	A. Mascio, 8908 S. Constance	X	X
	Hillsboro	Montgomery Co. AREC	D. Hoover, 401 East Wood	X	X
	Joliet	Joliet Amateur Radio Soc.	G. S. Bones, 2320 N. Raynor Ave.	X	X
	Kankakee	Kankakee Amateur Radio Soc.	E. Flowers, 545 S. Lincoln Ave.	X	X
	Moline	Quad City A.R.C.	Janet Stoebe, 1711-6 Ave., Rock Island	X	X
	Monmouth	Knox Warren A.R. Assn.	G. Salter, Box 1012, Galesburg	X	X
	Rochelle	Rochelle High School R.C.	D. Hayes, c/o Rochelle High School	X	X
	Springfield	Sangamon Valley Radio Club	E. Metzger, P.O. Box 572	X	X
	Sterling	YRAD Club	E. Fisher, 506 7th Ave.	X	X
	Urbana	Synton Radio Club	D. Heckman, Electrical Eng. Bldg., U. of Illinois, Urbana	X	X
	Zion	Midway Radio Club	J. Green, 2218 Gilboa Ave.	X	X
Indiana	Richmond	Richmond Amateur Radio Club	C. Huth, 2012 Nat'l Rd. W.	X	X
	Terre Haute	Wabash Valley A.R. Assn.	L. Tosser, 4310 S. 12th	X	X
Iowa	Decorah	Luther College A.R.C.	R. Ruen, c/o W9BQC, Box 139, Luther College	X	X
Kansas	Atchison	Atchison A.R.C.	G. Park, Jr., 416 N. 2nd St.	X	X
	Coffeyville	Coffeyville A.R. Soc.	Virginia Bonham, 1104 W. Second	X	X
	Dodge City	Boot Hill A.R.C.	K. Burrell, Rte. 2	X	X
	Kansas City	Jayhawk A.R. Soc.	C. Smith, 3131 Delavan Ave.	X	X
	Topeka	Kaw Valley Radio Club	J. Oberg, 432 Wedgewood	X	X
	Wichita	Wichita Amateur Radio Club	C. Wallace, 835 Porter Ave.	X	X
Kentucky	Lexington	Blue Gross Amateur Radio Club	L. Echols, 2000 S. Lime	X	X
	Louisville	Amateur Radio Transmitting Soc.	A. Gilbert, 427 Fairlawn Rd.	X	X
Maryland	Anne Arundel Co.	Anne Arundel Radio Club	N. Ball, RFD #1, Box 63, Annapolis	X	X
	Hagerstown	Antietam Radio Assn.	R. Knibb, Rte. #1	X	X
Mass.	Bedford	Bedford Radio Club	L. Porter, RFD #1, N. Billerica	X	X
	Fall River	Fall River A.R.C.	Ruthe Flagg, 120 Third St.	X	X
	Framingham	Framingham Radio Club	G. Dewey, 34 Lockland Ave.	X	X
	Newburyport	Seacoast Amateur Radio Club	A. Plouff, 11 Forrester St.	X	X
	North Adams	Hoosac Valley Radio Club	W. Estes, c/o State Teachers College, Church St.	X	X
	Southbridge	Quinebaug Valley Radio Club	P. Meunier, P.O. Box 210	X	X
	Wakefield	Quannapowitt Radio Assn.	Mrs. E. Daly, 20 Willow St., Wilmington	X	X
	Waltham	Middlesex Amateur Radio Club	E. Tougas, 111 Cederwood Ave.	X	X
	Waltham	Waltham Amateur Radio Assn.	P. Hay, 24 Riverside St., Auburndale 66	X	X
	Worcester	Central Mass. A.R.A.	Vic Boisseau, Box 932	X	X
Michigan	Battle Creek	Calhoun Area Radio Club	D. Blashfield, RFD #3, Box 561-A	X	X
	Benton Harbor	Blossomland A.R. Assn.	Marie Rutz, P.O. Box 292, Saint Joseph	X	X
	Detroit	Detroit Amateur Radio Assn.	L. Nathanson, 3780 Kendall	X	X
	Detroit	Detroit Mike & Key Club	S. Jones, 17514 Anglin St.	X	X
	Hastings	Barry Amateur Radio Assn.	R. Taylor, P.O. Box 9	X	X
	Iron Mountain	Iron Mountain A.R.C.	Dr. C. Steinke, 517 Stephenson Ave.	X	X
	Jackson	Jackson Amateur Radio Assn.	T. Wilson, 132 W. Wilkins St.	X	X
	Port Huron	Brass Pounders A.R.C.	G. Hayner, 1925 Lapeer Ave.	X	X
	Roseville	South Eastern Michigan A.R.A.	M. Connell, 23140 Sofia Blvd., St. Clair Shores	X	X
Minnesota	Mankato	Mankato Area Radio Club	R. Beck, 1501 Fair St.	X	X
	Minneapolis	Minneapolis Radio Club	Eunice Nordenfoss, 2924 Alabama Ave.	X	X
	Rochester	Rochester Amateur Radio Club	K. Williams, 1013 NW 2nd St.	X	X
	Stillwater	Stillwater High Radio Club	R. Gille, Senior High School	X	X
Montana	Billings	Yellowstone Radio Club	E. Williams	X	X
	Harlowton	Harlo Radio Club	V. Phillips, Box 971	X	X
	Missoula	Hellgate Radio Club	F. Nickerson, 820 Byron St.	X	X
Nebraska	Crete	Crete Amateur Radio Club	J. Jacobs, Box 68	X	X
	South Sioux City	Tri-State Radio Club	R. Clark, 1218 B St.	X	X
N. H.	Berlin	Coos Radio Club	J. Murphy, 37 Glen Ave.	X	X
	Nashua	Nashua Mike & Key Club	P. Morley, 9 West Glenwood St.	X	X
N. J.	Avenel	Avenel Radio Club	A. Elster, 53 Commercial Ave.	X	X
	Ceder Grove	Kearfott A.R.C.	R. Pelletier, 29 Fair Hill Rd., Clifton	X	X
	Westfield	Watchung Valley R.C.	C. Hopkins, 128 Hillcrest Ave.	X	X
N. Y.	Auburn	Auburn Amateur Radio Assn.	G. Hippisley, Jr., 58 Throop Ave.	X	X
	Clayton	Clayton Radio Club	L. Calhoun, 522 Alexander St.	X	X
	Dunkirk	N.C. Amateur Radio Club	P. Dean, 43 Albany Ave.	X	X
	East Hampton	Bonac Radio Club	Dr. A. York, c/o East Hampton High	X	X
	Levittown	Amps Radio Club	T. O'Donohue, 137 Old Farm Rd.	X	X
	Monsey	State Line Radio Club	W. Sanderson, Box 512	X	X
	New York City	Central Queens Radio Club	M. Seitelman, 153-32 73rd Ave., Flushing	X	X
	New York City	City College Amateur Radio Soc.	Dorothy Schlanger, 139 St. & Convent Ave.	X	X
	New York City	Knickerbocker Amateur Radio Club	C. Cool, 163 W 13th St.	X	X
	New York City	Fordham Radio Club	M. Grossman, 1665 Monroe Ave., Bronx	X	X
	Rochester	Rochester Amateur Radio Assn.	P.O. Box 1388	X	X
	Sidney	Sidney Amateur Radio Club	D. Frembes, Masonville, N. Y.	X	X
	Staten Island	Staten Island A.R. Assn.	R. Link, 190 Oakdale St.	X	X
N. C.	Greensboro	Greensboro Radio Club	J. Markham, 1421 Garland Dr.	X	X

Location	City	Radio Club	Information	Code	Theory
	Kinston	Kinston A.R. Soc.,	L. Palmer, 1233 Ferndale Lane	X	X
	Rocky Mount	Coastal Plain A.R. Soc.	J. Allred, Jr., 1609 Gay St.	X	X
N. D.	Jamestown	Jamestown A.R.C.	J. Martin, 814 3rd St.		X
Ohio	Canfield	Mahoning Valley A.R.A.	D. Grenzow, R.D. #1	X	
	Cincinnati	Greater Cincinnati A.R.A.	P. Wolf, 741 Delta Ave.	X	X
	Cincinnati	Northern Hills A.R.C.	L. Drake, 1536 Clovernoll	X	
	Cleveland	S.E. Amateur Radio Club	S. Kocik, 3653 E. 114 St.	X	X
	Cleveland	Case Tech Radio Club	Box 6, Yost Hall	X	
	Cleveland	Westpark Radiops	J. Bamberg, 680 Moore Rd., Avon Lake	X	X
	Dayton	Dayton Amateur Radio Assn.	E. Bonnet, Box 44	X	X
	Hamilton	F.H.A.R.A.	W. Schneider, 625 Clinton Ave.		X
	Tiffin	Seneca Radio Club	R. Ekleberry, 306 Ohio Ave.	X	X
	Van Wert	Van Wert A.R.C.	D. Anderson, 607 Leeson Ave.	X	X
Oklahoma	Carter	Northfork A.R.C.	C. Smith, Carter, Okla.	X	X
	Lawton	Lawton-Ft. Sill A.R.C.	C. Hoggatt, Box 892	X	X
Oregon	Astoria	Astoria Amateur Radio Club	R. Scott, 1068-11th St.	X	X
	Bandon	Bandon High Ham Club	O. Denniston, R. #1, Box 200	X	X
	Grants Pass	Southern Oregon Radio Club	P. Heydenburk, Box 349	X	
	Pendleton	Pendleton A.R.C.	A. Hummell, 304 S.W. 16th St.	X	X
	Portland	Oregonian A.R. Soc.	D. Manning, 2466 N.E. 58	X	X
	Portland	Portland Amateur Radio Club	R. Mayer, P.O. Box 1335	X	
	Tillamook	Tillamook Radio Communications Club	D. Christie, Box 135, Rockaway	X	
Penn.	Allentown	Lehigh Valley A.R.C.	Elsie Oberdoester, 647 E. Juniata St.	X	X
	Lancaster	L.R.T.S.	136 Springhouse Rd.	X	X
	Meadville	Crawford Co. Amateur Assn.	R. Graham, 898 Ernst Place	X	X
	Philadelphia	Mic Amateur Radio Club	C. Goetz, 335 E. Price St.	X	X
	Pittsburgh	Steel City A.R.C.	N. Firestone, 673 Loretta St.	X	X
	Sharon	Mercer Co. Radio Assn.	G. Emelko, c/o WPIC, P.O. Box 541	X	X
	Stroudsburg	Pocono Amateur Radio Klub	F. Notz, 5 Grandview St.	X	X
	Washington	Washington Co. A.R.C.	M. Beall, R.D. #1	X	X
	Waynesburg	Waynesburg College R.C.	c/o Miller Hall	X	X
	Wilkes-Barre	Wyoming Valley A.R.C.	J. Pugh, 23 E. Hoyt St., Kingston	X	X
R. I.	Newport	Newport Co. Radio Club	Mrs. T. Semich, Seaman's Institute	X	X
	Providence	Providence Radio Assn.	67 South St., Saylesville	X	X
	Warren	Bristol Co. Radio Assn.	J. Antonnucchi, c/o Warren CD Hq.	X	X
	Woonsocket	Blackstone Valley A.R.C.	R. Giguere, 383 S. Main St.	X	X
S. C.	Greenville	Blue Ridge Radio Soc.	G. Smith, Taylors, S. C.	X	X
S. D.	Lead	Signal Hill A.R.C.	Dorotha Adams, 51 Third St.	X	X
	Sioux Falls	Sioux Falls A.R.C.	J. Sikorski, 1900 S. Menlo Ave.	X	X
Tenn.	Chattanooga	Frye Amateur Radio Club	O. Smith, c/o Curie Radio, Broad St.	X	X
Texas	Dallas	Dallas A.R.C.	J. Jones, 9959 Witham	X	X
	El Paso	El Paso A.R.C.	W. Baldwin, 1501 Golden Hill Terr.	X	X
	Houston	Houston Amateur Radio Club	C. Dougharty, P.O. Box 907	X	X
	Waco	Central Texas A.R.C.	W. Wittman, P.O. Box 1032	X	X
Utah	Salt Lake City	Utah Amateur Radio Club	J. Erickson, 2756 Adams St.	X	X
Vermont	Burlington	Burlington A.R.C.	Helen Dean, P.O. Box 81	X	X
Virginia	Petersburg	Petersburg A.R.C.	S. Eltelman, 174 Monticello St.	X	X
	Richmond	Richmond A.R.C.	W. Bell, P.O. Box 1985		X
	Roanoke	Blue Ridge Amateur Soc.	C. Sisler, Box 2002	X	X
Wash.	Aberdeen	Grays Harbor A.R.C.	Dorothy Ferris, 2309 Simpson Ave.	X	
	Prosser	Lower Yakima Valley Radio Amateurs	Jean Larson, Box 466	X	X
	Puyallup	Valley Amateur Radio Club	Box 12	X	X
	Seattle	West Seattle A.R.C.	H. Johnston, 2727 Belvidere Ave.	X	
W. V.	Huntington	Tri-State A.R. Assn.	J. Smith, 3071 Wallace Rd.	X	X
Wisc.	Madison	Four Lakes A.R.C.	W. Aspinwall, 302 E. Washington Ave.	X	X
	Milwaukee	Milwaukee Radio Amateurs' Club	V. Fabishak, 4185 South 57th St.	X	
	Waukesha	Waukesha Co. Radio Amateur Club	Mrs. E. Koeppell, 1525 Lone Oak Rd., Brookfield	X	
Wyoming	Sheridan	Sheridan Radio Amateur League	R. Miller, 362 E. Loucks St.	X	X
Alberta	Edmonton	Northern Alberta Radio Club	M. Allen, Box 163	X	
Ontario	Hamilton	Hamilton A.R.C.	D. Williams, 5 Stinson Ave., Burlington, Ont.	X	
	St. Catharines	Niagara Peninsula A.R.C.	K. Priestman, 54 Linden St.	X	
	Stratford	Stratford Amateur Radio Club	A. Taylor, 40 Britannia St.		X
	Timmins	Norquebont A.R.C.	A. Godin, P.O. Box 263	X	X
	Toronto	Nortown A.R.C.	D. Oldford, 2 Deerfield Rd., Scarboro	X	
Quebec	Quebec	Quebec Y's Radio Club	920 Saint Vallier W.	X	
	St. Lambert	South Shore A.R.C.	G. Montgomery, 396 Labonte Ave.	X	X
Balboa	Canal Zone	Canal Zone A.R. Assn.	M. Cappa, Box 407	X	
Hawaii	Kahului	Maui Amateur Radio Club	A. Saito, 314 W. Nithau St.	X	X
	Honolulu	Honolulu A.R.C.	A. Char, P.O. Box 2868	X	X

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 December 20 at 2130 Eastern Standard Time. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 28,060, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on December 4 at 2100 PST on 3590 and 7128 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs 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 EST. 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.

Date Subject of Practice Text from October *QST*
Dec. 2: *Six Elements on 6*, p. 18
Dec. 5: *A Window-Sill Antenna*, p. 21
Dec. 10: *Let's Increase V.F.O. Stability*, p. 40
Dec. 12: *A Simple Conelrad Alarm*, p. 43
Dec. 18: *Audrey and the Hams*, p. 50
Dec. 23: *Contests*, p. 56
Dec. 27: *1957 Field Day Tops 'Em All*, p. 60

W1NCD of the Bristol County Amateur Radio Association smiles approvingly over his group of prospective "General Classes." BCARA maintains one of the most active code and theory classes in the east. They employ a multiposition code-instruction table (see *Learning the Radiotelegraph Code*, page 34) and a TG-10 keyer for their code instruction. A fine instructor, a few hours a week, and good construction exercises for their theory class makes for a well organized group. (*Photo by W1FVZ*)

A.R.R.L. AFFILIATED CLUB HONOR ROLL

In accordance with the Board's provisions for special recognition of all affiliated clubs whose *entire membership* consists of members of the League we are pleased to present the second Honor Roll listing for 1957. See page 75 of June *QST* for the earlier listing of additional active clubs with 100 per cent ARRL membership. Our honor list is based each time on analysis of data received in clubs' early '57 Annual Reports. In early '58 a new survey form will be sent each active affiliate for the filings on which continued affiliation and new Honor Roll listings will be based. These following clubs will also now receive "100% ARRL Club" certifications following this listing in *QST*:

Adirondack Radio Club, Glens Falls, N. Y.
Amateur Transmitters Association of Western Pennsylvania, Inc., Pittsburgh, Pa.
Ancient & Magnificent Propagation Society, Levittown, N. Y.
Batavia Amateur Radio Association, Batavia, N. Y.
Central Alberta Radio League, Red Deer, Alberta, Canada
Decatur Amateur Radio Club, Decatur, Ala.
The DX Club, Spring City, Pa.
The Fifty Club of California, Inc., Los Angeles, Calif.
Gadsden Amateur Radio Club, Gadsden, Ala.
Hi-Plains Amateur Radio Club, Plains, Kansas
Kingsport Amateur Radio Club, Inc., Kingsport, Tenn.
McKean Radio Club, Bradford, Pa.
Northeast Radio Club, Philadelphia, Pa.
Pampa Amateur Radio Club, Pampa, Texas
Pittsburg County Amateur Radio Club, McAlester, Okla.
Rappahannock Valley Radio Club, Fredericksburg, Va.
Sandusky Valley Amateur Radio Club, Inc., Fremont, Ohio
Skagit Amateur Radio Club, Sedro-Woolley, Wash.
Suburban Radio Club, Inc., St. Louis County, Mo.
Sunrise Radio Club, St. Albans, N. Y.
Sussex County Amateur Radio Association, Newton, N. J.
Tehama County Amateur Radio Club, Red Bluff, Calif.
The Thirteen Amateur Radio Club, North Burnaby, B. C., Canada
Totah Amateur Radio Club, Farmington, New Mexico
Valley Radio Club of Eugene, Ore.
Windblowers VHF Society, Paterson, N. J.

DXCC NOTES

Announcement is hereby made of the addition to the ARRL Countries List of Rodriguez Island. This island is located in the Indian Ocean approximately 375 miles east of Mauritius. Addition is made by virtue of point two as explained in May 1955 *QST*, page 68.

DXCC credit will be given starting February 1, 1958 for creditable *confirmations* dated on or *after November 15*, 1945. This is to permit foreign amateurs to start receiving credits at the same time as those in the U. S. A. Confirmations received prior to February 1, 1958 for this country will be returned without credit.

In future ARRL International DX Competitions, those making contact with amateur stations located on Rodriguez Island may claim credit for a separate country in accordance with DXCC rules.

CLUB COUNCILS AND FEDERATIONS

The Cleveland Area Council of Amateur Radio Clubs, Henry Bormann, Secy., 4345 West 50th St., Cleveland 9, Ohio.

Federation of Eastern Massachusetts Amateur Radio Associations, Ernest A. Coons, W1JLN, Acting Chairman, 25 Atlantic Terrace, Lynn, Mass.

Indiana Radio Club Council, Inc., Joseph A. Chasey, W9EIV, Secy., 5613 E. 21st St., Indianapolis 18, Ind.

The Los Angeles Area Council of Amateur Radio Clubs, Inc., Dorothy E. Williams, W6QLM, Secy., 361 Marie Ave., Los Angeles 42, Calif.

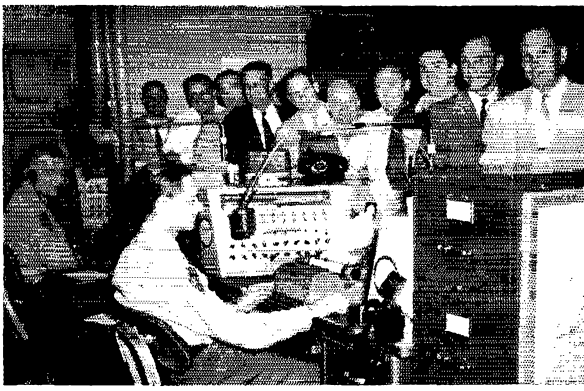
Michigan Council of Clubs, Roland R. Beineman, W8QBA, Secy., 136 Guild St., N.E., Grand Rapids, Mich.

Ohio Council of Amateur Radio Clubs, Ralph E. Crammer, W8VHO, Secy., 3989 Indianola, Columbus 14, O.

Ontario Amateur Radio Federation, G. Moes, VE3BV, Secy., 226 North Shore Blvd., Burlington, Ont., Canada.

SCM W6LRU »

December 1957



At KSB47 of the Illinois State Police, Chicago: on watch (left to right, seated): Richard Nowak, K9HGM, operating c.w., and George Hallam, W9CEE, at phone position. Standing behind consoles (*l. to r.*): Phil Simmons W1ZDP, ARRL Asst. Communications Mgr., C.W., winner of National Convention high-speed code contest at 52 w.p.m.; Ero Erickson, W9HPJ, Supervisor of the Illinois State Police station; George Schreiber, W9YIX, ARRL SCM of Illinois and *Chicago Trib* City Editor; Wayland "Soupy" Groves, W5NW, ARRL *First* Vice-President; Robert White, W1WPO, ARRL DXCC Awards; Charles Thompson, W9GLT, on first day of retirement after 43 years with telephone company; police op Orval Wingate, W9EDH; operator Rod Newkirk, W9BRD, also *QST* DX Editor; Ed Hart, W3NF; George Hart, W1NJM, ARRL National Emergency Coordinator. In town for the 9th ARRL National Convention, the W1s, W3NF and W5NW were treated to a tour of the Illinois Police setup by Supervisor W9HPJ.

(Chicago Tribune Photo Courtesy Weldon Whisler, W9GAS)

MEET THE SCMs

Donald H. Stansifer, W6LRU, recently elected to serve another two-year term as SCM of the San Diego section, has been a licensed ham since 1934.

An active member of the Helix Club, the San Diego DX Club, the Southern California DX Club and the San Diego Council of Radio Organizations, SCM Stansifer also assisted in the organization of the Silver Gate Club. Don is an Official Bulletin Station appointee as well as a Class I Official Observer, has earned DXCC-201, WAC (phone and c.w.), WAS, WBE, RCC and BERTA certificates and prides himself on DX accomplishments with QRP (for a W6) in the land of kilowatts. He participates in ARRL Sweepstakes and DX Contests, having been 1953, 1954 and 1956 section winner in the latter.

W6LRU's transmitting equipment is an ARC-5 80-meter VFO, four 6L6 doublers, parallel 807s final into a pi network output, covering 10 through 80 meters, phone and c.w. For receiving, a 75A-1 is used and the regularly-used antennas are a 33-ft. vertical for 7 and 3.5 Mc., a three-element rotary for 14 Mc., three elements for 21 Mc. and four elements for 28 Mc.

Don is employed by the San Diego City Schools as a teacher in radio and electricity. He enjoys baseball and fishing and is a busy church member, but his main hobby is amateur radio.

DX Century Club

The following list contains the call letters and countries totals of all holders of the Postwar DX Century Club award as of October 15, 1957. The calls of new members as well as those receiving endorsement credit during the period September 15 through October 15, 1957, are included in this listing.

• 273
W1FH

• 272
W6AM

• 271
W8HGW

• 270
W6ENV

• 269
W9NDA
W3GHD

• 268
W6MX
PY2CK

• 267
W8NBK
W8BRA

• 266
W6DZZ
W6SYG
KV4AA
W2AGW

• 265
W6RW
W6CUQ
W3KT
W3JNN

• 264
ZL2GX
W6TT
W7AMX
W2HUQ
G2PL
W3BES
W8KIA

• 262
W2BXA
W3JTC
W5ASG
W6EBG
W6SAI

• 261
W6SN
W6TS

• 260
W6VFR
W8DMD
W9RBI
ZL1HY

• 259
W1CLX
W1ME
W5ADZ
W6MEK
W9YFV
LU6DJX

• 258
W6GFE
W6VE
G3AMM
G4CP

• 256
W6ADP
ZS6BW

• 255
W4TM

• 254
W3EVW
W4TO
W7GUV

• 253
W1TW
CN8MM

• 252
W2WZ
W9FID
WØAIW
G6ZO

• 251
W8JBI
W8UAS
W9HUZ
G6RH

• 250
W3GAU
W6TI
W8BKP
WØYXO
CE3AG
PAØUN

• 249
W8DAW
WØDAE
SM5LL

• 248
W1BIH
W2QHH
W5JUF
W5MIS

• 247
W6NTR
WØELA

• 246
W2JT
W6GPB

• 245
W8JIN
VK2DI

• 244
W1ADM

• 243
W1HX

• 242
W3IYE
W5KC
W7GBW

• 241
W4BPD
W5EGK
W9ABA
W9FKC
HB9J
ON4AU

• 240
W1GKK
W1JYH
W3EPV
W6BPD
W6HX
W6NNV
W6UHA
W8SYC
W9LNM
VK2ACX

• 238
W6YY

• 237
W3CPV
W4MR
W8KML

• 236
W2QKS
W3ECR

• 235
WØNLY

• 234
W2GT
W5ALA
HB9X

• 233
W6BZE
W6DI
F8RS
VE7GI

• 232
W2HMJ
W5BGP
W5FFW
W6LDD
W8EWS
W8TMA
G6YQ

• 231
W1AXA
W2DS
W4KFC
W7HXG

• 230
W1HA
W2TQC
W3DRD
W4OM
W4HA
W4LZF
W8UPN
W9AMU
W9FJB
CE3DZ
DL7AA
FA8IH
G3HLS
KH6IJ

• 229
W3OCU
W6GRL
W6QJU
W6ZCY

• 228
W7AC
WØQVZ
VE7ZM

• 227
W5ABY
W5BNO
W8DHC
G3YF
4X4RE

• 226
W3OP
W4LVV
W5AFX
W5LXY
W6LW
SM5ARP

• 225
G3DO

• 224
W3KDP
W4LYV
W5MMK
W6KYG
W7PHO
OE1ER
PY1GJ

• 223
W2CTO
K2GFQ
W7NKW
W9FDX
KV4BB
SM5KP

• 222
W2YW
W3DPA
W5GEL
W6BVM
W6PYH
W9KOK
G4ZU
LU7CD
OK1FF
ZS6DW

• 221
W3CGS
W5OLG
W8MPW
W8WZ

• 220
W1ENE
W2NSZ
W2PRN
W3DKT
W4EPA
W5ENE
W5FNA
W6AMA
W6CTL
W7AH
W7GXA
W7KTN
W8KPL
W8LKH
W9GRV
I1SM
LA7Y

• 219
W3GRF
W5CKY
WØGKL
PY1AJ

• 218
W8UDR

• 217
K2GMO
W5EFC
W6TXL

• 216
W4DQH
W5BZT
W6KSM
W8QJR
W9QLH
WØNTA
G3FNN
G8IG
TI2TG

• 214
W1KFV
W5EB
PY1DH

• 213
W7ADS
G3AAE

• 212
W1IAS
W2HZY
W2UFT
W3VKD
W6MHB
W8BTI
W8EV

• 211
W2BJ
W3JTK
W4QCW
W6NGA
W7ENW
WØPNQ
G2MI
KP4CC
ZS2X
ZS6FN

• 210
W2AGO
K2CPR
W2CNT
W2DSB
W2GVZ
W2TXB
W5DMR
W5FXN
W5JC
W5KUJ
W5UX
W6ALQ
K6ENX
W6MJB
W7ASG
W7HQC
W8YIN
W9UXO
G5VT
KP4KD
OH2RY
PY4IE
VE3QD

• 209
W2KUW
W4CYY
WØNUC
SM5WI
VE7HC

• 208
W1ZL
W4AIT
W8PUD
DL7BA

• 207
W2AQW
W8CLR
ON4NC
PY1AHL

• 206
W1AB
W3GHS
W4NNN
W9GIL

• 205
W2CYS
W8SDR
WØAZT

• 204
W1LZE
W2GFW
W2HHF
W3FGB
W4AAU
CO2BK

• 203
W2RWE
W6CHV
W6LDJ
W6WO
W6YK
W7HIA
W8ACE
W8CDT
W8CED
W8VDJ
W9IU
WØANF
G3FXB

• 202
K2BU
W4RBQ
W6EHV
W6FOZ
W6LN
W7DL
CX1FY
HB9ET

• 201
K2BZT
W2DKF
W2EMW
W2SAW
W2ZGB
W5DGV
W6PQT
W6LRU
W7FB
W8NGO
W9FNR
WØUOX
CM9AA
EA2CA
I1AMU
KH6BA
KZ5CP
ON4FQ
SM7QY

• 200
W1BLF
W1TX
W1WK
W1ZW
W2ALO
W2BRV
W2HSZ
W2REF
W3ADZ
K4AIM
W4BRB
W5CEW
W5LGS
W5NW
W5PZL
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W6CAE
W6DBP
W6EPZ
W6GAL
W6IBD
W6JK
W6MVQ
W6PB
W6PH
W6RBQ
W6TZD
W7RT

W8DX
W8GLK
W9BQE
W9QIY
WØVBQ
DL7AH
G3FKM
G5RV
G6BS
G6QB
HB9EU
I1AIV
KH6PM
ON4PA
ON4QF
PAØGN
SM5CO
VE3AAZ
ZL1BY
ZS1BK

• 199
W1TYQ
W2IYO
W6ANN
K6CJQ
WØDXE
VK2NS

• 198
W3ALX
W6WWQ
G8KP

• 197
W1CH
W2JB
W6OME
PY4ZS

• 196
W1VG

• 195
W3AXT

• 194
W2BYP
W6EFR
W7PGS
HB9KB

• 193
W6UQQ
W6QNA
VE7YR

• 192
W4PN
K4PTL
W5KBU
W7EJD
W8HFE
W9VIN
G3BKF
SM3AKM
VE2WW

• 191
W1AEW
W3MFW
W4FVR
K6EWL
W9EU
CN8MI
F8PQ
I1KN
KL7PI
LA5YE
OQ5RA
VE8AW

• 190
W1BLO

W1MB
W2GUM
W2IJU
W2IOP
W3ALB
W3JKO
W3VOS
W5DML
W6ATO
W6BIL
W6BUO
W6BYB
W6EAY
W6ID
W6OMC
W6UCX
W6YMD
W7AJS
W7FZA
W7IQI
W8CVU
W8TJM
W9JIP
W9KXK
ET2AB
KH6CD
OZ7BG
PY2OE
VO6EP
YV5AE
ZL2HP

• 189
W1JNV
W5NMA

• 188
W2CWE
W3PGB
W9IOD
WØIEV
FA8DA
OZ7PH
VQ2DT

• 187
W9AND
G3DOG
TI2RC

• 186
W3AYS
W9YSX
OH3RA

• 185
W1RY
W1WY
W3MDE
W5OGS
W8LAV
WØQGI
CP5EK
CT1JS
CT3AN
G8KS
YU1AG
ZS2AT

• 184
W1BFT
W2IWC
W7GUI
W9MXX
SM5WJ

• 183
W1LOP
W3IMV
W8DUS
I1OJ
PY1HX

• 182
W2HQL
W2IWM
W3WDC
W4NNH
W5CFG
W5HDS
W6SRU
CR6AI
HB9CX

• 181
W1FTX
W2LAX
W2MLO
W3KQF
W4DHZ
W5MET
W6VDG
W8CQ
W9LI
DL1BO
VS6AE
F8CW
GM3CSM
I1XK
LA6U
PAØNU
VE3AIU

• 180
W1BIL
W1BGA
W1BGW
W1DQH
W2ABM
W2AZS
W2IMU
W2ZVS
W3EYF
W3LPF
W3WU
W4HVQ
W4IMI
W5VIR
W6CG
W6EAE
W6EFR
W6EYR
W6GMF
W6RM
W7DAA
W8HMI
W8OGV
W9KA
W9UIG
WØEYR
WØTKX
DL1QT
G2EC
G3EMD
I1ZFD
ON4JW
OZ3FL
PAØVB
SM5CCE
VE7VC
VE7VO
YV5BZ

• 179
W2CSO
W2GWE
W2LSX
W3KZQ
IT1TAI

• 178
W2AYJ
W2COK
W5LHP
G2WW
VK3BZ

• 177
W2AEB
W2DEC
W2LV
W4CYU
K6EVR
W8BOJ
F9RM
KG4AF
OK1CX

• 176
W1FFO
W3QJV
W4ECI
W4JDR
W6BJU
W6CYI
W6MEL
W8VLK
W9AEH
EA4CR

• 175
W2JVU
W3LMM
W3NA
W3NOH
W5AWT
W6BAM
G3AIM
DL6YK
KH6QH

• 174
W1ATE
W1BOD
W1DSF
W3FYS
W5RIO
W8RDZ
W9TJ
DL1GU
EI4X
KH6LG
KH6VP
MF2AA
VK3YL

• 173
W1RB
W4LQN
W4UXI
W6KEK
W8PWH
JA6AD
KZ5WZ
VE6VK

• 172
W2CR
W3JNM
W4TFB
W6SWG
W7QGF
DL4ZC
DL6MK
G3DCU
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HB9QU
VP2IJ
VK4EJ
9S4AX

• 171
W1HRI
W2LJR
W2PWP
W2RGV
W2TWC
W3HIX
W4DKA
W8FJN

WØUQV
F8EJ
GI4RY
PY4AO
VE6NX

• 170
W1CUX
W1DEP
W1JMI
W1LHZ
W1ODW
W1OJR
W2CWK
W2IRV
W2MUM
K2OEA
W3LVF
W3MLW
W4HYW
W4NBV
W4THZ
W4VE
W5TIZ
W6GMC
W6KUT
W6SIA
W6SQP
W6ULS
W7BGH
W8DEN
W9ABB
W9JUV
W9RKP
W9TQL
W9VP
WØAIH
DL3RK
CR6BX
CX1BZ
IS1AHK
JA6AO
OE3WB
OK1HI
PAØLB
PY1ADA
PY7WS
SM3BIZ
VE1PQ
VO1DX
ZL4GA
ZS6A

• 169
K2ERC
W2FXE
W2PUD
W3RNQ
W6NHA
DL1EE
VE7VC
ZL1AH

• 168
W2FBS
W2UWD
W3JYS
WØSYK
I1AY
VK5RX

• 167
HB9FU

• 166
W6PCS
VS6CG

• 165
W1PKW
W3LBG
W8MWL
DL3FM
GM3CIX

• 164
W1ICP
W3ZQ
W6SUQ
ON4AZ
VE1HG

• 163
W1DX
W1FZ
W8AJW
WØBPA
WØERI

G3COJ
G6RC
HB9MU
JA1CR
KZ5DG
ON4GU

• 162
W1AUR
W1ZDP
W2GTL
W2OST
W3SOH
W9UZS
DL1LH
EI5F
G2AJ
HB9AO
JA1AA
JA1CJ
PY2NX
VK6SA
ZL3CC
ZS2AG

• 161
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W3NCF
W4AAW
W6GHU
W6KBC
W6WKU
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W8EYE
W9DYG
W9GDI
W9WFS
WØFNN
DL1YA
F3FA
G2IO
GM3AVA
HB9DO
KV4AQ
OK1LM
OQ5LL
PAØRC
PAØZL
PY7VG
SM3AKW
SM3EP
VP7NM
ZL3GU

• 160
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W1QNC
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W2NUT
W2QKJ
W3AS
W3AFU
W3ARK
W3LEZ
W3MDO
W4JBQ
W4JII
W4TP
W4ZD
W6CIS
W6DUB
W6LVN
W6MUF
W7AUS
W7DET
W8DLZ
W8ZZU
K9BVR
W9NN
W9NZZ
W9RQM
DL1KB
F9IL
G2FSR
G3CBN
G6GH
G6XL
GM6MD
HP1BR
OH2TM
PY4AJD
SM6HU
VK3XO

• 159
W3HER
W4GHP
W4JFE
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W6VOE
W7FBD
EA3KB
G6LX
GW3ZV
I1IR
IS1FIC
KT1EXO
OK1VW
SM3ARE
VQ2GW
ZS6IX
ZS6OV

• 158
W1ZZK
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EA1BC
PY5UG

• 157
W2ITD
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W4AUL
W4JXM
W4ML
W6NIG
W9ALI
WØTJ
ON4FL
PY4RJ

• 156
W1IKE
W2ESO
W2SAI
K6ENL
W6KEV
W8PHZ
WØCPM
WØLLN
I1ALU
I1CZE
OH2QQ
ZS6EU

• 155
W1NHJ
W4AIS
W5HJA
W6ITH
W8MFB
W9ERU
ON4KT
G2AJF
G2BXP
G6GN
OZ3Y
ZS6KK

• 154
W1ZD
W2ICO
W2QCP
W3KVB
W3SWV
W4AIX
W8ZJM
CT1DJ
G3BNC
KP4JE
VP9G
YV5AK

• 153
W1QF
W2GTP
W2SUC
W7KVU
W8WWU
W9WKU
WØPGI
CE3AE
DL1ZN
DJ2AE
DL7FW
OH2NB
VE3ZW

• 152
W1MUN
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K4BVQ

W6FHR
W6JZP
W6LMZ
W6ETJ
W8YHO
G2YS
G8UG
LA2B
ON4MS
SM6ID
SM7MS

• 151
W1EOB
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W3FLH
W4AZK
W4BYU
K5ABW
W5CGC
W5TPC
W6NJU
W8HUD
W8IRN
W8UMR
W9PGW
W9YNB
DL9PX
EA3CV
GW3FSP
KP4WD
KR6SC
LA5Q
ON4TA
PY2AJ
PY7LJ
SM5ARL
SM5DZ
VE2BV
VK3JE
ZL3BJ

• 150
W1JOJ
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W1LQ
W1NI
W2ADP
W2AYU
W2BOK
W2EQS
W2FJH
W2GUR
W2GVP
W2NOY
W2PJM
W2SSC
W2YTH
W3AZG
W3CPB
W3FMC
W3IXN
W3KDF
W3LVJ
W3WGH
W4FID
W4GJW
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W5UUK
W6CGQ
K6CJQ
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W6EAK
W6LTX
W6NZ
W6OUN
W6PBJ
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WØGUV
EA4BH
G2VD
G3AKU
G3ESY
G5LP
G8KU
HK3CK
I1AOF
I1CJW
I1IT
JA1AG
KH6MI

OE1FF
OK1KTI
OK1MB
ON4GC
OZ7EU
OZ7SN
VE3ASR
VE7MD
VK4EL
ZC4XP
ZL3GQ

• 149
W1GDY
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W2HO
W2UE1
WØDGH
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ZL2QM
4S7NX

• 148
W1EIO
W2ROM
W6CLS
W6YMH
W6LPH
W8BWC
EA1AB
FA9RW
G8RC
HB9CE

• 147
W1AH
W2BXY
W8DFQ
HB9KU
LU5AQ

• 146
W3RCQ
W5LV
W6LV
W7VMP
W8CKX
W9TGY
G6RB
PY2BAU

• 145
G2AJB
G3BI
JA2KG
PAØTAU

• 144
W1FTJ
W6AGO
W9UX
EA9AP
G3IDC
G4QD
G4TM
PAØHP
PY1ANR

• 143
W2BUY
W3EBG
W4EO
W5ACL
W7BE
W9PSR
DL3SZ
F3MS
LU3DH
NY4CM
4X4BX

• 142
W1NW
W3ZAL
W4GMA
W4HQN
W5LVD
W5MCO
W7HKT
W9AHP
W9BBU
EI4Q
G4FN
G4JZ
G8GB
KZ5IP
VE1EK
VE3ADV

VP5FR
ZS5CU
4X4DK

• 141
W1AZY
W2CGJ
W2GNQ
K2PIC
W4HKJ
W6APH
W6ZVQ
W7AYJ
W7SFA
WØCU
WØLBB
DL1DX
EA2CB
G2FYT
G5LH
HB9MX
G3LP
I1IZ
I1UA
KP4ADX
KP4YT
PAØRLF
SM5AQW
SM7AKG
TA3GVU
TG9AD
VK5QR

• 140
W1APA
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W1CKU
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W1PFA
W1QXQ
W1RWS
W1WAI
W2BUI
K2JYH
W2MZB
W2OCI
W2OMS
W2ZA
W3DYU
W3ILA
W3KFQ
W3MZE
W4BQY
W4CKB
W4CYR
W4IWO
W4IZR
W4PVD
W4UKA
W5IGJ
W5LGG
W7CSW
W7GHB
W7HJC
W7WH
W8CXN
W8FJL
W8PCS
W9ROU
WØDST
WØGKS
WØOUH
I1BLF
DL1HA
F8VK
F9AH
G2AKQ
G5YV
G6VQ
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G8PL
I1FO
I1VS
KH6WW
PAØLR
VE1EX
VE5QZ
YV5FK
ZS2CR
ZS3K
4X4CJ

• 139
W2EGG
W3FUF
W3WSF
W4PHJ
K6CU

DL1YQ
F3AT
G3AJP
G3AWP
G5FA
G6QX
LA5S
OZ7CC
PY7AN

• 138
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W6FSJ
CR7AF
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OZ5PA
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ZL3LR

• 137
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PY3QX

• 136
W1QPN
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W3EOB
W4IUO
W5RX
W8IB
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CR9AH
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G3RB
KH6PY
VE7AIH

• 135
W1BAV
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EA7CP
F8SK
G5OO
G6XA
SM5PA
VE3HB

• 134
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W1ICW
W3LNE
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W5CPI
DU7SV
G5JU
G5VQ
OZ7KV
PAØGT
SM6ACO
VU2JP
ZE2JN
ZL1QW
ZS5YF
ZS6LW

• 133
W1CJK
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W2MEL
W5LCI
W6QDE
W7PEY
W8ERA
W8TUO
W9CYT
W9CYU
W9WYB
G3CSL
CX4CZ
F8WK
G5SR
OH3NY
OZ8SS
PAØHJK
PY7VBG

• 132
W1ORP
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W2PBG
W2PZI
W2TJF
W3KHU
K4EHA
W5ZZR
W6CEM
W6MJP
W6QPM
W6RRG
W7PZ
W7QON
W8LY
W9OTS
WØNGF
CR7BC
G2BVN
G6UT
GM2DBX
HA4SA
HB9IM
HB9KC
KP4MV
OH2VZ
PAØNIC
SM5AQV
VK5KO
VK5LC
YU3AC

• 131
W1DEO
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W2AFO
W2CDP
W2DSU
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W2OTC
W3RBE
W3RPG
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W6FUF
W6MHH
W6RLQ
W7GPP
W8ESR
W8JXY
W9UNG
W9WIO
G3HCL
G3VA
G6VC
SM5VW
SM7TQ
VE1PA
VP7NG
ZL4BO

• 130
W1BRX
W1MIJ
W2ABS
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W2BBK
W2CZO
W2LTP
W2PCJ
W2PZM
W2STJ
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W3HOX
W3NKM
W3VRJ
W3ZAO
W4AVY
W4IYT
W4IUJ
W4OSU
W4TAJ
W5KTD
W5OEN
W6LER
W6OBD
W6OXS
W6TKX
W6WJX
W8NJC
W8ZCK
W9EXY
W9PNE

WØQBA
WØVIP
WØYPQ
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EA3GF
EA9AI
F3CT
F9QU
G2BQC
G2FXB
G3GFG
G8FW
HB9NU
I1LT
I1UB
JA8AA
KH6ER
OH2PK
OH4NF
ON4TX
PAØDA
PAØFAB
VE3DIF
VE3IR
VE3SR
VE3TB
VE5JV
VK3YD
VP7NS
VQ2DH
VQ8AD
VR2BZ
ZL4CK
ZS6CZ

• 129
W1KQF
W1ODU
W1OJM
W2RQH
W4BGO
W5VGR
W8OCA
W8RVU
W8ZMC
WØDMA
DL4EA
OK1SV
PAØSPR
VQ4SGC
ZL1MR

• 128
W2VRE
K6EC
W9HKL
W9PZT
DL9SN
G3HJJ
G6BB
G8VB
PAØJQ
PY2DV
VK4RF

• 127
W1RZD
W1TSL
W3CTJ
W3MFJ
W4FIJ
W6MI
W6VX
W6YX
W9FKH
G5PP
I1RC
KV4BK
ZE3JO
ZL2AHA
ZS1FD
ZS1OU
I1BNU

• 126
W1BDS
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W6RDR
W7AHX
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WØMKF
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EI3R
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HB9DB
HB9HZ

VP6CDI
ZC1CL
ZE3JP

• 125
W1AWE
W2BLS
W2LPE
W5QVZ
W8ONA
K9BVR
CN2AO
HA5KBA
I1BEY
OK1WX
PY1HQ
VK3PG

• 124
W3KQU
W4FNS
W4QT
W6CEO
W6IDY
W6KYT
W8AE
CE7AA
DL1JW
G3GQS
G5VU
KL7PIV
OK1SK
ON4DM
PAØXE
SM5AHK
SM5XP
VE2NV
ZS6BJ

• 123
W1GKJ
W1KKP
W3MQC
W4ITR
K5ADQ
W5JBD
W6FLT
W6UZX
W8OKB
W9GWK
WØDSP
DL3JV
FQ8AP
G3DQO
OH1TI
PAØMZ
PY6DU
SM6AKC
SM7VX
VE2WA
ZS6GI
ZL4JA
4X4DF

• 122
W1DIT
W1QV
W2CC
W2FBA
W6BSY
W6IFW
W6WLY
W9POB
WØOJW
CE3HL
CT1SQ
DL4TL
DL7CX
F3CB
G3GIQ
G5IV
GM3CMB
HZ1HZ
LU9CK

• 121
W1YQC
W2AFU
W2QCF
W3DGM
W3EQK
W4BEY
W4FFV
W4KKG
W5GAI
W5MY
W6JU
W6KYV

W6ZBY
W7KWC
W8NOH
W9BRD
W9TKV
WØDU
WØIDI
WØJSN
CN8EJ
DL1DA
F9DN
G2HIO
G3BXN
G3JKF
HDCO
KG6AI
KZ5KA
OH5PE
OK1GL
ON4KR
PAØCP
PAØNOL
PY2AJK
SM5BCF
SM5FA
SM5KX
YU3EU
ZD6RM
ZS1FR
ZS2U
4X4BR

• 120

W1BTE
W1DBM
W1DHO
W1MRP
W1TS
K2CF
K2EDL
K2EQD
W2JVZ
W2NIY
W2WPJ
W3AOO
W3EVT/1
W3HXA
W3MNO
W3QLW
W3RBW
W3WPG
W4DPE
W4EJH
W4GQE
W4TFX
K5DGI
W5DNF
W5WI
W5TTB
K6IYJ
W6YZU
W7RFE
W8HEV
W8ILG
W9BYN
W9DGA
W9ESQ
W9FVU
W9ZTD
WØDIB
WØJFI
WØQAZ
WØQDF
W6WLY/Ø
CE4AD
CN8AF
DL3TP
EA8BC
F8PM
G2HNO
G3BQ
G3CCN
G3IOR
G3TK
G5PQ
G6XX
GM3BCL
HB9FE
HATO
HNT
KL7IT
KP4TF
LA4KD
LA7X
LU3EB
OH1QE
OK1AW
OK1RW
ON4FP
PAØCB
PAØVO
SM5ARR
SM5KV
SM5VN
SM6DA
SM7ANB
SVØWT
VE3AGC
VE3ES
VK3NC
YU3BC
ZD2DCP
ZL1MB
ZS1RM
ZS4AK
ZS6JZ

• 119

W1LQQ
W2AWF
K4EJO
K4GSS
W4OG
WØYZO
DL7AB
EA6AF
F9DW
G4QK
G8DR
HB9P
KG6ABI

• 120

KG6DI
OH2PC
SV1RX
VE7KC
4X4DE

• 118

DL3GZ
EA5AF
VE4XO
ZS1KK

• 117

W1ZDZ
W2GZZ
W2PQJ
W3MOT
W4GOG
W5GNG
W6LS
W6SR
W7UDG
W9NRB
DL3OC
DL3WV
F3DM
F9DZ
G5UF
OZ7SM
SM5WC
SM6VY
SM7AVA
VE7ZZ
VQ5EK
ZS2EC
ZS6WS
4X4FQ

• 116

W1LQO
W2AGU
W2AUH
W3MWC
W3TIF
W3TVB
W4YZC
W5UCQ
W5WZQ
W6DIX
W7BD
W7LVI
W8ZWX
W9HTY
W9UKG
F8OQ
G2BFK
GI3DQE
OZ2PA
OZ9DX

• 115

W2LWI
W2NFR
W3POE
W4BWP
K4CTU
W4KL
W4YHF
W6AFI
W6BAG
W6NKR
W7MWR
W7TML
W8JEC
W9KMN
W9LNH
W9YRO
ET3S
F8LF
G3GNM
LU6AX
OH1PN
VE2CK
ZL1AJU
ZL10A
ZS2IW

• 114

W3HUS
W4NKQ
W6MPY
W6WVU
W9ELA
W9LVR
WØLWG
DL1FE
DL7BK
HB9OA
IILD
IIWP
LA4DD
OH1PW
PY6BN
VK4RC
VU2RA
ZS6HO

• 113

W1EFQ
W1PEG
W2TUD
W8AYS
WØJMB
CN8EG
F8TM
G8OJ
ON4SS
OX3MG
SM5ANY
SP8CK
TF3EA
VE1DB
VE2YA
VP3ACS
VQ9HJP
ZB1BF
ZE3JJ
ZS5BS
ZS5LA
ZS6J

• 112

W1AJO
W1MX
W2CJM
K2EDH
W3BEN
K4LPW
W6AUT
W6CBE
W6JTB
W6TCQ
W6KIG
W8KAK
K9CLO
WØOAQ
WØUYC
CT1NT
DL1CS
DL1HH
EA5CF
EI9F
F9KQ
G2CDI
G2CNW
G3COL
G3IMV
GI6TK
GM5RH
GM3CFS
HB9IL
IIBVP
JA6FB
MP4BBE
OH2LA
PY2WB
SL5AX
VE1CU
VE3XY
VK5FM
W1LRK/
VOI
ZS6WJ
4X4CR

• 111

W1AWX
W1CDX
W1JSS
W2DEW
W2KTU
W2MA
W2NIN
W2UAT
W3HUV
W3KBC
W3RSR
W3WUH
W3ZN
W4BFR
W4DRK
W4LIM
W4YHD
W5PYU
W6GBG
W7BDW
W7JYZ
W8AAI
W8HRC
W8PNT
W8TTO
W8TTS
W9DUR
W9HUV
W9MPX
W9TMU
WØCAW
WØSBE
CR7IZ
CT1CF
DL3AO
DL3BL
DL4UZ
DL7AQ
EA3KI
F3SM
G2FFO
G2IM
G3CEG
G4AR
G4AU
HB9MC
HK3PC
HP1LA
IIPG
IIZQ
JA3BP
OH1ST
OH2KQ
OH2VF
OH4NT
PAØRL
PY2AK
SM2OS
SM5CXF
SM5RC
SM7AOO
VE2APH
VE5GF
VQ2AB
ZS5AM

• 110

W1KQY
W1MTG
W1YRO
W1YYM
W1YYR
W2AWH
W2BWC
W2FLD
W2FXA
W2GVU
W2OKM
W2OXR
W2PDB
W2WDP
W3BQA
W3CDG
W3NQC
W3VZD
W4EXO
W4IEH
W4KWC
W4TK
W4UKA
W4VCB/3
W4YGZ
W5DXW
W5JPC
W5KWY
W5VSS
W6AAO
W6AOD
W6AX
K6BFC
W6DBT
W6GSL
K6KJR
W6MUB
W6SEO
W6UYX
W6ZUI
W7BTH
W7DZO
W7NRB
W8CJ
W8FGX
W8GB
W9HLR
W9IHN
W9IOP
W9MXP
W9RHA
W9ROK
W9SWR
WØBBS
WØCXC
WØGBJ
WØLLU
WØRIA
WØSRX
CO2WD
CR7LU
DJ1DF
DL1AO
DL1VU
DL6HJ
F9MS
G2DPY
G2HKU
G3APN
G3CCO
G3CDG
G3CMB/A
G3CUG
G3DNZ
G3FKH
G3GSZ
G3HXZ
G3KAA
G5CW
G5MN
G8IL
GM3EOJ
HB9AT
HB9FI
HB9GJ
IIADW
LA7Z
OH2NQ
OH2UD
ON4JD
OY7ML
OZ5Z
PAØAGR
PAØUW
UC2AA
VE5TK
YV5FL
ZS1M
4X4FV

• 109

W1RCQ
W2RUJ
W4SRT
W4VB
W6UOV
W9WJH
WØCDV
WØNWX
WØMCF/C1
SM5KG
CO6AJ
DL6IC
EA3FL
EI5C
ET2US
F3DA
F9ER
FA3JY
FA8CF
FA9YE
G2DC
G2DHR
G3AMM
G3GGS
G8GP
G8IH
HB9BN
HB9EI
HB9KO
HZ1AB
LU8EN
PAØPN
PY1FT
PY1RW
VS1DZ
YV5BS
ZL2CU
ZS1EB
4S7GE

• 108

W1EZ
W2AOX
W4GCW
W4LHT
W6LGD
W6PUZ
W6RLP
W8IZQ
W8MKY
W8WHQ
W9TLT
WØMJM
DL1LD
DL1MN
DJ2YL
F7SHP
F9FY
FA9OW
FF8AJ
G2BOZ
G3FJU
G3ISV
G5GK
G6KS
IICLW
KZ5KS
LA7XE
LU7AS
LZ1KPZ
OE5PP
OH1NK
OK2DD
PAØOK
SM5KB
VE6GD
VQ4EI
YUIAA
ZD6BX
ZD9AA
ZL1LZ

• 107

W1FVF
W1KLY
W1PDF
W2HIQ
W2JBL
W3ANK
W3EFZ
W4BTU
W5RHW
W6CUL
W6ERB
W6HJ
W6NDP
W6PWR
W7MGT
W8BNA
W8VTF
W8WFB
W9CKP
W9GNU
WØYTL
CR6CZ
CT1CB
DL1FK
DL1SO
DL3UE
EA2CR
F9RO
G3BHW
G3CSP
G8IP
G8QZ
HB9IH
HB9MW
JA3AA
KH6YL
OH2RW
OH3RY
OH5NJ
ON4PZ
PJ2AA
SM7YO
VE1EP
VE1NH
VE1ZZ
YI2AM
ZD6RD
ZL3OA
4X4CW

• 106

W1QM
W2DPS
K2QQQ
W3BTQ
W3HTO
W4CS
W4FPK
W4KE
W4WOG
W5LAK
W5NUT
K6EYT
W6PQJ
W6WJM
W6YBR
W9PVA
W9YFD
WØBAU
CR6AU
DL1AV
DL1ME
DL1SC
DL1TM
DL1UE
DJ2HI
DJ2LK
DL3IE
DL9GH
F3IM
F8BQ
F9FS
F9JZ
F9RS
G2CBA
G2HFO
G2ZF
G3CMT
G3DDK
G3DMG
G3ETU
G3GWO
G3HLW
G3QD
G8TD
HB9BJ
HB9CS
IIAEG
IIAMO
IIRMO
IIRY
JA2DN
KG4AP
KH6DQ
OA4ED
OH2HK
OH3OE
OH5OE
OH7OL
OK1CG
OK1JQ
OK3SP
ON4HX
OZ3RO
SM2BCS
SM5BAF
SM5TQ
SM5UH
SM6DN
SM7AUO
VE3AHV
VE3PK
VK5BO
VO1B
VQ2HW
ZB1AJX
ZC4IP
ZE1JI
ZE5JA
ZS5FS
ZS6RI

• 105

W1ELR
W1IJB
W1KMY
W2CUQ
W2KJZ
W2NUO
W2QXB
W2RK
W3QOR
W4COC
W4DYM
W4EBO
W4YDT
W5KJN
W6EYY
W6CPL
W6DFY
W6DOT
W6KPC
W6MCY
W7PGX
W8AQ
W8QZB
K9AGB
W9BPW
W9DUY
W9SFR
WØFID
CT1ER
DL1SD
DL3BJ
DL3FL
DL9PR
FA3OA
G3GYH
G3ID
G3JEQ
G3JW
G5US
G6CB
G6IC
G8QW
GI3AXI
GM6MS
GW3JI
HB9BZ
HR1AT
HZ1KE
JA7AD
LA3DB
MI3ZJ
OE1WH
OE2SP
OE3VP
OH3NA
OH6NZ
OK2OS
OK2XF
OK3EA
PAØALO
PAØJV
PY1MK
PZ1AH
SM4AWW
SM5EC
SM7BHF
VE3ANH
VE3IG
VE3KE
VE6AO
VK2ADE
VK2PV
VK6DX
VP5DC
YU2CE
YV5AO
ZK2AA
ZL1RD
ZS6QF
ZS6SB
ZS6XQ
4X4FA

• 104

W1AFB
W1DF
W1NYA
W1PPN
W1TBY
W2BUV
K2EG1
W2QQ
K2QXG
W2RWN
W2TSL
W3IBT
W3ITW
W3OVU
W3RXM
W4AWS
W4FNQ
W4IPR
K5BGT
W5JSB
W5OFM
W5TOU
W6DYP
W6EJA
W6KRI
W6MUC
W6WWW
W7FAW
W7GWD
W7KEM
W8BWS
W8CCJ
W8ELL
W8JRG
W8YPT
W9EHU
W9FJY
W9GA
W9RYK
W9TFU
WØBAF
WØDSO
WØGNG
WØGYL
WØJJY
WØSQO
DL1PV
DL1SF
DL3ND
DL3TJ
DL4IH
FR7ZA
G2CLL
G2FQP
G3APX
G3AZ
G3CQF
G3FJ
G3HHV
G3IEW
G6FB
G8PW
GW3DOF
HB9MO
KG6GU
OA4C
OE3RE
OH1OW
OH7OU
OH9OB
OK1NS
OK1PN
OK1OP
OK1XQ
ON4TQ
PAØOI
PAØZV
SM5BGS
SM5OW
SU1AD
TA3AA
TF3SF
TF3SG
TG9AZ
VE3KP
VE3YV
VS1GX
VU2MD
YV4AU
ZL3HC
ZS5U

• 103

W1IAP
W1QXX
W1TKC
W1UMC
W1ZYG
W2BPA
W2JJC
W2PIN
W2PXR
W2UPH
W2WFC
W3EIV
W3KMS
W3LTW
W4EJN
W4KVX
W4LCY
W4OPM
W4VBR
W4VZQ
W5DF
W5MMD
W6BAX
W6GHG
W6JWL
W6KG
W6KUR
W6LMV
W6MLY
W6OKD
K6QXF
W6VBI
W6VJW
W6WB
W6YRA
W6ZZC
W7ACD
W7DXZ
W7GEB
W7PSO
W7TJ
W8CLM
W8FCX
W8TLL
W8ZIF
W9EHW
W9VFZ
W9WHY
WØCFB
WØIUB
WØRBA
WØVBK
CE3CK
CM2SW
CN8MZ
DL1BZ
DL1EV
DM2ABL
DM2ADL
DL4FS
DL6NB
DL7EN
EA5BD
F8DB
FA8RJ
G2AFQ
G2KI
G2SA
G3CXM
G3DAH
G3EFY
G5JM
G8PP
G8VG
GC4LI
GM3AWW
GM3DZB
HB9HC
HB9NO
HB9OQ
HB9RM
HB9TT
IIAFM
IIARA
IINU
IIUV
KP4HU
KT1UX
LA3Y
LU5ABL
MD1D
MD5KW
OH1PZ
OH2LU
OH2LX
OH2MQ
OH3OD
OH3TH
OH5NK
OH5OU
OH6OA
OH9PF
OK1NC
OK2SO
OK3IA
ON4FU
ON4JU
PAØLY
PJ2AV
SM5ADI
SM5AFI
SM5HH
SM6AOU
SM6AWE
SM7BIP
SP3PL
VE1BK
VK3AHH

VE3BWY
VE5KG
VO6U
VQ2DC
VQ4HK
YU3AB
ZB1AH
ZL3IA
ZS1BM
4X4BN
4X4FS

• 102
W1AOQ
W1CEG
W1CNC
W1PWK
W1SU
W2FCQ
W2HQB
W2HY
W2JA
W2JME
W2UOL
W3PA
W3WQN
W4INL
W4KKX
W4OMW
W4ZMC
W5BDI
W5BHV
K6AAJ
K6EDE
W6TGH
W6WPI
W8AAP
W8AVB
W8CEI
W8HZR
W8JRB
W8LYQ
W8YJE
W9DSO
W9FAU
W9GMZ
W9HYM
W9RMH
W9VW
W9WHF
W9YMG
WØDEI
WØFET
WØGTU
WØZDM
CE5AW
CN8JX
CX6AD
DL1AT
DL1EI
DL1IN
DJ1UR
DL3BK
DL3BV
DL3HZ
DL3LM

DL6GP
DL6MU
DL7AP
EA8BF
EI6G
EI9J
ET2PA
F8DU
F8GB
G3ABG
G3ATU
G3CFK
G3CVG
G3EYN
G3FML
G3FPQ
G3HFJ
G3HK
G4JB
G5CI
G5XS
G6XS
G8FC
G8TY
G8WF
GC2FZC
GI3GAL
GI3IVJ
GM2FHH
GM3EST
GM3HQN
GM3RL
GM3WO
GM8CH
GW2CPU
GW3AHN
I1KZ
JA4BB
JA6AK
JA9AA
KG6GC
KG6GD
KL7MF
KP4DP
KP4QA
KS4AI
KZ5AU
LA8F
LX1AS
OE1AD
OE1ZZ
OE5BG
OE5BW
OE6RM
OE13USA
OH2XK
OH2ZE
OH5OP
OH9NV
OK2EL
OK2MA
OK3AL
OK3DG
OK3MM
OZ2LX
PAØRU
PAØSU
SL3AG

SM3FY
SM5AUP
SM7AAZ
SM7AKO
SL7BT
SVØWL
TA3FAS
VE1BV
VE3BOR
VE3QE
VE3RM
VE6FK
VE7OJ
VK2YC
VK2ZH
VK4SS
VP9BM
VR2CG
YI3BZL
ZL2BII
ZL3CP
ZL4DV
ZS2FII
ZS3S
ZS5TO
ZS6VR
4X4CZ

• 101
W1AZW
W1CTW
W1FPS
W1MLT
W1NAV
W1NMP
W1ODY
W1RLV
W1VFK
W1WTF
W2AXU
W2EQG
W2FCT
W2FXO
W2ILN
W2IYG
W2JKII
W2KXK
K2LWR
W2TNA
W2TQR
W2UVE
W3COK
W3CSS
W3EIS
W3HVM
W3IL
W3KAT
W3OPM
W3RFA
W3TXQ
W4BO
W4BPU
K4BZL
W4DIA
W4GD
W4GUV

W4IKL
W4JV
W4LHQ
K4NHA
W4NWW
W4USQ
W4VNE
W4VPD
W5IIP
W5QF
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K6CDE
K6DDO
W6DLX
W6HNX
W6JFJ
W6KTW
W6OF
W6POZ
W6RCC
W6SC
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W7CNM
W7ETK
W7HYW
W7KSA
W7LYL
W7NIN
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W8FRW
W8GFB
W8HNX
W8HRV
W8MQR
W8PM
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W8TAJ
W8UED
W8WSL
W9GGO
W9IGK
W9TWC
W9VTI
ØBCJ
ØBMM
ØCWW
ØFBT
ØIEL
ØLVA
ØVDC
ØZQV
CE3AX
CN2AP
CO2OM
CT1AS
CT3AA
DL1CR
DL1ES
DL1KV
DL1LZ
DL6CV
DL6GB
DL6SS

DL9LB
F3BR
F3YP
F8IW
F8PA
F8SW
F9AG
F9BC
F9FK
FE8AB
G2DM
G2DVD
G2WQ
G3ADG
G3AWL
G3BQR
G3CDC
G3CHW
G3CJY
G3CSE
G3EBH
G3FEB
G3GAF
G3HEP
G4GI
G4GJ
G4LP
G5RM
G6XY
G8CD
G8NV
G8TS
GM2TW
GM3GJB
GW4CX
HB9BX
HB9EW
HP1EH
I1AFQ
I1BCB
JA2AT
JA2BL
JA3BB
JA8AQ
KH6EL
KH6LF
LA6O
OE1FT
OE5CA
OE5PV
OE8FK
OH1PI
OH2QJ
OH2YV
OH5QT
OZ1W
PA0KE
PA0FD
PA0MOT
PK6HA
PY1ARZ
TF3AR
TI2BX
VE1OK
VE1OM
VE6KX
VE6MN
VE6MZ

VK1EG
VK5MF
VP9OO
VQ4EO
VQ8CB
VS7NG
YU2DU
ZE3JL
ZE4JC
ZL1PO
ZL2GH
ZS4FF
ZS5AW
ZS6AEA
ZS6AJQ
ZS6CT
ZS6OS
ZS7C

• 100
W1BBN
W1BUX
W1COM
W1DWH
W1EQ
W1EYP
W1GOF
W1GYE
W1HOZ
W1ISX
W1JLN
W1LOS
W1MAN
W1NS
W1OOA
W1PPZ
W1UBC
W1WPO
W1ZFV
W2ADQ
W2BMK
W2CBS
K2DGT
W2GND
W2GSN
W2HAZ
W2HYV
W2HZN
W2JJI
W2KGN
W2KTF
W2LRW
W2PGU
W2QJM
W2RA
W2SGK
W2TJK
W2ZQW
W2ZY
W3AFM
W3CLP
W3DDV
W3ETD
W3EWR
W3FJU

W3GEN
W3GRS
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W3HDZ
W3EH
W3HA
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W3JLJ
W3KJJ
W3OHC
W3ORU
W3RBF
W3RZL
W3SJK
W3UVT
W3VXE
W3WJD
W4AFS
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K4BAI
W4CRI
W4GXB
W4IA
W4KCQ
W4KIT
W4KN
W4KRR
W4LZW
W4POF
W4RTX
W4SHJ
W4SOV
W4UDZ
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W5BK
W5BQJ
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W5CDP
W5CTM
W5FDL
W5FTP
W5IX
W5JLU
W5KCR
W5NTT
W5NXF
W5QKZ
W5QLY
W5QN
W5RDL
W5VAE
W5ZSX
K6AQP
W6BUY
W6CEF
W6CGP
W6CUF
W6DUC
K6DSK
W6EKC
W6GEB
W6GHM
K6HFB
W6NUQ
K6OWQ
W6RZS
CT1PJ

W6UYW
W6VBY
W6VZG
W6WTH
W6WLI
W6ZEN
W6ZTW
W6ZZ
W7FMX
W7IEE
W7ITN
W7JUO
W7KEV
W7LYO
W7ONG
W7TMF
W7YOA
W8AL
W8FJR
W8HSW
W8ICC
W8IQS
W8IV
W8JGU
W8JM
W8KIT
W8LCN
W8LFJ
W8LYP
W8MFW
W8NKU
W8OPG
W8QVU
W8SSI
W8SWG
W8YGR
W8ZIY
W9AMM
W9BEM
W9CMC
W9ESD
W9IRH
W9IZ
W9JNB
W9LSV
W9MZP
W9OMZ
W9POB
W9POC
W9QLW
W9QNO
W9UAZ
W9VOD
WØARH
WØBFY
WØBMQ
WØDRG
WØEWH
WØFFV
WØFWW
WØFXI
WØIJW
WØTXW
CE6AB
CO2BM
CR7CI
CR9AF
CT1FM
CT1PK

CT3AV
DL1AG
DJ1BZ
DL1DC
DL1VR
DM2ACM
DJ2BC
DJ2BW
DL3KN
DL3NX
DL3OO
DL3RM
DL3XS
DL4MW
DL6TW
DL7CW
DL7DA
DL7EM
DL9TJ
EA0AB
EA2BL
EA9DF
EI3S
EI8S
EI9Q
F3TP
F7BO
F7DB
F7ER
F8PI
FG7XA
G2AO
G2AOW
G2BJY
G2GM
G2NS
G2ZZ
G3AAG
G3ACC
G3BDS
G3BNE
G3CWW
G3CWZ
G3FPI
G3FXB
G3HYM
G3IAD
G3TC
G3VW
G5CR
G5JL
G5WC
G6AX
G8JO
G8JR
G8LG
G8UK
GC2AWT
GI3BKG
GI4NU
GM3EDU
GM3EFS
GM8AT
GW5FN
GW8UH
HB9DH
HC2KJ
HC7KD

I1PL
IT1ZGY
KH6SO
KL7PJ
KL7UM
KP4ARD
KZ5GF
LA1RD
LA2MA
OA4AK
OE1KF
OE1SQ
OE3SE
EO5LV
OE8HK
OH1TM
OH2VN
OH2WM
OK1AEH
OK1GT
OK1WF
OK3HM
ON4CY
ON4HB
OZ4KX
OZ4PA
PAØBK
PAØBX
PAØHG
PAØLOU
PAØUV
PJ2AN
PK4KS
SM3ACP
SM5BPJ
SM5BRO
SM5IZ
SM7IA
SP1JF
SP5AR
VE1EA
VE1NE
VE2AFC
VE2BK
VE2KZ
VE3ARS
VE3OR
VE3QB
VE7AAD
VE7CN
VE7EH
VE7SB
VE7ZK
VK3RJ
VQ4BU
VQ4HJP
VQ4KRL
VS1FK
VS6BA
YO2BU
YS1O
ZL2AFZ
ZL2FI
ZS5KF
ZS6IH
ZS6OW
ZS6SG
4X4DR

RADIOTELEPHONE

• 265
PY2CK

• 260
VQ4ERR

• 257
W1FH

• 253
ZS6BW

• 252
W8GZ

• 251
W8HGW

• 250
CN8MM

• 246
W9RBI

• 245
W3JNN

• 243
W9NDA

• 242
CX2CO

• 241
W8BF
W6AM

• 234
W1NWO

• 232
WØAIW
ZL2GX

• 230
W1JCX
EA2CQ

ZL1HY

• 228
W6DI

• 227
W8KML

• 226
G2PL

• 224
W5BGP

• 220
W1MCW
W8BKP
II8M
SM5ARP

• 217
LU4DMG

• 215
W6YY

G3HLS
XE1AC

• 213
W8QJR
G4ZU

• 212
W4IIA
SM5KP

• 211
HC1FG
KH6OR

• 210
W2BXA
W5EFC
W6GVM
ZS6Q

• 207
W5JUF

W6KQY
KV4BB
PY2AHS
TI2RC

• 205
W9RNX

• 204
G5VT

• 203
W8VDJ
G3FNN
PY4CB

• 202
W2APU

• 201
W2AFQ
W8UAS
W9WHM
CM9AA

• 200
W3ECR
W3GHD
K4AIM
W6MBD
CO2BL
EA2CA
G3DO
PY4KL
ZS6DW

• 199
ZP5CF

• 196
W1ADM
W3BES
W4MKB
MS5LL

• 195
W3DHM
W8DMD

I1AMU

• 193
CO2BK
W5ALA

• 192
CT1PK

• 191
W3KT
WØGKL

• 190
W1MB
W5KBU
W5YLL
W7HIA
LA5YE
PY1NC
TI2HP
YV5AB
YV5EC

ZS6FN

• 189
W9QLH
CT1CL

• 188
W5ASG
W9JJF
MP4KAC

• 187
W6SAI

• 186
W1CLX
G8IG
HB9J
TI2TG

• 185
VE7ZM

• 184
W3UIP
PY4ZS

• 183
W4NYN
W4OM
VQ2DT

• 181
W5GXP
W6CHV
F9HF

• 180
W1PST
W4AZD
W4DCR
W6SYG
CE3AB
OD5AB
PY4VX
ZL1KG

• 179
W2JT
W4ANE
W4ESP
W4NHF
PY4APE

• 177
W2WZ
W4EEE
DL3IR
G6RII

• 176
W5NMA
W9FDX
W9ROQ
HC2JR

• 175
W3GHS
PAØNU
PK4DA

• 174
W1ATE
F8CW
G6BS

• 173
PY1AQT

• 172
W4EWY
W7ADS
W8CLR

• 171
W1LMB
W3AEV
W3NA
W8JBI
F9RM

• 170
W7MBX
W9HB
WØVSK
F8LE
HB9LA
PY2JU
VE3AIU

• 169
W3VKD
WØIEV
HB9ET

• 168
DL7BA
ZS1DO

• 167
W1BLF
W1EKU

• 166
W5DMR

• 165
W1MMV
W8PWH

• 164
W1HX
W2EOH
W3EVW
W4DQH
G3BID
KL7AFR

• 163
W2PUN
W3IMV
VE3KF

• 162
W2AEB
K2CJN
W8EWB
F8PQ
G5RV
I1CAR

• 161
W1ENE
W5MMK
G2ZB
I1ASM
I1BIC
I1YJ
PY4PI

• 160
W1GOU
W2JY
W2OGE
W3MAC
W4AAW
W4ADY
W4FPS
W4JGO
W8NXF
WØHX
WØNCG
DL1LH
DL4BY
F9HE
G6AY
KZ5DG
LU4DD
ON4DH
VE3BDB

• 159
W1FFO
W5KC
LU8CW

• 158
W2CKY
W3HIX
W5TIZ
WØKOK

• 157
W1AUR
W2FXE
W4CYU
CR6BX
G3FXB

• 156
W1QPN
W8ZOK
PY4RJ

• 155
W6ITH
W8NGO
W8REU
ON4RC

• 154
W4TO
W8AJW
ON4PJ
SM5WJ
TI2LA

• 153
G2BXP
G2MI
PY7VG
VP9G

• 152
W2JIL
W6SHW
W9YFV
WØCPM
PY1AGP
SM3BIZ

• 151
W1HKK
W2QF
W5HJA
W7HXG
W8EMZ
W8NWO
WØIOS
LA7Y
LU4MG
ZS3G

• 150
W2VWN
W3BET
W4GMA
W8MRC
W8MWL
F8XP
G3AIZ
GM3AVA
KT1WX
PY4LP

• 149
EI2W
ON4YI
TI2OE
ZP5ET

• 148
K4BVQ
W9BVX

• 146
W6FHR

• 145
W4TFB
W6CLS
W6QOG
W9YSX
G3BNC
G8UG

• 144
W2RGV
W2ZX
W7PHO
W8LAV

• 143
CX3BH
EA3KB
PY1FR

• 142
W1BEQ
W3CGS
W3KVB
W5KUJ
W7HQC
WØJYW
PAØJA

• 141
W4FBH
W7EMP
W9HP
WØYMH
CT1MB
CX4CS
F8EJ
G2AJF
G8QX
I1BPW
I1GZ
OZ3Y
VS2DQ

• 140
W2AKX
W2BQM
W2YYL
W4HRR
W6TT
W8AJH
W8IUD
W8PUD
W8TMA
W9EZD
WØEHF
WØPRZ
WØSYK
CE3AE
CE3DY
EA2CB
G6LX
I1CQD
I1UA
I1VS
KL7AON
KP4ADX
OZ7TS
PY4PQ
SM5RY
TG9AD
VP6SD

• 139
ZP5JP

• 138
K2AAA
W4DOU
W8JIN
W8KPT
I1ZCT

• 137
W1FZ
W7AUS
WØANF

• 136
W8SDR
CP5EK
EA3GI
G2WW

• 135
W1ARV
W2ZKG
W3JNM
W5CEW
W8TJM
WØGEK
EA9AR
HC2OT
LU8BS

• 134
W2PBI
W4GIO
4X4RE

• 133
W3DKT
W5EB
W5ERY
W6NIG
CE1AH
EA4CX
EA9BC
I1KDB
I1RM

• 132
W1GKK
W1KJU
W6VFR
W7PEY
W9IOD
I1CTE
ZS1KW

• 131
W2PRN
W2ZW
W4CWV
W9UUN
F8SK
GM2DBX
HB9FU
ON4AR

• 130
W2GIC
W2NHZ
W2WCY
W3BUX
W3BYL
W3DPS
W4BA
W5VU
W6CHY
W6TXL
W6WNH
W8GAN
W9BZB
WØPUE
CN8BA
F8MY
G8KP
I1AXD
I1RC
VE2GQ

• 129
W2ZVS
W4AQR
PY7VBG
VP6CJ
ZS6FU

• 128
G3COJ

• 127
W3BVL
F8SE
GC2RS
HB9NU
ZE1JE

• 126
W1QGJ
W6TZD
W8CYL
WØGUV
CE3HL
DL4QH
I1THZ
SM5BBX
ZE2JE
ZP5EC
ZS5CU

• 125
W1CJK
WØQGI
CX5AF
G3DPJ
ON4MS
PY4GC

• 124
W1LSZ
W4EBO
W4NBV
WØEYR
WØQFQ
EA7EV

• 123
W2BRV
W2MFS
W8AUP
W9TJ
F9PH
PY3AGR

• 122
W1HRI
W1PNR
W3DYT
W5GNG
W5HFQ
W8IUA
WØGFO
WØGPR
WØJRY
DL3NE
G2ALN
G5LN
I1ZV
LU5DC
OQ5LL
SM5ARL
VE2WW
VE7VO

• 121
W2BYP
W3EQK
W4BOC
W4JCK
W4SKO
W4YHC
W9BEK
W9ICL
W9JLH
W9NLP
WØAGO
DL3VZ
EA7EM
EA8AX
G4JW
I1BJC
OH2SE
VK5LC
VK7RA
VS2DB
ZP5CG

• 120
W1RZD
W2QKJ
W2SGX
W3DWA
W4DCQ
W4IYM
W4MB
W6IKQ
W6MJB
W8BGU
W8BIQ
W8WZ
W8ZET
W9JUV
WØFUH
DL1SD
FB8BC
HB9DY
I1AOF
I1BXK
I1RGF
VE1CR
VE3BNQ
4X4DK

• 119
W1CUX
W5JBD
W7DAA
HK4DF
I1SGZ
LU3DH
LU3PF
PY7VE
VK3BZ
VP5FR
5A1TA

• 118
W1RYJ
W2VQM
W2VYH
W6YI
WØTJ
OD5AD
ON4DM

• 117
W4KAE
W6YX
W8EKW
DL4EA
EA4CM
F8SC
I1AIJ

• 116
W1DBM
W1NBI
F3WV
G2HIO
I1BSB
LU8FP
SM5BAF
VE5RU

• 115
W3RIS
W4BVX
W4HKJ
W7GUV
W8HRV
WØZSZ
LU3FAQ
SM3EP
4X4CX

• 114
W2GLF
W4BYU
K5BEU
W6IDY
W8ZMC
WØDST
ET2LV
GM2UU
I1CBZ
PY4EM
TI2EV

• 113
W3MMH
W4BWP
W4EEO
W8CJ
WØMCX
G5PP
ZS2AT

• 112
W2IUV
W4MRA
W5JJA
W7EKA
CX2CN
DL6VM
G4JZ
OZ5KP
VE7AIH
ZS6LW

• 111
W1JSS
W1LIB
W2HTI
W2PRF
W2TEX
W2UTH
W3RPG
W4QT
W5YKK
W7MBW
W9CZC
W9DSP
W9JYU
PY7YS
VE3TW
VE7MS
VU2EH
YK1AC
ZS2IW

• 110
W1HN
W1UWB
W1WQC
W2GX
W2TXB
W3FGB
W3HUV
W3MJF
W4IQG
W5MZP
W5RHW
W5ZUI
W6DLN
W6LHI
W6LTY
W8BFQ
W8CQL
W8DMJ
W8LJ
W8MXS
W8QAD
W8VQD
W9LTR
W9ZUL
WØUYC
CO1AF
CT1DX
CT1NT
DL3EA
EA2DJ
EI4Q
G3YM
HB9RS
HP1BR
I1FLD
LU3EB
OD5BA
OH5PE
OZ7SM
VE3KT
VK2DI
YV5RS
ZS1GG

• 109
W1KWD
W1RIL
W4NDE
W5DJH
W6ZEN
W8GLK
W9ABA
CO2OZ
CT1PR
DL4TL
EA4DB
EA6AR
HB9CX
HB9ID
HK4CO
I1BNU
I1ZFF
PY2AK
ZS6Z

• 108
W1BAV
W2AOX
W3KTF
W3MWP
W4LIM
W7MGT
W8RVU
WØIGL
F9EZ
I1AHW
I1RLH
IT1TAI
OZ5BW
PY1ANU
ZS5GU

• 107
W2DCO
W2RUI
W4LZM
K6EVR
W7HLB
WØCXC
DL7CX
EA3FG
G4MS
G5OO
HB9JZ
IT1AFS
OH5NW
PY6CO
4X4BL

• 106
W1OHJ
W3AER
W4LRG
W6ZWK
W7AHX
W7RSP
W8CUO
W8MKY
W8SDD
W9DPI
DL1FK
DL7EX
F8YE
G8VB
HR1EZ
I1CWX
I1CXJ
LU3MZ
TI2OA
VE6NX
VK3JE
VQ5EK
YN4CB
ZL2JB

• 105
W2JJI
W2ONV
W3CUB
W3ZQ
W4ZMC
W5JUE
W5PQA
W6AED
W6BJU
W6UYX
W8JWV
CX6BM
FA8RJ
G2MQ
G3ESY
I1TBU
VE7YR
VP6GT
ZD6RD
ZE2JK
ZS6WS

• 104
W1BFT
W1BPH
W1JXM
W2PPS
W3DRD
W4AHF
W4EYH
W4KGR
W4TWW
W5RNG
W8ACP
W8CQ
W8KDJ
W9FHZ
W9LXQ
CE3AG
EA4CK
EA7EU
EI2L
EI3S
F3OX
G2ALO
G6TA
G8QW
I1SGA
I1TDJ
I1ZJG
KV4BI
LU4ES
LX1SI
PAØAGR
PY5DP
SM6SA
ZD4AH
4X4FV

• 103
W1JYQ
W1PDF
W2CGP
W2DPS
W2ESG
W2IZS
W2NQR
W2OFX
K2QQQ
W2QWS
W4AYF
W6GPB
W8IOO
W9EWC
W9ZPT
WØUQD
CR6AU
DL3RM
DL4OR
DL4UZ
DL7CE
F3DG
G2AKR
G8SC
GW3CDT
HB9KU
HK3PC
HK4FV
I1KP
IS1AYN
KG4AP
OE5CK
OZ7BG
PY6CN
VE1NH
VQ4SC
YS2AG
3V8BB

• 102
W2DYR
W2HTI
W2LV
W2PBG
W2QCP
W3QMG
W4KYB
W4PRM
W5JWM
W5NZE
W6PWR
W7HTB
W7YAM
W8IWI
W8JXM
W8MWZ
SU1HF
W9WXT
W9YRO
WØSQO
WØSUG
WØWSH
CO7GM
CT1DU
CT1ER
CT1FL
CX7BA
DL3DO
DL3TM
DL7AB
DL9OV
EL1H
G2DP
G3CCO
G3HRO
G3XC
GC6FQ
GI6TK
GM3BCL
GM3CIX
GW8BW
HB9HM
I1AUH
I1BFS
I1ZZG
KG6AGO
KP4ES
OE5JK
ON4LJ
OZ3TH
PAØMDW
PY2BCB
PY6RZ
TA3GVU
VE3AUJ
VE7HC
VS9AH
XZ2SY
ZD1SW
ZL3LR
ZS5G

• 101
W1QWU
W1RFE
W1UMC
W1ZYG
W2LSX
W2RTX
W2UAT
W2WME
W3BIW
W3ORG
W3SFK
W4DEO
W4EFX
W4IIB
W4LPT
W4NZM
W5JCY
W5LFK
W5ZS
W6BYB
W6KPC
W6PKI
W6QNL
W7DND
W7JNC
W7KT
W8NML
W8WT
W9LQ
WØJFI
WØLIL
WØMKF
WØNWW
CN8GT
CX3AA
EA4EP
F3PW
F9AA
G6WX
HB9BR
HK1DZ
I1ASO
I1BEM
I1CSP
I1KZ
I1NK
I1QQ
I1RB
I1WAL
KP4EZ
OH2OV
PAØTV
SM5XP
TG9AZ
VE1DR
VE3BQP
VP6WR
VP9L
VS1AY
YK1AA
4X4AD

• 100
W1FQX
W1MLM
W1REP
W1VAN
W1VFK
K2BZT
W2CFT
W2DSU
W2FZO
W2GFH
W2KSN
W2MA
W2OR
W2OXR
W2PQJ
W2SKE
W3AM
W3BYI
W3DZZ
W3JTK
W3OJW
W3PA
W3RVM
W3UMU
W4CRI
W4DCW
W4DSC
W4DYM
W4ECE
W4EYG
W4GLR
W4LGG
W4NQN
W4NYX
W4PGZ
W4PYX
W4ZKM
W5ALB
W5GZ
W5NXF
W5SFT
W5UBW
W6MEL
W6NOT
W6OZE
W6UZX
W6ZTW
W7ADH
W8AIC
W8BRA
W8CSN
W8DXO
W8FJX
W9CKP
W9GZK
W9HMG
W9IGK
W9UJ
WØDIB
WØDXE
WØGSW
WØMAF
WØWXJ
CR6AG
CT1QF
DL1WP
DL4SK
EI4L
F7AX
F8WE
G2HIF
G2LS
G2VJ
GM3DZB
HC2BH
KP4HZ
LU8FAO
LU9FAY
LX1DC
OE5YL
OH1PN
OZ7OP
PAØQJ
PAØZD
PJ2AF
PY1FT
PY1RC
SM4BMX
SM5FA
SM6OE
SU1AS
VE3AOL
VP1EK
VP5AR
VQ5PBD
XE2KW
YN1RA
YU1AG
ZS1MQ
ZS3AB

Station Activities

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the *preceding month*. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Richard B. Mesirov, W3JNQ—PAM: TEJ. RM: YAZ. E. Pa. nets: 3610 kc. (meets at 1830), 3850 kc. (meets at 1800) and 3997 kc. New appointments: AFF and GYP as ORSs, WPG as OES, FCI as OPS. The Pottstown ARC meets the 1st Thurs. and 3rd Tue. of each month at the Science Bldg. of the Hill School and reports new officers are K3AOH, pres.; HOG, vice-pres.; ZVY, secy.; YDY, treas.; ARK, act. mgr. Officers of the Lancaster Radio Transmitting Society are KKW, pres.; UMX, vice-pres.; OY, secy.; HXY, treas. The club has a monthly paper edited by CMN. In addition, the LRTS conducts code classes in the McCaskey High School under the direction of VBI, and has secured the call W3AD for a club station as a memorial to a former member. Election results of the Delaware-Lehigh ARC are NF, pres.; FKE, vice-pres.; RUY, treas.; FVT, secy. The Frankford Radio Club continues its expansion and has had more than 50 in attendance at its last several meetings and noted that its club entries broke QSO records in both the one transmitter (BES/3) and three transmitter (FRY/3) groups in the last Field Day. AXA returned to the fold with a traffic total and report of DX activity. CXJ has a new SX-*101* and an 80-meter dipole and is QRV for all traffic. LEZ continues with DX by working VS1 for a new country. OK and BBS are both using vertical antennas. PYF continues his travel with a jaunt to W5-Land. While he is gone KN3AFW minds his store, but reports the going is tough in handling traffic on the Novice bands. CUL complains that the National Convention was too short in duration and also reports rubbing elbows with all of the brass. TEJ reads Official Bulletins every evening just before the PFN meets on 3850 kc. NOH entered the F.M.T. and also readied his 3-band squad for launching. ALU passed the General Class exam and is on with a DX-100. The Short Skip Radio Club meets at 28.8 Mc. every Sat. night at 2330 and passed its 28th Consecutive session! JNQ was QRT rebuilding but is now back in action. To those who applied for membership in the AREC—have patience. We have no SEC at present, and your applications will be taken care of as soon as possible. In one year JBA has worked 468 6-meter stations in 3493 QSOs. Many E. Pa. stations are not sending in monthly reports and this column will disappear without information. Traffic: (Sept.) W3CUL 1807, AFF 525, WHK 248, TEJ 232, CXJ 132, BFF 125, BNR 37, EPL 32, PDJ 26, FVT 20, FCI 15, AXA 13, AMC 9, NQB 8, FAW 6, JNQ 4, PYY 3, ADE 2, CNO 2, KN3AFW 1. (Aug.) W3AFF 893, WHK 462, NF 63. (July) W3AFF 572. (June) W3WHK 249. (May) W3WHK 355.

MARYLAND-DELAWARE-DISTICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Asst. SCM Delaware: Philip R. de Courcelle, 3DQZ. SEC: PKC. Section nets: MDD 3650 kc. 1915 EST M-S, MEPN 3820 kc. M-W-F 1830, SSn 1300 EST. New appointments: ZZK as EC for St. Marys Co. and HIZ or ORS. The Foundation of Radio Amateur Clubs' Hamfest was a big success in spite of rain. The affair, chairmanned by OMN, was held in the two auditoriums at the Gaithersburg Fair Grounds. First prize, a GRP-90, was won by ex-WN3GQI, second was a Gonset Communicator for 2 meters, won by INC, and third an Eldico Automatic Key won by 4BGV, a c.w. man. The mobile contest was won by CQH, with K4JEL runner-up. The v.h.f. transmitter hunts were won by NUT on 6 and SST on 2 meters. The CARCS meetings on Sept. 9 and 23 featured movies, "The History of the U. S. Air Force." KLA reports a fine score for PGA in the September V.H.F. QSO Party. The club journeyed to West Virginia, as did the National Capital V.H.F. Society, and gave many that state on 50, 144 and 220 Mc. The Area ARC has code classes started under HXN. YAG presented AF films, "The Thunderbirds," "Aeronautical Charts" and two others at the RCARA meeting on Sept. 27. WMRC and Philmonts' half-way mobile trip to Havre de Grace proved to be a big success with a large turnout from both clubs. The CSRC started its fall-winter season with a talk on receivers by UN. Mr. Schultz, Chief of Communications, U. S. Weather Bureau, presented a history of the Weather Bureau Communications and 4RJX introduced his recorded history of telegraph, "The Saga of The Telegraph," at the District Heights Radio Club meeting on Sept. 27. The speaker at the WRC meeting of Sept. 20 was Bill Grenfell, 4GF, Chief of the Amateur Division of the FCC. He spoke on the proposed revisions of the amateur regulations. New officers of the WAYLARC are RXJ, pres.; 4TVT, vice-pres.; TSC, secy.; and CDQ, treas. K4DKG/3, Rockville, is now KR6HN and is on 20-meter s.s.b. from 0630 EST. SLS and DVO reported the birth of Ray III. BGF and ex-WN3HEX passed the General Class exam. PQT handled traffic from EJW/3 at St. Mary's Co. Fair. K2DAB is a new General Class licensee and an operator at PQT. WV received, finally, worked 1950, an AC5RF QSL making WAZ. ECP vacationed in New York and New Jersey and used a BC-474 to keep schedules. YAE, Montgomery Co. EC, conducted a Washington Area AREC meeting. PKC, ECP, K4LMB, 4TNQ, PBW, BKE, PZA manager RPE and UCR were in attendance. MHW at OA4IGY is keeping schedules with MCG and MSK at the U. S. NRL end. YL operator UJU was very active in the Sept. V.H.F. QSO Party on 6 meters. GKP worked Georgia and Mississippi for No. 24 and No. 25 on 2 meters during the Sept. Aurora. PZW, our new RM, issued a nice printed bulletin. Activities and traffic reports are due at the SCM's by the 5th of each month. The ARRL National Convention will be held in Washington Aug. 15, 16 and 17, 1958. Traffic: W3PQT 1172, UE 278, NNM 173, K3WBJ 132, W3HIZ 127, PQ 104, WV 100, RV 98, COK 94, BUD 68, UCR 65, ECP 35, EUG 32, AHQ 10, PKC 9, MCG 7, OYX 6, KA 2, WSE 2, MSR 1.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW. PAM: ZI. New appointments: K2CIQ as OES and K2SOZ as ORS. We wish K2ERC a speedy recovery from his illness. The SJRA Picnic was a big success with nearly 700 attending. K2KTS received his WAC on 20-meter phone. K2CEA, TE and ZK are the leading SJRA DXers. K2OOK (RG's son) is doing a fine job handling traffic. K2CPR is still silent in his new QTH. K2PPT, Burlington, received the VA-JF award. K2DSL (Trenton) has increased power. At school, Bunny is president of the Student Council. K2PGC is now president of the Bucknell U. Amateur Radio Club (3RPB). RG continues to add states and countries QSOed with his QRP transistor rig. ZI spent part of his vacation visiting 8FX and the Ford Museum in Detroit. K2JGU, Glassboro, is heard regularly on NJF, TCPN, V3N and also MARS nets. WN2SXV, Brigantine, QSOed 20 states his first month on 40 meters as a Novice. K2BNU, Audubon, is a radio operator aboard the M/S *Dynafuel*. BZJ, Pennington, is back on the air. PTJ, Pennsauken, has many new antennas and seems to favor 6 meters. SJRA membership is nearing the 250 mark. 5VCI/2 is technical editor of *Harmonics*. The Burlington Co. Radio Club meets in Moorestown the 1st Fri. The SJRA meets in Erlton the 4th Thurs. Reports from clubs are solicited, especially with regard to plans and projects. At this writing 2UA and daughter K2INQ expect to sail for Europe early in November, returning after Christmas. Seventeen Form 1 reports were received this month. Keep up the fine work and keep me advised of your activities. Traffic: W2HDW 203, K2OOK 185, W2RG 130, K2JGU 71, W2ZI 48, K2PPT 37, W2BZJ 34, K2EFA 33, DSL 20, PGC 16, KØHEX/2 9, K2SOX 4.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: TEP and NAI. 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, SPRN on 3980 kc. at 1000, LSN on 3970 kc. at 1600. UTH reports that he is collecting pictures of prewar and early v.h.f. gear in order to put together a "World Above 50 Mc." Show. K2RHQ is building a double sideband amplifier using 807s. K2CEH is looking for schedules on 220 Mc. He is on 220.030 Mc. on Wed. and Sat. nights. K2RTN has been working 6- and 7-Land on 75-meter phone in the early morning hours. RXW reports an attendance of 150 at the Oneida Hamfest. 4ZM was the principle speaker. K2PVN is building a 500-watt final. BKC has a new 4-125A final which can be heard on the NYSPTEN. WN2TAG reports good results with a twice-bent indoor 40-meter dipole and a DX-35. He has worked 16 states in 6 weeks. The Niagara Radio Club, Inc., elected KEC, pres.; UMS, vice-pres.; K2LKC, secy., and KN2CEW, treas. The Niagara RC supplied communications for the International Boat RACES in Niagara River. QNA has a new 6N2. He is also looking for schedules on 220 Mc. with 20 watts and a 5-over-5. K2RIT has a new three-element 15-meter beam and 40-ft. tower and is really knocking off the DX. K2RAA is on the air with a new home-brew 3-807 120-watt rig. K2KWF is now on 15 meters with 50 watts and a three-element beam. SCI also has a new three-element 15-meter beam. MTA/2 is building an 829B 6- and 2-meter rig between 10-meter contacts. QQ made DXCC with 104 confirmed. QQ is one of our most active OOs. IRU is putting articles of interest to blind hams on magnetic tape (about 2 hours of reading per tape) and mailing them on, round-robin style. This is an excellent project, for it keeps the blind ham up to date on current happenings in ham radio. He would be glad to answer any queries concerning this no-cost service. Lyn Nichols, the young chap who lost both arms when his antenna hit the power lines, is now KN2DGU. He acquired his ticket after the accident. Clara, RUF, has been helping him along and he'll soon have his own station on the air. ORI now has 33 states on 2 meters. COB has been appointed OPS. K2AQY and K2EGB have been renewed as ECs for Wyoming and Canadaigua Counties, respectively. Traffic: (Sept.) K2IYP 197, W2RUF 183, COB 68, K2DXV 48, GWN 43, RXH 40, RTN 24, RIT 16, VNR 16, BBJ 12, GQU 9. (Aug.) W2COB 50.

WESTERN PENNSYLVANIA—SCM, John F. Wojtkiewicz, W3GJY—SEC: OMA, RMs: UHN, GEG and NUG. PAMs: AER and TOC. The WPA Traffic Net meets nightly on 3585 kc. at 7 P.M. Satellite accounts prompt us all to put a "top priority" tag on our c.d. efforts. If you are not yet a member of AREC or RACES, SIGN UP NOW. Gleanings from the Horseshoe Radio Club bulletin: AFD, KQD, ZUG and ZUF took in the ARRL Convention held in the Windy City. K3AHY and AHG are new General Class licensees. CHN is working hard on an 813 final and three-element beam. ZUG, a newly-appointed EC, needs support. KFD is back on c.w. and checks into MARS and c.d. nets on 80 and 160 meters. YHQ garnered some new DX with his bow-tie antenna. ROA is busy boosting his DX total. TJP, in Africa as a missionary, hopes to work Stateside with a VQ3 prefix. BTX is helping BZM get his 813 on the air. The gear at YA should get a good workout with YOZ present. MRI still is going strong on 10-meter mobile. AFH and OEZ are out of the hospital. Mr. A. L. Budlong, of Headquarters, was a speaker at the Oct. 16 gathering of the Amateur Transmitters Assn. held at the studios of radio station WPIT. AOH and his trusty rifle hunted bear in Vancouver. PBN is now on 20-meter phone. LHP has been flying radio-controlled model airplanes all summer. At the first fall meeting of the Cumberland Valley ARC the following were elected: ZUX, pres.; KRM, vice-pres.; KN3BRN, secy.-treas.; ZQU, net. mgr. ACH, outgoing secretary, did a fine job reporting club activities. LSS has his new Johnson Valiant on the air. The regular monthly meeting of the Conemaugh Valley ARC was held at Dr. J. J. Huebner's cottage. C.d. activity has been confined to weekly drills. LXQ reports the Communications Officer has requested FCDA to inspect the Cresson Site for approval. WRE, MIM and LXQ live dangerously at both ends of 75/80 meters on Sun. mornings. Ideas are being hatched by the RO for increased activity within the RACES group. AFY and KBZ are now General Class. ZKO has a new PRO-300. FAK spent his vacation on the Great Lakes. SFU moved to Maryland, SIN to W2-Land. UIY has a Johnson 500 and new beam. ELU sold all his gear. A report from the Allegheny-Kiski ARC states that the club-sponsored float in the Fort Crawford Day Parade never materialized since not enough time was available for organization. Several of the club's mobiles participated. HQW held a continuous 4-hour QSO with a mobile in motion travelling through the State of Wyoming. The Etna Radio Club was incorporated on Sept. 6. HSW invaded VE3-Land. KIQ and MWJ are sporting new station wagons. TOC had antenna troubles but HSW, KN3AAD and WN3MLU came to his rescue. KN3BVV is a new licensee. ARZ has dropped the Novice tab for General Class. Traffic: W3WIQ 1150, BZR 74, GJY 55, LSS 40, K3AGF 20, W3UHN 15.

CENTRAL DIVISION

ILLINOIS—SCM, George T. Schreiber, W9YIX—Asst. SCM: Grace V. Ryden, 9GME. SEC: HOA, Cook County EC: HPG. RM: MAK. Section net: ILN, Mon. through Sat., 3515 kc., 7 P.M. CST. This will be one of the last columns your SCM writes for you. After serving for four years we feel we deserve a rest and a "little more airtime." Thanks to all of you for your cooperation. During the National Convention at Chicago NN was elected 1958 chairman of the W9DXCC. DEI moved to California and is sporting the call 6TXD. LKK demonstrated his RTTY to the Northwest Radio Club in Des Plaines. NSL is contemplating 6-meter mobile work. Rescue work saved ATH's equipment in basement flooding recently, but other amateurs were not so fortunate, including YIX. PEB serviced and painted his beam for 20-meter winter DX while PGW has switched from DXing to ragchewing. CKU has his 72A-2 realigned the better to hear his brother at KC4USA. YMI threatens to rediscover hamming any day, now that boats have been dry-docked. EWR is heard on portable although he is busy traveling the Midwest for his employer. SXL reports bad TVI after an absence of three years. NIU is looking for a good winter project when the snows come. Congratulations to the CQ Radio Club of Wheaton (Ill.) Academy and the Glenbrook High School Electronics Club on their recent affiliation with ARRL. The September issue of the *St. Clair Amateur News* was good-looking and with color, as well as interesting. UBI regrets a heavy classroom schedule keeps him from the nets, especially as he wants to see how his 10B600L will handle the traffic. K9AXS finds 40-meter phone to her liking and hubby VEY has a class of ten he is instructing in radio. Ed and Larry, operators at K9USN, report the station is going off the air, but they don't say why. K9AMC likes his 60-ft. tower and KJ's 76-footer still is holding in the fall winds. GDI reports that he is glad the fishing fever has subsided so that he can get back to DXing. The Illinois C.W. Net had a message total of 103 with 22 sessions, reports RM MAK, while CSW reports that the North Central Phone Net handled 466 pieces of traffic. JZK now is running 600 watts on 40 and 10 meters and hopes that by the time you read this he will be perking on 80 meters. INF is renewing his acquaintance with c.w. after all these years and is having a good time. EVZ reports the joining of Silent Keys of another old-timer, EHL of Mill Shoals, Ill. The Warren County RACES Net never misses an opportunity to cooperate with the Monmouth Police. CTZ spent a good portion of the summer traveling and hence missed considerable airtime. ICF has a new 10-meter beam to replace the old one the wind played with. VBV is back at Miami University at Oxford, Ohio, singing slant eight. K5JAW is sweating out in Peoria a ninth district call. Downstate they still are talking about the Shawnee Amateur Radio Association Picnic and Hamfest. Officers of the club are RNM, RKV and ATL and directors are BJ, KH and UXR. Traffic: (Sept.) K9USN 678, W9DO 604, IDA 575, K2MUV/9 300. W9MAK 274, FAW 124, PCQ 106, SXL 52, YYG 25, VBV 17, K9AMD 11, W9SKR 4, HPG 3, JZK 2. (Aug.) K9IFB 52, W9PCQ 49.

INDIANA—SCM, Seth Lew Baker, W9NTA—Asst. SCM: George H. Graue, 9BKJ. SEC: QYQ. RMs: DGA, TQC and TT. PAMs: CMT, KOY, SWD and UXK. New appointments: NQG Green County, WUH Vanderburg, RVM Knox, PGO Huntington, KBX Owen, LNC Vermillion, SVZ Lake, JUQ Shelby, WTY St. Joseph and EQB Johnson as ECs. IRCC officers elected at the Purdue meeting were WTY, chairman, IHO, vice-chairman, FJI, secy.; CDW, treas.; MVZ, QYQ, CMT and NTA, directors. The Shelby County RC and Bloomington ARC were admitted to IRCC membership. Those awarded the Hoosier Courtesy Award were CC, CDW, QYQ, RTH, TQC, WTY, BUQ and K9CIH. The YLs organized a YLRL club to be called the Hoosier Amateur Women's Klub (HAWK). Officers elected were RTH, pres.; JYO, vice-pres.; KN9IXD secy.; LYU, treas.; K9CIH, pub. chairman; K9HMJ, editor. The club's news bulletin will be called *Hawk's Eye View*. The following furnished communications for the Antique Car Endurance Run at Mitchell: WHL, ZSX, CTM, QYQ, CNL, YJD, K9BEH and HIL. MMY was appointed OPS. New calls: KN9JKO in

(Continued on page 116)

The editorial "A Christmas Bonus" reproduced below was written last year by the late Cyrus T. Read, W9AA. We find it now, as we did then, hard to imagine a simpler, more appropriate expression of the great and unique bond of friendship that radio amateurs alone enjoy. By popular request, reprints of "A Christmas Bonus" have been prepared and are available on request.

Bill Halligan, Jr.

A Christmas Bonus

IN THE DAY BY DAY PURSUIT of our hobby we radio amateurs have a wonderful time. The fascination of experimenting with new circuits and equipment — the thrill of DX — the organized teamwork of net operation — the excitement of Field Day, Sweepstakes, the DX Contest — all combine to make ours an incomparable avocation. In the midst of such absorbing interests it may be that we fail to remember the one enduring reward which comes to all of us through our amateur activity.

THAT REWARD is the many lifelong friendships which we all establish directly or indirectly through amateur radio. From the day we start to work toward an amateur license we begin to make new friends. Some may live near enough to help in learning the code, building equipment, or putting up an antenna. Others are so far away that we never hope to see them in person. None-the-less, near or far, they are all close friends. Most of us have had the heart-warming experience of visiting some distant place, calling on an amateur whom we knew only through contacts over the air, and being welcomed like one of the family.

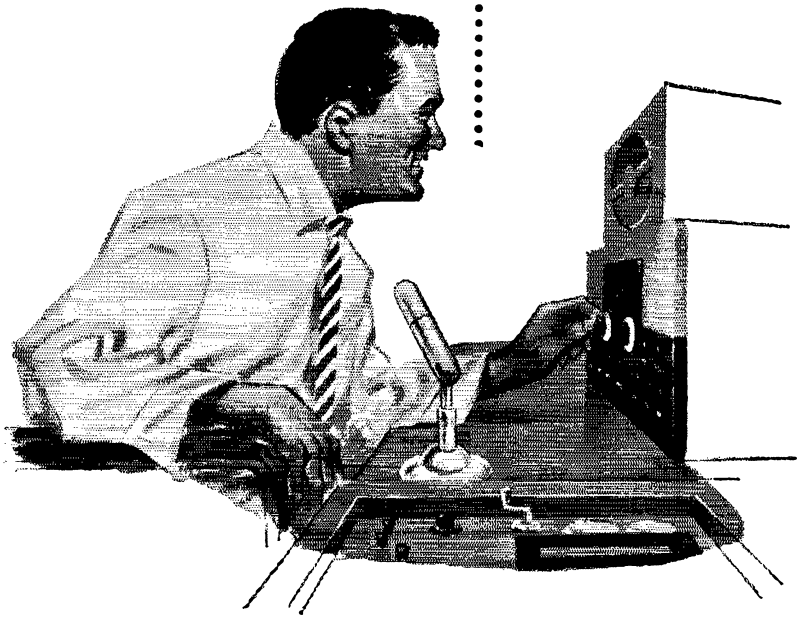
WE AT HALLICRAFTERS like to feel that those interested in amateur radio are our friends. And, at this particular season, we want to extend to all amateur enthusiasts, everywhere, our sincere best wishes for a Very Merry Christmas and a Happy New Year.

Vy 73,

— CY READ, W9AA

Bill Halligan Jr. W. S. Halligan W9AC for hallicrafters

amateur radio is fun with Johnson amateur equipment



And the fortunate amateur who owns Viking equipment enjoys the maximum amount of operating pleasure and performance.

Since the first Viking transmitter was built, amateurs everywhere have looked to the E. F. Johnson Company for leadership in transmitter design.

Owning a Viking means more than just having the best transmitter . . . it means more than the DX record you build; it means that your station has arrived.

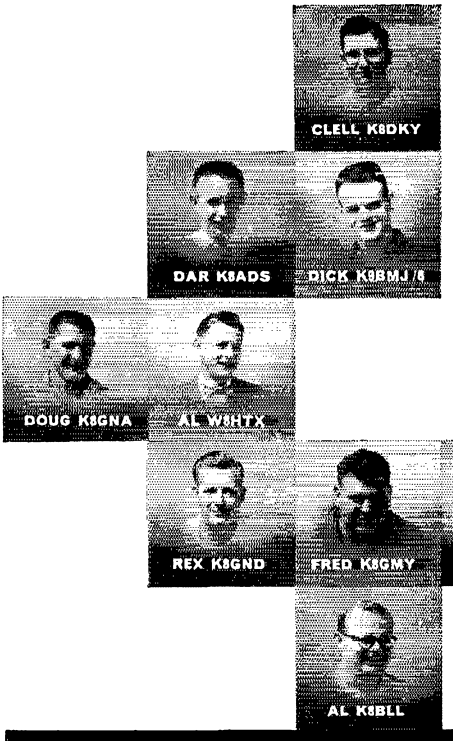
For effective practical design and honest dollar value, Viking transmitters stand ahead of all others. Whether you choose the "Adventurer" as your first transmitter, or the fabulous "Kilowatt" as the "last word," you know beyond a doubt that your transmitter dollar is soundly invested. The big "J" on the front panel tells you that!

VISIT YOUR DISTRIBUTOR — HE'S HELPFUL AND FRIENDLY

The E. F. Johnson Company sells its products only through authorized distributors. We have long recognized the valuable services an established distributor can render to the amateur.

Your distributor offers a wide choice of equipment and accessories. He has considerable experience in the field and can offer helpful suggestions. Most distributors offer convenient time payment plans to suit your budget and often as little as 10% down is all that is required to get you on the air.

Visit your distributor soon . . . see and compare the exciting new Johnson equipment!



All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

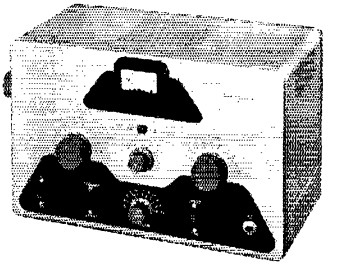
HEATH *hams work to bring you*

ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

$35.95



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 500 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 18 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL DX-100

$189.50

Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

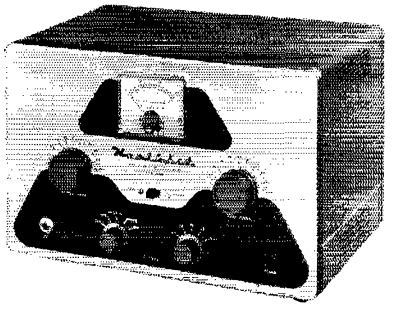
You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built in VFO, built in modulator, TVI suppression, Pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, Pi network interstage coupling, and high quality materials throughout. Copperplated No. 16 gauge steel chassis, ceramic switch and coil insulation, silver-plated or solid silver switch contacts, etc., are typical of the kind of parts you get, to use in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11, and 10 meters with a single band switch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final Amplifier, modulated by a pair of 1625 tubes in parallel. Other tubes featured are: 6AL5 bias rectifier, 5V4 low voltage rectifier, 2-5R4GY high voltage rectifiers, OA2 voltage regulator, 12AX7 speech amplifier, 12BY7 Audio driver, 6AV6 VFO, 12BY7 crystal oscillator-buffer, 5763 r.f. driver, and a 6AQ5 clamp tube. VFO tuning dial and panel meter are both illuminated for easy reading, even under subdued lighting conditions. Attractive front panel and case styling is completely functional, for operating convenience. The DX-100 was designed exclusively for easy step-by-step assembly, and no other transmitter in this power class combines high quality and real economy so effectively. Listen to any ham band between 160 meters and 10 meters and make a mental note of how many DX transmitters you hear! This kind of acceptance by the amateur fraternity testifies to the performance and quality of the rig. Its the kind of a transmitter you will be proud to own, and one that will give you a very respectable signal on the air. Time payments available! Shpg. Wt. 107 lbs.

...top quality at lowest prices!

NEW HEATHKIT PHONE & CW TRANSMITTER KIT

MODEL DX-40

$64.95



The new DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig, for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, controlled-carrier modulator for phone operation peaks up to 60 watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and Pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80 meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so the buffer stage can be pretuned before the final is on, and so the operator can locate his own signal on the band. Tubes used are a 6CL6 Colpitts oscillator, a 6CL6 buffer, a 6146 final amplifier, a 12AX7 speech amplifier, a 6DE7 modulator, and 5U4GB rectifier. The modulator, incidentally, has plenty of "punch" for clear, strong phone operation. A switch selects any of three crystals, or a jack for external VFO. A high-quality meter with D'Arsonval movement mounts on the front panel for tuning. Whether you are a newcomer or an old-timer, you will find the DX-40 an ideal rig in its power class! Shpg. Wt. 26 lbs.

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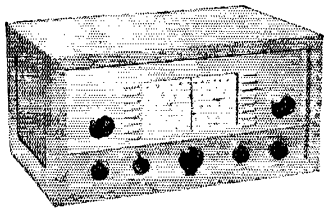
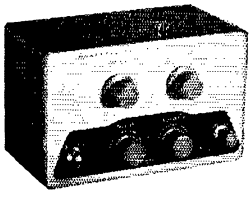
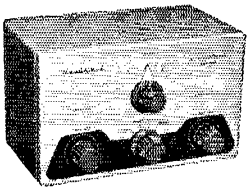


ALL-BAND RECEIVER



ELECTRONIC VOICE CONTROL



"Q" MULTIPLIER

HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal 5½" speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs.
Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. **$4.95**

MODEL AR-3
$29.95

HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to build with complete instructions provided. Requires no transmitter or Receiver alterations to operate. Shpg. Wt. 5 lbs.

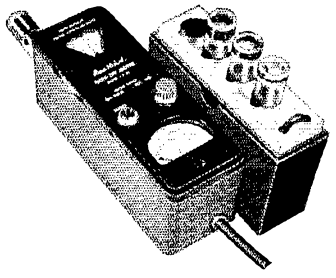
MODEL VX-1
$23.95

HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a hetrodyne. Functions with any AM Receiver having an IF frequency between 450 and 460 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs.

MODEL QF-1
$9.95

more fine ham gear from the pioneer



GRID DIP METER

HEATHKIT GRID DIP METER KIT

A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designed procedures, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs.
Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC. Shpg. Wt. 1 lb. No. 341-A **$3.00**

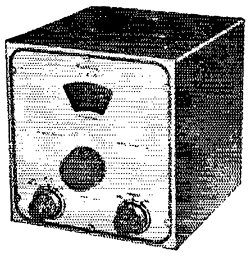
MODEL GD-1B
$21.95

HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1

$19.50



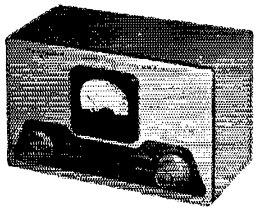
VARIABLE FREQUENCY OSCILLATOR

HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2

$15.95



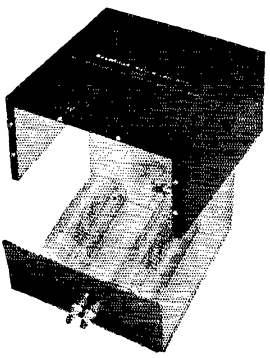
REFLECTED POWER METER

HEATHKIT BALUN COIL KIT

This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

MODEL B-1

$8.95



BALUN COIL

...in do-it-yourself electronics!

FREE 1958 Catalog

Send for this Free informative catalog listing our entire line of kits, with complete schematics and specifications.

☐ Rush Free 1958 catalog.

HEATH COMPANY

BENTON HARBOR 9, MICH. a subsidiary of Daystrom, Inc.

name _____

address _____

city & state _____

QUAN.	ITEM	MODEL NO.	PRICE

$_____ enclosed. Parcel post, include postage—express is shipped collect.

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DeMambro Radio
Providence
W. H. Edwards Co.
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NOW, get your NC-300 for little or NO MONEY DOWN

it's National "old receiver round-up time"

How many times have you wished your old receiver was a bright new National NC-300? Now, make this dream come true, and save money too!

HIGHEST TRADE-IN ALLOWANCES IN HISTORY!

Most National distributors are offering top deals for your old receiver—regardless of age—toward National's famous NC-300.

NO CASH DOWN in most instances where old receiver covers down payment, up to 20 months to pay balance.

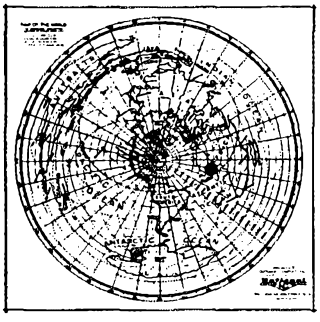
You may win a FREE NC-300 if your old receiver is the nation's oldest one traded for an NC-300 during the contest period. Get official entry form from your local National Company Distributor.

Final decision will rest with National Co.'s appointed board of judges. Contest period: August 1—Dec 31, 1957

BURTON BROWNE/New York

World famous National NC-300—thousands now in use. Suggested price, without trade-in—only $39.90* down. Cash price $399.00 at most National distributors.

* Slightly higher west of the Rockies.



FREE FROM NATIONAL: MAIL COUPON NOW

This is what you get: Free 19" x 20" 360° world Azimuthal map. (Use it to aim your beam), and full information on National's "Old Receiver Round-Up" plus detailed facts on the NC-300 and why it is your best value.

National Company, Inc.
Dept. 300, Malden 48, Massachusetts

Please send me my FREE Azimuthal map and full information on National's "Old Receiver Round-Up" plus detailed facts on the NC-300.

Name_____ Call_____

Address_____

City_____ Zone____ State_____

tuned to tomorrow

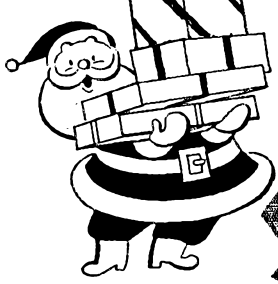
since 1914 **National** Company, Inc.
Malden 48, Mass.

8 out of 10 U.S. Navy ships use National receivers

BOXED, WRAPPED and DELIVERED!

International's

for HAMS!



This year, for a happy Christmas Day in many Ham Radio Shacks, International improves its Christmas Gift Service still more by providing special Christmas Gift Wrapping, inside the shipping container. A few of the many International printed circuit units are shown here as Gift Suggestions . . . boxed, wrapped and delivered, with your card enclosed.

T-12 TRANSMITTER

3500-4000 KC

Only 3½" x 6" x 3¼" . . . the new T-12 Transmitter makes many DX contacts, with careful operation under good conditions.

Pi-network output enables operator to couple into almost any type antenna. Has low drive oscillator with International FA or F-6 crystals; may be used in close tolerance applications. 12BH7 oscillator-buffer and 5763 final.

7000-7300 KC

Power Requirements: Filaments 6.3 VAC @ 1.35 amp. Plate supply 350 volts dc @ 50 mils. Separate B+ input connection to final for addition of modulation. Crystal frequency same as output frequency; uses straight through operation.

- ***LOW COST***
- ***SIMPLE TO OPERATE***
- ***LOW COST POWER SUPPLY***

PRICES

- T-12 Kit less tube and crystal ..... **$ 8.95**
- T-12 wired, with tubes less crystal **13.95**
- FA-5 Crystal frequency (specify KC) **3.00**
- Special T-12 Kit less tube, with one 80 or 40 meter crystal (specify KC) **10.95**
- Special T-12 wired with tube and one 80 or 40 meter crystal (specify KC) **15.95**

Shipping Weight ..... **1-lb.**

(See "How To Order" on next page)

FCV-2 CONVERTER

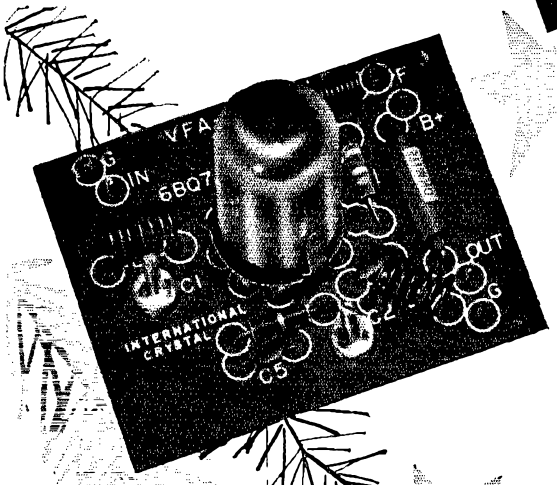
- **Model 50 - 6 Meters**
- **Model 144 - 2 Meters**

A 6U8 tube is used as oscillator-mixer. Cascode r-f amplifier using 6BQ7A. IF outputs available from broadcast band through 30 MC. (Two standard IFs are available, 600-4600 KC, 7-11 MC; others on request)

Designed to mount in a standard 3" x 4" x 5" minibox.

PRICES

Kit with crystal (less tubes) **$12.95**
Wired with crystals and tubes **17.95**
Shipping Weight ..... **1-lb.**



VFA-1 CASCODE PRE-AMPLIFIER

For 2 Meters and 6 Meters, using the 6BQ7A in a low noise circuit Designed to mount in a standard 3" x 4" x 5" minibox.

PRICES

Kit, less tubes ..... **$ 4.75**
Wired, with tubes **6.95**
Shipping Weight ..... **1-lb.**

IFA-10 AMPLIFIER

For use between converter and receiver. Uses 6AH6 type tube. Available for I-F ranges from broadcast band through 30 MC. Designed to mount in a standard 3" x 4" x 5" minibox. (Specify range when ordering).

Kit, less tube ..... **$ 5.75**
Wired, with tube **8.50**
Shipping Weight ..... **1-lb.**

HOW TO ORDER

Furnish name (or names) and address of those to receive gifts. Send your Gift Card for each Gift Wrapped unit; state shipping time desired.

Add sufficient postage and insurance (for applicable Parcel Post Zone) to check or money order for each printed circuit unit ordered.

Shipping Weight Each Unit 1-Lb.

Zone		Postage
1 x 2	(to 150 miles)	.27
3	(150-300 miles)	.29
4	(300-600 miles)	.31
5	(600-1000 miles)	.36
6	(1000-1400 miles)	.40
7	(1400-1800 miles)	.46
8	(Over 1800 miles)	.51

Insurance—Add 10c for $10.00; 15c for $25.00 Value.

Write for COMPLETE CATALOG

International
CRYSTAL MFG. CO., INC.

18 N. LEE PHONE FO 5-1165 OKLAHOMA CITY

Station Activities

(Continued from page 104)

Langdale, KN9JTC in Plymouth, KN9JWH in Culver, KN9JTO in Indianapolis. Those dropping the "N" were K9DCX, Kokomo and K9GSV, Whiting. Brothers KN9ISA and IRZ have a new HQ-150. CBD has a 6N2 and 2-meter converter. GUX has his old call back and is located in Elkhart. SWD reports IFN morning traffic 148 and evening 289, total 437. TQC reported QIN traffic as 186. Those making BPL were NZZ, JOZ, ETM and EJW. K9GOE is now Cond. Class using a Globe Champion, SX-99 and trap antenna. K9AOM's new equipment is a 75-A4, HT-32 and HT-33. New officers of the Wabash Valley ARA are KOJ, pres.; K9EFO, vice-pres.; KT, secy.; UUU, treas.; and HIO, trustee. UGY has a new SX-101. The Elkhart High School club station is K9IXS. SYM is rigging for phone patch and 15-meter operation and has a full-spaced beam. JYO received a Traffikers 10,000 certificate. This being my last column I will say 73 and a Very Merry Christmas. Traffic: (Sept.) W9NZZ 743, JOZ 602, VAY 323, TT 222, ETM 172, EJW 138, JYO 116, NTA 106, TQC 96, EQO 94, SWD 94, BKJ 77, SVL 77, DHJ 76, JBQ 65, AB 61, QYQ 60, RTH 60, BDG 54, ZYK 44, VNV 36, SNQ 32, HUF 31, UQP 31, HRW 30, BUQ 25, HXR 22, IMU 20, YYX 20, CC 19, WHL 19, BDP 17, KN9IXD 17, W9WBA 17, ENU 16, DOK 14, PQZ 14, ACW 12, EJC 12, IGZ 12, SYM 12, WAU 11, HGF 10, GJS 8, SVZ 8, WTY 8, CDW 7, CMT 7, DZC 7, K9AYT 6, GQB 6, W9CTF 5, DGA 5, QR 5, ZSW 5, MMY 4, GUX 2. (Aug.) W9RTH 36, K9HGF 13, ELE 6, W9SVZ 5, UXK 3.

WISCONSIN—SCM, George Woida, W9KQB—Happy Holidays and thank you all for your cooperation in the past year. New appointees: LVC as OES, VZK as OBS. The Superior Association of Radio Amateurs is now affiliated with ARRL. K9EVB dropped the "N" from his call and PJT has a new three-element 10-meter beam. VZK skeds VE8MC in the Canadian Arctic for phone patches into Milwaukee. KN9HOL, new in Lake

(Continued on page 118)

WISCONSIN SECTION QSO PARTY
December 8, 1957

All Wisconsin amateurs are invited to take part in a QSO Party, sponsored by the Milwaukee Radio Amateurs' Club in order to promote friendship and operating ability.

Rules: 1) The Party will begin at 10:00 A.M. and end at 5:00 P.M. CST Sunday, December 8. 2) All types of emission and all bands may be used, but a station may be worked only once regardless of mode or band. C.w.-to-phone operation is permitted but crossband work is not allowed. Stations are urged to work all bands from 2 through 160 meters to raise their scores. A station may compete on c.w. or phone or both, as desired. 3) The general call will be "CQ WIS." 4) Information to be exchanged in each contact will consist of the QSO Nr, RS or RST report, county, operator's name, and time of contact. 5) Logs should show times, station worked, signal reports sent and received, frequency, type emission, power input, QSO numbers sent and received, name, county. It is suggested that sheets from the ARRL Log Book be used for convenience and accuracy. Exchanges *must* be entered correctly. 6) Scoring: Count 1 point for such information sent and 1 point for such information received, for a maximum of 2 points per contact. Multiply the total contact points by the number of different Wisconsin counties worked for final score. Only contacts with other Wisconsin stations can be counted. 7) A traveling trophy will be awarded to the highest scorer, regardless of whether that score has been made completely on c.w., phone, or in a composite of both. Certificates will be issued to the first, second, and third place winners using c.w.-phone, phone only, c.w. only, Novice, and Mobile. 8) A self-addressed, stamped envelope to W9FDX will bring contest forms. Send logs, postmarked not later than January 8, 1958, to Doug Pavek, W9FDX, 5776 North 24th St., Milwaukee 9, Wis. Judgment of the Committee, consisting of W9s DGB DYG FDX GIL and K9CJK, will be final.

See how many Badgers you can work during the 7-hour contest period. Get on the air December 8 and meet the gang around the section!

Let me put YOU in this Collins Picture!

The Operating Position at W6UOU showing Ted Henry and his Collins 75A-4 and KWS-1.

Collins KWS-1 SSB Transmitter, Net Price $2,095.00
Collins 75A-4 SSB Receiver, Net Price..... $695.00
Collins KWM-1 SSB Mobile Transceiver, Net Price..... $770.00

HENRY HAS ALL Collins SSB EQUIPMENT for immediate delivery

Top trades . . . 90 days open account or only 10% down—up to 20 months . . . Personal Service . . . Fast Delivery. Henry has ALL the New Equipment.

Write, wire, phone or visit either store today.

We are proud to have helped hundreds of fellow amateurs enjoy the thrill of operating these superb Collins transmitters and receivers. Our liberal trade policy and easy terms puts them within YOUR reach.

Bob Henry, W@ARA Butler, Mo.

Ted Henry, W6UOU Los Angeles

Butler 1, Missouri
Phone 395

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"World's Largest Distributors of Short Wave Receivers."

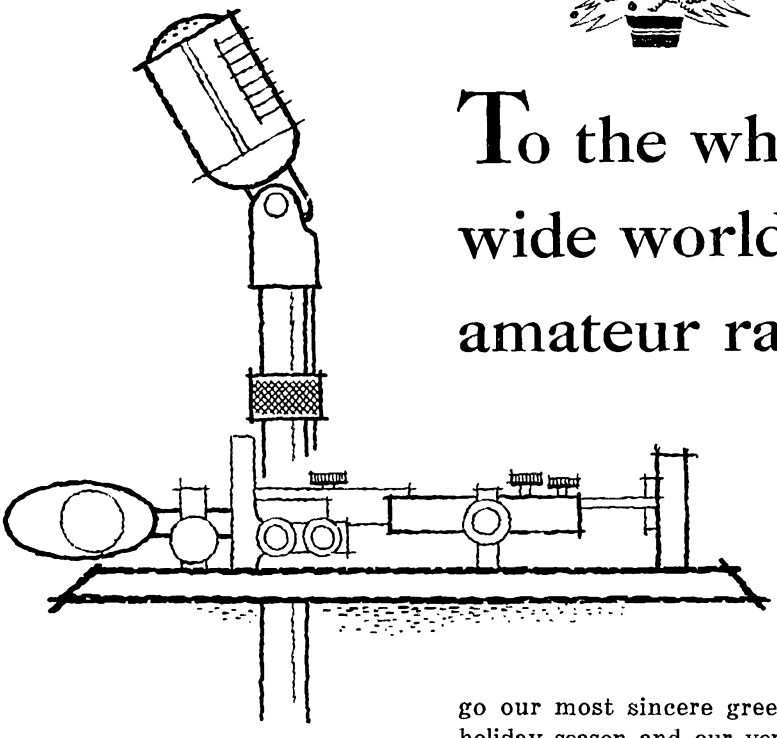
Geneva, uses a DX-35 and 75A-3 and has 36 states and 7 countries worked. ZSO has a new Johnson 500 and ONM a new HQ-150. KN9JTW is new in Oshkosh. IMQ and GFL are active on 2 meters in Green Bay, KPG at New London and NSE and K9EAN at Clintonville. The Monroe Club has a new NC-188 and a Globe 680. K9ELT is active on WIN from Madison with a new "V" antenna. SZR meets the mailman daily for that 100th country QSL. LGR had her keyer overhauled by her OM, ADM, for more activity on WIN. QZO and KQB had an hour QSO on 21 Mc. one morning, a distance of 30 miles. YOS now is operating at the Naval Training Center at Great Lakes and sending out big QSL cards from K9USN. KJJ and K9AEQ, RMs for Wisconsin, are trying to find time to operate and enjoy their last year of high school. CCO, now of San Diego, Calif., leaves for a cruise Down Under with the Navy in the spring. He says he is getting DX cards from stations worked by someone who used his call while he was in Japan. The end of 1957 finds our section with an active SEC, 33 ECs for 48 counties (23 counties have no EC), two PAMs, two RMs, 24 ORSs, 11 OPSs, 4 OOs, 6 OBSs, 7 OESs, 24 clubs and 2 active nets with the BEN and WIN. AREC in Wisconsin has 604 members, 229 mobile units, 45 local nets and 94 emergency units. Happy hamming to you all in '58. Traffic: W9CXY 738, K9AEQ 215, GDF 215, CKW/9 167, W9KQB 106, SZR 63, K9ELT 46, W9QJW 45, SAA 38, K9AYK 34, KJJ 33, W9FZC 16, OVO 16, GFL 8, PJT 8, KWJ 7, UTV 7, RQM 5.

DAKOTA DIVISION

SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM: Gerald F. Lee, ØYKY. SCM assistant: NEO. SECs: YOB and GDE. PAM: SCT. RM: SMV. The 75-Meter Net had 25 sessions in September (SCT 22, GQH 2, OOZ 1) with QNI 610, high 30, low 3, average 24.4; traffic 41, high 5, low 0 (8 times) average 1.64; informals 50, high 6, low 0 (three times), average 2. The South Dakota 40-Meter Net had 23 sessions (EXX 5, SCT 11, YKY 5 and new KØDPD 2) with QNI 295, high 23, low 2, average 12.82; traffic 41, high 7, low 0 (4 times), average 1.78; informals 30, high 5, low 0 (5 times), average 1.3. There were 170 plus at the Convention. OOZ has a new "V" beam aimed at Rapid City. 9ARN operated a Viking II at Davis the latter part of September. The convention at Huron was very successful. The Signal Hill Amateur Radio Club has not been having too much business. We had a picnic in July. We also helped out with our mobiles and a fixed station during the Days of 76 Parade in Deadwood and also the Labor Day Parade in Lead. Traffic: WØSCT 280, DVB 34, ZLB 16, FLP 15 NEO 14, GWS 8, BMQ 7, INZ 5, OFP 5, BQS 4, ZWL 4, TKU 3.

MINNESOTA—SCM, Robert M. Nelson, WØKLG—Asst. SCM: Bob Schoening, ØTKX. SEC: WVO. RMs: DQL and RQJ. PAMs: JIE and LUX. Code and theory classes sponsored by the St. Paul Radio Club got under way with 50 in attendance at the first meeting. IRJ has been in University Hospital and getting lots of Twin City operators for visitors. Twins, a boy and a girl, have been added to the QTH of VEP and his XYL. This year's Forrest Bryant Trophy was awarded to KJZ for her outstanding contribution to amateur radio during 1956. Presentation was made at the September meeting of the Minneapolis Radio Club. New hams in Cass County are KØKAT, at Backus, and KNØJQJ, KNØJQK and KNØLFV at Pequot Lakes. KØCFV has moved to W9-Land and hopes to get back his old call, 9TRA. TQQ left her summer cabin on Basswood Lake for a new home near Bel-Aire Beach in Florida. New officers at the St. Paul Mobile Radio Club are SXU, pres.; KØAXA, 1st vice-pres.; KØDYT, 2nd vice-pres.; KØDUO, secy.; and KØHCC, treas. UBD will be operating portable on 75 meters from Minneapolis for a year while attending Brown Institute. MBD's new Globe King and a SX-101 are creating a big noise at St. Cloud. VEZ has a new Valiant. KØGVX now has a Wonder-bar antenna for 10 meters. DQL is now mobile on all bands with an Elmac AF-67. KØGLS now runs a half gallon with a new Globe King. KXC has a Tri-Band Hy-Gain beam mounted on his flag pole! There is no need for TUS to write letters home since his mother, KØIRW, got her Globe Champ. KNØLBA, from Dassel, operated portable at Browns Valley while working in that area. His station line-up includes a DX-35 transmitter and an HQ-120 receiver. KØGCN has worked 42 states with 40 confirmed. RQJ and his XYL visited KLG's QTH. KØEWD has been quite active on the air since his recovery from a serious heart attack. KJZ attended the Midwest Division Convention at Kansas City. OBS appointments went to KØGLS and BUO. The Noon Phone Net has moved back to 3820 kc. Current traffic net schedules are: Minn.

(Continued on page 120)



To the whole wide world of amateur radio...

W 1 DI	W 9 BBC
W 2 LAL	K 9 AIO
W 2 NRE	K 9 CLH
K 2 RTU	W 9 CXL
W 5 ZNM	K 9 DIY
W 6 HV	W 9 EPZ
W 6 MEG	W 9 IDI
W 8 GGG	W 9 JMD
W 8 MTZ	W 9 NTI
W 8 NPO	W 9 PXL
W 9 AEA	W 9 QYX
W 9 BAQ	W 9 URS

go our most sincere greetings for the holiday season and our very best wishes for a wonderful 1958. Good QSO's... Good DX... and Good Fellowship to all.

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MALLORY

Phone Net on 3820 kc., Mon. through Sat. at 1205 and 1800 CST, Sun. at 0900 CST; MSN on 3595 kc., daily at 1830 CST. Traffic: (Sept.) WØKJZ 316, RQJ 64, KLG 62, OJG 41, WMA 29, QVR 27, KØGCN 23, WØUMX 21, BUO 19, KØEPT 16, GUJ 8, WØVBD 7, LIG 6, KØGKI 3, WØHEN 3, UCV 1. (Aug.) WØVYI 53, LIG 15, KØEPT 11.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: K5CIR. PAM: DYL. RM: CAF. We were very happy to have had the pleasure of meeting with the club at Russellville recently. We appreciate very much the presence of the hams from Paris and Clarksville who drove over to be with us. YHC and LUX sure did a fine job of keeping the OZK C.W. Net going during CAF's illness. We are glad CAF is now well and back on the job. KRO is working on a new final using a pair of 833-As. ZZY is building a new a.m. rig for 500 watts. GWB has a new 6-80-meter Globe Scout. K5APA recently finished building a new 813 rig and now has it on the air. The Wonder State 6-Meter Net meets each Tue. at 2000 with growing interest. It is very gratifying to see the increase in activity that the fall season has brought. New ECs are K5HSO, CEU and BKH. New OBSs are KRO and K5CIR. We are all sorry to lose DAG, formerly of Osceola, who has moved to Whitesboro, Tex. The Pine Bluff Club has started its code and theory classes again for would-be amateurs. All who are interested in amateur radio are invited to contact the club. Traffic: W5YHC/5 108, ZZY 51, KRO 14, K5HSO 12, W5YHT 4.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—BSR has been renominated as Delta Division Director. TVW is active as OES, OPS and CAP on 2 and 6 meters and is going to Tulane for an E.E. degree. K5KLA, recently appointed OES and OPS, offers to help out on TVI problems. NDV, who is an ORS, has been active on MARS, TXN and NTS. Now that summer is over, EA reports that he will have more time for hamming. KRX turned in the lowest traffic in a long time. CEZ reports that delivery of Louisiana traffic has improved with MXQ, KRX and NDV checking into RN-5 frequently. MXQ, incidentally, reports into MARS, CAN, Hurricane and Red Cross Nets and his efforts made the New Orleans Hamfest the success it was. VAR, who lives on the Crayfish Net, had his OPS appointment renewed. DGB is active as organizer and net control of the Mid-Continent Sideband Net, which meets at 5:30 P.M. each day on approximately 7206 kc. KC is planning to install a four-element beam for 15 meters over his 20-meter three-element job. We had the pleasure of meeting with HCP, of ARRL, while he was in New Orleans. EB is doing a fine job of recovering from a very serious operation. SUM, when not fixing two-way equipment around Morgan City, can be found on 40- and 75-meter s.s.b. Some ARRL appointees have not sent in their certificates for endorsement. Please check your certificate and forward to the SCM for endorsement. EC, OPS, ORS, OES, OBS and OO appointments are open all over the State. Drop the SCM a line asking for information. Traffic: W5CEZ 206, NDV 54, TVW 52, MXQ 50, KRX 23, EA 14, VAR 2.

MISSISSIPPI—SCM, John Adrian Houston, sr., W5EHH—CBW reports that a v.h.f. club has been organized. Officers are SGJ, pres.; CBW, vice-pres.; VRW, treas.; YAA secy. They invite any qualified MARS member to meet with them four nights each week from 2000 to 2100 CST on 144.990 Mc. The Cleveland Amateur Radio Club had its newly-completed emergency communications truck on display at the County Fair. GUU has been appointed State MARS Director. K5DZE has been appointed OBS for the eastern section of the State. GG and HBW visited World Radio Laboratories and brought back a Globe King for K5LEA. He is working much DX now. HBX is seeing much of Japan with the U. S. Navy. EHH will not be heard mobile for a while because of the wrecked automobile and transmitter. Traffic: W5JBS 71, RIM 7, K5EXG 6.

TENNESSEE—SCM, Harry C. Simpson, W4SCF—SEC: RRV. RM: IV. PAM: PQP. Congratulations to BPLers PL and 5RCF on their usual fine totals. PL is sporting a new electric mill. Congratulations to 5RCF on his appointment as RN5 Manager. Victory roses to RRV, our hard-working SEC, who was unopposed as vice-director. IGW introduces Humboldt's newest ham, KN4QEA. AAX and EQB has new transmitters. DIZ and DHA have recovered from their automobile injuries. UVU, a senior at Tenn. Wesleyan, reports 6-meter activity is booming in the Athens Area, with JJN, PHX, MVM, EMY, RUF, RST, NEG and UVU on the air. Several others are building fixed and mobile rigs. RRV,

(Continued on page 122)

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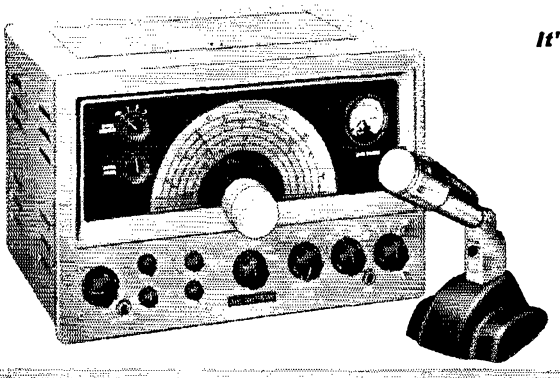

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in a whirlwind trip, visited DMU, PQP, IV, DDF, BAQ, HHK and SCF. See October Oak Ridge *ROC* for a very good story on receivers by SGI. HJO, victim of a spider bite, spent several days in a Memphis hospital. HUT and HSX are building linear finals in a Memphis State University electronics class. GFL also is now grounded-grid. GEN claims to be the first ham to be awakened by signals from outer space—he tuned his receiver to 20.005 Mc. when the satellite was announced, left it turned on, was awakened by the now-familiar "beep-beep" promptly at 7 A.M.! VQK is building a kw. linear final. VQE has worked *all seven* American Antarctic stations! WQW, our hard-working ex-RM, is now living in Paducah. FLW now has 45 states confirmed on 6 meters. IV visited SCF. VJ announces start of the Morning Net (MN) Mon. through Fri. 0630 EST on 3715 kc. with a maximum code speed of 10 w.p.m. PAM PQP reminds us of the Davidson County Emergency Net, 29.6 Mc. Wed. at 1900 CST. TDZ has installed a new Mosley Tri-Band beam atop his pocket beam and is chasing DX. YRM introduces K4MVF and reminds all members of the Tenn. 6-Meter Net Fri. at 1930 EST on 50.5 Mc. with ZZ as NCS. Congratulations to DCH on a splendid job as 1957 president of the Memphis Club. Traffic: W5RCF 1092, W4PL 1039, VJ 77, UVL 67, PQP 61, SCF 45, IV 32, GFL 30, YRM 28, EWC 25, BQG 20, IGW 17, BMC 15, FLW 7, LPW 4, TDZ 4, HSX 2, HUT 2, ECW 1, PAH 1, PVD 1, UVU 1, WQW 1.

GREAT LAKES DIVISION

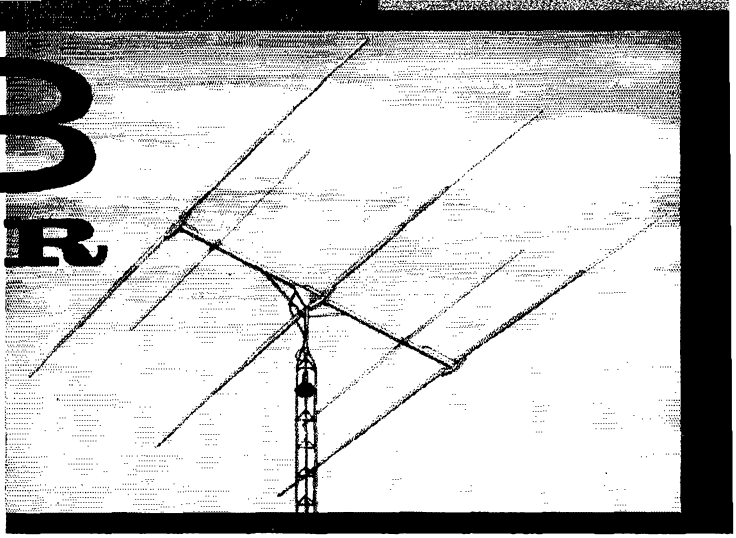
KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH. PAM: SUD. RM: QCD. Congratulations to ZDA and ZDB, new ECs in Ashland. K4AIS has a new band-spanner antenna. K4KIN and K4KIO are moving to Louisville. K4OAH wants to get on 6 meters but needs help. SEC JSH was very QRL with S.E.T. drills and did a wonderful job at the Lexington Hamfest. 8SPF, Great Lakes Division Director, and UPB, Ohio SEC, were present. KRC, of Tampa, Fla., won the SX-101. VKR won the HQ-100, and the band-spanner was won by 9DOK. QCD threatens to put his antenna back in the tree. Hi! A new ORS is K4JGN. New OPSs are K4AIS, K4KIO, SZB, K4ECJ, K4DLI and NUQ. YYI renewed his OPS appointment. Excellent OO reports were received from MGT, K4GAG and OMW. A very fine report was received from MWX, manager of KNN (Ky. Novice Net.), now on daily schedule (Mon. to Sat.) on 3735 kc. at 2000 CST. The net is open to all Novices anywhere. K4AKD has a ground plane on 20 and a 3L Gotham on 10 meters. The Owensboro Amateur Radio Society reports 24 enrolled in the new beginners class. KN4SBZ is new at Junction City. KN4PNA has a new station control unit with electronic keyer and key built in. KN4PGF is active on KNN. K4DLI is active on 10 meters. SZL is QRL college. K4BVC's dad is now K4QCP. PAM SUD reports KPN traffic doubled over last month with 158 messages cleared in thirty sessions. RM QCD reports KYN cleared 276 messages in 29 sessions. OMW has a new tri-band beam and c.w. WAC sticker for 80 meters. KKW heard the satellite signals. Traffic: W4ZDB 231, K4AIS 207, W4KKW 122, K4KIN 89, OAH 86, W4JSH 84, K4KIO 76, W4QCD 76, K4CNJ 67, CSH 67, W4RPF 63, K4JGN 51, W4MWX 32, K4AKD 25, W4HJI 21, NIZ 21, SZB 16, OGY 15, K4MMW 14, W4AHL 12, CDA 12, K4HOE 10, DLI 4, W4JUI 4, K4KHE 4, KN4PGF 4, W4SZL 2.

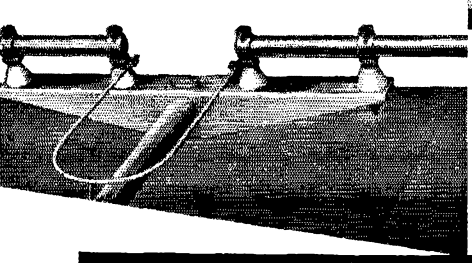
MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—As it is getting well along toward the Holidays, may I take this opportunity to offer my best wishes to all for a Merry Christmas and the best of New Years. May your signals be solid where and when you want them to be. BPL certificates were issued this month to ELW, FGB and SCS for September traffic totals. Congratulations to all on the earned scores. No new appointments were issued this month, but they were waiting for qualified members who apply. This may serve as a last-chance reminder too those who have not yet applied for their 1958 special call letter license plates. The deadline for ordering is Dec. 15. Orders for special plates must be filed along with the two-dollar fee to James M. Hare, Secretary of State, Capitol Building, Lansing, Mich. Also included must be mention of the class of license held, call letters and your full name and address. New officers of the Blossomland Amateur Radio Assn. are QOT, pres. and QQO, vice-pres. The South Eastern Michigan Amateur Radio Assn. has elected the following slate: PSA, pres.; PWN, vice-pres.; SEB, secy.; JXX, treas.; and RX, LIG and PZQ, directors. This organization claims to have more mobile 160-meter units than any other club in the world. Anybody care to challenge that claim? Members of the Niles Amateur Radio Club are serving as instructors for an adult evening course in amateur radio code and theory.

(Continued on page 124)

GONSET 3 BANDER

The long-awaited, coil-less fully streamlined beam that gives you three full sized elements on 10-15 and 20 meters.





No cumbersome coil traps! Mechanically strong yet lightweight. . . assembly is simple, rapid. Beam is maximized for all bands by setting coaxial tuning sleeves to pre-determined positions supplied. No instruments needed. . . you tune only with a tape measure!

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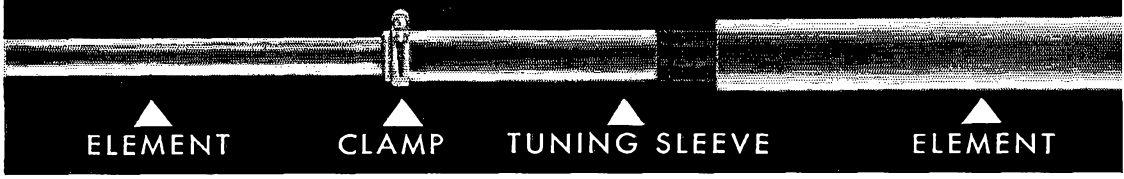

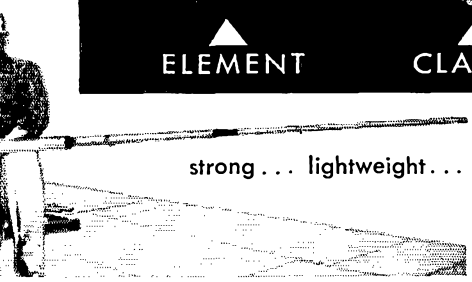

strong . . . lightweight . . .

HIGH GAIN

Gains are equal to full length beams on all bands. Average 3-element values are: 20M, 8.2 db. 15M, 8.1 db. 10M, 8.4 db. Front-to-back ratio, typical, 24-28 db.

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Beam is fed with single RG8/U coax. VSWR is 1.4 (or less) all bands.*

* DEPENDS UPON HEIGHT ABOVE GROUND.

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HOW IT WORKS . . .

Gonset's unique triple-sleeve concentric element sections, (pat. applied for) effectively act together for the lowest band, (20M) and electronically disconnect successive outer sections for operation on the 15 and 10 meter bands.

TUNING . .

The 10 meter band requires no tuning since separate fixed-length director and reflector are used. On 15 meters, driven element, reflector and director are aligned with tuning sleeves, (no coils) which slide inside of the two inner concentric elements. Once set, these sleeves are permanently clamped in position. The element lengths do not change. Boom is 18', longest elements 31' 1".

2-element, #3219. 3-element #3220

Both 2 and 3 element beams are available in the 3-bander series.

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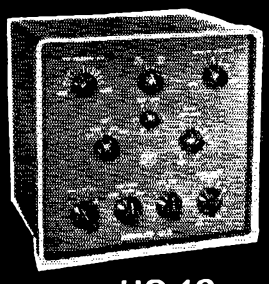
This is in cooperation with the Buchanan High School adult education program. Youngsters in high school are allowed to attend ex-officio and the interest is running high. The surprise launching of the Russian satellite has apparently stimulated much interest and activity toward our planned launching in the near future. Details of how we can take an active part in the IGY program can be found in earlier issues of *QST*. Traffic: (Sept.) W8ELW 767, FGB 289, SCS 233, NUL 126, GKT 112, ILP 99, DJN 98, QQO 98, OCC 74, FX 67, FWQ 65, OCU 52, DAP 36, K8NAW 28, BQD 24, W8NOH 23, YAN 23, WXO 21, K8AXL 17, W8RVZ 17, OGY 14, DSE 10, SCW 9, HKT 8, EGI 5. (Aug.) W8QQO 131, GKT 96, NUL 64, OCC 20, TBP 12, RVZ 9, SWN 5. (July) W8SWN 2.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RMs: DAE and FYO. PAMs: FNN, HPP, HUX and HZJ. TZO went into a hospital for surgery. The Marietta ARC is very active and now has six s.s.b. stations. VZ, KWZ, PBA and PAP and K8s AXK and AWS. PLQ worked Tennessee for a new state on 2 meters and Colorado for a new state on 6 meters. WTO has a new Gotham V-80 vertical antenna. JY is interested in s.s.b. OKB's XYL is recovering nicely after an operation. WXG is now conducting the Springfield ARC's code class. Greater Cincinnati ARA's Hamfest was attended by over 800 amateurs, including your Director, SEC, SCM and Kentucky's SCM, 4KKW. Prizes were an HT-32 won by GQ, an SX-100 won by UPC and a Super 10-meter beam won by HMX. SLY had the best commerical mobile installation, with HLC a close second, and 4RLH had the best homemade mobile installation. VDA is attending Northwestern U. The Dayton ARA's code class graduated KN8s DRM, EZW, EZX, GCN, GDU, GDV, GFU, GKF, GKH, GWB, HGI and HLA. Springfield ARC's officers for 1958 are QCU, pres.; DCJ, vice-pres.; KQW, secy.; and IMP, treas. QCU has an all-ham family; KN8HJK is his XYL and his son is KN8EUQ. K8BPY won a Weller soldering iron. The Canon ARC held an auction. WE and ARO passed on the information concerning the large Findlay Hamfest, which was held the same day as Cincinnati's. Between 350 and 400 amateurs attended with more than 500 present. Findlay's main prize was an SX-101, which was won by George Iwschenko, a German refugee. Columbus ARA's *Carascope* reports that K8BPY worked 3 LUs, VP7 and South Americans on 6 meters. CSW, BAX, BPJ, HOF, MSA, NVI, USF and VHZ operate on 220 Mc. Toward Worked All Ohio Counties On Six: NVI has 58 and THX has 16. EOU has worked 3 LUs, 3 COs and VEs on 6 meters. Two YL operators are KN8s GVD and GZX. LVC is spending three months in W5-Land. New appointments: FFK as ORS and OPS and K8DKW as OO. Seneca County RC has an active AREC 2-meter net with BSF, CUZ, GSB, IJL, LAH, MHY, MVE, RBT, VKB, WAB and K8s ACF, BCX and KN8s DBW, DOH, DOW and HBM. They are holding a 2-meter transmitter hunt and meet the 1st and 3rd Mon. in Tiffin City Hall. GJL, KVW and K8AEC are active on s.s.b. KN8IIBM is a new ham in Cooper. HXB and his son OEQ won first place in the '57 Field Day in the W8 district in Class B, one transmitter. Fort Hamilton ARA's bulletin reports SUK spoke on "Résumé of the Establishment and Development of Wireless and its Growth into the Radio Services of Today." K8ETK received his General Class ticket. SWB came home on his boot-camp leave. NP has a new 10-meter vertical. The Canton ARC had a weiner roast. Dayton ARA's *R-F Carrier* tells us that JXM made DXCC, K8BSM has a new tri-band beam. SVW and K8BPC now have beams. CSK worked 26 new countries in September on 15 meters. KN8HKP is a new ham in Mt. Healthy. IKM has a new SX-101. Hams at Xavier U. are AUV, CSK, KBZ, MWY, QIZ, SCK, UFG and KN9JEX. FFK is in charge of communications of the Independence Red Cross. K8AEC has been running phone patches for Antarctic and Greenland. SVL has a new NC-300 and two-element tri-band antenna. K8DDG received his 35-w.p.m. certificate. *Shack Gossip* tells us that KIX is home on leave from Japan, some 25 area hams participated in Toledo's c.d. hidden transmitter hunt. HWX spent two weeks in the hospital. KN8GZK is a new YL Novice and K8CJS has a new Gonset 6-meter converter and a Tecratt transmitter installed in his car. ZWX moved to Washington, D. C., to work for Uncle Sam. DSX has a new jr. operator. Traffic: (Sept.) K8AEC 417, W8SZU 134, DAE 121, CSK 112, GFE 87, K8BPX 84, W8HXB 63, WTO 55, K8DDG 54, W8VDA 46, AL 36, VWX 29, GQD 14, QIE 8, BEW 6, FFK 6, IMB 4, MGC 4, STR 4, SVL 4, OUU 2, KN8HKU 2. (Aug.) W8WTO 156, RO 13, MGC 8, PLQ 2.

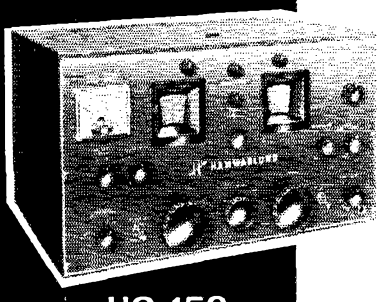
(Continued on page 126)

HQ-110

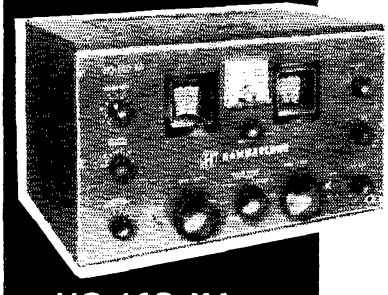
HQ-100



HC-10



HQ-150



HQ-140-XA

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HC-10 SSB/CW or AM/MCW CONVERTER. Completely self-contained with own power supply and audio system. Works with any receiver having IF between 450 KCS and 500 KCS Connects in seconds. Tuned IF with seven selectivity positions Vernier type tuning. Razor-sharp filter, adjustable over passband **$149.00**

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HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: KGC. RM: BXP. PAMs: IJG and NOC. Section Nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, SRPN on 3980 kc. at 1130, IPN on 3970 kc. at 1530, MHT (Novice) on 3716 kc. Sat. at 1300. Endorsements: AWF, CYW, EHZ, IRT, GTI, HO, SQW, VPG, ZTZ and K2GCH as ECs, CYW as OO and K2HNW as OPS. K2QPB is on 6 meters with a Gonset and four-element beam from Ellenville. K2PRB, well entrenched on 2 and 20 meters, is constructing equipment for 6 meters. LWI, with an assist from KGC, operated under emergency power for two days during the V.H.F. Party. The new instructor in code and theory offered by the Schenectady Adult Education Program is ODC. K2GNO, former OES, is in the Marine Corps operating 6 meters from El Toro, Calif. A net bulletin received from IPN shows these Eastern New York stations listed as members: APF, EFU, NOC, K2CWX, EHI, EJV, LKI and MBF. The RPI Club station, SZ, is active and reports classes for Generals and Novices on the Troy campus. Ex-DC reports he now is 4DK in Owensboro, Ky. K2HNP, LTW and YWH are using 5-over-5 beams on 6 meters and are looking for skeds around Utica and Syracuse. New stations heard on 6 meters include K2PHW, TDO and TLS. A new jr. operator (boy) was presented to the staff at K2OUG. His many Eastern New York friends were saddened by the death of KYJ in Clinton. HB9LA was guest of the Poughkeepsie group during the June V.H.F. Party. KQI, LWI, KGC, K2UKE, JMY and WN2ROE assisted with operations. Stations tracking the Russian satellite were too numerous to mention, but please send your observations to the IGY Coordinator at League Headquarters. Traffic: (Sept.) W2PHX 180, K2HPQ 123, VTW 68, W2EFU 52, K2LKI 43, W2GDD 33, K2YTD 25, HNW 17, EIU 14, UYK 10, HJX 6, RKY 6. (Aug.) K2EDH 4, PRB 2.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: ADO. PAM: OBW. RM: WFL. Section nets: NLI, 3630 kc. nightly at 1930 EST and Sat. at 1915 EST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST; NYC-LI AREC, 3908 kc. Sun. at 1400 EST. The following change is announced in the QSL Bureau: Effective immediately, the North Jersey DX Association, Box 55, Arlington, N. J., is handling all W2-K2 QSL cards. KEB is the lone BPL-winner this month. The NYC-LIPN traffic totals 209 for the month and the average attendance remains at a very high 25 stations per session. The NYC-LIPN is sponsoring the NYC-LI Weather Net under the direction of K2RJO. This net will disseminate weather information received by Suffolk County c.d. teletype. Time of the net is 1500 to 1530 EST on Sun. and 1700 to 1730 EST on Wed. on 3908 kc. or alternate frequency 3915 kc. The newly-installed phone-patch at K2ECY works fine and Frank patched K2JCK/VE8, who was contacted on 10 meters from Frobisher Bay, Northwest Territory. ASI/K2DEM have installed a KWS-1. VDT installed the Gonset Mobile Twins in his new car. Doug also put up a two-element Telrex beam for 20 meters. K2RKL has constructed an 11-tube converter for 420 Mc. and has hopes of breaking the 420-Mc. DX record in the spring. Mobiles RTQ, TUK, WTB and K2TAQ and fixed station CWD/2 provided communications on 10 meters for the Sperry Sports Car Rallye. The James Madison HSRC, K2UXR, is active with 150 watts and an NC-98. AOD reports increasing local activity on 420 Mc. BQM activated his other station, 1AA, during his vacation. HQL is now mobile with an AF-67 transmitter and Morrow converter. K2QFV has a completely automatic station on 6 meters with automatic signal seeking, receiver tracking v.f.o., automatic transmitter tuning and VOX. Ed is interested in contacting other amateurs interested in this work. EEJ has an 813 rig on the air working mostly 75 and 10 meters, while his son, K2YPR, holds forth on 40-, 20- and 15-meter c.w. K2UFT has a new Ranger and HQ-140-XA. K2GMV runs a Viking Valiant and 75A-4 and needs elusive Idaho for WAS. ICW announces the formation of the Queens County Open Net on 29.8 Mc. for traffic, ragchewing and anyone desiring a Queens County contact. The Bellport HSRC, K2VMG, elected the following officers: K2TSE, pres.; K2ZLS, vice-pres.; and Elizabeth Honnet, secy. Mobiles EHC, WPH, K2s EAF and TAQ cooperated with the North Babylon Rescue Squad in a c.d. drill with KNA, Suffolk Radio Officer, observing. The Babylon RC now meets in the West Islip HS on the 1st and 3rd Mon. On alternate Mon. the club sponsors a hidden transmitter hunt on 29.240 Mc. K2PFH/KA2 is awaiting his KA call and expects to be active with a Ranger and SX-99. A new all-band vertical is now the antenna in use at AEV. K2YJC dropped the "N." K2JLE is mobile with a

(Continued on page 128)

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HQ-100

Excellent performance, at lowest price! Covers .54 to 30 MC, with calibrated bandspread of Ham bands. Has Q multiplier, Auto-response, etc. It's yours for only

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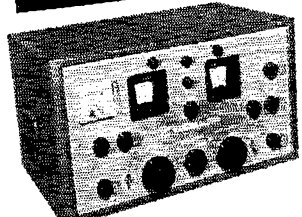
Prompt, safe shipment to most anywhere in the world, or, you can "Come and get it!" and take it safely home with you.



HQ-150

Here's all the FB features of the famous HQ-140-XA, PLUS Q Multiplier, crystal calibrator, clear-sight S meter, etc. You can get the pleasure of operating it now, while paying only

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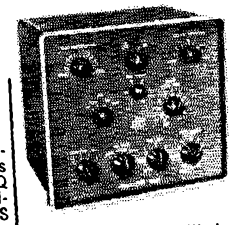
Matching speaker — **$14.50.**



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It has T-slot filter, vernier passband tuning, noise limiter/squelch, linear product detector, stable BFO, adjustable decay AVC, IF amplifier, internal power supply, etc. to add every modern feature to your receiver. Uses 10 tubes.

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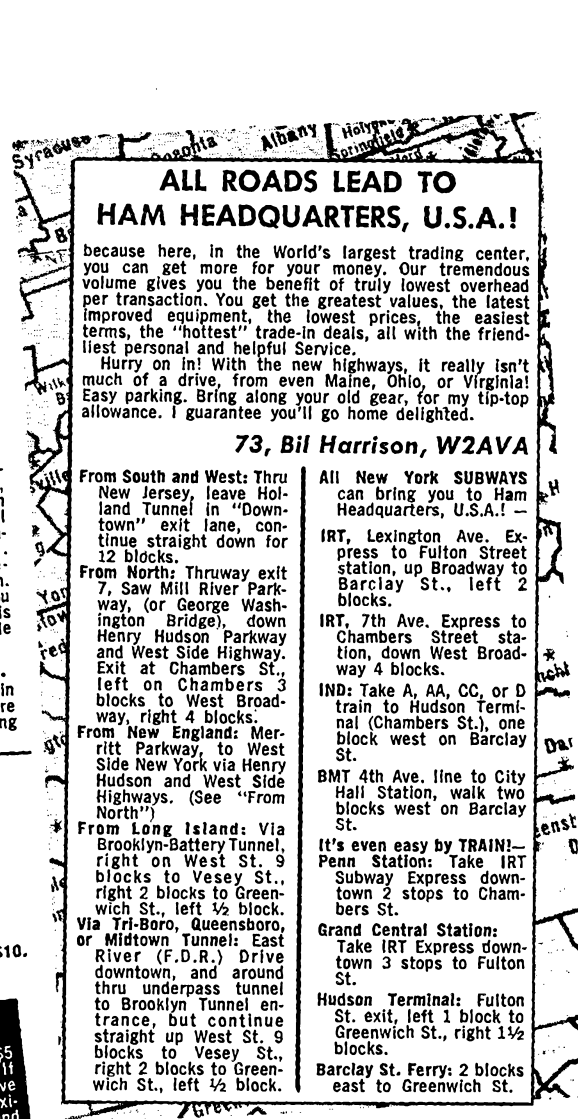

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From New England: Merritt Parkway, to West Side New York via Henry Hudson and West Side Highways. (See "From North")

From Long Island: Via Brooklyn-Battery Tunnel, right on West St. 9 blocks to Vesey St., right 2 blocks to Greenwich St., left ½ block.

Via Tri-Boro, Queensboro, or Midtown Tunnel: East River (F.D.R.) Drive downtown, and around thru underpass tunnel to Brooklyn Tunnel entrance, but continue straight up West St. 9 blocks to Vesey St., right 2 blocks to Greenwich St., left ½ block.

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Gonset Converter and a low-power rig on 10 meters. HQD has a Viking I on the air. KN2BJQ is active on 40 meters. Congratulations to K2HZC, who recently soloed and is on his way to a pilot's ticket. Your SCM would like to receive all changes in club officer rosters as soon as possible so that inquiries about section club activities can be satisfactorily answered. Include meeting places, dates and times, plus any information relative to schools or other club-sponsored programs. A visit to your club would be my pleasure. Traffic: (Sept.) W2KEB 2161, K2PHF 453, W2WFL 115, K2ECY 106, W2DRD 85, K2DEM 83, W2OME 81, VDT 61, K2KSP 59, SEK 58, TSE 51, RJO 46, TNM 42, PMI 36, LUM 29, W2JBQ 25, K2RKL 21, LEP 16, MEM 14, SSE 13, W2PF 12, EC 8, JCA 8, TUK 8, GP 6, K2ITZ 4, W2OBU 3. (Aug.) K2PHF 649, W2HAC 30, K2AAW 14, W2EC 6, LPJ 4, IVS 2.

NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: IIN. PAM: VDE. RMs: BRC, NKD and CGG. K2RJD is working on a new 6-meter converter. K2VAB and K2SBT, the Birnholtz brothers, have a new HQ-150, and they are building a modulator for their AT-1. They plan to work a lot of DX on 20, 15 and 10 meters. K2BJA has 95 countries confirmed for DXCC. DME is building a full kw. rig for s.s.b. operation on 2 meters. JTJ has received his WAC certificate. The following graduates of the GSARA code class have received their Novice licenses: WN2RDN, RDP, REH, RDI, RDV, RDT, TEI, RDR and TFD. NIY still is having equipment trouble. School and a new part-time job will limit the operating of K2MFF. "Sparks" also has been appointed editor of the *New Jersey Net News*, the monthly publication of the New Jersey 40-Meter Traffic Net. The Penn. Jersey Amateur Radio Club is starting basic radio classes and code practice sessions. KFR has moved to a new QTH. GVU is searching for an IP-501 ship receiver. Two new hams on Russel Ave., Ft. Monmouth, are K2BYI and K2ABH. Congratulations to VMX and his XYL KN2UXJ on the birth of their first child, Dorothy Anne. KN2CEP, an XYL, is a new licensee heard on 40 meters. SJT was her examiner. Oddly enough SJT drove the school bus that transported Fran to and from school starting back in her grammar school days and on through high school. I wonder if there could have been some connection. Another strange connection—3UVL is her son's godfather. The R.C.A. Tube Division, Harrison, has organized a new amateur radio club called the Harrison Ameteur Radio Society. KN1BTY and BTZ are the calls belonging to the mother and dad of K2SKK. Consequently, K2SKK has been kept busy up on 80 meters for home contact with the folks. K2OAM is NCS on TCPN on Tue. nights. NJN report for September shows 25 sessions held, attendance 259 and traffic 217. New stations heard on NJN are K2SOX, K2SOW, K2TNJ, K2KGB and EWZ. DRV has been QRL because of a shift in working hours. BRC visited with VE3GG, 3APU, 3OD and 3AUW while on a recent trip to Canada. Jack checked into NJN from VE3GG's shack and had instant communication with his XYL through ANG in Elizabeth. Net Mgr. BRC is planning a meeting of NJN members for late in November. TCRA officers for next year are YJC, pres.; IRO, vice-pres.; K2BHQ, secy.; and SJU, treas. EWZ recently completed QSO No. 12,000. The FNJ gang is forming a bowling team. OCA, K2RKL and QYI attended the SJRA Hamfest and came away the winners of two prizes. The New Jersey State RACES Radio Officers meeting was held in Asbury Park on Oct. 20. Excellent facilities were provided by the city fathers in the Solarium on the Boardwalk. Speakers from the State Director's office afforded an opportunity for all members to meet their state civil defense officials and become better acquainted with the top brass. This meeting was the second annual state-wide meeting of radio officers. A separate section of the meeting was set aside for the operators assigned to county control centers. Training schedules and future programs in operator training were agreed upon. At this writing great activity has sprung up relative to the launching of the first earth satelite. Traffic: (Sept.) K2MMM 232, BHQ 167, MFF 134, W2MLW 101, EWZ 97, K2OAM 85, W2BRC 71, K2KGB 54, W2RXL 51, K2BWQ 46, EQP 37, W2OXL 22, K2QYI 22, W2EBG 20, CVW 15, K2MFX 15, RGS 14, W2VMX 10, CFB 5, WOJ 4, ZVW 4, K2JTU 2, W2NIY 2, K2PIM 1. (Aug.) W2CFB 4.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—The new Des Moines Tech. Radio Club officers are SMS, pres.; KØCLS, vice-pres.; ZAQ, secy.; KØIEX, treas.; IAK and EUV program chairmen, and KNØICY, Novice representative. EEG renewed his EC appointment. BQJ and BLH renewed their ORS appointments. KØBPE

(Continued on page 130)

We can't hold back any longer!

WE HAVE BEEN DELUGED WITH REQUESTS FOR INFORMATION ON THE NEW 100V, SO WE ARE RELEASING THE FOLLOWING DATA IN SELF DEFENSE—AHEAD OF SCHEDULE.

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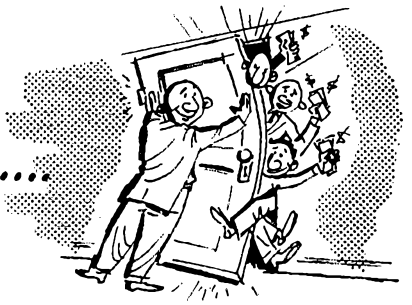

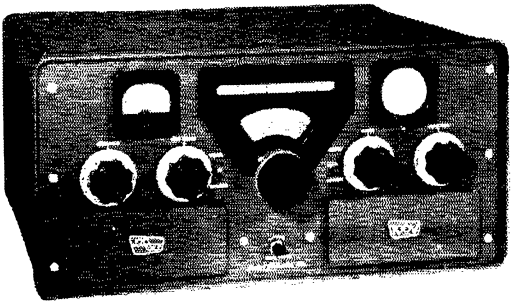

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FREQ. RANGE: 80, 40, 20, 15 and 10 meters with spare position on bandswitch for 160 meters or other frequencies such as Mars, CAP, commercial, etc.

PRECISION LINEAR VFO BUILT IN: Direct reading 1 KC calibration all bands. Separate .1 MC slide rule dial and KC window. Two speed tuning knob turns precision leadscrew in new Patent Pending permeability tuned two tube oscillator circuit. Fast tuning 100KC per turn; Slo tuning 750 CYCLES per turn!

NO TUNING CONTROLS (other than VFO): Broadband circuits throughout, as introduced in our 600L Broadband Linear. Separate crystal controlled mixers.

NINE POSITION EMISSION SELECTOR: Lower sideband, upper sideband, double sideband, all with suppressed carrier; lower, upper or double sideband (AM) with preset carrier; Phase Modulation (PM), CW and FSK with preset carrier. FSK frequency deviation adjustable.

ONLY FOUR OPERATING CONTROLS PLUS VFO ON FRONT PANEL: Seldom used "set and forget" controls on front panel behind magnetic doors.

METER READS: Watts input 0 - 200, RF amps output and suppressed carrier level. Has input marked at 100 watts for AM and 170 watts for CW, PM and FSK.

2" RF ANALYZER SCOPE BUILT IN: Monitors RF output wave to show flat topping and prevent TVI.

CALIBRATE LEVEL CONTROL: Choice of either voice or carrier for calibrating signal.

ADVANCED PHASING GENERATOR: With inverse feedback and new PS-2 network. Sideband suppression with new network in excess of 50 db. Built-in audio filter. Narrow signal, plus naturalness, coupled with long term stability are features of new generator.

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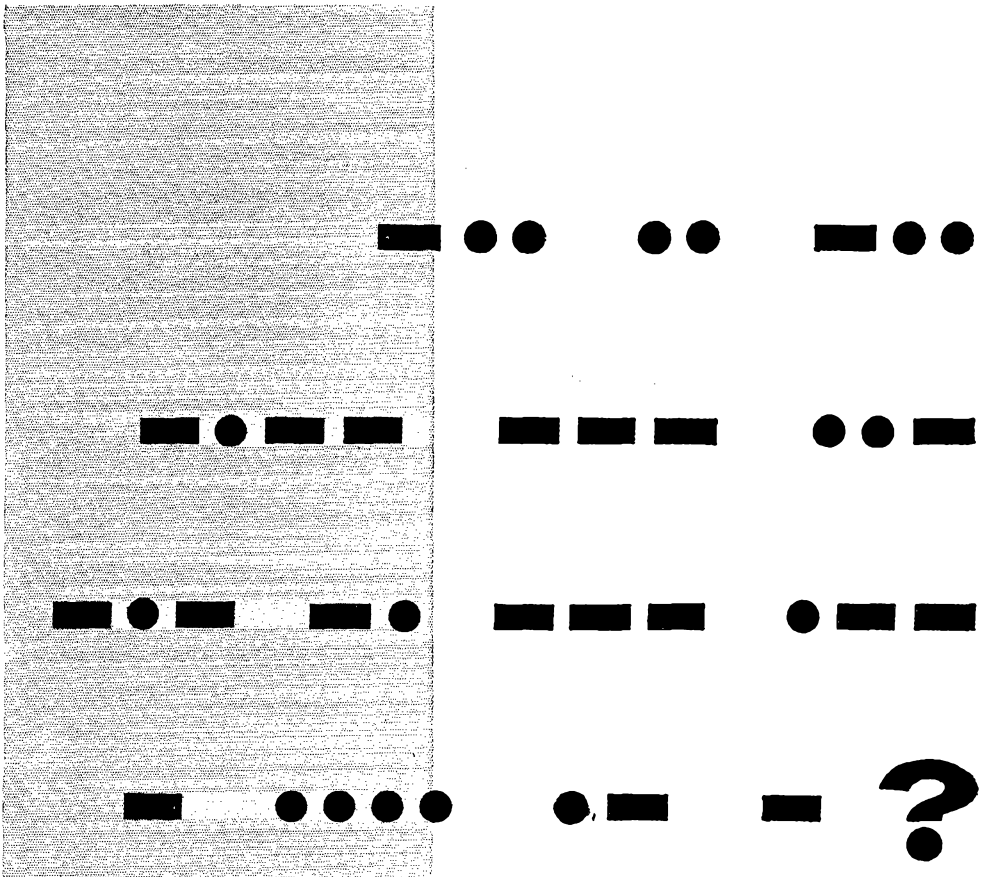
received an OO appointment. DTB, at Waterloo, got his ticket. KØGEY, Calmar, received a Conditional Class ticket. KNØLVH, a new Novice at Calmar, is now in the Army. KNØLUV and LOV are new Novices at Clinton. The TLCN and 160-Meter Phone Nets are back on winter schedules. BLH has a new 15-meter four-element beam. Larry received an SWL card from Bulgaria giving him a 559 on 40 meters. EGR operated at the Woodbury County Fair. FDM and ESB, father and son, vacationed in Wyoming. UJS went East for his vacation. NTB vacationed in Colorado. 9PUW/Ø is back on TLCN from Iowa City. KØWAD and YI are back on the air after vacation. YI reports the Iowa State College Campus Radio Club is active again. NWX showed his Clipperton pictures at the Burlington Club. HNE got a nice write-up in the *Des Moines Tribune*. Traffic: (Sept.) WØBDR 1749, SCA 1182, LGG 1013, BJP 900, PZO 643, CZ 564, LCX 389, KØCLS 381, WØGXQ 264, NGS 94, UTD 91, QVA 85, LJW 76, REM 54, BLH 50, ERG/Ø 46, FMZ 21, LWD 21, KØAHZ 16, WØNYX 16, SLC 16, PTL 13, KØWAD 12, WØIUY 10, MEL 10, UHO 9, CGL 8, KØEXN 8, AAH 7, CFB 7, WØHNE 7, KØBRE 6, GHZ 6, WØUTX 6, VWF 6, KØCYF 5, JIU 5, BPE 1, WØCOD 1, FDM 1, (Aug.) WØBTL 22, GQ 12.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH. RM: QGG. PAM: LEW. The Wheat Belt Radio Club held its annual hamfest Sept. 8 at Sappa State Park near Oberlin. Of the 80 attending, 43 were licensed hams. A 40-meter YL phone net has been started by a group of Wichita YLs. The net meets on 7280 kc. every Wed. at 1400. We are pleased to announce the appointment of SZF, of Almena, as EC for Zone 20, which includes Decatur, Norton, Phillips, Smith, Sheridan, Graham, Rooks and Osborne Counties. Moe reports he has 37 amateurs in his territory and plans on regular drills. The CKRC *Ink* news sheet advises of a new net in Salina known as the 10th Air Force MARS V.H.F. Net #6A. Net #6B is in Kansas City and #6C, of which AFØZJB is NCS, is in Wichita. AFØETX, of McPherson, is NCS of #6A and the group operates on 143.46 Mc. each Wed. at 2000. MIG is active with QKS with a Viking Adventurer NC-109 receiver and Windom antenna. The Kansas State Radio Club at Manhattan had a station set up at Union Open House and took 22 messages. FDJ made a nice recording of the Russian satellite Oct. 6. Traffic: WØBLI 456, TOL 292, KØBXF 206, WØQGG 197, NIY 159, KØHSF 45, WØABJ 40, KØHVG 34, WØQQQ 31, MXG 24, IFR 22, MIG 18, KØBIX 17, WØUOL 14, KNØKDV 12, WØTNA 12, LEW 8, WWR 7, FDJ 4, ASY 3.

MISSOURI—SCM, James W. Hoover, WØGEP- SEC: BUL. PAM: BVL. RMs: OUD and QXO. Nets: Missouri Emergency Net, 3900 kc., 1800 CST, Mon., Wed., and Fri.; Missouri Net, 3580 kc., 1900 CST, Mon. through Sat. Novice stations interested in handling traffic should contact PME. WEQ, St. Louis, and KLQ, Jefferson City, are soliciting schedules on 50.25 Mc. at 1900 CST. A transmitter power transformer failure has WFF shut down temporarily. The St. Louis Amateur Radio Club has received a club station call, KØLIR. The University of Missouri Amateur Radio Club has a new DX-100. The Rolla School of Mines Amateur Radio Club has received a 1000 Traffikers Club certificate. A case of influenza prevented BUL from attending the Midwest Division Convention. BVL attended the Early Bird Net Picnic in Toledo, Ohio. CPI spent a two-week vacation fishing on the Gulf of Mexico. MHS is attending college in Ohio. KØDEX is attending the School of the Ozarks, Point Lookout, Mo. OMM has moved to Raytown, and KØHQQ is moving to Kansas City. CKQ has 90 watts on 6 meters. KØIHY has finished building a v.t.v.m. kit and is building a mobile converter. EXN and NUE report excellent results from all-band mobile operation during their vacations in Canada. Traffic: (Sept.) WØCPI 951, GAR 505, VPQ 204, YVM 127, OUD 116, KIK 72, EBE 48, VJD 36, HUI 35, KØHQQ 30, WØOVV 27, BUL 24, BVL 16, RTW 16, CKQ 14, GEP 12, GBJ 10, IIR 10, KØIIK 6, WØMMZ 6, KØIHY 4, WØGCL 2, PSP 2, WYJ 2, KNØJPJ 1. (Aug.) WØOMM 292, UXT 31, LQC 26, KØDEQ 8, WØKA 4, RTW 2.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—Your SCM attended the Midwest Division Convention at Kansas City, which was a very nice convention, with SCMs from all states in the division in attendance, as well as a good delegation from Nebraska. DDT, NCS for the Nebraska C.W. Net, reports a very nice start on Sept. 2 as planned. The sessions reported 162, traffic 99, average of 6.2, high 10, low 2. The present roll call is 18 members. The Nebraska 75-Meter Emergency Phone Net, MAO as PAM, has QNI 441, QTC 60, duration 642 minutes. As of Oct. 1 there were 34 on

(Continued on page 132)



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roll call. New calls added are KØFBD, HOP, KØDGW and KØJBT. The Nebraska Stow-Speed Net had QNI 215, QTC 37, duration 1381 minutes. As of Oct. 1 there were 9 on roll call. MAO had a nice birthday party Sept. 22 with EGQ, SPK, VGH, ZWF and ZWG helping Jerry to celebrate the occasion. *I am dictating this to* my XYL, Jeanie, from a hospital bed and will try to do better next time. Traffic: (Sept.) KØDGW 187, WØEGQ 129, DDT 126, MAO 104, ZWG 50, ZJF 42, NIK 28, SPK 23, BOQ 22, KØHKI 18, WØZOU 15, KØEPI 10, FBJ 9, JBT 9, WØZWF 9, FXH 8, PDJ 8, VGH 8, HOP 7, KLB 4, LEF 2, LJO 2, VZJ 2. (Aug.) WØZJF 51.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—SEC: EOR. RM: 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 2130 on 3640 kc.; CTN, Sun. 0900 on 3640 kc. CN held its fall meeting Sept. 21 at the Hamden Amateur Radio Club house. New England Director EFW and NJM, of ARRL Headquarters, attended. NCS and IRN representatives were picked and RM KYQ led a general traffic discussion. EFW reports MCN handled 66 messages in 21 sessions. High QNI goes to IBE 21, DIY 19 and RFJ 18. Section Net certificates were issued to GVK, KAM, MQT, EJV, FCE, HHR and ZHM. KAM is working for WAS. GIX is busy with bulletins on 3905 kc. RAN has lots of irons in the fire in the way of a new exciter, power supply and kw. amplifier for 3.5 and 7 Mc. TYQ worked JT1AA for the 40th zone. YBH advises that CPN met 29 times, handling 227 pieces of traffic. Average daily attendance was 28 stations. High QNI goes to DHP and YBH 29, DAV 27, HID, VIY and VQH 26, FHP and NQL 24. YNP added HB1MQ/FL and SVØWQ on Crete for a country total of 147. MPL is mobile on 10 and 75 meters. ECH is busy working 10-meter DX mornings before school. KYQ reports CN handled 196 messages in 25 sessions. Average attendance was 10 stations per session. QNI honors go to GVK and KAM. KN1DIA is a new Novice in Winsted. The Waterbury Amateur Radio Club defeated the Torrington CQ Radio Club in a softball game. EJH reports September was a lazy month but he still submitted an EC report. In fact, Ernest hasn't missed one in the past year. YNP and RAN are new members in the TOPS C.W. Club. TD enjoyed his vacation. Homework is cutting down the operating time at AMY. The September lunch of the Newington gang found JSQ, OKY, ORG, WGJ, WPR and VPI attending. NQL is a new OPS. EOR reports the following EC appointments: FOA for Saybrook, SVK for Manchester, WHR for Cheshire, ZPD for Old Greenwich. Does your town have an EC? If not, how about recommending one to EOR. We regret that BVB had to give up his EC appointment because of his health. GIX submitted an OO report. An OES report was received from FVV, BDX, ØICF, SKA, VVA, SAQ and other members of the University of Connecticut Radio Club have formed a mobile net with DHP as manager and NCS. They meet Mon. through Fri. between 1530 and 2100 and from 0900 to 2100 Sat. and Sun. on 3825 kc. They monitor police and fire department frequencies and are available in case of emergency. Traffic: W1EFW 329, YBH 228, AW 151, KYQ 142, MQT 137, TYQ 127, FVF 74, HID 56, ULY 48, CUH 43, GVK 42, BDI 32, AMY 27, DHP 23, RFJ 22, MQL 17, ACR 12, KAM 10, GEA 8, GIX 8, FCE 7, LV 7, EJH 5, HHR 3, KN1BJP 2, W1MGD 1.

MAINE—SCM, John Fenton, W1LKP—PAM: VVA. RM: EFR. Traffic Nets: The Sea Gull Net meets on 3940 kc. Mon. through Sat. at 1700; the Pine Tree Net on 3596 kc. Mon. through Fri. at 1900; the Barnyard Net on 3960 kc. Mon. through Sat. at 0800. FNI reports the Wonder Bar beam is working FB on 10 meters with a reflector. KAS is building a new final using a 450TL. WST is working hard for WAS on 75-meter phone. UTG is now a freshman at the U. of Maine. LRZ has accepted a new job as engineer on Mt. Washington. CPZ is now at WCOU. UDD is back home after a vacation in Florida. It's nice to hear Al on SGN after a long absence. BWB is building a new 6-meter rig. UAS is active on 220 Mc. in the Portland Area. The CAP supper held at the Highland Lake Grange Hall Sept. 28 was a great success with over 100 present. FBJ is in Florida for the winter and is active on 10 meters. PTN is in need of more stations for Central and Northern Maine. We are sorry to hear that VV had to spend a few days at the Maine Medical Center. A speedy recovery, Slim. TOZ has a new linear which sounds FB. An SGN certificate was awarded to K1AEZ, who applied for OPS appointment. KN1CJK is a new Novice in Phillips using a 5-watt home-built rig. HAG has joined the Morning Watch Net on 7 Mc. Hope to have you

(Continued on page 134)

FROM A COUPLE OF SEASONED HAMS

... comes the ultimate in versatile rigs

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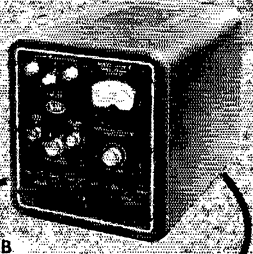
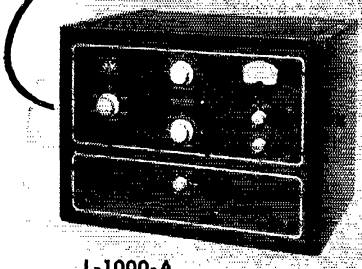


51SB-B
$265.00



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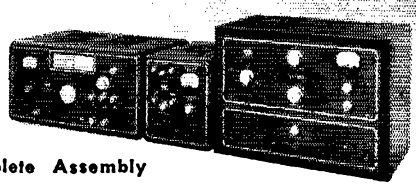

Complete Assembly

The B&W 5100-B TRANSMITTER was conceived by well seasoned amateurs *for* amateurs. These men *know* from long personal experience, just what you as an amateur need.

Since your need was their need—and every true ham can appreciate this burning desire for fulfillment—they turned loose their company's engineering staff to develop their ideas. The result is a transmitter that's the ultimate in flexibility and performance.

The thousands who have proved the dependability of the B&W 5100-B over the years will attest to its unparalleled advantages, including 145 w. input AM, 180 w. input CW, 180 w. PEP SSB with 51SB-B.

For the oldtimer, or the novice, B&W's 5100-B will put you on the air with a top quality rig at a minimum expenditure. And when you're ready, you can add this:

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B&W L-1000-A GROUNDED GRID LINEAR—Final stage of a complete rig, this 1-KW Final with a pi-network output offers precision tuning and loading from 80 to 10 meters. Rating, 1000 watts peak envelope SSB power, 875 watts CW, and 375 watts linear AM phone.

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on PTN soon, Sandra. TWR and family are in Florida for the winter. ZAJ now is living at Ocean Park. COP has a new 75A-4. KN1BUH is a new Novice in Biddeford. Both ROM and DFC are recent fathers of boys. NWJ is going to Bell Lab. School. RUO is recovering nicely after a leg operation. ZEN sends a nice report on the Barnyard Net for Sept. K2OUN/1 is now at Portsmouth Air Base and is on 75-meter phone from York Beach. Traffic: W1LKP 137, EFR 42, HYD 12, K1AES 10, W1HAG 9, OTQ 9, CEV 8, RJE 7, BX 4, GRG 4, VYA 1.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—Appointments endorsed: MBQ Vineyard Haven, YYZ Randolph, ZBD Hudson, ZNG Wakefield, as ECs. MD as OPS. LMU as OBS and OES. PXH as OO. K1BUF is a new ORS. K1DGG is on 6 meters. CG is on 75 meters. Heard on 2 meters: KPG, WEW, VJC, ZLQ, KNI, CZP, ZLQ, JOB, KN1s CZQ, BST and AWH. ZQA is active on several bands. DXQ and ZHX have new sons. WZN is alternate RO for Milton. LLY is RO for Sector 1D. NF is going to get his ½-gallon back on 6 meters. The Federation of Eastern Mass. Amateur Radio Association held a meeting in Lynn. MRQ has the RACES plan for Groveland ready to send in. OOP spoke at the GBARS meeting on home-built gear for 420 Mc. K1CLO passed the Technician and General Class exams and is on 15- and 20-meter c.w. NYL, Sharon, is on 2, 15, 20 and 40 meters. FJJ has ½-kw. with 812s on c.w. KN1AYW is on several bands using a 12-ft. wire. The New England WX Net held a get-together at YCR's with 15 present and meets Mon. through Sat. on 3900 kc. at 6:30 A.M. DIY is NCS for the EMN on Thurs. nights. KN1DIY is new in New Bedford. TY has a new QTH. CUW has a new QTH on a hill in Lynn with a Valiant, an HRO-50 and a three-element beam and now is working DX. AOG is building a portable rig for 2 meters. K1BUF built a new rig and is going to college. ETH is working DX on 15-meter c.w. and will be on 10 and 20 meters. The T-9 Radio Club met at Al Barton's QTH. KL7UPS, ex-1UPS, is on 10 meters and is looking for the gang in this area. PXH has been away all summer. SCD is on 80, 40 and 20 meters. RPB is RO for Amesbury. The Braintree ARC held a meeting. 2EEY is working in Lexington. HIX reports that Stow has bought two 6-meter Gonsets and with AHE and ZAP has a net with HIX and HLQ on. MDD, Marlboro, is liaison station. KN1COC has his Tech. Class license and is on 80-meter c.w. DQF has a Ranger. BB is fixing beams and antennas for all sets and bands and is working DX on 10 meters. ZBD is building a new house. K1AXG, on 6 meters, is new in Winthrop. OIR visited Alaska this summer. DPN, IRV and TTH have gone away to college. The Winthrop Net is drilling again. AHE is very active on 6 meters and has a place in Maine he is fixing up. CPB has a new beam for 2 meters. K1BYV built a preselector for 15 meters. PX is living down the Cape. CXJ is waiting for a beam. AGR is in the hospital. SXD has a 6-meter beam. CGU has a Tapetone converter. RM is busy with Newton C.D. LMU is trying 15 meters. K1DNT is working in Needham. Appointments endorsed: DWO as ORS, MEG as OBS, OPS, ORS and EC for Framingham. Traffic: W1EMG 153, FJJ 140, EAE 64, IBE 42, AUQ 34, KN1AYW 32, W1ATX 25, UKO 25, CZW 24, UE 21, DIY 16, TY 12, CUW 11, AOG 7, SMO 7, BY 6, TZ 4, K1BUF 2, W1DTB 2, ETH 2, HHC 2.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKeraghan, W1HRV—SEC: RRX, RM: BVR, PAM: AING. The WMCW Net meets Mon. through Sat. on 3560 kc. at 1900 EST. The WM Phone Net has at least a dozen stations reporting in Mon., Wed. and Fri. at 1800 EST on 3870 kc. ORS endorsements go to KGJ, DGL, DZV, WEF and DVW; OES and EC endorsements to RFU. A picnic for members of the WM traffic nets was held at the Quabbin Area on Sept. 15 with a fine turnout of 50, including family groups. DVW did a fine job of arranging. A fine job was done in covering the 100-mile relay race from Springfield to Boston Sept. 7. Six mobiles, HRV, OFZ, GQP, WEF, JSH and NLE, and two fixed stations, SRB/1 and FDJ, covered the race through Hampden County as far as Warren, where EKO, FBN, ENX, LQV, JAT, ZWL and VPE, under the direction of EC SPF, covered the race through Worcester County. The East Mass. boys took over through their section. The race program director was delighted with the swell job and sends along his thanks. Thanks also to all from the SCM for the nice cooperation. KQK has become a regular on the WMCW Net. JYH has received a DXCC 240 sticker and the WAVE award. UEQ makes BPL again. The Montachusetts Club made a fine showing during the V.H.F. Contest with rigs on 6 and 2 meters. The

(Continued on page 136)

YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!

NO TRAPS, COILS, BALUNS, STUBS OR INSULATORS USED!

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 ¾" and 1⅝".

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use ⅝" and ¾" tubing elements; the deluxe models for these bands use ⅞" and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

TRIBANDER BEAMS

6–10–15 TRIBANDER.....$39.95
10–15–20 TRIBANDER..... 49.95

Do not confuse these full-size tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

TWO BANDER BEAMS

6–10 TWO BANDER.....$29.95
10–15 TWO BANDER..... 34.95
10–20 TWO BANDER..... 36.95
15–20 TWO BANDER..... 38.95

Each Two Bander has twin 12' booms, and full-size half-wave elements. ⅞" and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy.

FREE! FREE! FREE! Details, Specifications and Characteristics of 50 antennas!

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.

NO TRAPS, COILS, BALUNS, STUBS OR INSULATORS USED!

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Enclosed find check or money-order for:

TWO BANDER BEAMS
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2 METER BEAMS
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10 METER BEAMS
- ☐ Std. 2-El Gamma match 11.95
- ☐ T match 14.95
- ☐ Deluxe 2-El Gamma match 18.95
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15 METER BEAMS
- ☐ Std. 2-El Gamma match 19.95
- ☐ T match 22.95
- ☐ Deluxe 2-El Gamma match 29.95
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20 METER BEAMS
- ☐ Std. 2-El Gamma match 21.95
- ☐ T match 24.95
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- ☐ T match 34.95
- ☐ Std. 3-El Gamma match 34.95
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- ☐ T match 49.95

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

NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

- ☐ Beam #R6 (6 Meters, 4-El).....$38.95
- ☐ Beam #R10 (10 Meters, 4-El)..... 40.95
- ☐ Beam #R15 (15 Meters, 3-El)..... 49.95

Name.....

Address.....

City.....Zone....State.....

Pioneer Valley Net on 29 Mc. Wed. evenings is going strong with WIs TAY, FWW, LIW and IZI and KIs AZS and CID as regular members. ZEO had an FB article on power supplies in Sept. *QST*. VNH has made WAS on 50 Mc. and received certificate No. 28. The Pittsfield Radio Club RACES group was active on Labor Day week end assisting the Police Dept. in traffic control and speeding reporting. Seven mobiles, HPA, WF, UUJ, UIS, JDB, IW and LKO, were used while BKG, LKO, CJG, DWA, UEY and FDG manned the c.d. communications trailer. KN1DJE is a new Novice in Lanesboro. AGM reports many nice portable and mobile QSOs while on a vacation trip through Northern New England. LIW is mobile again with a new car after his unfortunate accident. BFE has a new 50-ft. tower up and ready to go. KGJ is active again after raising a new antenna. Traffic: W1UEQ 509, BVR 70, FZY 34, DVW 31, DGL 29, TAY 22, DZV 7, DPY 4, JYH 3, AGM 2, HRV 2.

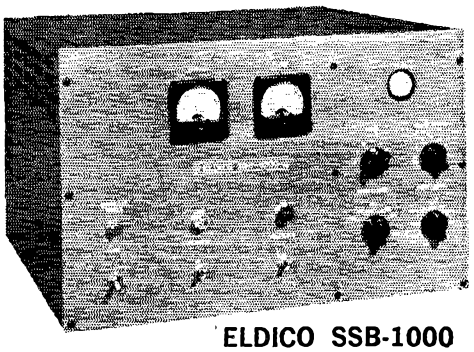
NEW HAMPSHIRE—SCM, John A. Knapp, W1AIJ—SEC: BXU. RMs: CRW and COC. PAM: CDX. The Granite State Phone Net Picnic and Outing, held Sept. 29 at KVG's QTH at Mirror Lake, must go down in the records as an outstanding event. Forty-plus hams and their XYLs, YLs and jr. operators swelled the attendance to approximately 80. The general business meeting was followed by boating, games, horseshoe pitching and "eyeball" QSOs. The Nashua Mike and Key Club reports that BXM is now Asst. Radio Officer for Nashua and also holds forth as chairman of a v.h.f. group formed by some of the club's members. JTB/NPY sends word from Tri-State College, Ind., that he is going for his degree in Electrical Engineering. Good luck, Gordon. GVL is now back at Proctor Academy. HOU is doing a fine job on 20 meters with his new vertical ground-plane antenna. AIR has acquired WAC and WAVE. KN1BVJ is on using a DX-35 and is working toward WAS with 27 confirmed. HUR called CQ Pasadena and was answered by 6HUR, who put through a phone patch for his grandfather. Welcome to new hams: K1BLR and KN1s CFX, CDV and BVJ. GSPN certificates go to K1s AXU and BWO and W1s TA, EUT, VBT, LGO, OTQ and ARR. Traffic: (Sept.) W1ARR 605, FUA 126, CRW 82, HQ 26, JNC 22, ENM 18, AIJ 16, CNX 9, CDX 8, JTB/NPY 5, BYS 2. (Aug.) W1HOU 102, KVG 7, BYS 3. Season's Greetings to all.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAM: YNE. RMs: BBN and BTV. CMH is the new manager of the RIN (3540 kc. at 1900 Mon. through Fri.). The PRA's new club building on Neutaconkanut Hill in Johnston was officially dedicated on Sept. 15. Our New England ARRL Director, EFW, was one of the guest speakers. The CRA sponsors code classes each Mon. night at Cranston C.D. Headquarters under the direction of YKQ, MNC and K1AEW. Movies of the club's Field Day activities taken by VWR were shown by him to the EPARA at a recent meeting. HDQ, of ARRL, spoke on v.h.f. at the Oct. 1 meeting of the BCRA. Members of the EPARA, NCRC and the Fall River Amateur Radio Club also attended this meeting. Congratulations to KCS, who has added two more states (Mississippi and Tennessee) on 2 meters and now has a total of 21 states on this band. YNE has a new DX-100 and beam. VWR reports better reception on most bands at his new QTH in Providence. TXL now has General Class and works several bands. CMH and KN1AAK have WAS. ECs are reminded to send reports to PAZ the first of each month. If your club's activities are not mentioned regularly in this column, it could be that no one in the club has the responsibility of reporting to your SCM each month. Every effort is made to give each club equal space. Traffic: W1TGD 64, CCN 36, VXC 27, NCD 14, YRC 13, YKQ 9, VWR 7, MUZ 5, QR 2.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK—SEC: SIO. RM: BNV. PAM: KKM. Our newly-appointed PAM is KKM of Hartland. Our grateful thanks to retiring SEC for faithful service on VTPN, which has been appreciated. Forty-seven messages were handled on GMN and Asst. Net Manager WOA has returned home from Veterans Hospital in White River. BNV lists the following VTN NCS roster for the fall and winter season (Mon.-Sat., respectively): KKM, GQJ, OAK, ELJ, KRV and BNV. Each station is representative to 1RN the same session. The long sought-after license plate bill has been passed in Vermont. K1CXS, a General Class licensee in White River, is operating 10-meter mobile. TXN has moved to Hinesdale, N. H. K1BCS, from New Hampshire, operated portable at Cabot using a Viking II with an HQ-129X on 20, 40 and 80 meters. K1APA is active on 50 Mc. using an SX-99 receiver with an International

(Continued on page 138)

Engineered RIGHT for all three . . . SSB, AM, CW, . . . by ELDICO



ELDICO SSB-1000

ELDICO SSB-100F

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.

AVAILABLE NOW
at your local distributors

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.

ELDICO SSB-1000

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.
Power Rating: DC Input C.W. 1000 watts, A.M. 700 watts
Peak Envelope Power:
Input SSB-1000 watts
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.

Write W2BFY for additional details if your distributor can't assist you.

ELDICO ELECTRONICS

29-01 BORDEN AVENUE, LONG ISLAND CITY, NEW YORK

A Division of Radio Engineering Laboratories, Inc.

Crystal 6-meter converter and Globe Scout 65B with 45 watts input. JEV also is on 50 Mc. and recently dropped the "N." EOY and KDY had an interesting write-up with a photo in the *Barrington Free Press* telling of a husband-and-wife team sharing ham radio. KIBGC has Conditional Class license and is active on all Vermont nets using a DX-100. "Happy days are here again" is the theme for FPS, who is back on the air on 3.5 and 50 Mc. running ten watts! KJG has joined the AREC. CQJ continues with much interest with his home-made keyers. All clubs in the State are getting in full swing. On 144 Mc. MMN worked West Virginia for a new state. OAK is gunning for particulars. Visitors this month were PFU, KIBCS, QIX and KIBGC. Traffic: W1AVP 94, OAK 64, BNV 19, ELJ 19, KIBGC 3.

NORTHWESTERN DIVISION

IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—The FARM Net elected WNR as Net Control. HOV and WEY are alternates. NTQ is the new Net Manager. Sincere thanks to all who served last year. LQU has four 837 tubes in a linear. ACD is running phone patches from the South Pole. He worked surrounding states on 6 meters, and has 151 countries now. VQC is patching university students home with his new Viking 500. WHZ is drilling in the Canadian wilds and has only a receiver with no transmitter. FQV has a KWS-1 at home and a KWM-1 in his Caddy. He and RWW, HXN, RSQ and WHZ have their license plates in North Idaho. All hams should get their plates for the coming year. Most of the fellows packed up the Sputnik signals with resulting publicity. More s.s.b. rigs are sprouting up on all sides. Keep up the good work on the FARM Net. Traffic: WTGMC 189, VQC 31, ACD 15, EEQ 11.

MONTANA—SCM, Vernon L. Phillips, W7NPY/WXI—SEC: KUH. PAM: KGJ. The Montana Phone Net meets Mon.-Wed.-Fri. at 1800 MST on 3910 kc. The Montana High School Net meets Tue.-Thurs. at 1800 MST on 3885 kc. Numerous stations report receiving the signals from the Russian satellite on 20.005 Mc. GCS and VLZ attended the ARRL Convention in Chicago. CTM has a new jr. operator. BXL moved from Thompson Falls to Hauser Dam. CLB moved from Lincoln to Wisdom. OGT attended Naval Reserve Camp at San Francisco. K7AEU received a Conditional Class license and left Billings for the service. KN7BBI is a new Billings call and is at the Naval Training Center at San Diego. Other new calls in Billings: KN7s AVK, AVJ, BBQ, BCO, BEI, BEN, HFH and BFJ. KN7BHP is a new call in Harlowton. EEO has a new Globe Champion. QYA and YUB have new SX-101s. New officers of the Harlo Radio Club are SZB, pres.; TGL, vice-pres.; YHB, secy.-treas.; and RZY, act. mgr. Recent appointment: YHS as EC for Billings. Traffic: WTYPN 14, HLI 9, DWJ 6, YHS 6, SFK 4, NPV 3, CQC 2, EEO 2, IDK 2, OOG 2, YQZ 2, BKB 1.

OREGON—SCM, H. R. McNally, W7IDX—VPH is building an 829-B final for 2 meters. RCL, as EC, has lined up several of the gang on a 6-meter net. VLE is moving to Medford. LT has a new G4ZU beam on 15 meters and reports good luck with it. YKT has a new electronic key and monitor. ZBO will be mobile soon. WNV is busy with school work. TLC/6 still is in Inglewood, Calif., where he is active on MTN. RN6 and 2-4-6 Nets. The OSN had a good month in September with OMO and ZBO making BRAT. High check-ins on OARS for September were QWE and DVE. The Oregon Hams Mobile Society has now been formed in Portland with QFY as president. The first formal meeting was held Sept. 19. The Mountain Rescue and Safety Council (MORESCO), which handles search and rescue work on Mt. Hood, now has lined up a definite communications section with WFP as the head. ENU, RCL, NGW, HDX, RVN, JDX and OZL are coordinators. Communications members are WFO, DOK, QFY, QWE, JCI, DJX, DGE, YZAI, SHK, PTJ, AXI, HVX, PPQ, JMW, DPV, OUS, RCM, BTF, EJO, QMZ, VLE, RHX, WVI, QYS and HYW. Frequencies used are 3940 kc. fixed, 3865 kc. mobile and 3885 kc. walkie-talkie. Traffic: (Sept.) W7CUW 104, LT 45, OMO 42, GUR 38, QWE 32, ZFH 29, ZBO 28, AJN 23, ESJ 12, YKT 9, SPB 8, RXO 5, ZUD 1. (Aug.) W7TLC 577, BVH 36.

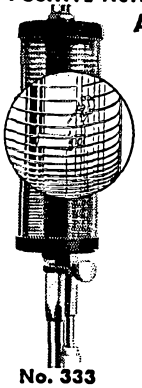
WASHINGTON—SCM, Victor S. Gish, W7FIX—This issue of *QST* carries a notice requesting nominations for SCM of this section. Your present SCM has had the job for four years and does NOT wish to be reelected. All appointees are requested to look at the

(Continued on page 140)

go mobile with Master Mobile

NEW!.. SILVER-PLATED ROLLER WITH POSITIVE ACTION, STAY-PUT CONTACT

ANTENNA COILS

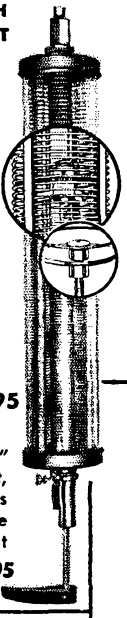


MASTER DELUXE ALL-BANDER
No. 750

HY "Q" construction with wider spacing of turns for high frequency bands. Use as center or base loaded antenna with 60" whip.

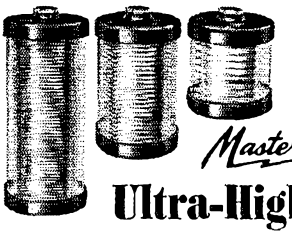
- Covers 10 thru 75 and all intermediate frequencies.
- Silverplated single turn contact, positive spring.
- Eccentric cam contact, easy selection of turn.
- Automatic lock prevents damage to coil.

Amateur net. **$14.95**



No. 333
MASTER MIGHTY MIDGET

... engineered to provide the highest "Q" consistent with good design. Compact, extremely rugged, yet lightweight, its operation assures precision tuning with the new adjustable silver-plated roller that stays put! Perfect for 40-20-15-11-10 meters. "Get 5 Bands Plus on 1 Coil." **$9.95**



- Ruggedized construction
- Greater efficiency
- Precision made
- 2¾" Diameter

Master

Ultra-High "Q" COILS

For 80-40-20 & 15 Meters

After many years of experimentation, here is the coil with the highest "Q" ever obtained. Tested and found to have a "Q" of well over 515. Use with 36" base section, 60" whip. **$5.25 ea.**

BODY MOUNT
No. 321
less spring
$7.95

BODY MOUNT
Heavy duty
Stainless Steel
Coax. Conn.
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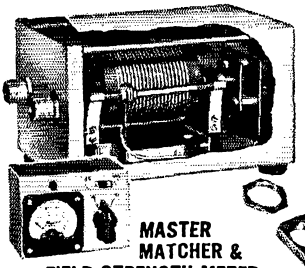
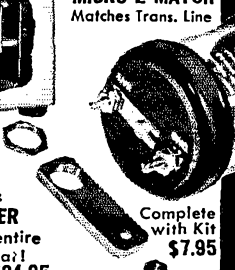
Other Mounts from **$8.75 up**

THE NEW DIAGONAL SWIVEL BALL-JOINT LOCKS IN ALL POSITIONS

W6EFX—Says!
"I would not be without a Master Matcher on my mobile rig... I can QSY on any band at the same time peak my antenna to the operating frequency for *maximum output.* It makes a mobile like a home station!"
W. B.



MASTER MATCHER & FIELD STRENGTH METER
Automatically tunes the entire band from the driver's seat! 6 or 12 volt models **$24.95**



MICRO-Z-MATCH
Matches Trans. Line
Complete with Kit **$7.95**

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AT LEADING RADIO JOBBERS EVERYWHERE

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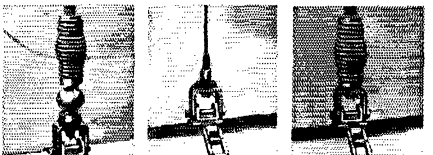
BUMPER MOUNTS
WITH NEW X-HEAVY DUTY CHAINS



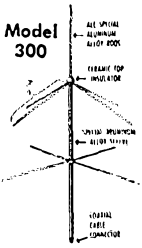
No.444 $17.80 **No.445 $7.95** **No.446 $13.45**

Adjustable to any bumper. No holes to drill, easy to attach. High-polished Chrome Plated ⅜"-24 thread, to fit all antennas. Precision engineered.

GROUND PLANE ANTENNA

Outperforms any type mobile vertical dipole, "Drooping" type. Gives a low angle of radiation for general coverage. Ideal for CD, defense nets, Amateur, Broad Band. Matches 52 ohm coax cable. Adjustable radials. For medium or low-powered trans.

Model 300



***Net* $12.95**

NEW NOISE-FREE

E-Z-OFF
ANTENNA CONNECTOR

Connect or remove your loading coils, whips or mounts in a jiffy. No wrenches, pliers or screwdrivers needed. High-grade stainless steel throughout.

- **Precision made**
- **Maximum efficiency**
- **Positive lock—will not corrode**

AMATEUR NET **$2.95**

QCWA QSO PARTY
December 6–8 and 13–15

The Northwest Chapter of Quarter Century Wireless Assn., comprising the area of Washington, Oregon, Idaho, and British Columbia, is pleased to announce a QSO Party in which all QCWA members are invited to participate. The purposes of the party are (1) to make more friends in QCWA, (2) to stimulate interest in Chapter activities and to find out how other Chapters are run, and (3) to give information on the Northwest Chapter, if desired.

The party runs from 1800 December 6 to 1200 December 8 and from 1800 December 13 to 1200 December 15, all times PST. The general call will be "CQ QCWA." The following frequencies are recommended for use: 3655, 3950, 7125, 7210, 14,100, 14,260, 21,360 and 28,600 kc. Mail entries to Dr. F. Clifford J. Spike, W7OS, Secretary Northwest Chapter, 1412 Medical Arts Bldg., Tacoma 2, Washington.

Members of the Northwest Chapter will be on the air on the above dates and frequencies to see how many QCWA members can be contacted throughout the American Continent.

expiration dates on their certificates. The Valley Amateur Radio Club (Puyallup) had a booth at the Western Washington Fair. The theme was "Women in Amateur Radio" and featured FWR, for years the QSL Manager for W7. Much of the work on the booth was done by HMQ and WHV. Visitors included hams from Saudi Arabia and Hawaii. KN7AEJ reports from Vancouver: *The Clark County Radio Club meets* the 1st and 3rd Thurs. at 8 P.M. at the Red Cross Bldg. ZDU has a class for Novices at Clark College and will start General Class code and theory on Dec. 1. FRU reports QRN was terrific but QSB worse this summer. WAH is attending Pacific Lutheran College and is off the air because of lack of an antenna. AIB has nothing but praise for his new HQ-150. FZB had a basement fire and says, "Scratch one SX-100 and one Ranger." FZQ now relays all RN7 QNI reports to the RN7 Net Manager. WQD says traffic is picking up. JC is moving to a new QTH. NWP has been reappointed as ORS and OPS after a lapse because of time spent in Texas. AMC has been on the sick list. The Doc says it's arthritis. Chet says, "It ain't good." BMK reports a break in the twin lead to his 80-meter doublet and the winterizing program is now in progress. LVB is looking for a QTH out in the sticks away from TTV, etc. *ER is busy with Quarter Century Wireless Association* business. HDT reports: PSL stopped work on hi-power to go hi-fi; GJA also stopped work on the kw. to go steelhead fishing. HDT says neither of them have caught one yet. AVM reports two AREC-RACES drills were held in Aberdeen during September. CWN is working some DX and MARS. OEX got his picture in the paper for his phone patch work for isolated GIs. Traffic: (Sept.) W7BA 2249, PGY 855, VAZ 544, K7FAE 513, W7FRU 248, WAH 102, AIB 101, FZQ 101, WQD 81, JC 62, APS 58, NWP 48, USO 28, JEY 23, AMC 21, GVV 19, BMK 8, ER 6, LVB 6, YJE 4, EVW 3. (Aug.) W7VAZ 537, K7WAT 473, W7WQD 44, BXH 17, ER 8, BMK 2.

PACIFIC DIVISION

NEVADA—SCM, Albert R. Chin, W7JLV—SEC: JU. Newcomers to the Reno Area are 6HVC and his XYL, 6KOY. Movers: GOE has moved to Montgomery, Ala., and 5JAG/7 has transferred to Hamilton AFB. YNO is now attending the Naval Guided Missile School at Virginia Beach, Va., *and is doing some operating at* K4NCX. Congrats to Doug Webb on his new call, WN7AGZ. TKV now has a 50 WAN endorsement on his WAN certificate. New WANs went to 1AW and the gang, K7ADD, 4HYW and 5AWT. BGV is back on the air working DX on 15 meters. YLO is doing FB on RACES. YKQ is picking up such choice DX contacts as CE9AH Antarctica, TG9RB, HA1KSA, CE9AE, PY7AFK and KZ5IF on 50 watts. VIU has a new SX-101; he is active on RN6 from his new QTH and is looking for contacts and skeds to Reno and Las Vegas. ZHW is organizing code practice sessions in Reno. AZF is adding RTTY to his operations. TQE is sporting a new final. Traffic: W7VIU 16.

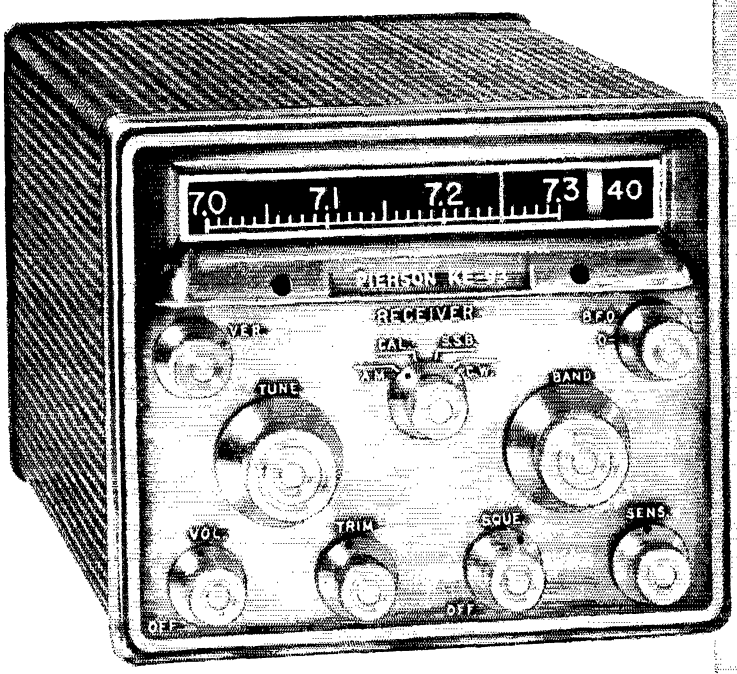
SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6YHM—SEC: NVO. RM: ZRJ. PAM: QFJ.

(Continued on page 142)

new, improved

PIERSON KE-93

communications receiver



- Dual conversion, crystal second mixer, virtually eliminates image responses
- Dial displays only the band in use. Indirect lighting provides non-glare readability of large legible lettering.
- Plated satin finished panel styled to match the most luxurious car interior.
- Each ham band spread over entire length of dial.
- Extreme selectivity and sensitivity.
- Size: 6" wide, 5" high, 9" deep.
- Rigid construction, die cast panel and turret housing.
- Highly effective noise silencer and squelch circuits of new design.
- Provisions for external S meter.
- Controls in most practical and convenient operating panel position for mobile operation.
- Function switch provides ideal settings for A.M., C.W. and S. S. B. operation. Excellent S. S. B. reception even in "mobile in motion" operation.
- Versatile, 7 position turret band switching.
- 6 or 12 V.D.C. or 110 V.A.C. power packs permit mobile, fixed, or portable operation.
- Competitively priced.

A Full-Fledged 12-Tube All-Band Communications Receiver In A Small, Mobile Package!

Built to outperform existing mobile receivers, the Pierson KE-93 equals and surpasses many receivers of the large console variety. Extremely small and compact, the KE-93 Receiver is designed for either mobile or fixed station operation. It delivers high over-all performance on seven bands; 10, 15, 20, 40, 80, 160 meters, and broadcast band. In addition, it features a new functional design and simplified control operation. Best of all, it bears the name of Pierson, whose more than 25 years of radio-engineering know-how have produced many outstanding receivers familiar to veteran hams the world over.

AUTOMATION ELECTRONICS, INC.
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WRITE TODAY FOR COMPLETE DETAILED INFORMATION

New appointments are CBE as OPS and K6ALH as OO. WGO has given up his appointment as PAM as he is QRL with other business. New Novice calls are KN6BDM in San Carlos and KN6AUL in Atherton. The following were present at the Northern California Traffic Assn. breakfast meeting held in Monterey Sept. 22: HC, ZRJ, ZLO, PLG, OII, BMP, OFJ, WGO, LCA, YHM, K6DYX, GID and BGM. The South County Amateur Radio Society has been organized in the Redwood City Area with WWJ as the club call. K6IIE is in charge of the club station. HJP reports that he is on single sideband from KR6RX. Art expects to be back in the States in February. YHM returned from KL7-Land. K6GZ makes BPL both on originations and total traffic points. K6EMN flew to London via the polar route recently. AMH has a new oscilloscope. MMG flew to New Hampshire to attend his brother's wedding. K6DYX is replacing the 20- and 40-meter antennas making ready for the winter storms. K6CGA is looking for a receiver to replace one he is losing to the C.G. The SCARS in Redwood City holds meetings the 4th Mon. of each month. Those interested should get in touch with K6MPN for more information. K6JJU now has a six-element beam on 6 meters. K6MPN has a four-element beam on 6 meters. K6TWI was heard on the air using a Heathkit grid-dip meter as a transmitter. The PAARA reports two new members, WN6WIV and K6TCU. Your SCM and his staff wish you a very Merry Christmas and a Happy New Year. Traffic: (Sept.) K6GZ 582, DYX 444, W6BPT 417, PLG 171, HC 92, YBV 58, K6HGV 57, W6YHM 55, MMG 2. (Aug.) K6CGA 239, W6OII 22.

EAST BAY—SCM, Roger L. Wixson, W6FDJ—At this writing election time is here again for the office of Pacific Division Director. Both ACN and HC have in the past proven themselves as leaders. ACN was responsible for the California ham license plates and has been very active in amateur activities. HC has displayed his leadership in ARRL activities and in carrying our recommendations to the League and has shown his interest in amateur activities by participating in the CCRC, PAN, RN6, NCN and MARS. ZF is running for Vice-Director. Around the clubs in the East Bay section: The Oakland Radio Club was entertained by the Remote Control Society and had as its guest speaker Mason Booth. Mason brought remote-controlled trucks, planes and boats which were demonstrated. Motion pictures taken of the model planes in flight and showing take-offs and landings were shown. The East Bay Club heard a talk on TVI with demonstrations given by VSV. Bob had some TV sets and transmitters on hand and was able to remove the TVI problem right before their eyes. The SARO enjoyed a talk and movie given by United Air Lines on the new DC-8 jet engine made by Pratt and Whitney. The program started off with dinner at the United Air Line shop's cafeteria. The ACACIA Club went dining and dancing at the U. S. Naval Station at Treasure Island. R. L. Wixson (CPO in charge) acted as host at the Chief Petty Officers' Club. The Hayward Club had as its guest speaker HC, who gave out with some dope on modulation. New officers for the Skyriders Club are TLM, pres.; BSY, vice-pres.; DQT's XYL, secy.; and KKB, treas. A note for BSY says the club net meets each Wed. at 8 P.M. on 28.560 kc. All are invited to check in. ANK, BSY and QLS are now using home-brew G4ZU beams. ACU is back on 10 meters. PQW is trying a new beam. MMK is QRL boat building. CCY has his 100 countries on 21-Mc. phone confirmed at last. The NCARTS, the teletype boys, have been very active with traffic and putting out ARRL bulletins. RTTY was tried out in the Simulated Emergency Test held in October. There was no word from the Napa crew this month but you can bet the fellows are keeping 6 meters hot with the Silverado Six Shooters. The Richmond Club is holding its annual WAS Contest. K6GXU is now EC for that area. The club held an auction which was a huge success. Traffic: K6GK 531.

SAN FRANCISCO—SCM, Fred H. Laubscher, W6OPL—Asst. SCM: E. L. Olmstead, K6LCF. SEC: KZF. It is a pleasure to report that activity in this section is at an all-time high. The various county groups are busy with the AREC plans under KZF. The SFRC had a long session to nominate officers for the coming year. K6LCF outlined AREC plans. PHS, retiring president of the SFRC, has done such an outstanding job that the nominating committee had a real problem filling his spot. The 29ers Club, as usual, has good turnouts for transmitter hunts. BIP won both the hunt and the transmitter at the Eimac Picnic. OPL and LCF are looking forward to visiting all of the clubs before the year runs out. EKC reports from the Far East RC, Fortuna, that VGZ is moving to Ukiah and WN6YOM had over 60 QSOs on 40 meters the first

(Continued on page 144)

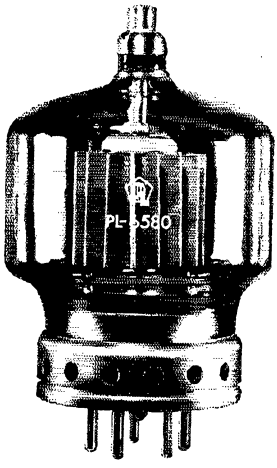
WHY USE MAKESHIFT TUBES FOR GROUNDED-GRID OPERATION? THESE RUGGED POWER TRIODES ARE DESIGNED FOR IT!

No need to fiddle with makeshifts. These Penta power triodes were designed specifically for the job. And only Penta makes them. Either tube will boost a 100-watt class transmitter up to a kilowatt. Either tube can be used for both SSB, CW service. There's no neutralization!

PL-6569—250-watts plate dissipation, hi mu (45). With a power gain of 10 or more, this tube gives you more than 800 watts output with only 75 watts drive. Low plate-to-filament capacitance (0.10 uuf) gives you high stability.

PL-6580—400-watt plate dissipation, hi mu (45). More conservative than the PL-6569. Useful in linear amplification of AM signals where carrier efficiency is low, and extra plate dissipation is needed.

FREE DATA FILE 301—gives ratings, operating conditions, suggested circuits plus single-sideband data. Write today for your personal copy.



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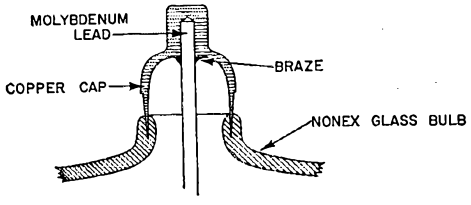


EXTRA-RUGGED PLATE CAP—Penta has designed both these tubes with a one-piece low-loss copper plate cap and seal. It can't break off. And there are no set screws or separate pieces to come loose.

TRADE MARK REG. U. S. PAT. OFF.

week. BJO is moving to Loleta and is off the air temporarily. The FERC runs on-the-air code practice twice a week. KN6COU is a new call in Fortuna. The MARC is real proud of the gang that ran SG's score for Field Day to second place. A practice alert and disaster drill was held without forewarning, to test AREC in Marin. K6s BTH, BMW, LCF, BAQ, SFD and JGX and W6s OPL, AZE, TLJ, MIS, IFO and JEU responded and had SG on the air and the net operating in nine minutes. The Tamalpais Club enjoyed a real FB picnic at El Verano. GGC still carries the scars of the baseball game. YME still is shooting the gang out of the saddle on 21-Mc. DX. ZQK is wondering how he does it. The Sonoma Radio Club shows great promise of becoming one of the outstanding clubs in the section. It is a small group with all workers. GWI is in the throes of a wild idea that includes a blimp-mobile. We are given to believe that the Humboldt RC is very active in current tests of its facilities in preparation for the winter season. Let's all take stock of our own emergency gear and fill out those Form 7s for *KZF. BIP reports 74 W/VE contacts* with terrible QRN from lightning in the Rockies. Traffic: W6GGC 35, SG 8, BIP 6, OPL 4.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—The oldest club in our section is the Sacramento Amateur Radio Club which was founded in 1915. Some interesting side lights were presented at the club's annual "old-timers" meeting in September. In the beginning the members met in a church and then at the Y.M.C.A. RM was the first secretary and later served two terms as president. The treasurer ran off with the funds. MOH admitted "bootlegging" in 1915 and as late as 1922, 500 miles was real DX. JL said most of the original members started in ham radio around 1910-15 during the days of the Leyden jar. AK also started in those days but insists no one is older than he feels. He proves it too by piloting his own airplane. The North Hills Radio Club of Fair Oaks is doing a real FB job with code and theory classes and even has code practice over K6LKS on 51.9 Mc. at 6 P.M. five nights a week. The Camellia Capital Chirps (Sacramento's YL Club) *is going to appoint an* OMS—Official Menu Station—to announce the latest in home cookin'. What's this "secret pal" business with the C.C.C.? Listen for an improved signal from QYX, who has been doing some rebuilding. Congratulations to K6YBV, who made BPL this month. Bob uses a Braille slate and stylus. K6SXA did it again, too. Congratulations to the new officers of the Tehama County Amateur Radio Club in Red Bluff: PYE, pres.; K6SKG, vice-pres.; K6LGU, act. mgr. and K6RFT, secy.-treas. Traffic: K6SXA 603, YBV 258, W6CMA 40.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—Merry Christmas, everybody, and hope all of you received your 75A-4 and KWS-1! At this writing, the satellite launched by the Russians is making news and history. Many of the local hams, both active and inactive, have been listening to the "beeps" on accustomed frequencies. OQX is having difficulties with overtone oscillators. K6IFL is looking longingly to s.s.b. BAN is building a new final with 813s. LOS is having B&W bandswitch problems. K6MVY is building a 10-meter beam. K6HWS *has a new 20-meter beam.* CPT has a new Ranger. ONK worked KDIGM on the floating island at the South Pole. K6RYU is moving to Longbranch, Wash. ONK is building a final using a pair of 4-250As. K6EJT is heard on 75 meters with an ARC-5. KN6ZCD is working out very FB on 15 meters. JPU is running a pair of 4X150As on 20 meters. The Fresno Radio Club is sponsoring a code and theory class at Chandler Field every Mon. at 7:30 P.M. PSQ and K6BKZ are in charge. KN6BHN is a new Novice in Coalinga. K6GOX is building a kw. on 6 meters. K6BGJ has a new QTH. JXY is heard on 20 meters s.s.b. K6BLP is a new call in Fresno. K6MFB went deer-hunting and killed a bear instead. QRZ, OM. MVU and his XYL were recent visitors in Fresno. WN6YEP is a new call in Fresno. K6GTI is building a final for s.s.b. using a pair of 4-125s. Send in those reports, we can use them. Traffic: (Sept.) W6ADB 80, K6EJT 54, W6ARE 3. (Aug.) K6EJT 47.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: ZG. PAM: DRC. In reply to many questions as to why the NCS of the Tar Heel Emergency Net is located in the eastern part of the State, the Net Directors deem it advisable to have the NCS there during the normal period of the coastal storms and in the central or western part of the State during that period when we might experience ice and other type disturbances not common to the eastern part of the

(Continued on page 146)

For a Christmas you will remember, tell "Santa" about the

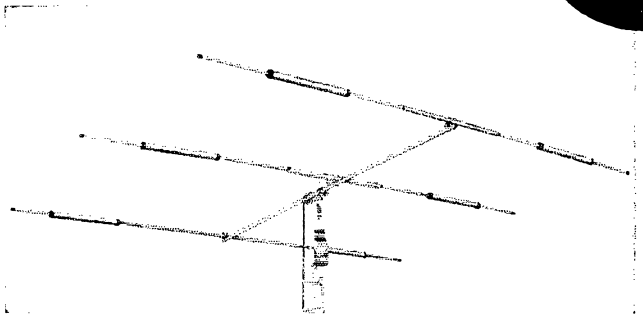
MOSLEY *TRAP MASTER*

2 element, 3 band beam for 10, 15 and 20 meters. Foward gain 5.5 db., front-to-back 20 db., SWR 1.5/1. Max. element length, 28 ft. Boom length, 7 ft. Wt. 34 lbs. Converts to Model TA-33 easily.

Model TA-32
$69.50

3 element, 3 band beam for 10, 15 and 20 meters. Foward gain, 8 db., front-to-back, 25 db., SWR 1.5/1. Max. element length, 28 ft. Boom length, 14 ft. Wt. 47 lbs.

Model TA-33
$99.75



Model V-4-6
$27.95

Broad band trap vertical for 10 thru 40 meters. Low SWR on all bands. Requires little space. May be mounted on ground or rooftop. Automatic band-switching all bands. Base loading coil available for operation on 80 meters.

Wow! What a happy Christmas a new Mosley "Trap-Master" will make! Drop that hint *now*! Open the magazine to this Mosley ad and leave it where 'Santa' can see it!

Remind Santa that owning a Trap-Master is just like multiplying your power many times. Tell about all the really *good* DX you will work...on three bands!

While your at it, send for brochure TR-1 so you can show how well the Trap-Master is made and what a terrific value it is.

Don't forget! Tell Santa! – and from MOSLEY, a very

Merry Christmas

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WØRXK WØPXE
WØIFL WØCWV

Mosley Electronics, Inc.

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State. Reports from most areas indicate that the Emergency Coordinators are busy reorganizing the AREC. Many thanks, fellows. Be sure to report the results of your efforts. It has been pointed out many times that each ARRL district should be so organized that the normal flow of traffic should be from the Tar Heel Net to a representative of the District AREC Net. This will avoid confusion and will limit the THN to its membership and not more than one station per district. Get with it, fellows, and much luck. The Tar Heel Net is the only traffic net within the State exclusively amateur, and it is a part of the National Traffic System. K4CDZ made the Brass Pounders League in August. This is the third BPL certificate I have had occasion to issue since becoming SCM. JZQ is now an ORS. Sam works on both phone and c.w. and will be an asset to the section. GIM has been appointed as OO. This brings our total to five in the State. Get busy and help clean up our part of the rules infractions.

SOUTH CAROLINA—SCM, Bryson L. McGraw, W4HMG—The Palmetto Club of Columbia elected TYS, pres.; TTH, vice-pres.; KN4OUG, secy.; KN4OUF, treas.; K4AVU as EC; VJI and DNR as directors. Congrats to K4EGI, retiring president, on an outstanding job during the past year. K4AOG now is a student at U. of South Carolina. COA is the proud owner of a new SX-101. GQV, K4PJE, FM and ZRH played host to more than 100 of the gang for a week end at Pawleys Island. Our sincere thanks go to K4BVX of Rock Hill for the very outstanding job as NCS of the C.W. Net and to AKC for his fine plan of regional operations within our State c.w. gang. There was a nice turnout for the Barnwell Hamfest-Picnic despite the bad weather, with more than 100 attending. Featured were very fine talks by FFH, our PAM, ZRH, the RACES director, and others. K4ETB was mistress of ceremonies, very ably assisted by PED and many others. K4BFY now has a brand-new store in Columbia. The *Rock Hill Bulletin* has done a swell job for all of us and needs your support. VJI is working from 6 to 8 s.s.b. nightly and doing a fine traffic job with modest power. The C.W. Net handled 198 messages during September. More than 250 have obtained their new license plates. Traffic: (Sept.) K4BVX 242, W4AKC 192, K4JFN 76, W4CHD 65, K4EJR 60, W4PED 59, DAW 31, K4DFW 14, W4ANK 13. (Aug.) K4EJR 140, BVX 102, W4DAW 67, K4HJK 32, JFN 28, DFW 25.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC: PAK. LW reports VSN off to a fine start with a full roster of NCS and ANCS, and traffic frequently has been more than could be cleared in 30 minutes. However, VN has been clearing nearly 100 per cent. VN Mgr. IA lists special recognition to K4JKK for his faithful liaison to VFN. SHJ has accepted temporary managership of 4RN. WWN reports a club project at NPT to help all interested to build 6-meter rigs. BYZ says the Danville Club station, CB, now is on the air from White Oak Mt. The Rockbridge ARC now is active in Lexington. CXQ has an ARC-5 on the air at V.P.I. and also is NCSing VN Wed. via Tech. station K4KDJ. Also at V.P.I.: CHK, ZNU, HDZ, CPN, PQK, K4GHF and K4CEK. Other Virginians at college: CXH at W.&M.; K4CEC at Rensselaer; EUU at R.M.W.C.; APM, YZC and TFX at G.W.U.; AAD, TVI and K4BUG at N.C. State. YHD is setting up at a new Herndon QTH. CVO reported from Wyoming while mobiling through the West. JUJ says VA-JF is near the 300 mark, with flood tide expected following the Va. FFA Party. Charles added Alaskan ADXC to his wallpaper collection. THM reports K4EYE/4 worked Canada, Michigan, Indiana, Illinois and Florida on 144 Mc. during the V.H.F. Field Day. OOL, the low-power champ, now is planning QRO and VFO. FLX is toying with s.s.b. K4DPX has a new DX-100 on the air. K4LPR is planning to build a G4ZU beam. In answer to numerous queries: The Richmond Club will NOT accept contest logs for VA-JF. You MUST submit the 25 QSLs. Big mystery of 1957: "Where were the PHONES during the Free-For-All?" Traffic: K4EZL 690, W4IA 253, QDY 160, K4JLO 101, W4SHJ 78, K4JKK 68, W4KX 53, K4ELG 51, W4PVA 42, K4MEV 40, W4FLX 37, AAD 30, CFV 23, THM 22, RHA 20, WWN 17, BRG 15, BZE 15, CVO 14, LW 13, K4BYS 9, W4OOL 7, JUJ 6, K4DKA 4, W4BYZ 3, K4LPR 2, DPX 1.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: KXD. PAM FGL. RMs: DFC, GBF, HZA and PBO. K8DJT and his XYL, K8GXQ, are very active in Charleston and are to be congratulated on their work in increasing the local club activity. PQQ has a new HT-32 s.s.b. rig and worked JT1AA in Outer Mongolia (Zone 23).

(Continued on page 148)

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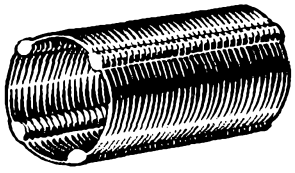

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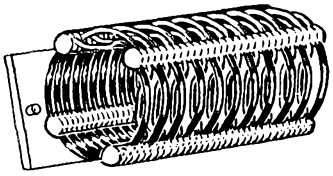

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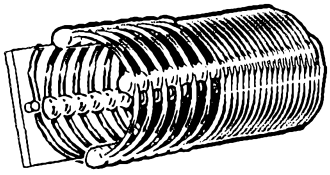


vari-pitch air dux®

air dux coils

Cat. No. "T"or"E"	Diameter in Inches	Turns per Inch	Length of Coil	Wire Size	Total L	Net Price
404	½	4	2	18	0.18	.35
406		6		18	0.39	
408		8		18	0.71	
410		10		18	1.1	
416		16		20	2.87	
432		32		24	11.3	
504	⅝	4	2	16	0.27	.40
506		6		18	0.61	
508		8		18	1.1	
510		10		18	1.6	
516		16		20	4.3	
532		32		24	17.3	
604	¾	4	2	16	0.38	.45
606		6		18	0.86	
608		8		18	1.52	
610		10		18	2.38	
616		16		20	6.08	
632		32		24	24.2	
804	1	4	3	16	1.02	.60
806		6		18	2.33	
808		8		18	4.1	
810		10		18	6.47	
816		16		20	16.3	
832		32		24	66.3	
1004	1¼	4	10	14	5.8	1.45
1006		6		14	13.0	
1008		8		16	23.3	
1010		10		18	36.5	
1016		16		20	94.0	
1204	1½	4	10	14	8.3	1.55
1206		6		14	18.6	
1208		8		16	33.6	
1210		10		18	52.0	
1216		16		20	134.5	
1404	1¾	4	10	14	11.2	1.65
1406		6		14	25.1	
1408		8		14	45.0	
1410		10		16	70.0	
1416		16		18	179.0	
1604	2	4	10	12	14.3	1.75
1606		6		14	33.1	
1608		8		14	57.5	
1610		10		16	89.5	
1616		16		18	232.0	
2004	2½	4	10	12	22.3	1.90
2006		6		12	49.6	
2008		8		14	88.6	
2010		10		16	142.0	
2404	3	4	10	10	31.5	2.85
2406		6		12	71.0	
2408		8		14	127.0	
2410		10		14	198.0	

Silver and formvar available at additional cost

pi air dux coils

indented air dux®

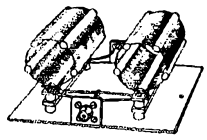
Cat. No.	Dia. in "	Wire Size	Length of Coil	Mtg. Centers	L uh.	Net
816A	1	18	3 3/16	3¾	18	.98
1014A	1¼	18	2 25/32	3⅜	18.3	1.25
1212A	1½	16	2¾	3⅜	18.3	1.50
1411A	1¾	14	2⅝	3⅜	18.0	1.70
1609A	2	14	3	3⅜	18.1	1.85
2007A	2½	12	3¼	4	18.6	2.25
2406A	3	10	3 5/16	4¼	18.7	2.85

vari-pitch air dux®

820D10	1	18	3¼	3¾	18	1.05
1212D6	1½	14	3 13/16	4⅜	18.6	1.75
1608D6	2	12	4⅛	4⅞	18.1	2.45
2008D5	2½	12	3¾	4⅜	18.2	2.80
2408D4	3	10	3¾	4⅝	18.6	3.50

air dux balun

Air Dux® Balum coils may be used for impedance matching in both transmitters and receivers without adjustment from 10 through 80 meters.



No.	Description	Net Ea.
B2009	Coil with hardware	3.36
MB2009	Mounting Plate	1.95

spiral wrap

SPIRAL WRAP

Spirally cut polyethylene tubing for cabling loose wires into neat cables for production or prototypes. Available in ¼" and ⅜" O.D. in four colors: white, black, red and blue.

ladder line

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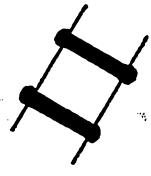

Extremely low loss transmission line for TV, amateur, and commercial use. Formvar copper wire molded by exclusive process in polystyrene spacers for maximum strength. In individual self-reeling cartons in lengths from 30 ft. to 250 ft.

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IRN also worked JT1AA and has submitted his cards for DXCC. Because of an oversight on my part I did not mention that AKQ was also at the Convention in Chicago. ESH is QRL with school. West Virginia net activity is very high, 170 per cent above the same period last year. SSA participated in the last ARRL Frequency Measuring Test. K8CSG put the 10-meter beam back up after repairing it. ORT is working lots of good DX. HLB is a new Novice in South Charleston. K8DZU got his General Class ticket and has a new mobile rig on all bands. OIV is working good DX. MLX visited 4BWK and 4YMG in Memphis and maintained contact with his home location via VMP and DZU. ELX, of Fairmont, is now KG4AE in Guantanamo, Cuba. DIE has moved to a new QTH and is getting antennas ready. LSG has a kw. rig ready to go. FCM is ex-4JTQ in South Charleston and is very active on 40 meters. UMR has 20 certificates on the shack wall. He has all South America countries. PQV is back in Morgantown and ready to get on again. Traffic: (Sept.) W8FNI 260, GWR 69, HZA 62, PBO 54, GBF 44, KXD 26, BWK 24, K8HID 21, CSG 20, CNB 5, W8PQQ 3. (Aug.) W8KXD 300, GWR 76, GBF 25, K8CSG 12, CNB 6, W8UMR 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML—SEC: NIT, PAM: IUF, OBS: KØBTU, OOs: OTR and RRV, OES: KØCLJ. According to *The Splatter Chatter*, UPS has a new 10-meter beam. KØEXM has traded his DX-100 for a complete Elmac mobile rig. FRQ has on order an s.s.b. exciter model 20-A. TVB temporarily is on the shelf on doctor's orders. KØHFB is applying for a chauffeur's license and plans to take up truck-driving for a livelihood. KNØJST tells us he has become grandfather to another little Texan. IC is using a Viking, feeding a 32-element collinear array, a 144-Mc. converter and is available for 6- and 2-meter contacts any time after 1800 MST. YRF is running 400 watts on 220 Mc. KØKWS and CLJ are practically ready to go on 220 Mc. Recent additions to the 50-Mc. picture are YLs KØLSL, KØLSM and KØJIT. We have W0s ACA, DGG, DMC, IC, ISL, JGF, MLH, TVV and VSN all active on 144 Mc. in the Denver Area. Newly-elected officers of the Denver Radio Club, Inc., are GQY pres.; BON, vice-pres.; YHI, secy.; and HXP, treas. A swell get-together was enjoyed by the Breakfast Club, which included KØDXF, PGX, YFL, NVU and several more at the Rainbow Lodge of DDM, Edgar and Ruth. Our condolences to the Middletons in the passing of Dr. W. E. Middleton, KNØJJJ. Traffic: WØKQD 605, KØBCQ 540, WØQOT 103, KØDCW 86, DCC 53, WDZ 36, WØNIT 35, YQ 13.

UTAH—Acting SCM, Col. John H. Sampson, jr., W7OCX—SEC: JOE, PAM: DTB. The Ogden City-Weber County Emergency Net meets Thurs. at 2000 MST on 29.510 Mc. Our latest father-son amateur team is SAZ and KN7BBZ. IZM (*mobile*) and his wife reported a highway accident near the Nevada border to the Salt Lake City Police by amateur radio with relays through SAZ and VFY. Stations were kept open for further use but when this was not needed they discussed the event with PKI, UWB, DHD and OQD, who were on frequency and standing by. FSC has lost the big "N" in his call. FCC Examiner L. E. Hastings talked to the Utah Amateur Radio Club on the work of the amateur and the FCC. The UARC has resumed publication of the *Mirrorolt*. Future FCC examinations in Salt Lake City will be held on Fri. instead of Sat. Winning pairs at the UARC transmitter hunt were OSV with daughter UKF, VEL with Jim Clauson and Don Pettit with Dick North. Winners at the UARC Hamfest were RRM, OSV, Arline Sant, FSC, ZKL, CCP and QWH. The wives of LRP and YPC evened the score of jr. operators with a boy and a girl, respectively. GPN and OCX talked to the Ogden Lions Club on Amateur Emergency Communications. LRP is c.d. chairman of his PTA group. Traffic: W7OCX 2.

NEW MEXICO—SCM, Ray Birch, W5OZ—SEC: K5DAA. PAM: DVA. The Pecos Valley Amateur Radio Club had 30 aspirants turn out for night classes conducted to aid them in obtaining their licenses. K5CWH is secy.-treas. for the newly-affiliated Albuquerque Amateur Association. K5MNN is another new call in Gallup. K5LOU and LOV are sporting new DX-100s. K7ACU is a newcomer to New Mexico and is stationed at Fort Defiance. LEF and 25 members of the Caravan Club enjoyed a peach cobbler feed. LEF is now on 2 meters with a 522 transmitter. KKW has returned from summer camp and will take up activities again. The Totah Amateur Club played host to Mr. Carl L. Smith, BWJ, in lieu of Mr. Maer, who was called to Washington at the last minute. BWJ en-

(Continued on page 150)

lightened the boys about League functions, s.s.b., d.s.b., a.m. and antenna systems. Among those present were POI, SGC, CIN, FED, SB, PBV, NSV, SBJ, 7TCN, 6WFR, KN5MLO and the city editor of the *Farmington Daily Times*. Traffic: W5CIN 16, CEV 12, K5DAA 8, IPK 7, W5VC 7, GB 2.

WYOMING—SCM, James A. Masterson, W7PSO—SEC: MNW. RM: BHH. The Pony Express Net meets Sun. at 0830 on 3920 kc. with AMU and MWS alternating as NCS. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc. with BHH, DXV and NMW alternating as NCS. NMW and BHH report that YO Net check-ins are increasing. Why don't you join the gang and check in. PSO logged a visit from CRP, who stated that the Sheridan group had once again started code and theory classes for prospective amateurs. GS, UFB and LKQ copied signals from the Russian satellite on 20 Mc. NVX is now driving his kw. with a Hallicrafters HT-32. Casper amateurs are elated that the local TV station on Channel 2 is increasing its power from 200 to 28,000 watts. BXS is building a new 15-meter beam. It seems early to wish everyone a Merry Christmas and a Happy New Year for at this writing it is only Oct. 7. This will give you some idea of how far ahead of time these notes are written. Won't you help and send me your station's activities. Traffic: W7NMW 6, BHH 4.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Joe A. Shannon, W4MI—SEC: TKL. RM: KIX. PAM: K4AOZ. Presently there are four section nets: AENB, daily at 1900 on 3575 kc.; AENO, Mon., Wed., Fri. at 1915 on 50.55 Mc.; AENP, daily 0630 (except Sun.) and daily at 1800 on 3955 kc.; AENT, daily at 1630 on 3905 kc. AENP has a business session Sun. at 0800, while AENT holds a similar session at 0800 Sat. The latter net is composed of teen-agers who conduct their own net. How about giving one or more of the nets a try? YRO belatedly reports that an HRO-7 has replaced the ancient SX-25 in his shack. KJZ and KAK now have WAS after a struggle. K4BTO has put the clothespin on his nose but hasn't given a complete report on the exciter. KN4PWD, the XYL of WHW, has completely recovered from an illness which necessitated a stay in the hospital. GJW reports that he has 162 DX contacts confirmed. CNU says that his mother and father in Florida have new calls, KN4ROO and KN4RNJ, respectively. It's now a ham family totaling *four!* Traffic: W4RLG 233, K4EOH 135, AOZ 117, ANB 70, W4YRO 63, K4KJZ 62, BTO 60, W4KIX 58, K4AJG 56, OCV 45, W4ZSQ 32, K4JWB 31, W4MI 30, K4LOE 26, W4WHW 22, DGH 20, WOG 18, AWA 17, K4HJM 13, W4CRY 12, RTQ 12, K4KJD 11, W4CEF 9, CNU 5, CIU 3, K4DDC 2.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: LAP. PAMs: TAS and JQ. The first All-Florida V.H.F. Picnic was a big success. Nearly 40 v.h.f. enthusiasts met for the first time at Tavares Sept. 15. The charter of *Florida Skip* was officially completed Sept. 9. All the hard work was done by KLL. The Orange County C.D. participated in "Operation Safety" in conjunction with the Florida Highway Patrol over the Labor Day week end. The Silver Springs Radio Club is now the proud owner of a station license with the call K4GSO. The Floridora YL's C.W. Net now meets on 7104 kc. each Wed. at 1400 EST. K4HXB is NCS. TKE won the Gainesville Club's month-long contest. New officers of the DBARA are K4BV, pres.; SDR, vice-pres.; UHL, secy.; K4KRI, treas. K4IRE, formerly of Ocala, now is in Orlando teaching at the vocational school. K4CXW makes WAS and WAC. TDK, Naomi and BAV, Catherine, flew to Chicago to attend the 2nd YLRL and 9th ARRL National Conventions. WPD and UFR are now operating from their new QTH in Tampa. The Floridora YLs are offering a new certificate for QSOing ten members. The Dade and Miami Springs Radio Clubs paid host to Danny Weil, famous DXer from England, in Miami on Aug. 24. K4OEX has a new KWS-1 and 75A-4. Have you seen QS's new 1000-watt P.E.P. transmitter which fits into the palm of your hand? The rig uses six 6CL6s. New papas are K4KEG and KN4RDR. DVR has a new 1-kw. rig for 75- and 40-meter emergency net operation only. The ARCACS participated in the S.E.T., handling statewise Red Cross traffic. The Miami Springs Radio Club has a new type Gonset Communicator on 147 Mc. Send in your Form 1 reports, fellows. We need them. Traffic: W4FPC 219, PJU 216, DVR 135, CAA 90, K4KDN 76, W4PZT 72, LMT 71, EHW 67, WS 66, K4AKQ 52, W4IYT 49, K4BNE 38, W4HTH 37, FFZ 32, K4MTP 32, W4TAS 30, K4IWT 23, DII 20, W4ZCD 19, AHZ 18, DTV 18, K4JNE 17, OSQ

(Continued on page 152)

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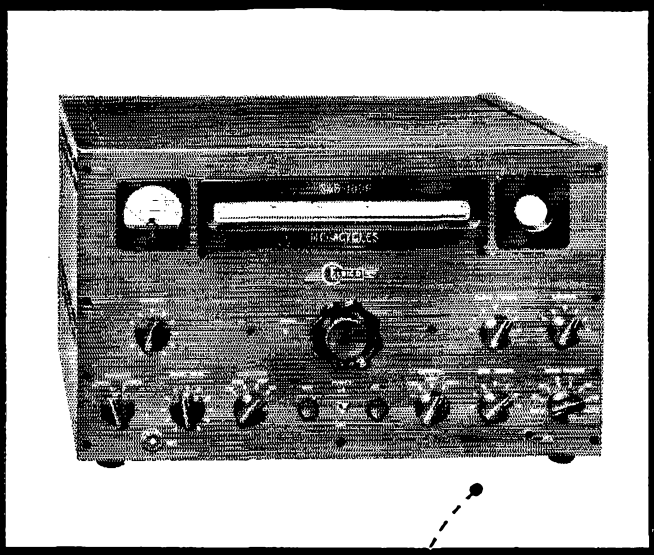

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AMPEREX type 5894
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Designed for outstanding performance at high frequencies (250 Mc at full rating), the AMPEREX 5894 has a powdered glass top, which makes it far more rugged than tubes with the conventional glass-beaded top. It is self-neutralized; has a Zirconium-coated anode instead of black nickel to withstand heavy over-loads; and it requires less air for cooling purposes. All in all, a most superior tube for a most superior ELDICO transmitter-exciter.
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12, W4BWR 11, K4EXN 10, W4HMO 10, K4ILB 10, AHW 8, JJZ 7.

WESTERN FLORIDA—SCM, Edward J. Collins, W4MS/W4RE—SEC: HIZ. RMs: Escambia AXP, Okaloosa BVE. New officers in the Panama Amateur Radio Club are MMA, pres.; K4OFM, vice-pres.; K4HTN, treas.; RYZ, secy. K4HTN reports a new program underway with lots of activity this fall. KN4RMO is going up for his General Class exam. AXP has a new grandchild. K4KIF put a new gamma match on the beam and really added punch. EQR has the beam on the new tower and is raring to go. JV is building big antennas for the signal shifter. K4OXB is leaving ground plane for beam. OKB has the Sautley Field Club perking again. 5VQG/4 is a welcome addition to the Six-Meter Net. K4PIQ has cleared up his audio trouble. K4IYQ is QRL. TV repairs. ZFL, BGC and UUY are at F.S.U. VR keeps the key in preference to the mike. PAA is trying 20 meters for new Dog Xray. HBK is going to Pensy Junior College. ACB is building a big trailer for the Tallahassee Civil Defense Unit. K4PJC keeps improving the 6-meter gear. MS had a QSO with LU9MA on 6 meters. DAO/DEF does more listening than transmitting. FHQ enjoys sitting behind the Viking KW. K4IVD has FB mobile and fixed rigs on 6 meters. K4OWW is a newcomer to 6 meters with an FB signal. There is talk of forming two new clubs in the Pensacola Area. One will be for Novices and the other for the gang that works on frequencies of 50 Mc. and up. GMS is looking forward to the Thanksgiving Holidays so he can fire up the 15-meter rig again. K4HYL is getting set for traffic and phone patches. UL is building 6-meter gear. UUF is having trouble with a broad signal on 6 meters. QK is studying a more compact rig. K4KIF is planning a new tower. KRH is building up gear to be operating on all frequencies. K4APE is our one and only real active OO. K4AGM is QRL studies at F.S.U. but keeps her interest in 6 meters and the IGY program. CDE is a 75-meter man as well as super-active MARS. As I have only two more reports to make as your SCM I would appreciate data to make the last one a big one. After over twenty years of service as SCM it's about time for me to take a rest.

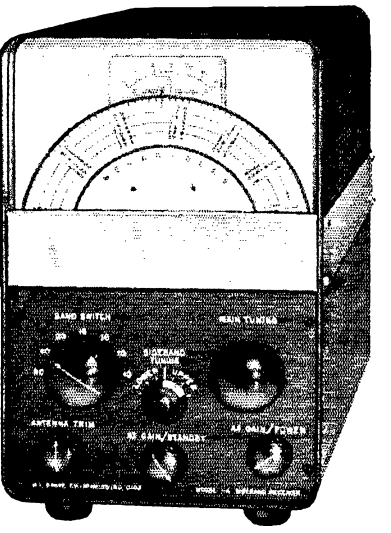
GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 2100 EST on Tue. and Thurs., 0800 on Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Fri. at 1900 EST on 3595 kc.; with PIM as NC.; 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc. with UUH as NC; the Atlanta Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc. VHW as NC.; the Georgia Teen-Age Net each Mon. and Thurs. at 4:30 P.M. on 3810 kc. with K4HVK and K4IOV as NCs; the Georgia Peach YL Net each Thurs. at 0900 EST on 3985 kc., UMM as NC. KN4QWU had his rig ready to go when his Novice ticket arrived. K4LBC continues to stress traffic-handling on c.w. K4KZP made 162 contacts in August. New hams are KN4RJY and KN4RSQ. The Fitzgerald Amateur Radio Club elected Larry Bryant, pres.; Bill Barr, vice-pres.; and Max Hair, secy.-treas. KN4OLF is on 145 Mc. in Marietta and uses a six-element Yagi antenna. LNG is building a new 6-meter converter and has 9 states on 2 meters. K4HOU now is back in school. PIM is doing a wonderful job as NC for GSN. ETD has installed an all-band vertical and LM-7 frequency meter. PDP has a new jr. operator. K4FCI, at Moody Air Force Base, is doing a wonderful job handling traffic. LNG has moved into his new home. WFN is a new member in the Georgia Peaches Club. The Georgia Peaches YL Club now has 18 members. K4GCT is secy.-treas. ZD has up a new 15-meter Telrex beam and is getting good reports. K4KKT is racking up contacts on 6 meters. KN4RIM is a new ham in Dublin, Ga. Your SCM wishes you and your family a very Merry Christmas and a Prosperous New Year. Traffic: K4FCI 283, MCL 179, W4PIM 146, ETD 142, K4LVE 141, BA1 67, HOU 38, W4BXV 31, ZD 22, K4KIV 8, W4PDP 3.

WEST INDIES—SCM, William Werner, KP4DJ. SEC: AAA. AAA has a new Viking Valiant working FB. RA dabbles with s.s.b. and has the newest Telrex 20-meter beam. The USWB is preparing to install instruments at the QTHs of WT, Mayaguez, RE Arecibo, AEB Humacao, and probably in Guayama and is looking for volunteers from the central mountainous and east and south coast towns. FB is a new station on 3925 kc. from Saba Island. QA received CA certificate No. 170 for working 100 Argentine stations (Cien Argentinos). QM now has a 75A-2 receiver. MS, in New York, keeps in touch with the family via W2IQC and KP4MV. ABD ordered a KWS-1 to match his 75A-4.

(Continued on page 154)

NEW

A SIDEBAND RECEIVER



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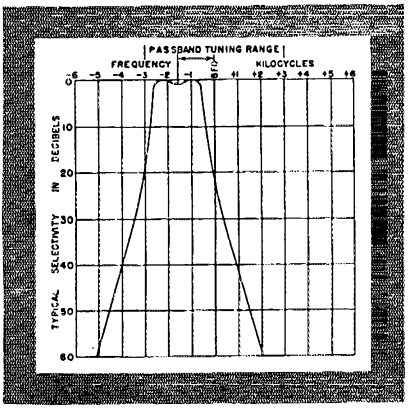

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- **BUILT IN THE SHAPE OF A "SCOPE" FOR PORTABILITY AND MINIMUM DESK SPACE.** Set it beside that old general purpose receiver.
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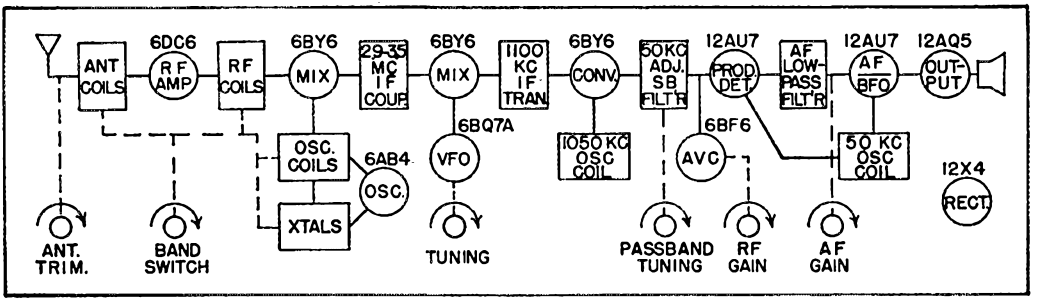
- **WEIGHT**—18 pounds **SIZE**—6¾ x 11 x 15"
- **POWER CONSUMPTION**—45 watts at 115V A. C.



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AIS has a Viking II feeding a Windom antenna on 75 and a Hy-Lite three-element beam on 10 meters. MP's new QTH is M-38 Reparto Metropolitano. W5LV/-MM was in port visiting DJ, AAA and ABD. RK and his XYL visited ARRL Headquarters and W1AW and kept in touch with KP4-Land through W2IQC. On the way home they found KP4ZC sitting behind them on the airliner. WØVTM joined the USWB staff at International Airport. KD had his 79th QSO with his son KN4PUJ Sept. 30. KD sent in his hundredth Virginia QSL for the Jamestown Festival sticker. KD also received a QSL from PX2FC for DXCC 215. CB writes from Rio de Janiero. CA joined the AREC. KP4AFS/-DL4CD writes from Mannheim, Germany, that while visiting Barcelona the hams there complained to him that they never have received a QSL card from the KP stations they work. KG4AL writes that he is the new secy.-treas. of the Guantanamo Amateur Radio Club. DJ put up a 40-meter doublet to get in on the Mayaguez round tables and the Antilles Weather Net. WF was home on vacation from the U. of Miami. Merry Christmas and a Happy New Year. Traffic: (Sept.) KP4WT 59. (Aug.) KP4WT 28. (July) KP4WT 99.

CANAL ZONE—SCM, P. A. White, KZ5WA—TV and CW have been testing new mobiles on 29.5 Mc. JS is working South America on 6 meters regularly and is waiting for the day the boys to the North will come through. FC, with 3½ watts to a 6AQ5, has been getting out well on 15 meters. When his receiver went out on a power surge in October, he and JE got together over the landline to continue operation, with Joe telling Jim who was answering his CQ. RF has been working W1AW on 7080 kc. at 2300 EST, week nights, and invites other KZ5s to join in for a contact. K4AEE (dad) ex-KZ5BL, and his three sons hooked up on 15 meters in October. The three sons are K4GYF/mobile 2, KZ5CC and KZ5RM. W8PNF, ex-KZ5WJ, joined the same QSO. WZ has a brand-new tilt-over tower and tri-band cubical quads. A new YL heard on 15 meters in the mornings is CJ, from Fort Gulick, C.Z. Traffic: KZ5VR 43, IF 32, WA 19, RM 6.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: LIP, RMs: BHG and GJP, PAMs: K6BWD and ORS. BPL this month was awarded to GYH, K6OZJ, K6OQD and K6MCA. New appointees are K6EPY as OPS, NTE as OES. MEP is going to improve the receivers on automatic repeater station K6MYK. SRE is putting in a new mobile rig. K6OQD has a new 10-meter beam. K6IYJ got two new countries and a fat score in the W/VE Contest. K6ICS is back in college, as is K6BTJ. LVQ spent his vacation in the Sierras with an s.s.b. rig. K6COP is on s.s.b. with a Phasemaster II. YLs are invited to a c.w. session on 3750 kc. at 0900 PST daily with K6EA's XYL at the key of K6EA. K6PLW received phone WAC. PAM K6BWD is back from a 24-state trip. New officers of the Barstow Amateur Radio Club are K6RIG, pres.; Roger Kendrick, vice-pres.; K6LVL, act. mgr.; K6RQE, secy.-treas. K6HKS is teaching a code class at Girls Town Christian School in Riverside. K6QPG is working DX like mad on 10 meters. Poem from the 2-4-6 QRM net Bulletin: "Roses are red, violets are blue, I'm on six and channel two!!!" Support your section net, the Southern California Net, 3600 kc. at 1930 to 2100 PST nightly. BHG is net manager. Traffic: (Sept.) W6GYH 683, K6MCA 634, OZJ 507, LVR 440, OQD 362, W6BHG 155, ZJB 155, K6MON 149, GCC 116, QMK 86, W6NTN 59, K6JQB 50, W6VSH 48, K6EPY 31, COP 25, EA 19, W6INH 19, K6HOV 12, W6MN 12, MEP 8, NTE 6, K6PLW 6, W6BUK 2, CMN 2, K6IYJ 2, KYJ 2, W6SRE 2. (Aug.) K6LVR 310, W6GJP 26, K6HVC 18.

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. PAM Arizona Emergency Net, 3865 kc.: ASI. PAM Grand Canyon Net, 7210 kc.: LUJ. By the time this reaches print ASI will be back home in Dallas. The Phoenix V.H.F. Club is holding regular meetings and has had talks by VMP and K6QVW. The club held a Labor Day trek to Bill Williams Mt. near Williams and operated on 144 and 50 Mc. The following took part: BIQ, JBX, PLW, QNO, RUX, VLN, VMO, VMP, K7ADG and K6QVW. The Arizona Amateur Radio Club held a hidden transmitter hunt on 75 meters. First prize was won by FMZ and OIF, second by MAE and KOY and third by UXZ. Everyone had so much fun it is planned to hold one every month through the winter. Traffic: W7FKK 118, CAF 10, OIF 4.

SAN DIEGO—SCM, Don Stansifer, W6LRU—

(Continued on page 156)

The smile of Mary Burke, W3CUL, 1956 Award winner, shows appreciation of the honor being paid to all radio amateurs. Mrs. Burke is receiving her Edison trophy from L. B. Davis, general manager of the General Electric electronic components division. Center: Rear Admiral H. C. Bruton, chief of naval communications.

JANUARY 3 FINAL DATE FOR MAILING EDISON AWARD NOMINATIONS!

LETTERS naming candidates for the 1957 Edison Radio Amateur Award must be postmarked not later than January 3, 1958. If you have not yet sent in your nomination, act soon! Time is growing short.

Only amateurs named in letters from you and others are eligible for the Award and will be considered by the judges. You will be aiding the entire amateur group by choosing a candidate.

The activities listed at right are among many which can qualify an amateur for Award consideration. Someone you know may have rendered important service along these or similar lines. Be sure to submit his name!

It is easy to nominate for the Award. See the rules and terms in the September issue of this magazine. Or write direct to *Edison Award Committee, General Electric Co., Electronic Components Division, Owensboro, Ky.*

HERE ARE TYPICAL ACTIVITIES THAT CAN QUALIFY FOR THE AWARD:

Emergency communications work in a disaster, such as a flood, hurricane, tornado, or an explosion.

Relaying messages from remote points for the benefit of isolated servicemen and civilians.

Teaching young people the elements of electronics.

Helping amateurs and others with their specialized problems, through professional knowledge and experience.

Publishing a book or other literature that contributes to general scientific knowledge or procedure.

Helping disabled or physically handicapped persons.

Designing and constructing radio equipment for use by persons in remote parts of the world who do not have access to regular commercial communications channels

Civil-defense organization work; weather reporting; radio assistance to state or local traffic and police authorities; co-operation in forest-fire prevention and control.

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K6ZEE and her OM K6UOD, in Yorba Linda, handled 367 messages last month and report some 80 members check into the 2-4-6 Net each night. WYA is now 10-meter EC for San Diego County, and K6HQJ is EC for 10 meters in the City of San Diego. K6QJP is EC for 2 meters in the City, and K6GEL is EC for 6 meters in the City. EWT is now EC for the City, and KBT is County EC. KUU still is SEC, and has been working with all ECs and the SCM to coordinate AREC activities. LYF enjoyed a late fall vacation to Michigan. UQF made WAS on 7 Mc. K6UJL vacationed to Oregon and Washington. He reports the formation of the Graveyard Net on 50.4 Mc. at 1:45 A.M. each morning. K6MVY is on 430 Mc. from Imperial Beach. SK and K6BPI both participated in Operation Smoke Puff. K6LKQ is the EC in Vista. The October S.E.T. was a very successful operation, and the SEC and SCM thank all ECs and members of the AREC for participating. The Helix Club has undertaken the project of repairing old donated radios for people who have none. OME becomes the seventh San Diego station to confirm 200 countries. He runs 600 watts on 14 Mc. only to a three-element beam. BGX is going after DX again with a DX-100 and a mini-beam. K6IPV is a new member of the Helix Club. KYG becomes the first San Diego station to work 250 countries and puts out his potent signal from Poway with an antenna farm including "V" beams as well as rotary beams. Season's greetings, and all the best in '58. Traffic: W6EOT 484, K6UOD 367, BPI 196, W6SK 51, UQF 14, K6UJL 2.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—Asst. SCM: Bruce Craig, 5JQD. SEC: BNG. PAMs: K5AEX and IWQ. RM: ACK. AHC has returned to Texas Tech, for more "skull-pounding" and we suffer the loss of a fine, hard-working RM. Thanks, Danny! ACK will take over here and to all we again remind you of NTX. It will afford all of us an opportunity to "brush up" on the old fist! K5GVS, the new reporting secretary of the Midland ARC, advises that the club is building up a new 300-watt club station. New officers of the Temple ARC are K5EOW, pres.; JIB, vice-pres.; DWN, secy.-treas. BNG, our SEC, visited with the folks at the East Texas State College ARC and was most impressed by his reception and the attendance. New officers of the Caravan Club of Dallas are ZGV, caravan master; CNN, emergency caravan master; VNJ, secy.-treas.; IFK, program chairman; SBF, asst. program chairman; WX5 turned in an FB job of public relations at the Tri-State Fair in Amarillo. FBQ wishes to announce to all teen-age hams that a Western Area Teen-age Net is now active every morning, Mon. through Fri., at 7:30 on 3940 kc. Join in, those of you lucky enough to be teen-agers! AEX and his NT-O net control stations have come up with a *real* guide for net participants. They are mailing a copy of this fine check list to all stations who become active on the NT-O. This is an informal net that meets daily on 3960 kc. at 5:30 P.M. Take a listen! Traffic: (Sept.) K5WAB 1682, W5SMK 160, K5EMR 112, AEX 80, HTH 70, W5BKH 50, BOO 41, TFP 30, ASA 28, K5ETX 27, W5AYX 14, AWT 8, CWC 4. (Aug.) K5WAB 1478.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC—Asst. SCM: James R. Booker, 5ADC. SEC: LXH. PAMs: EJK and MFX. RM: JXM. The Storm Warning Net meeting at Oklahoma City was well attended. UCT and AZO were awarded Public Service certificates by the WX Bureau for their work in the net. Several Oklahoma hams, including your SCM, attended the ham day at Texas State Fair, Bartlesville hams report the first case of TMI (Tele-Movie Interference). KN5MIS is a new YL ham. K5EJC still is working DX. K5BVA got 9 new countries when he sent his envelope to the QSL Bureau. Others might follow suit. KN5MIF is a new YL ham in Lawton. JXM is back home and in harness again as RM. He needs more c.w. operators to check in the Oklahoma C.W. Net, frequency 3682.5 kc. at 1900. LLQ was transferred to Clinton. VNC is in Louisiana for awhile. IWL and his XYL K5BNQ attended the National Convention in Chicago. Lucky people! K5BNQ was elected 5th district chairman of the YLRL. New officers of the Chisholm Trail ARC are YPK, pres.; K5IBZ, vice-pres.; NCH, secy.; UGA, treas.; YPJ, act. mgr. K5JLP is attending Denver University. PAA made WAC. K5EXU transferred to Washington, D. C., in September. Traffic: W5DRZ 348, ESB 269, K5CAY 184, EGS 100, W5QVV 72, CCK 36, MGK 33, ADC 31, FEC 20, PNG 20, KWK 17, K5KTW 15, W5GOL 12, K5DVE 9, W5IER 9, K5BNQ 8.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. RM: FCX. New calls out El

(Continued on page 158)

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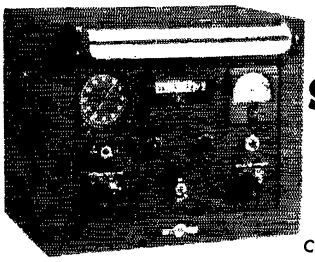

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BARKER & WILLIAMSON 51SB-B–Display Models....$212.00
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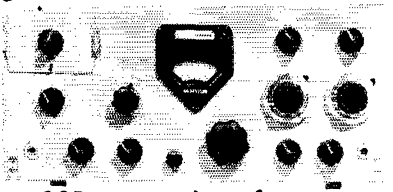
Collins KWM-1



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The revolutionary KWM-1, the first mobile transceiver to offer SSB. And this 14-30 mc 175 watt* package is equally adaptable to fixed use with simple removal from a convenient mounting tray under the dashboard.

Utilization of common components in both transmitting and receiving functions results in a saving of both space and cost and, in the case of frequency-determining components, assures exact coincidence of transmitted and received signals. Frequency stability and readability is comparable to that of the KWS-1/75A-4. The panel meter serves as an S-meter during receive and multimeter during transmit. Break-in CW using VOX circuits is built-in, as is a side tone for monitoring CW. Ten 100 Kc bands are available anywhere in the 14-30 mc range.

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KWM-1 Transceiver	$770.00
516E-1 12 vdc Power Supply	248.00
516F-1 115 vac Power Supply	103.00
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351D-1 Mobile Mounting Tray	22.00

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First is a high frequency crystal filter which cuts unwanted sideband 50 db. or more. Second is a newly developed bridged-tee modulator which is extremely stable. These and other features make the HT-32 the best S.S.B. transmitter buy on the market today.

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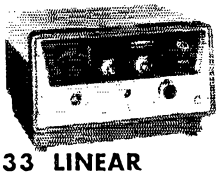

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Hallicrafters new ultra-compact HT-33 *is the only kilowatt amplifier to employ extra-safe, extra long life ceramic power tubes. They're rugged, assure a consistently higher performance, as well as provide extra safety under overload conditions.*

See the HT-33, look at its clean table-top lines, compactness, then put it to work. You'll know immediately why this new linear kilowatt amplifier is in a class of its own.

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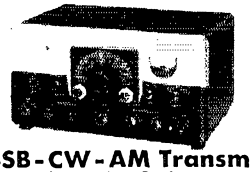

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Paso way are KN5LUG and KN5LXS. K5ILG is the new NCS for the El Paso 10-Meter Emergency Net. HSX has a new DX-100. K5GPR has dropped the "N" from his call. K5DZZ acquired a new air-conditioned station wagon, complete mobile rig and a new baby daughter, all in one week. The Valley Radio Club has acquired a club site in downtown Harlingen, and has moved from the Harlingen Air Force Base. The club station is K5FIB, with K5CCM as trustee. The 7290-kc. Traffic Net had 40 net sessions, with 878 station check-ins, and handled 542 messages. The South Texas C.W. Net, on 3790 kc., had 25 sessions, 139 station check-ins and handled 172 messages. This is for the first month of operation. FEM and TAF, of Houston, had the first RTTY cross-town QSO. AQK, MSA, GMT and BRZ report the satellite transmissions were received in Corpus Christi loud and clear. LUU and XYL are vacationing. DKK hopes to be on from Japan in the near future. The San Antonio Radio Club has a YL code class. The new officers of the San Antonio Radio Club are LUU pres.; OZQ, vice-pres.; K5GUH, secy.; CTL, treas.; K5DMK, sgt. at arms. Traffic: K5FHR 696, W5FCX 360, EGD 259, ZIN 162, ZWR 78, K6ROR/5 57, W5EPL 38, DTJ 14.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, 1OC. Newly-elected officers of the LCARC are BY, pres.; GE, vice-pres.; UR, secy.; NF, treas. It was announced recently that Truro will be the site for next year's convention. Congratulations go to the Sydney Radio Club on its fine showing in Field Day. The launching of Satellite No. 1 created much interest in the section and many amateurs were able to receive its signals. New section appointments include: PZ (Cape Breton) as EC, WIQCC/VE1 as OES, AV as OO. Several members of the St. Croix Valley Club are now active on 2 meters. Communications for civil defense exercise "Lanyard" (the evacuation of about 600 residents of Lancaster to St. Stephen in a 137-car convoy) were provided by about 25 amateurs from Southern N.B. The 75-, 6- and 2-meter bands were used in the exercise. PV (ex-3BCU, VE6CP and VP5CP) is now a resident of Dartmouth. AEB has modified his Viking for remote operation and is building a ¼-watt transmitter for phone/c.w. operation on 75 meters. Season's Greetings and the best of luck to all in 1958. Traffic: (Aug.) VE1UT 49, FH 31, DB 11, BN 7, OM 7, AEB 6.

ONTARIO—SCM, Richard W. Roberts, VE3NG—Ontario amateurs were all busy tracking the Russian satellite. Among those who were the first to hear the signals were AER, NG, BBQ, DQG, AML and AQE. APC is active in Ft. Erie. BSW has transmitter grief. The Nortown Club's new officers are DAR, pres.; HB, vice-pres.; BOF, rec. secy.; A. Livey, corr. secy.; KA, treas. The Skywide RC, also of Toronto, elected ASA, pres.; DXS, vice-pres.; Lorn Proctor, treas.; Bud Athrens, secy.; Sam Finley, act. mgr. Scarboro came up with this fine selection of executives: DZI, pres.; Sid Prior, vice-pres.; DDP, secy.; AWC, treas.; YD, club engr. The new club call is SRC. CER is on 7 Mc. EIS is building a new rig. Ten years of Scarboro Club records were lost in a flood at the shack of AWC. DZI has a new QTH, Richmond Hill. ES did well in the W/VE Contest. RE was mobile VE1 while on his vacation. EOV is a new RCC member, thanks to DPO. BUR is on 21 Mc. DUU is PAM for 2 meters in the Toronto Area. AIB is the EC. The v.h.f. group met at Oakville and had a bang-up affair. AJA, GH, TL and NG were seen rainbow-trout fishing at Meaford on Thanksgiving. BXF won the "Capt. Morgan Cup" for his effort in the C.W. SS Contest in Ontario. (Note: This award is open only to members of the Nortown Club.) DEX and BBH are still laughing at the film taken at the North Bay Hamfest. BJV, EAU and EAM are active on the c.w. nets. Metro-Toronto Civil Defense held a Civil Defense Day. Those in on the activities were BBD, DSM, BUT, AZX, RH, NG, RG, MF, ASA, BLQ, AIB and DUU. AUU is the new ECN mgr. KM organized the S.E.T. RU vacationed in Bermuda. Our congratulations to 2BE on his reelection as Canadian Division Director. With the assistance of some very good friends who are MPP's in the Ontario Government, the situation regarding license plates is coming along very nicely. Please be patient, fellows, it does take a little time. We will keep you advised. Our sincere thanks to ARRL Headquarters staff for all the help they gave us in the organization of the ARRL Ontario Convention. AML, at Sarnia, has some excellent tape of signals from the satellite. Traffic: VE3BUR 155, NG 102, DPO 62, AML 51, NO 46, DTB 43, DUU 32, KM 22, EAU 21, RW 19, BJV 13, DWN 13, AES 7.

(Continued on page 160)

WE TRADE HIGHER!

Howdoody...

Here's a revoltin' SWITCH.....an eevaluator gettin' eevaluated! I'm Jack S., Chief Eevaluator of Trade-Ins at Walter Ashe Radio Co. and the Head-Shrinkers have just figured my Eye-Cue. I don't know why the interest in my eyes.....I got two and see two of everything like anybody else!

They say I'm not a Moron at all....I'm an Imbecile, and I'm really too stupid to be ignorant! This is going to make the boss real happy! He's already pleased with the way I've been losin' money every month in the Trade-In Dept. Now that I'm conscious of how UNCONSCIOUS I really am, I'll mark stuff even crazier and the losses will be phenomenal!

Why don't you sit down and write me a newsy little note about your old gear and throw me into a wild, value setting fit that'll end up with a trade-in price that'll make you as happy as I'm stupid.

You'll love me madly,

Jack S.

IT'S EASY TO DO BUSINESS WITH WALTER ASHE!

1. Just tell us what factory-built gear (made since 1945) you have to trade, and what new gear you wish to purchase. You'll get our top dollar quote by return mail.

2. When the deal is made, you ship your equipment to us by prepaid express or, if express is not available, by prepaid truck. We check it at once and, in most cases, your new gear is on its way to you within 24 hours after we receive your trade-in.

3. We will ship your new gear to you via express in most instances. Where express is not available, or not practical, we will ship by truck.

LOOK! FOUR BRAND NEW MODELS!

GONSET

COMMUNICATOR III
2 or 6 Meters.....$269.50

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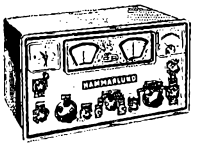

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Less Clock. Net $229.00

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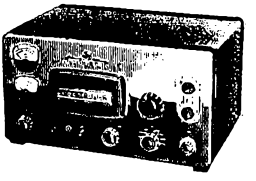
COURIER KIT.....$244.50
Wired & Tested.....289.50

JOHNSON



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for.....
(show make and model number of new equipment desired)

Q-12-57

☐ Send new FREE 1958 Walter Ashe catalog.

Name.....

Address.....

City.....Zone.....State.....

QUEBEC—SCM, Gordon A. Lynn, VE2GL—ATL again makes BPL on originations and deliveries. He also won the Burgess Trophy in the code-receiving contest at the MARC Hamfest. AGN handles a lot of traffic even though building a new rig. APC visited several W1 hams during vacation and took movies at W1AW. AMY reports the Muskeg Net meets on 3755 kc. Mon. to Fri. at 7:15 P.M. FL has moved to a new QTH in Bourlamaque. AEV has a new DX-100. ADD is active on 75 meters with a new antenna. AMY is erecting a wide-spaced beam on 20 meters. AWK has BCI and TVI. AFJ, ABN, AUA and AGI are back at school but are active in their free hours. AJD took part in the W/VE Contest. TI has resumed skeds with ADF. AAD and AUU are mobiling. ABN and AFJ are both active on c.w. with a Globe King. ACD has a new bug. AKB, from Valleyfield, and AXL from Ville St. Laurent, are on 80-meter c.w. APU is handling traffic on 75-meter c.w. EG is now able to use s.s.b. She is testing the B&W linear amplifier. OC won an NC-109 at the hamfest. PS is a newcomer using a 75A-4 and a Viking II from the Town of Mount Royal. RU has moved to Beauport. Traffic: VE2AGN 246, ATL 158, DR 113, AWK 45, EC 18, AMY 16.

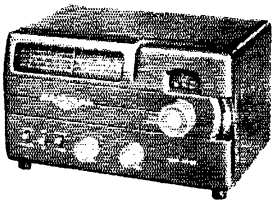
ALBERTA—SCM, Sydney T. Jones, VE6MJ—PAM: OD. IC is moving his QTH to YY-Land. OD is back on the Alberta Phone Net after a vacation visit to VE7-Land. SX reports he has most of his crop in and will be more active radiowise from now on. WL reports that the Calgary gang will sponsor a code course this winter. He also has finally made WAC on 28 Mc. AS and HM have heard the radio signals from the Russian satellite. EY is reported having his 28 Mc. up again. GY was made an honorary member of the Edmonton mobile gang. IM is having good results with his new rig. The Alberta Phone Net has returned to its winter schedule of 1930 Mon., Wed. and Fri. Keep the monthly reports coming, gang. Support your local club and take an active part in all the activities. Traffic: VE6HM 153, OD 10, MJ 6, PV 4.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—This month the Vancouver Amateur Radio Club (VARC) is in the spotlight. It is a very active club with a good variety of talks and illustrations at its meetings and visits to electronic and other interesting installations. The following is the club's executives for 1957-8: AQW, pres.; TX, vice-pres.; AHT, treas.; Ken Stunden, secy.; AMW, activities; APX, historian; XW, tech.; FB, publicity; MI, official auctioneer; YG, auditor and watcher of the pot; KX, BCARA delegate. I have to admit I misplaced a couple of reports in the muddle of some ham shack changes. Hope the ones missed will excuse me, please. AIO has taken over as Tel-com officer for the #266 Airforce Cadets in Kimberly with the club call of ANQ. Nanaimo also has an active Airforce Cadet Radio Club under the wing of DH. Traffic: KG1DT 597.

MANITOBA—SCM, James A. Elliott, VE4IF—Congratulations to the ARLM, Inc., on its affiliation with the ARRL. A very good time was had at the ARLM Hidden Transmitter Hunt and Wiener Roast. There was fine work on the part of KP for recording the Russian satellite. Winnipeg stations active on 20 and 15 meters are TE, BG, NO, TJ, PU, KX, LL, TC, SS, RY, MP, LJ, ex-6LJ and VJ with SX sporting a Viking II and 75A-4. TA is building an A13 linear. WS and SH are doing well on 10 meters. GB has moved to Pine Falls. KN was visitor to Winnipeg. KP is accumulating transistors for mobile. IF, GE and PE had fine trip to Calgary, Banff, Jasper and Edmonton where we enjoyed real ham hospitality. ER is slowly improving from an infection which sent him to the hospital for a short session. LO is on temporary duty in Saskatoon. DU will be back with a new skyhook before the snow comes. Many thanks to VJ for assisting with this report. Traffic: VE4GE 19, JY 10, AY 9, AN 6, KN 6, PA 6, HL 4, JW 4. VE5YR 4.

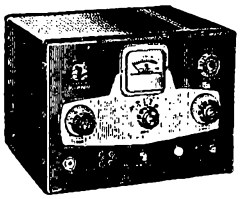
SASKATCHEWAN—SCM, Lionel O'Byrne, VE5LU—HR has a new QTH and is using a portable rig. BQ is awaiting a rotator for his beam. DR schedules VE3AHU/SU on the Gaza Strip and relays "World Series" scores to the gang. YW, OB, CU, DU and LM have activated 10 meters in Saskatoon. VL is getting new transmitting equipment. 4LO is a Saskatoon visitor. CF works 15 meters and lots of DX. LM and his XYL are planning a trip to Florida this winter. Good luck, Leo. DD has a new converter for his new car. AM and HQ are new calls in Saskatoon. Welcome, Don and Jerry. JK visited with 7JB, 7ANT, 7AZ (ex-5LV) and 7PM this summer and is now replacing a blown gasket on the mobile power plant. UU and GG have 8-Mc. crystals for their 144-Mc. rigs. BL had mobile in the Civil Defense Parade. QL was in an accident but is O.K. Traffic: VE5LM 30, YR 14, BI 8, RE 6, CB 2, JA 2.

FOR THAT PERFECT CHRISTMAS GIFT... CHECK WITH ARROW'S HAM DEPT.!



National Model SW-54

A truly fine receiver for the novice. Receives voice or CW. Broadcast band plus foreign stations and all high frequency ham bands. Built-in speaker and power supply. 5 tubes.
Amateur Net..... $59.95



Viking "Adventurer" CW Transmitter

Ideal 50 watt CW transmitter kit for the novice! Easy to build and safe to operate. Gives you practical construction experience. Designed for more than just the novice class. It stacks up favorably for flexibility, operating convenience, and real DX punch against transmitters costing far more! Compact—completely self-contained—single knob bandswitching 80 through 10 meters. Complete with built-in power supply, tubes, cabinet, wiring instructions & antenna suggestions.
Viking "Adventurer" Kit complete with tubes, less crystals & key ..... Net $54.95

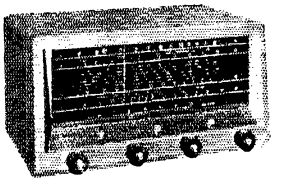
New Modulator Kit for the Johnson "Adventurer"..... **$12.50**

"Wonder Bar" 10 Meter Antenna

As featured in Nov. 1956 QST. Complete with B & W 3013 Miniductor. Only 8 ft. long for 10 meters.
Amateur Net..... $6.95

"Champion" Vibroplex

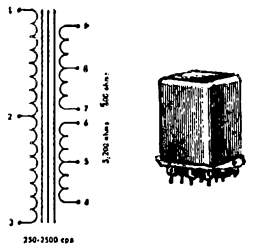
Chromium finished top parts with grey crystal base. Weight 3 lbs. 8 oz.
Amateur Net..... $15.95



Hallicrafters Model S-38E

Broadcast band 540-1650 kc. 3 short-wave bands 1650 kc to 32 mc. Communications type controls for accurate tuning. Separate bandspread tuning control. Headphone tip jacks on rear. Built-in PM speaker. Oscillator for reception of code signals. Four tubes plus rectifier. 105-125 volts, 50-60 cycles AC-DC.
Amateur Net..... $54.95

ARROW SPECIAL!

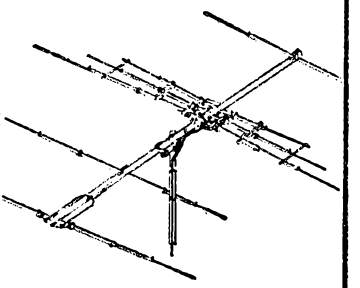


Versatile Miniature Transformer

Same as used in W2EWL SSB Rig — March 56 QST. 3 sets of C.T. windings for a combination of impedances: 600 ohms, 5200 ohms, 22,000 ohms. (By using the centertaps the impedances are quartered). The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, phone patch, line to grid or plate, high impedance choke, etc. Size only 2" h. x ¾" w. x ¾" d. Brand new. Fully shielded. At fraction of Government cost.
Amateur Net, each..... $1.39
3 for $3.49! 10 for $10.75!

Hammarlund HQ-110

Amateur Communications Receiver — Dual conversion superheterodyne with automatic noise limiter. Covers 6, 10, 15, 20, 40, 80, and 160 meter amateur bands. Separate SSB linear detector. Q-Multiplier. Crystal calibrator. Separate stabilized BFO. Crystal control. Auto-response. Clock $10 extra.
Amateur Net..... $229.00



Telrex "Tri-Band" TB2E – 10, 15, 20

Full size—no compromise! Three-band one transmission line array. Telrex tuned, matched and calibrated for easy assembly (without formulas or traps to break down) to provide outstanding performance on 3-bands with a practical long-lasting structure incorporating the finest of materials. Install a Telrex tri-band today for full size 2-element performance (gain 5.5 db) F/B 18 db—and enjoy your hobby to the fullest!
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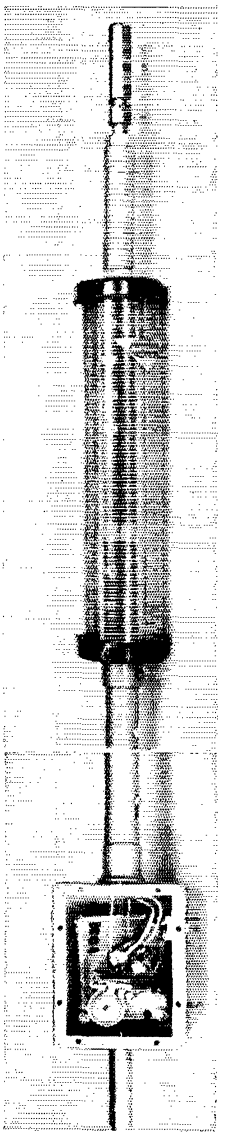
Mobile Antennas

(Continued from page 41)

the coil. Another slide switch is operated by the string that progressively adds resistance in a meter circuit; the meter reading is determined by the series resistance, and the meter is marked in frequency bands.



The Autenna uses a motor to switch the loading coil through the various bands. The motor is housed in a small box at the base of the antenna; a spring-loaded string runs up to the switch inside the loading coil. The tube between base and loading coil serves as part of the antenna and also houses a switch that operates band indicator on the dashboard of the car.

The Autenna incorporates "Kwik-On" disconnects that make it possible to remove the antenna quickly and store it inside the car when the car is parked. — *B. G.*

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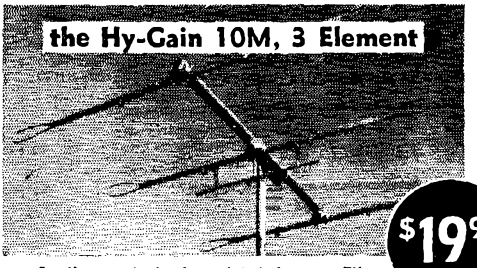
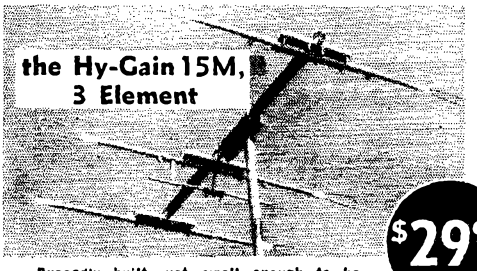
these 3 great standard beams from hy-gain



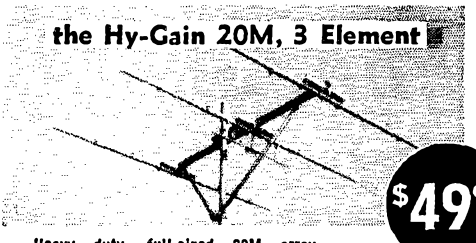
$19.95

Small enough to be rotated by any TV rotator. Elements adjustable for max. gain over entire 10M band. Factory pre-tuned, pre-adjusted and pre-matched. Easy to assemble. No further adjustments necessary. Only 18 lbs. wt.



$29.95

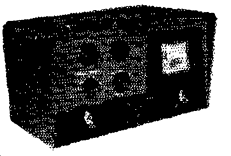
Ruggedly built, yet small enough to be rotated by heavy duty TV rotator. Adjustable over entire 15M band. T or Gamma match for any line balanced or coax 52-450 ohms. Simple to put up and into operation.



$49.95

Heavy duty, full-sized 20M array; — built to take it! Elements adjustable over the entire 20M band and are telescoped three times to minimize element sag. Combination T or Gamma match for any line balanced or coax 52-450 ohms.

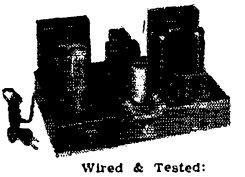
these 4 great new products from WRL Electronics



Wired & Tested: $124.50
Kit: $99.50

GROUNDED-GRID Linear Amplifier LA-1

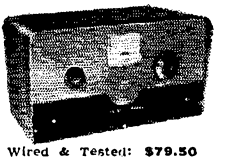
Complete with well-filtered power supply, operates Class B or C, with grounded-grid Final. 200 watts input operated AM Class B. 300 watts DC input, or 420 PEP input, Class B linear SSB or DSB. Requires 15 watts RF driving power. 300 watts class C for CW (18 watts driving power). Pi Net output circuit covers 80-10M bands, matches loads 30-150 ohms. 52 ohm Pi Link coupled output on 6M. Extensively bypassed, filtered and shielded for TVI.



Wired & Tested: $49.95
Kit (less tubes): $37.50
* Available . . . approx. Dec. 15

Universal Modulator UM-1

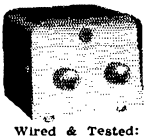
Supplies 10-45 watts audio output, depending on tube types and class operation. Uses: Class A or B modulator (RF inputs 8-100 watts); driver for higher power modulator; PA amplifier. Output matching impedance 500-20,000 ohms. Carbon or crystal mike may be used. Perforated steel cover available as accessory, $3.00 extra. Wired model complete with 6U8, 5U4GB & two 6L6 tubes.



Wired & Tested: $79.50
* Kit: $69.50
Available . . . approx. Dec. 15

Globe Matcher Sr.
ANTENNA TUNER AT-4

Built-in VSWR Bridge constantly in circuit. For any Xmttr. with final RF input up to 600 watts, 80-10M. Fixed link coupling in output circuit. Coax input, 2-wire balanced output. Special calibrated meter for monitoring actual SWR. RF shielding cabinet.



Wired & Tested: $15.95
Kit: $11.95

Globe Matcher Jr.
ANTENNA TUNER AT-3

For any Xmttr. with input of 100 watts CW, 75 watts fone, or less. Provides substantial amount of harmonic attenuation when properly tuned. Aids matching Xmttr. output to various types of antennas. Unbalanced output. Self contained.

NEW LOW PRICE: SCREEN MODULATOR KIT

For use with WRL Globe Chief & similar CW Xmttrs. Permits radio-telephone operation. Self contained. All connections to Xmttr. included. Complete with printed circuit & all parts.

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T-12 Transmitter

(*Continued from page 33*)

one shorts out a section of the coil in the pi-network, and the other connects a larger capacitor across the buffer plate tank.

Putting the T-12 together should be a simple matter for anyone who has a small soldering iron and can use it. It is only necessary to shape the component leads, insert them in the correct holes, and solder to the etched circuit. After completion the unit can be mounted on a metal chassis (not furnished) by means of the four brass stand-off bushings.

The mimeographed instructions describe construction and tuning procedure and give several suggestions for suitable antenna systems. The final carries a rating of 12 watts input (at 350 volts), and one can expect the T-12 to become popular as a first transmitter for a Novice and as a standby transmitter for local net operation.

— *B. G.*

How's DX?

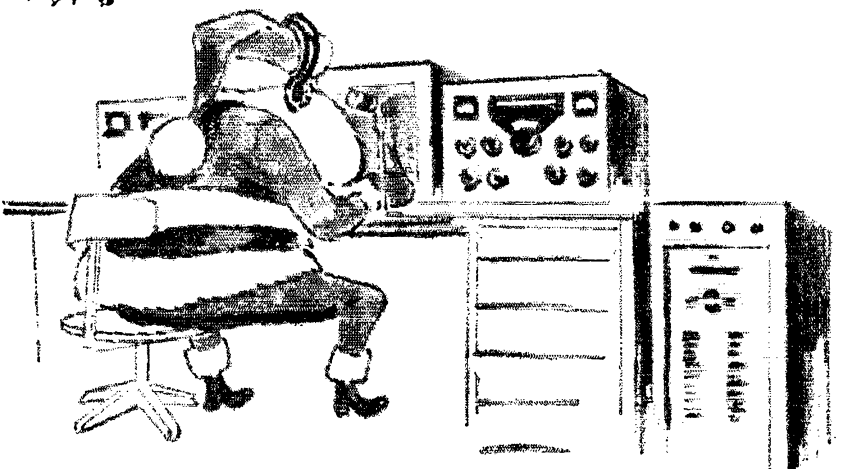
(*Continued from page 82*)

without a couple of scoundrels trying to steal the contact right out from under you and, if not successful, jamming the frequency." — *W6RZS*. . . . Not very pleasant reading, eh? Thank goodness there's a bunch of squareshooters on the air for every DX bum a-radiating . . . . . K2UPD celebrated removal of the "N" from his call by venturing to rarish Prince Edward Island for a spell of K2UPD/VE1 fun during late August . . . . . VO1s BD and BF vow to make St. Pierre a perennial objective after such delightful sport as FP8s AY and AX this summer . . . . . Interesting figures on W2EQS's September FP8AS sally: Of Charlie's 792 c.w. QSOs 570 went to U. S. comers in 42 states, and the remainder was distributed among 45 countries on all continents. By W/K call areas FP8AS worked 59 Ones, 103 Twos, 71 Threes, 48 Fours, 16 Fives, 80 Sixes, 20 Sevens, 67 Eights, 56 Nines and 50 Zeroes. Per band there were 22 contacts on 160, 5 on 80, 35 on 40, 581 on 20, 129 on 15 and 20 on 10 meters. Alert YL W3GEN started things off by picking up FP8AS's initial tune-up. An AF-67, HT-30, NC-300, a 136-foot wire and a multiband trapper gave an excellent account. W2EQS thanks the DX gang in general and resident FP8AP in particular for help in making his sojourn so eminently successful. "The big let-down came when putting W2EQS back on the air at home — and getting no replies. I got spoiled!" . . . . . "VE8NS claims he's the most northern amateur station in the world," writes K4IGD. "He's on the northern tip of Ellesmere Island near the Pole." Who's *your* candidate? . . . . . VE8OJ closed shop in Port Radium and now signs VE7CQ with 200 watts on several bands down south . . . . . "Worked 134 DX stations in the past month and only 33 said I was their first Idaho contact (two said I was their first Seven). So Idaho doesn't seem to be quite so rare anymore." Observation by W7FBD . . . . . W5ACL sees little sense in such transmissions as FB FB MISSED MOST UR RST 579 579. Perfectly readable but missed most — secret code? . . . . . W9NN was elected W9-DXCC 1958 chairman at that organization's '57 ARRL National Convention business meeting. Next year's W9-DXCC Banquet is scheduled for September 13th in the Windy City . . . . . KL7BPK's hamming interests absorbed a fresh fillip when his dad rejoined the fraternity as K4BS in Vero Beach. The OM was QRT since Pearl Harbor . . . . . W1s VG WPO and W6ZZ note that G5RV signs PJ5AA on Aruba, PJ5AC on Curacao, Louis, based at Caracas, also holds VP4 VP5 VP6 and VP7 licenses with the RV suffix . . . . . Ex-ZC4FB will flaunt a new VP8 label from Shackleton Base . . . . . Good to hear HK0AI boiling through once more. W4HKJ found Victor banging away on 20 with an 807 110-watter and dipole, feeding San Andres to a brand new DX generation . . . . . OVARA iterates KP4AIO's determination to put Navassa Island on the air but soon . . . . . Those club abbreviations in the text preceding represent International Short Wave League, Japan DX Radio Club, Malaya Amateur Radio Transmitting Society, Northern California DX Club, Newark News Radio Club, Ohio Valley Amateur Radio Association, Southern California DX Club, West Gulf DX Club, Willamette Valley DX Club and the Wireless Institute of Australia.

Ten Years Ago in "How's DX?" — Relieving W1CH

(*Continued on page 166*)

"Seems like every ham wants one!"



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Ask any amateur. He'll tell you the most wanted item on his Christmas list is a Collins 75A-4. Of course we have KWS-1's and KWM-1's in stock, too, and offer the convenience of our time payment plan with 24 months to pay. See Ward, W2FEU.

WARD J. HINKLE,
W2FEU

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in December, 1947, W9BRD/1 takes his first editorial dive into *QST*'s DX mailbag . . . . . It's 20 c.w. by a landslide — Cs 4RK 7OK 9JW, EP1AL, EQ2L, FQ8AT, HP4Q, HZ1s AA AB, I6USA, Js 8AAI 9SIR, KS4s AC AE, KX6USN, LI2B, LU1ZA, MB9AM, MDs 1D 5BU 5KW, PKs 3CK 5LK 6CR 6EE 6JV 6TO 7HA, TA3SO, UG6s AB WD, UH8AA, UI8AA, VR5PL, VSs 4VR 7IT, Ws 3KXO Iwo 3LTK Antarctica ØMCF C6, YR5s KP PK Q and VP are reported worked . . . . . On phone we find J9ABH, KP6AA, VR3A and Trieste's XAMC listed for 20, while 10-meter doings feature J8s AAA ACS, KG6AW VK9, KH6LT KW6, KJ6AA, LZ2AB, MD5s AF TS, UA3s AC BM, VR6AA, Ws 2WMV C9 6VKV I6, ZC6JP and Basutolander ZS4P . . . . . Lower-frequency DX developments see the East Coast gang working GD3UB and FA8BG around supper time on 3.5 Mc., with such 7-Mc. offerings as KM6AA, W5MUS/KS4, YU7KX and ZB2B on tap . . . . . Narrow-band f.m. DX work is gaining popularity on 10 and 20 . . . . . *O tempora! O mores!* Almost legendary AC4YN, "Mr. Rare DX," is said to be disenchanted by increasing 14-Mc. DX hoggery.

10B Exciters

(Continued from page 39)

voice control mode for telephony. Not every person has the same speech waveform which may require modification of the original 10B time constant for reliable voice control operation.

Tuning Eye

The other half of the dual triode is used as the r.f. rectifier for the tuning eye, which can be added at the same time. It is used as an aid in tuning to the proper band and gives a relative indication of r.f. output voltage. Although this is not essential, it is highly desirable to have a simple and sensitive means of monitoring when adjusting the carrier balance for maximum rejection when using s.s.b. emission.

The switch S_1 is used to select either direct connection to the r.f. output circuit or the r.f. voltage dropped through the adjustable potentiometer. For monitoring, any amount of eye deflection can be had by means of this pot, while for carrier balance the direct or maximum-sensitivity position should be used.

The tuning-eye tube and associated controls are mounted easily and in such a manner as to improve the panel appearance, and they look as if they were original equipment. The holes for the tube, switch and pot are punched directly between the words "Multiphase" and "Exciter" on the front panel. The cover shade for the eye tube will neatly cover the manufacturer's sine wave symbol and the two matching knobs for the switch and pot can be taken from the anti-trip unit and "VOX Sensitivity" control where substitution can be made easily.

Strays

W6LSO worked PAØJR, who said that he was trying to locate a friend he hadn't seen for 30 years and who was now living in W6LSO's QTH of Long Beach. It soon developed that the friend lived near W6LSO, had only been in Long Beach for a short time, and was looking for work. One thing led to another, and PAØJR's friend was soon working for Pacific Valves, Inc., of which W6LSO is president.

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Radar
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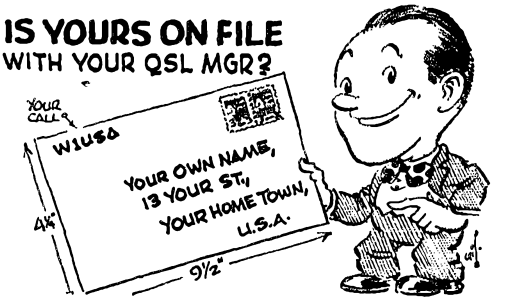
A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.
W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount 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 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. F. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Pointe Claire, Montreal 33, Que.
VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 883 10th St. N., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newfoundland.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Naumauu Dr., Honolulu, T. H.
KL7 — KL7CP, 310 — 10th Ave., Anchorage, Alaska.
KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

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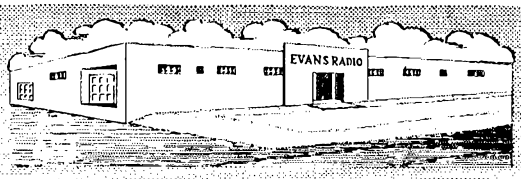

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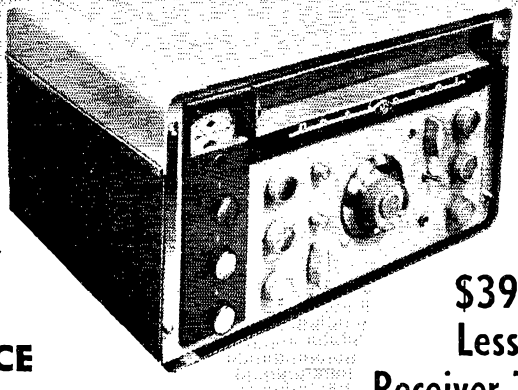

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Navassa—1957

(Continued from page 59)

Why did we choose 20 c.w. and 15 fone? If we operated 20 fone, government regulations would require our staying between 14,200-300, and there was no sense adding to the mayhem ever present in those 100 kc. The U. S. fone chunk on 15 is a good deal larger and by operating at the top of the band, the stations calling were given room to spread out and breathe. We stayed on 20 c.w. for the one purpose that everyone who works DX can operate 20, but not always 15, and we wanted to work everyone who works DX.

Between operating times we did some exploring of the island. Our operating area was actually on a plateau just above the cliffs extending toward the center of the island about 150 yards. This plateau completely encircles the island, the center gradually rising to an elevation of 400 feet, and the top is another plateau. The island's vegetation is dense, consisting mainly of stunted trees and cacti, and it is estimated that over 1000 wild goats inhabit the land. There are only three structures: the lighthouse, a concrete shed housing the light's supply of gas, and a roofless building crumbling in ruin, once used to quarter Coast Guard personnel.

In our operating we were continually amazed by our fine reports going through this minor mountain. As 20 c.w. reached almost a nadir, we changed to 21,378. It proved much more productive, for the Navassa label seemed to panic the phone gang. The DX portion of the band was tuned after every second or third QSO, but no signals were heard. As the afternoon wore on, our rate per hour steadily improved, and in the last half hour on fone, 34 QSOs were made. At 2230 GMT we tried 14,024. Many of the East Coast gang had returned from work and the pile-ups were beyond comprehension.

All W call areas were pounding in, but our DX consisted only of neighboring Carribean islands. Finally SM7MS and DL7FW broke the barrier and gave us our only DX outside of North America. Conditions to the States were so good that everyone was S9 plus, which prevented us from hearing the S8 DX stations. Later we were told of the hundreds of Europeans and Africans who called us by the hour; sorry, fellas. In the middle of this avalanche of calls we were informed of the shattering news that the captain had ordered everyone to return to the ship immediately; their work was finished and they were leaving the island. At this point we were dispensing Navassa contacts at more than 70 per hour.

And so, after only 8½ hours of operating (a generator break-down forced us off the air for 3 hours), 48 phone and 259 c.w. QSOs with 33 states and a slim DX total of KP4AIO, KV4AA, VE3AAZ, KZ5BB, PJ2ME, DL7FW, SM7MS, KP4ADS, KP4AIJ, KZ5WU, KP4DH, and a good case of sunburn, we disassembled the sta-

(Continued on page 172)

tion and departed from the island to the cutter in the same hazardous manner in which we arrived.

After docking at the Coast Guard station in Cuba on June 8, and after many delays due to waiting for passes, rebel uprisings and attempts to find transportation, busses, airplanes and our car brought us safely home to New York, less than 2 weeks after our departure.

Both of us now appreciate the insight and perspective into DXing that only an expedition can provide, but we are still disheartened over the fact that we were not able to give the foreign gang a country they so avidly sought. One thing's for sure: we'll never scoff at the trials and tribulations of those who undertake an expedition. Oh, well, back on the prosaic side of DXing.

Heavenly Reward

(*Continued from page 61*)

However, in three days (or more accurately, six hours), Leo was ready to plug it in, which he did. He flipped the filament switch, and the rectifier tubes lighted like rising suns. He then operated the plate switch, and a blue glow leaped from the rectifier filaments to the plates.

Satisfied with his accomplishment, Leo turned off the power supply, picked up his pearl-studded screwdriver, and commenced to mount the power supply in a relay rack which had been built for it by St. Bud of the Chassis and Rack Subdivision.

Just as Leo was installing the last screw and cup washer, a tiny cherub flew past his face. In an effort to keep from falling (although clouds are really very soft, and seldom is anyone bruised if he falls), Leo grasped the nearest convenient object, which unfortunately was one of the filter capacitors. A blinding blue flash of ionzed atmosphere and oxidized ectoplasm threw Leo halfway across Cloud 223. He barely had time to think "lousy bleeders" when the stars diminished and a black curtain descended.

Through the curtain he heard someone say, "It was my fault for talking him into building a kilowatt rig." Then someone else said, "He's waking up. Hey, Leo, are you all right?" Leo opened his eyes and found himself lying on the floor of his shack. He saw his friends Homer and Horace looking down at him.

"You got quite a jolt from your power supply," said Homer.

"Are you all right, Leo?" asked Horace. "I was worried; I even said a small prayer for you."

"I'm all right," said Leo. "Funny thing: It seems I've been in a heaven for ham radio operators. I remember a fellow named Sir Heathekit Featherblossom, who asked me to build a power supply; and I built it. Then when I had finished it, it bit me."

Homer laughed. "Bit you? Where — in the head?"

"Surrrrre it did," said Leo dreamily as he spotted a pearl-studded screwdriver lying on the floor beside him.

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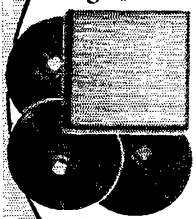

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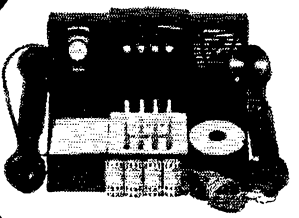

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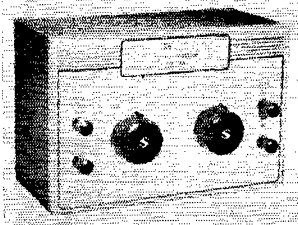

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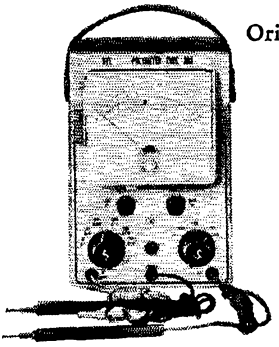

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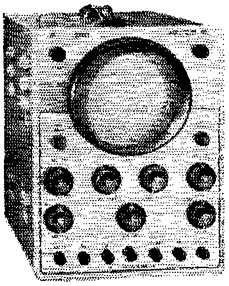

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. . . How to convert broadcast sets to all-wave superhets for c.w. and phone . . . How to boost the power output of a low-power transmitter by using a four-tube oscillator . . . How to use break-in operation with crystal control . . . How to calibrate your frequency meter — these were some of the "how to's" twenty-five years ago.

. . . Three pages of hints and kinks . . . The first of a two-part article on modulating the screen-grid r.f. amplifier . . . And some good advice on learning the code — these were more of the offerings twenty-five years ago.

. . . Ross Hull described an all-purpose 56-Mc. station, and the editors of *QST* described some of the 56-Mc. work that was being done around the nation.

. . . DX notes of a quarter century ago were somewhat less extensive than nowadays. There was a page of "Calls Heard," together with a few sparse notes in the IARU News and in the Communication Departments pages.

. . . The Federal Radio Commission reorganized its field force, increasing the number of inspection districts from nine to twenty. It was hoped that this would help speed up the issuance of operator and station licenses.

. . . And, finally, the Government Printing Office announced that the Government list of amateur radio stations would no longer be printed, because of budgetary considerations.

Satellites

(*Continued from page 15*)

but should show in a general way how the signal strength varies during a pass, and the times at which significant changes in amplitude occur. It is also important to record the general characteristics of the signal — whether it is steady, has an auroral-type flutter, slow or fast fading, and similar observations — as these characteristics vary with time.

Tape recordings can be a useful tool in making observations of this type if by some means the appropriate time intervals are introduced on the tape. A log can then be made up from the recording at leisure, with the probability of more accuracy because as many reruns as necessary can be made to clear up doubtful points. If you do make tapes for this purpose, transcribe the information in the form suggested and then reuse the tapes for further observations. Don't try to send them to anyone; the physical facilities for analyzing the "raw" tape simply do not exist.

Some other possible uses (besides those discussed earlier) for tape recordings are now under consideration, but at the moment there is nothing definite to report. We may expect, however, that tapes will simply be a means to an end, and that, whatever the project, the recorded information will have to be "reduced" by the amateur who collects it before it can be of real value to those who might want to analyze it. This "reduction" process will depend on what it is that is recorded, of course, and may require either special equipment or skill, or both.

— *G. G.*

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Official Observers

(Continued from page 66)

you who are 40-Meter DX men may remember that odd, swishing parasitic that bothered the band during the wee, small hours about 7010 kc. last winter. Locating and identifying the station responsible for this required the use of a pair of receivers, one on the parasitic, and the other cruising through the medium frequency spectrum to locate the station responsible. Using this method it was found that the unwelcome visitor was a keying transient from one of the transmitters at WSL. One short letter to ARRL Hq. setting forth the facts of the matter, and the transient disappeared. What Hq. did, I don't know, but it was effective. Before you criticize anyone else for "letting" an unauthorized signal in on the ham bands, ask yourself, "What have I done to get it moved?"

This use of a pair of receivers can locate a lot of other things, too. Quite often a keying transient outside the ham bands can be traced to a ham rig that is quite well-designed, but whose neutralizing capacitor has slipped just a touch. Another thing they can find is who emits those unreadable signals that sound similar to voice, but are in no recognizable language, just below 8000 kc. Side-band harmonics almost defy identification. This is oversimplified, but if you consider a single spoken word transmitted on s.s.b, you find that the signal consists of, perhaps, a series of signals varying, let's say, 300 to 1000 cycles from the carrier (which isn't there anyway). Now, at the second harmonic, this series of signals, when detected, range from 600 to 2000 cycles from the carrier frequency. You can tell that someone is talking, but who is it, and what is he saying? It usually takes a second receiver on the ham band in question to match up the signals. Assuming you do locate and identify the harmonic of an s.s.b. signal — brotherrrr!! Your troubles are only beginning! Invariably you get a stock answer, "There must be something wrong with your receiver, OM, 'cause this is a *linear* amplifier I'm using; *linear* amplifiers don't have harmonics."

To clear up this little situation, let's consider the manual for the Belchfire Sooper Slugger Linear Amplifier, in the large, economy size. Somewhere in this book, hidden among more meaningful statistics, such as driving power, output, weight, dimensions, price tag, etc., is usually the statement that at full output the harmonic distortion is such-and-such per cent. In short, if it says that the distortion is 5% at 1000 watts output, you're generating 50 watts of odd harmonic power that can be radiated if it is coupled to the antenna. Now, any s.s.b. man worth his salt will tell you that 50 watts of s.s.b. will get out a long, long way!

From the OO's Mailbag

Let's look at a few samples of the mail:

"Dear Sir: Thank you for your OO card on my harmonic

(Continued on page 178)

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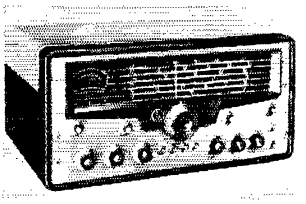

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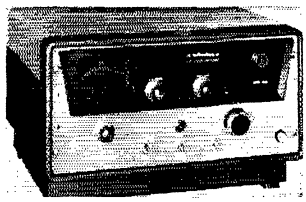

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on 7435 kc. I have been on only 2 weeks and have had no QSOs as yet. I have been calling almost every night on 3718 kc. Maybe you could help me. The rig here is a —— (commercial job with 50 watts and pi-network) running about 35 watts. My antennas are doublets for 40 and 80 meters but the 80-meter doublet broke down in an ice storm and I am using the 40 doublet on 80 although it doesn't load too well. It seems to load O.K. up to about 35 watts but the xmtr is supposed to run 50. Do you have any ideas? . . . "

". . . Thank you for your notice of my harmonic on 7480 kc. I didn't know that I was interfering with the police c.w. network and I really feel foolish about it because after I had called for 2 hours on 3740 that night I noticed the bandswitch knob was loose and I had been on 40 meters that morning . . ." (If he keeps that knob tight we won't be bothered with him any more.)

". . . After I got your card I borrowed a grid dipper from WØ . . . and I find that my plate condenser will hit both 80 and 40 meters with the 80 meter coil plugged in . . ."

". . . Am sending you a circuit schematic of my transmitter which I copied from the 194- *Handbook* (built for 80 meters, featuring a pi-net final with a maximum of 250 μf available on the output side) which seems to be getting out very well (Well, I agree) and loads very heavily. It loads so well that I hardly get a dip on 80 meters and I can't understand why I am putting out a 2nd harmonic because the *Handbook* says the pi network cuts down on harmonics . . ."

". . . Thanks for your trouble, OM, but there is something wrong with your receiver calibration. My transmitter is a —— (commercial job with excellent TVI shielding and filtering) and I run it into a low-pass filter. I have absolutely no TVI on my own set, so I couldn't be putting out a harmonic that goes that far . . ."

I chose these excerpts of letters not from random, but with the intention of showing what 75% of the replies I receive from Novices say.

A few of the boys try to fool me and claim that it wasn't their call I heard. To these, I can only say that the OO isn't any law-enforcement officer,

and therefore an alibi isn't necessary or desired. If you *do* have a harmonic, cure it, if you don't, start looking for a pirate. Just remember, the call is positively identified before you receive the notice. No one is picking on you. The notice is an attempt to get you to attempt to clear your troubles before directed to do so by the FCC.

Now, let's take those letters individually and go into the rather obvious solutions:

In the first letter, the solution is apparent from the first. The Novice has loaded his rig into a

(Continued on page 180)

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quarter-wave antenna. He's using a pi coupler. The antenna doesn't load as well as the 80-meter doublet, so the Novice backs off on that control marked "LOADING." What he does, besides load the final, has ruined any chance that pi coupler had of operating as a properly tuned low-pass filter. Since the pi isn't knocking down the harmonic, quite a bit gets through. The 7 Mc. component finds a broad highway right out into the air via an antenna more or less resonant on 7 Mc. Any good 40-meter man will tell you this is the band for low power. The Novice's harmonic goes places and does things.

The second letter is duplicated quite often. Usually this boy has a good rig, and, if he keeps the set screws in his control knobs tightened up, he's off to a good start.

The third letter is the one that gets my goat! Here is a case of the Novice building a transmitter from a design in some magazine or *Handbook* (You, too, West Hartford) in which a 250 $\mu\mu f.$ capacitor is specified for the final tank. This little problem can best be cured editorially by specifying a 150 to 200 $\mu\mu f.$ mica *soldered* across the final tank coil for 80 meters and a 75 to 100 $\mu\mu f.$ mica across the tank coil for 40 meters and using a 100 $\mu\mu f.$ variable to tune the rig. It stands to reason that if a 250 $\mu\mu f.$ capacitor fully meshed will hit 80, and if the stray capacity across the circuit is less than 60 $\mu\mu f.$ (which it always is) the unwitting Novice can hit 40 unintentionally.

The fourth letter can almost be considered a variation of the first. In this case the cause is different, but the effect is the same. It all boils down to this — if you aren't using at least 750 $\mu\mu f.$ on 40 and 1500 $\mu\mu f.$ on 80 to load a normal low-impedance transmission line, your harmonics aren't attenuated in the pi-network, and you're asking for trouble.

The fifth letter points up something that W1ICP mentions in his well-known lectures on TVI and ham harmonics. *You don't kill your low-frequency harmonics merely by virtue of having a shielded rig working into a TVI low-pass filter!!* The low-pass filter will take care of harmonics above 50 Mc., but the ordinary low-pass filter installed to cure TVI has a cut-off frequency in the 40 to 50 Mc. range. Any harmonics below this range roll on through. Why shouldn't a harmonic in the 7.4–7.5 Mc. range get through if your 21.1-Mc. fundamental will??

I might add that I believe that the best thing manufacturers could do to help alleviate the harmonic situation would be to provide for about 500 $\mu\mu f.$ of fixed output capacity on 40 meters and 1000 $\mu\mu f.$ on 80 to be switched in automatically when the bandswitch is turned to those positions.

Another thing, the pi network is a wonderful circuit, but *only when properly used.* Don't try to feed the transmitter that uses one directly into an all-band antenna. That multi-band antenna is designed to radiate harmonics as efficiently as the fundamentals. *Always use an antenna coupler.* It never hurts anything; it's

(Continued on page 182)

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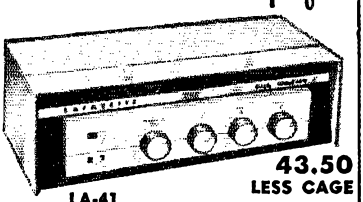

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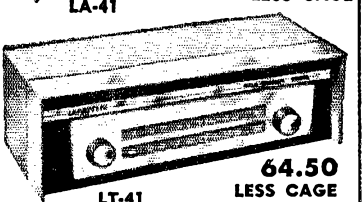

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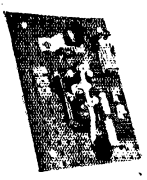

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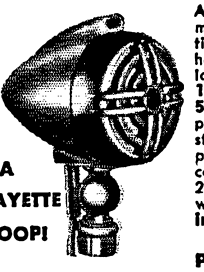

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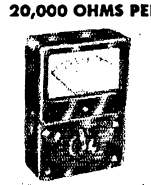

A terrific buy in a convenient accurate, completely wired instrument. Has a 3" 36 μA meter. 1% precision resistors and efficient single selector switch. Scales: Volts DC and AC; 0-10-50-250-500-1000 Ohms; 0-50K-500K- 5 Meg; DC current; 0-50μA-1MA-25MA-500MA: Decibels; —20 to +22, +20 to 36. Attractive plastic front in rugged shielding metal case. Imported to save you money. Size: 3-5/8 x 5¼ x 1-5/8". Complete with batteries and test leads. Shpg. wt., 3½ lbs. **RW-50 Imported** .....Net **14.50**

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Include postage with order.

only one more knob to twist when tuning up; and the time you lose doing this over a period of a year or so wouldn't add up to the time you might have to spend thinking up passable alibis for the FCC if you get clipped with a Grand Island SWL card.

Skip the Fan Mail?

In closing, I'd like to ask in behalf of all the OOs, unless your troubles were really unusual don't bother the OO with a lot of alibis. The common solutions he's already heard, many times — the unusual ones are welcome. Another request is directed especially to the Novices. Under ordinary circumstances don't ask an OO for a sked on 80 c.w. to check on a 40-meter harmonic. The skip is usually such that if you can be heard on one band, you can't be heard on the other. In my particular case, I've probably received over a hundred requests for skeds. A few I try to meet, but the majority of them fall at a time when I'm tied up in a traffic net. I'd like to meet all requests, but it is impossible. I'm quite sure that the other OOs find themselves in the same position.

Strays

Over one hundred Novices and SWLs rustled uncomfortably as W9XXX, better known as Prof, strolled to the lectern. Prof knew ham radio cold and he was a good instructor, but he had a way of popping questions that made a fellow feel like a dope when he didn't come up with the right answers. There had been months of study in connection with the club-sponsored course in How to Become. Tonight was the final briefing. Tomorrow the group would be going down to FCC to take the exam for General Class.

Prof poked around in his papers for a moment and then looked up into the sea of faces. "Young man in the back of the room," said he, "what is the formula for calculating the reactance of an inductor?"

"Dunno," was the reply.

"What is the *Q* of a resonant circuit?"

"Dunno."

"Well," continued Prof, "I assigned those questions last week. What did you do last night?"

"Drank beer with a few of the boys."

"Now then, the class is going to take the FCC exams in the morning. How do you expect to get your ticket and get on the air and ragchew and work DX?"

"I dunno, Bub. I just come to fix the steam pipes." — *W1ZDP*

—...—

The Black Diamond Radio Club of southern West Virginia has two members with an interesting coincidence of calls and names: W8GEP is B. B. Bennett, while K8GEP is Benny Bennett. — *W8GGC.*

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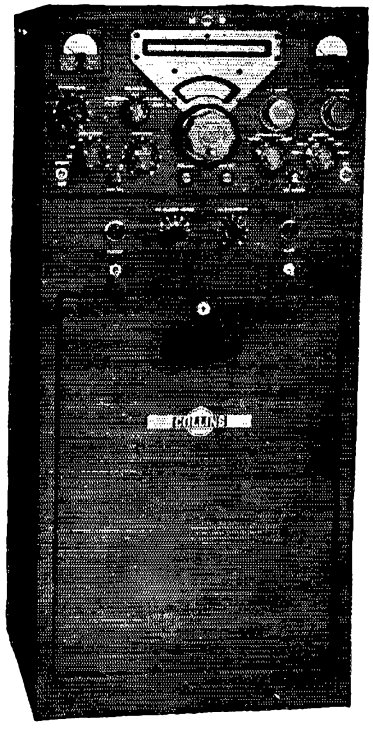
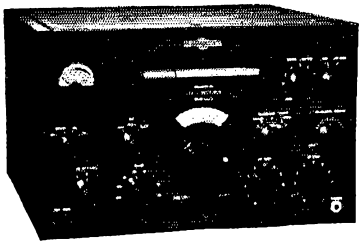
Collins SSB equipment for immediate delivery



KWS-1 TRANSMITTER

Finest kilowatt in Amateur SSB history. Efficiently compact, with all controls necessary for tuning and operating in one receiver-size, table-top cabinet. Dual conversion makes the KWS-1 as stable on 10 meters as it is on 80. PA network for continuous tuning from 3.5 to 30 mc with constant L/C ratio over entire range. 1 kc dial division on all bands — 80 through 10 meters. Special sideband generation utilizing Mechanical Filters provide 60 db sideband suppression. Effective spurious suppression. These and many other features give you unmatched performance, accuracy and stability in SSB, AM and CW operation.

KWS-1 Net Price $2,095.00



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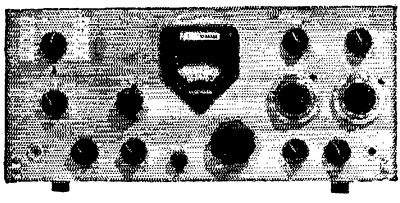
75A-4 Net Price, complete with Gear Reduction Tuning Knob, 3.1 kc Mechanical Filter, and tubes $695.00



KWM-1 MOBILE TRANSCEIVER

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KWM-1 Mobile Transceiver, Net Price.....$820.00

24 months to pay — trade-in allowances

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New Solid-State Oscillator for Microwaves

The first successful operation of a completely new oscillator with interesting potentialities for microwave work was announced early in February by Bell Laboratories. While the experimental result is new, the possibility of the development of such a device had been the subject of studies and speculative discussion for some time. The idea was first proposed by Prof. Bloembergen of Harvard University. The experimental development work was done by Drs. Scovil, Feher and Seidel.

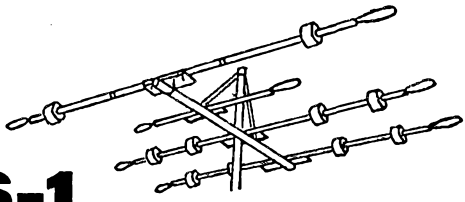
The device is called a spin oscillator, but it will operate, in principle, as an amplifier. One of its outstanding characteristics is that it is expected to have very low noise, compared with conventional microwave devices heretofor used. The principles involved were first demonstrated last November 27, when a crystal containing a

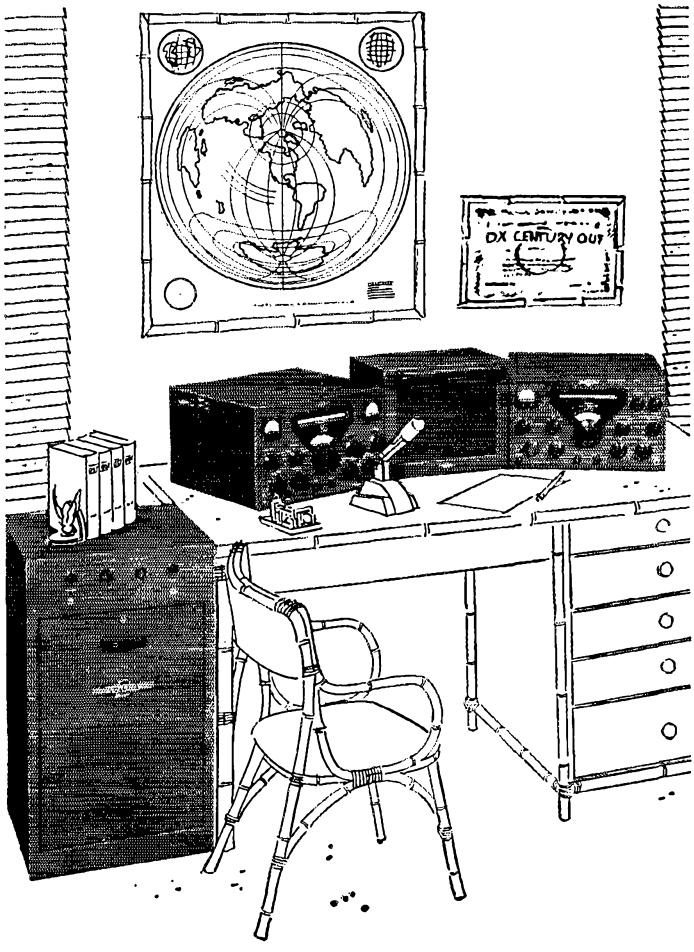
The three Bell Telephone Laboratories scientists whose work has resulted in a solid-state device which will oscillate at microwave frequencies are left to right: Harold Seidel, Derrick Scovil and George Feher. The device, which is still in an early research stage, is expected to have very low noise compared with conventional microwave devices. Thus it should make use of microwave radio signals several hundred times weaker than those usable at present. — *Bell Telephone Labs photo*

small amount of paramagnetic salt was used to produce oscillations at 9,000 Mc. with a power output of 20 microwatts. Lanthanam ethyl sulphate makes up about 99 per cent of the finished crystal.

Operation is on the MASER principle. This is a recently-coined term for "microwave amplification by stimulated emission of radiation." Frequency of operation is proportional to the applied magnetic field. Development is still in the early research stage, but the potential of the invention for extending the useful range of microwave communication and radio astronomy is rated high. A factor that may limit its usefulness to hams — it presently operates immersed in liquid helium, a commodity not found in great quantities in the average junk box!

WE WILL GIVE A **FREE** HY-GAIN 3 ELEMENT TRI-BANDER TO THE FIRST 20 HAMS WHO PURCHASE A *Collins* KWS-1





Here is unmatched performance, accuracy and stability in SSB, AM and CW operation. Exciter and RF power amplifier are in a single, receiver-size cabinet which can be mounted on top of the power supply cabinet or placed on desk or table.

SPECIFICATIONS

POWER AMPLIFIER INPUT — 1 kw peak envelope power SSB, 1 kw CW operation. Equivalent to 1 kw on AM when using narrow bandwidth receiver.

R-F OUTPUT IMPEDANCE — 52 ohms.

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

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

FREQUENCY CONTROL — 70E-23 Permeability Tuned Oscillator.

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 approximately 35 db down 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.

SIZE — 40½" high, 17¼" wide, 15½" deep.

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

TUNING CONTROLS — Bandswitching, frequency selector, PA tuning, PA loading.

OTHER CONTROLS — Filament power, plate power, filament adjust, PA bias voltage, tune-operate, multimeter switch, VOX speaker gain, VOX speech gain, audio gain, sideband select, emission selector, dial lock, zero set.

Net price, complete with tubes ----------$2,095.00

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Let's Talk . . . .

BY STEVE AUG,* K2EOF

LIKE so many other things since the advent of commercial television in rather large proportions about 10 years ago, the art of conversation appears to have fought a losing battle for survival. This quaint old custom, of which few if any know anything, appears to have had its greatest days prior to the era of Jackie Gleason, Hal March and his "$64,000 Question," Steve Allen, and other occupants of John Q. Public's time in 1957.

No place, however, has this loss of conversational fluidity been noticed more than in amateur radio. Oh, of course, average Sam Ham doesn't see it, largely because he's part of it. He is amongst the vast majority of the "thanks-old-man-for-the-call" fraternity of amateurs, and his vocabulary extends very little further than an exchange of signal reports, a quick rundown of equipment, his name, and maybe a few other pertinent details.

Perhaps the "silliest" phase of any contact between two hams is the sign-off. For the most part, one ham will sign off with another simply because he's about as bored with the other fellow's conversation as the other fellow is with his. But would he say this? Not a chance. Remember, section one of *The Amateur's Code:* "The amateur is gentlemanly." He certainly wouldn't want to offend the other operator. So what does he do? He says something like this:

"Well, old man, thanks very much for the fine business QSO, it sure has been a pleasure to hook up with you, and we'll be seeing you some other time, perhaps when we can talk a little longer. So very best 73s old man, and it sure has been a pleasure. We'll see ya', 73, W1ABC[1] this is W2ABC now over, off, and in the clear and taking a courtesy[2] look over the band, 73[3] old man, see you again."

Of course, there are many interesting variations in this technique. A large number of excuses are used to sign off. For instance:

"Well, old man, we'll have to say 73 now, the XYL is calling us for chow (or "giving us the old chow call") so 73, and we'll see you."

Or: "Well, old man, it's kinda late, so I guess we'll hit the old sack (or "hay"[4] depending upon the operator's preference, or the part of the country in which he lives, since this is largely a colloquialism).

(Continued on page 188)

* 175 West 93rd St., New York 25, N. Y.

[1] Calls bear no resemblance to owners, but are used for the sake of example only.

[2] This is wrong, though virtually all hams use it. The expression was originally a "cursory' look.

[3] Note the monotonous repetition of 73 (a single 73 means best regards — perhaps "best 73s" means "best, best regardses) and other simple words.

[4] The author is rather doubtful of the veracity of either of these words, since few hams sleep on hay, and probably fewer in a sack.

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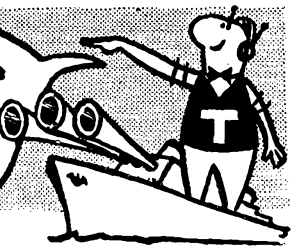

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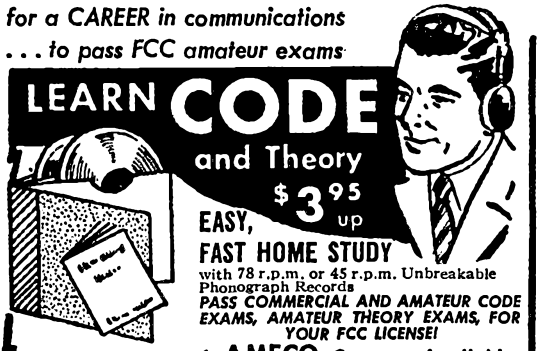

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No. 2 — **SENIOR CODE COURSE.** You get and keep everything given in the Novice Course except that you get 22 recordings (alphabet through 18 W.P.M.), plus typical FCC type code exams for General class and 2nd class commercial telegraph licenses. All this for only: 45 rpm **$11.95** 78 rpm **$12.95**

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No. 4 — **COMPLETE RADIO THEORY COURSE.** A complete, simplified home study theory course in radio covering the Novice, Technician, Conditional and General classes — all under one cover — with nearly four hundred typical FCC type questions to prepare you for license exam. No technical background required. You also get, FREE, a guide to setting up your own Ham station. All for the amazing low, low price of.... **$3.95**

No. 5 — **RADIO AMATEUR QUESTIONS & ANSWERS LICENSE GUIDE.** A "must" if preparing for Novice, Technician or general class exams. Approx. 200 questions & answers (most multiple choice type) similar to ones given on F.C.C. exams. Has 2 typical F.C.C. type exams. Other questions by subjects, easier to study. Low, low price of **50¢**

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The AMECO Code Practice Oscillator, for 110 volts AC or DC, with a built-in 4 inch speaker, produces a pure, steady tone with no clicks or chirps. It can take a large number of headphones or keys. After the code has been learned, the AMECO code practice oscillator is easily converted to an excellent c.w. monitor.

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Set of two tubes (35W4 and 50C5)..... **$ 1.80**

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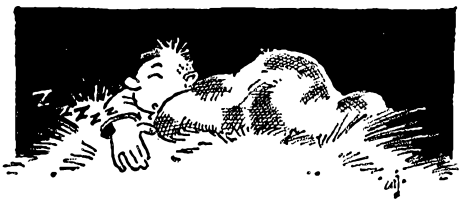
Or still another (a very popular one, and, believe it or not, sometimes the truth): "Well, old man, we didn't get too much of that transmission (often the amount heard is given in a rough calculation of percentage for the sake of authenticity), seems like the QRM is building up (or, the band is changing, depending upon whether it is 40 or 75, or one of the more erratic higher frequencies) so I guess we'll say 73, and hook up again when conditions are a little better . . . etc."



These are but a few of the trite expressions to be found on the ham frequencies today.

But what, then, *has* happened to the true conversationalist, the man who uses words rather than stale expressions which have become almost a source of utter nausea to him?

The answer? He is caught in the middle of a multiplicious quadrilemma, if indeed, such a situation could really exist.

He doesn't want to engage in the meaningless contacts which he hears on the air. He certainly isn't terribly overjoyed at the prospect of having to "work DX," as it is called in the trade, since these contacts are generally little more than an exchange of signal reports and nothing else. He definitely wouldn't want to engage in traffic handling, for there, as even the average ham realizes, human beings are dealt with as automatons, limited to spurting out "raager, raager, old man, QSL yer number 38" with nothing ever varying but the number! C.w. is usually taboo for the brilliant conversationalist largely because there is very little personality in a key.

So this poor lost soul sits about morbidly twirling the tuning dial on his receiver, listening for someone who is not afraid to say a bit more than the bare essentials (as they have come to be) of a contact between two sensible amateurs.

Lately, however, things have begun to look up, not for most amateurs, of course, but for the conversative fellow. He has taken to twisting his fellow amateurs about his little finger with his tricks of speech. He has tried to bring a bit of life into the dead art of "rag chewing" (this phrase is actually revolting, as only a moth would engage in such an act, hardly a human). His means are subtle, but simple. He is making complete fools out of his fellow amateurs without their even knowing it, and, surprisingly, most of them find they have emerged from such a contact with a sense of pleasure, or, in some instances, even having learned something new — or having simply enjoyed themselves.

His tricks are simple. Any ham can adopt them,

(*Continued on page 190*)

the hy-gain 3-Element Tri-Bander

ONE FEEDLINE - THREE BANDS (10, 15 & 20M)

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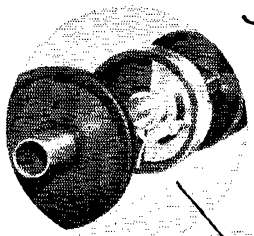
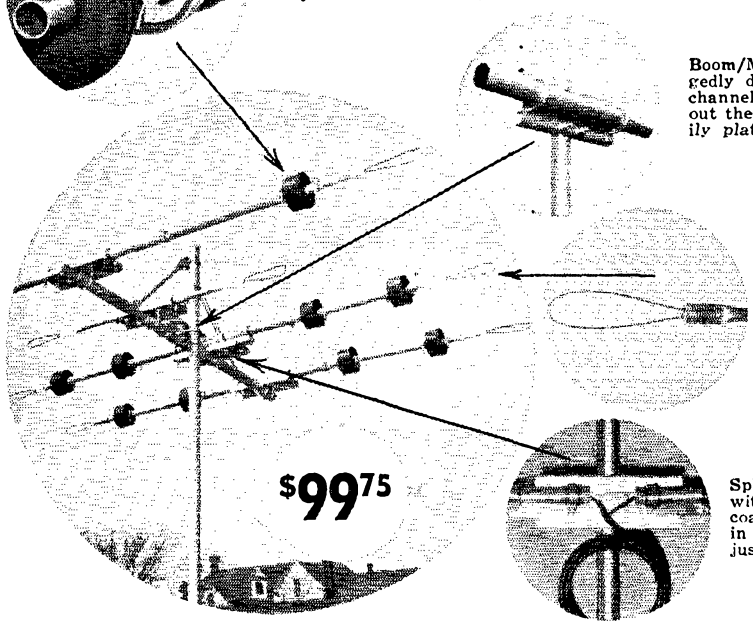
3 Active Elements on Each Band!



Exclusive New Insu-Trap;- a new concept in parallel resonant trap circuits obsoletes old fashioned open-type coils. The only adjustable, completely weatherproof trap. Adjustable capacitor color coded for Fone or CW. Hi-Q coils wound on high impact styron forms which also act as low power factor dielectric for adjustable capacitors. No air dielectric involved. Trap assembly completely enclosed in weatherproof polyethylene cover with 2 grams of silica gel to absorb condensation.



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.
3 Element	152T-3	8 Aver.*	25 Aver.	Less Than 1.5:1	1 Kw	59°	216"	1½" Hot Dip Galv. Steel	1⅛", 1", ⅞", ¾"	.058", .049", .035"	6061ST6 Ant. 41	31', 9"	58#

* Additional Director Element for Increased Gain and F/B Ratio on 10M, Net $14.95.

The standard of comparison for three band antenna systems, the hy-gain Tri-Bander is factory pre-tuned, prematched and pre-adjusted and may be erected in an extremely short time with no test equipment and no further adjustment necessary. Guaranteed to outperform stacked arrays, because interaction and detuning effects have been eliminated. All hardware hot dip galvanized steel for maximum weather ability. Injection molded polyethylene, styron and cycolac plastic used throughout. Complete assembly and installation instructions furnished.

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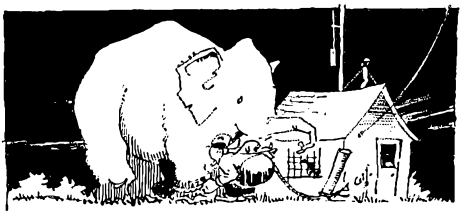
and become a brilliant, and, in truth, possibly even a delightful talker.

When signing off, avoid hackneyed expressions. If you don't want to say what you feel, viz.: "I don't want to talk to you any more. I think I'll go see who else is on," then says something different, pleasant, and amusing, like: "By golly, this certainly was one devil of an enjoyable contact, old boy, but I think I'll sign off now, as I just remembered, I have to go out and tether the elephant. So 73, and I'll be looking for you again . . . etc."



Notice the smoothness of this procedure. First, the other party will be overjoyed to learn that you really enjoyed the contact. Secondly, you will feel proud of yourself not having used a single "Q" signal in your phone sign-off. Then, too, the other operator will have had a bit of humor injected into his day of drudgery at the dials, with your statement about tethering the elephant and will undoubtedly try something similar on his fellow hams. And this time, when you say you'll be looking for him, he'll think you really mean it, and he will be on the lookout for you, since the two of you will have thought you've had an enjoyable time. The next time, maybe you will become better acquainted with each other, and your conversation will branch out into other fields, such as politics, music, *belles lettres*, the drama, mathematics, physics, electronics in a more advanced manner, and the many other themes on which two truly interested (and, hence, interesting) and sensible human beings can talk.

One final word of caution, or encouragement, however the reader looks at it. The author has tried these methods first. He has "stuck his neck out" as the phrase is commonly repeated, and he has gotten many fine hours of pleasure. He firmly believes that in the long run, if the members of the amateur radio rank and file concert these methods, ham radio will be reborn, but this time, into a world of sane, sensible, fascinating, intelligent conversation.

ARE YOU LICENSED ?

• When joining the League or renewing your membership. It is important that you show whether you have an amateur license, either station or operator. Please state your call and/or the class of operator license held, that we may verify your classification.

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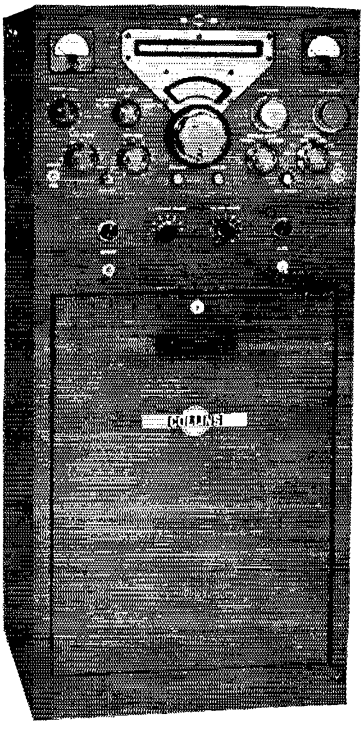

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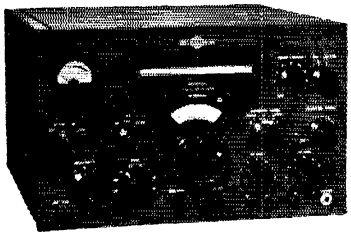
Finest kilowatt in Amateur SSB history. Efficiently compact, with all controls necessary for tuning and operating in one receiver-size, table-top cabinet. Dual conversion makes the KWS-1 as stable on 10 meters as it is on 80. PA network for continuous tuning from 3.5 to 30 mc with constant L/C ratio over entire range. 1 kc dial division on all bands — 80 through 10 meters. Special sideband generation utilizing Mechanical Filters provide 60 db sideband suppression. Effective spurious suppression. These and many other features give you unmatched performance, accuracy and stability in SSB, AM and CW operation.

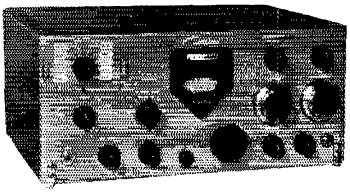
KWS-1 Net Price $2,095.00



75A-4 RECEIVER

Designed for best SSB reception without sacrificing top efficiency in AM and CW. The 75A-4 features passband tuning, AVC on SSB, bridged T rejection notch filter, built-in crystal calibrator circuit, separate detectors for AM and SSB, and provision for 3 Mechanical Filters together with time-proven features such as excellent image rejection, and an accurate linear dial with calibration of 1 kc per division on all bands.

75A-4 Net Price, complete with Gear Reduction Tuning Knob, 3.1 kc Mechanical Filter, and tubes $695.00



KWM-1 MOBILE TRANSCEIVER

First SSB Mobile Transceiver ever offered. 14-30 mc. 175 watt PEP input. Use for mobile or fixed station without modification. Frequency stability comparable to KWS-1 and 75A-4. Break-in- CW using VOX circuits — side tone CW monitor. Self adjusting ALC. Mechanical Filter sideband generation. Complete TVI filtering. Pi-L output network. 6¼" H x 14" W x 10" D. Available in limited quantity.

KWM-1 Mobile Transceiver, Net Price $820.00

Go SSB with Collins gear now — pay later. Use our time payment plan! Contact us now for trade-in allowances and terms!

M. N. DUFFY & CO.

Amateur and Electronics Headquarters

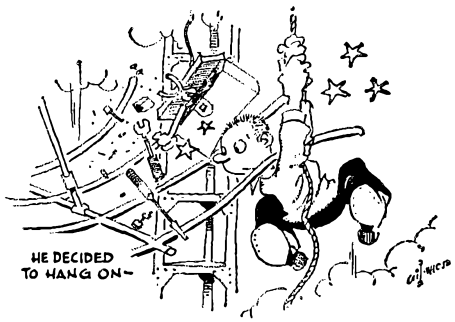
2040 Grand River Ave., Detroit 26, Michigan

Phone WOodward 3-2270

A Situation Fraught With Gravity

Re your recent editorial on the dangers of ham radio.

After getting his tower up, Y. T. McHam found that he faced the problem of getting up a husky four element antenna, a supporting pipe and an extra heavy duty rotator. So he rigged up a beam with a pulley at the top of the tower and hoisted the whole rig complete with a box of tools and wire. Then he decided to free the hoisting line from the bottom pulley and make it fast to a nearby tree.



Unfortunately, the rig was heavier than McHam. Before he knew what was happening the whole load started down, jerking him off the ground. He decided to hang on and halfway up he met the rig coming down and received a severe blow on the shoulder. He then continued to the top, banging his head against the beam and getting his fingers jammed in the pulley. When the rig hit the ground, the rotator smashed and dropped off.

Then McHam was heavier than the antenna and so started down again at high speed. Halfway down, he met the antenna coming up and received severe injuries to the shins. When he hit the ground he landed on the remains of the rotator, getting severe cuts from the sharp edges.

At this point McHam lost his presence (?) of mind, because he let go of the line. The antenna came down, giving him a blow on the head which twisted the elements of the antenna like a pretzel.

He then wrote the manufacturers and respectfully requested replacement of the rig on the grounds that *it* was defective.

—*Cecil W. Guyatt, K3ABN*

Strays

K2TVP's first QSO on a new rig was with W1JLN, who was also having a first QSO with *his* new rig.

Correspondence

(Continued from page 83)

typed QSOs, and probably would change my hobby to collecting insects — I understand there are over 60,000 variations!

— *Ed Cahalan, W2AOY*

BUILT-IN TVI

5901 Paul St.
Alexandria, Va.

Editor, *QST:*

The installation of television translator stations in weak signal areas will serve to increase the number of complaints of TVI supposedly caused by radio amateurs. These translator stations are licensed to receive v.h.f. TV signals from distant stations and heterodyne the incoming signals to u.h.f. for rebroadcast to the surrounding area. Identification is by means of a time-clock-controlled keyer which causes the local station's call letters to be superimposed on the outgoing signal. The local station identification appears as keyed black horizontal bars on the TV receiver screens. The pattern is similar to TVI caused by c.w. stations. Some, through misinterpretation of the call letters, have tried to blame local radio amateurs for their supposed interference to their TV reception.

For example, I recently visited the TV translator station at Rawlins, Wyoming, which is assigned the call letters of K73AF. A local listener reported that he knew his interference was caused by a local radio amateur because he read the screen and the call letters of the interfering station were K7VAF.

Inasmuch as these identification periods are time-clock-controlled they often interfere with a program in progress. Amateurs in communities being served by TV translator station should be aware of this potential source of complaints and ascertain if they are being blamed for something beyond their control.

— *Lester C. Harlow, W4CVO*

AMITY

Woodholme Avenue
Baltimore, Maryland

Editor, *QST:*

I would like to submit this report from a jealous observer (me!). Right smack in the middle of the 15m fone band I have monitored KP4AEZ xmitting voice to 15m novices on c.w. Having just received my General ticket, I think that I am in a position to say that with all the guff from fone men about novice c.w. on 15m interfering with DX fone and vice-versa, this show of arbitration is commendable and deserves some recognition.

— *Alan Bernstein, Jr., W3HZI*

THINK

RR 1
Crete, Illinois

Editor, *QST:*

A word about s.s.b. QRM, if I may. I have nothing against s.s.b., and I think it's a good means of communications, but it seems that some of the side banders on the low end of 40 are hanging over the edge into the novice territory. The top 10 kcs. of the novice band are barren because of the QRM. Come on fellas, you don't have to stay that close to 7200!!

— *Allan Dooley, K9DDE*

7827 Shoshone Avenue
Northridge, California

Editor, *QST:*

This side bander is one who believes there must be a moral (and perhaps legal) re-evaluation of the many aspects of sharing our ham bands.

I refer to the many deliberate attempts to interfere with side band contacts by a few a.m. die-hards. Usually this interference consists of tuning up, turning carriers on and off, "testing", all without call letters, or long-winded CQs or calls without first listening for a clear frequency. This leads us side banders to these rather obvious conclusions:

1. We are forced to increase power to the hilt so as to further reduce their interference during our QSOs,
2. We are forced to spread out in individual QSOs throughout the entire phone band to seek a clear spot,

(Continued on page 198)

if our staying at band edges is not enough for the a.m. die-hards.

Both these measures a perfectly legal, but will only add to band cluttering. Retaliation in kind will destroy us all and must be avoided at all cost.

The ham bands are like city streets; many years ago there was room for all. Today the horsepower and r.f. power races are on, and shoving has replaced the fraternal spirit. I'm afraid we hams need as tight regulations (and enforcement of same!) as motoring has required, all because a miserable few won't practice common courtesy.

— *James R. Carpenter, W6QWG*

DON'T BLAME THE GEAR

P.O. Box 1911
Fort Myers, Florida

Editor, *QST*:

I overheard a QSO this morning on 21 Mc. that may serve to illustrate why so many of the older members of the ham fraternity are growing increasingly critical of the rapidly increasing number of "mail order" ticket holders.

At 0645 EST today I heard a K1 who gave his QTH as somewhere in Mass., in QSO with a DL. The DL advised him that he was operating approximately 10 kc. below the edge of the W fone band, to which the K1 replied, "Yeah, I'm always getting down in the foreign part of the band. I'm using equipment whose calibration isn't very good."

Three transmissions later the K1 signed without having even made an attempt to correct his off-frequency operation. His actual frequency was 21,234 kc. and he was using A3.

What type of operator are we breeding today that will knowingly and willingly operate equipment of this type near enough the band edge to stray outside, and then flagrantly continue such off frequency operation even after being notified of it and acknowledging such notification?

— *William C. Thomas, W4GG*

"37"

219 Goetz Street
Saginaw, Michigan

Editor, *QST*:

From time to time I read in *QST* of accomplishments and near accomplishments amongst the ham fraternity. Near accomplishments are of extreme interest to me and I submit my bid as the nearest "near" yet. Here's a few examples.

1. My initials are K.A.M., not H.A.M.
2. My call (for 25 yrs) is W8HAN not W8HAM
3. Have had house numbers like 1317 etc.
4. Telephone numbers like 8870, 7874 (present one)
5. License plate numbers like present one of 37–50 (this could have been at least 73–50 which would have been usable for real close male friends rating more than a 73 but obviously not an 88)

What do you think?

37, — *K. A. Mack, W8HAN*

[*Editor's Note:* BF, MO!]

"PSE QSL"

9 Bennett Street
Canisteo, New York

Editor, *QST*:

I have sent cards to 1026 DX stations, most of them by first class mail, since March, 1956. I have received 307 in return and of that 73 are from different countries. In as much as some of my cards are coming thru a year or more after the QSO I have not followed with repeat requests but wonder now, after reading the Sept. *QST*, if I should not try the IRC return card method?

Motto here that I have printed on my latest cards is "If I have your card you have mine." What say you?

— *Duane H. Harris, K2PFC*

"WHAT'S THE DIFFERENCE"

628 Eighth Street
Ames, Iowa

Editor, *QST*:

In this hobby of ours if some of the OMs are so class conscious, please petition the FCC to add an X in the call to denote Extra class like they do the N for novice, and let's let the matter of a premium or plumb for the holders of those licenses be dropped.

— *C. E. Hoover, WØKWY*

World Above 50 Mc.

(*Continued from page 70*)

type that makes the job easy. Here's how it's done by WØFRR, Omaha, Neb.

The 6AZ8 is a dual tube having a medium-μ triode and a semiremote cutoff pentode in the same envelope. Its base connections are such that only very minor changes are needed to use it as a replacement for the 6BQ7A normally found in the Communicator. As may be seen from the schematic, Fig. 1, the pentode section is used as the r.f. amplifier, and the triode section is grounded.

Changes required are the installation of a 180-ohm cathode resistor from Pin 3 to ground, connection of a bypass across the resistor, connection of a 33,000-ohm resistor between Pin 2 and the B-plus, and the moving of the lead from the input coil from Pin 7 to Pin 6.

Making these changes made no observable difference in the sensitivity of WØFRR's 6-meter Communicator, and the tendency to overloading was greatly reduced. Formerly having any of three different local stations on the air made it impossible for him to receive anyone else. Now only the nearest gives any trouble, and then only when the two beams are aiming at each other. He is still able to copy any of the weak signals from distant stations that were receivable with the triode front end.

Antenna Elements — Cheap

With aluminum costing what it does these days, big v.h.f. arrays are getting rather expensive to build. W8OKT offers welding rod as a low-cost substitute. Usually lightly copper plated, and coming in various sizes up to ½-inch diameter, such rod has many uses in antenna construction. The ⅛-inch size comes in 36-inch lengths, but extensions can be soldered or welded on readily if needed. Cost is about 28 cents per pound, which makes the elements for a 2-meter 64-element array come to about $3.00. Don't attempt to polish the rod with steel wool or other abrasive, as the copper plating is thin. Lacquer spraying may be desirable.

Another idea for antenna builders from W8OKT: The plastic caps that plug the ends of copper tubing of 1-inch diameter or larger are nice for plugging up the ends of beam elements or booms. A supermarket under construction (at the time when the refrigerating equipment is being installed) is a fine place to pick these plugs up in quantity.

RECORDS

Two-Way Work

50 Mc.: LU3EX — JA6FR
12,000 Miles — March 24, 1956

144 Mc.: W6NLZ — KH6UK
2540 Miles — July 8, 1957

220 Mc.: W9EQC — W2DWJ
740 Miles — September 17, 1957

420 Mc.: G3HAZ — DL3YBA
500 Miles — June 19, 1957

1215 Mc.: W6IHK/6 — W6VIX/6
190 Miles — June 9, 1956

2300 Mc.: W6IFE/6 — W6ET/6
150 Miles — October 5, 1947

3300 Mc.: W6IFE/6 — W6VIX/6
190 Miles — June 9, 1956

5250 Mc.: W6VIX/6 — K6MBL
34 Miles — October 12, 1957

10,000 Mc.: W6VIX/6 — W6BGK/6
124 Miles — June 23, 1957

21,000 Mc.: WINVL/2 — W9SAD/2
800 Feet — May 18, 1946

OES Notes

W1UHE, N. Tiverton, R. I. — Completed 1296-Mc. converter, W1OOP style, and parabolic antenna of perfo-

(*Continued on page 202*)

rated aluminum sheet. Can hear 5th harmonic of grid-dip oscillator, running on 259 Mc. Antenna for radiation of this harmonic is made by soldering a 2⅜-inch piece of No. 12 wire to another rod or wire that acts as a boom. The latter is laid on a table and the grid-dipper is placed on it to hold it in such a position that the oscillator coil is coupled to the quarter-wave antenna. A half-wave director is soldered to the boom ahead of the radiator. With this arrangement, the 5th harmonic can be heard S9 at a distance of 20 feet or more.

W3GKP, Spencerville, Md. — Aurora of Sept. 22-23 provided contacts with W4EQM, Ala., and W5JWL, Ark. Heard W5DFU, KØEMQ and WØRUF. Now have all states east of Mississippi River on 144 Mc.

W3KLA, Baltimore, Md. — Operation by Aero Amateur Radio Club, W3PGA/8 in W. Va. during Sept. V.H.F. Party was big success, with 400 contacts on 50, 144 and 220 Mc. Special QSL cards available.

W3UQJ, York, Pa. — Contest activity on 220 Mc. shows that band has excellent possibilities. Good signals from N. N. J., E. Pa., W1s and W. Va., and activity well ahead of previous contests. Experimenting with 432-Mc. converter using more-or-less conventional coil-and-capacitor circuits.

W4HHK, Collierville, Tenn. — Have resumed 144-Mc. skeds with W9WOK, Barrington, Ill. Though distance is over 500 miles, contact can be made nearly every try. Aurora openings Sept. 4, 13, 21 and 22 best on record. Was heard via aurora Sept. 22 by WØIC, Denver, Colo., 2349 CST. Beam headings varied from 50 degrees for W4CPZ to northwest for W5VWU.

W4YRM, Madison, Tenn. — First *F2* and backscatter of fall season heard Sept. 6. LU, CE, CO and Miami area W4s heard, 1918 to 2120.

W4ZZ calls Tenn. 6-Meter Net on 50.5 Mc. Fridays at 1930.

K5DCQ, Irving, Texas — Working on transistor transceiver for 50 Mc.

W5TW, New Orleans, La. — Working on 10,000-Mc. gear with K5GFB.

W6NTE, Bishop, Cal. — Aurora display seen Sept. 23, 2130 to 2300, but no DX heard on 50 or 144 Mc.

K6USL, Victorville, Cal. — Graveyard Net organized by K6s UJL VOB and MJW operates at 0145 on 50.4 Mc.

W7BDK, Seattle, Wash. — Working on 1296-Mc. converter and other gear with W7PUA.

W9GAB, Beloit, Wis. — Night of Sept. 17 provided best tropospheric DX yet heard on 144 Mc. at this station. Worked stations in Mass., Conn., N. Y., N. J. and Pa. Nearer states also in, but not up in strength the way East Coast stations were. Suggests a duct formed at great height, approaching a skip effect at the middle of the path.

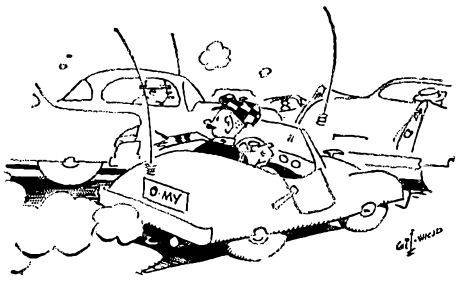
Ham Crossword

(Continued from page 61)

1 R	2 A	3 N	4 G	E	■	5 W	A	6 S	■	7 I	N	8 D	9 E	10 X
11 A	R	A	B	■	12 E	A	■	13 S	14 I	N	■	15 A	R	M
16 C	R	Y	■	17 D	X	C	18 C	■	19 S	S	20 B	■	21 G	T
22 E	L	■	23 B	C	I	■	24 H	L	■	25 U	A	26 W	■	R
S	■	27 C	A	■	28 S	29 R	I	■	30 A	L	L	O	31 W	■
■	32 S	W	L	■	33 T	A	R	■	34 H	A	U	N	T	35 S
36 Y	V	■	E	■	■	37 D	P	■	■	38 T	M	■	39 S	W
O	■	40 H	A	41 I	T	I	■	42 Q	S	O	■	43 T	■	R
U	■	44 A	R	C	■	O	■	U	■	45 R	C	V	46 R	■
47 N	O	V	I	C	E	■	48 F	I	49 R	S	■	50 I	O	51 N
G	■	52 O	C	■	■	53 N	■	54 T	A	■	■	■	55 T	A
■	56 A	C	■	■	57 F	E	58 R	■	59 D	60 L	■	61 F	A	R
62 O	M	■	63 R	64 E	C	T	I	65 F	I	E	R	■	66 R	R
67 H	P	■	68 A	R	C	■	69 C	L	A	N	■	■	70 Y	O
M	■	71 Q	T	A	■	72 C	O	U	N	T	R	Y	■	W

How To Create Chaos

The sports car stops at the intersection. The driver motions the cross traffic to go ahead. Then he starts up again and pulls out into the stream of closely packed automobiles. Interference, confusion!



The DX station stops, waves others on by transmitting SK and then pulls back into the traffic by transmitting again to the station he just finished working. Interference, confusion!

A far-fetched comparison? Perhaps; but the fact remains that a great deal of unnecessary QRM would be eliminated if a station sends SK only when ready to receive calls from other stations. SK means "End of QSO." It does not mean "End of QSO — except that I'll listen to your next transmission and then answer you once more." It hardly makes sense to say "I'm stopping for good but I'm starting the same thing immediately," whether it's a car or a QSO. The use of KN or K with SK seems to be just plain foolish.

The results of such operating are only too easy to find on the air. When a DX station sends SK many stations may call him, and properly so, whether or not he adds KN or K to his SK. The bedlam subsides, all listen hopefully — only to hear him go back to the station he was supposed to have finished QSOing, perhaps even complaining of "QRM on the frequency."

SK means "End of QSO" and that's all it does mean. It's obvious that the use of SK KN and SK K generates interference — and if there's one thing a fellow trying to work DX does *not* need, it's more QRM. — *L. A. M.*

Strays

Two days after working G2FLU on 20 c.w., K2YUS came down with the flu. Wonder if it was the Asian variety or the common DX bug?

—···—

In rapid succession on 6 meters, K21UV worked K2BAW, K2VAW and K2YAW.

YL NEWS AND VIEWS

(Continued from page 76)

occupations, including teaching, dancing, painting, and music.

With *Isle Royale Calling* currently under consideration as a motion picture in Hollywood, Helen is now working on an adult novel, again focusing on amateur radio.

We recommend *Isle Royale Calling* for young people and are pleased to note that one more book is added to the comparatively small list of fiction books on amateur radio.

Author W8GJX and Governor G. Mennen Williams of Michigan, who publicly endorsed Helen Cloutier's ISLE ROYALE CALLING. Isle Royale, Michigan's only state park, is one of the Governor's favorite projects.

YLRL DIRECTORY

YLRL President W3PVH announces that copies of the 1957 YLRL Directory are still available. The Directory gives a brief biography of all YLRL members and should be an aid to anyone interested in various YLRL awards. For your copy, send $1.00 to Betty Sandberg, W9STR, 2951 No. Monitor Ave., Chicago, Ill.

SONNET

*(To Mister X and the Forsaken OM)**

YL Protector and Defender? Wrong!
The Ham-type female needs no buffer stage.
I hereby raise my voice in raucous song . . .
Cut down your output, men, and act your age!
Whose dainty, perfumed hand holds tools for you?
Who pulls, with slender strength, the guy-lines tight?
Who, gladly turning good steak into stew,
Keeps watch (plus coffee) with you sweepstakes night?

You'd rather have us merely cook your food?
Just wash (not wear) your pants? Just curb the tykes?
And, quite forsaken, hate it when you're glued
By DX to your earphones, bugs, and mikes?

You guess again! We'll fight for rig and key,
And match you — tho you'd have us QRT!

— *K6ROY*

* The reader may recognize direct reference to the lamentations of Mister X recorded in this column, Sept. 1957 issue.

Strays

Mrs. Lucille Morrison, a marriage expert, has some advice for women who are looking for a husband — "Take up ham radio operating as a hobby, thereby putting yourself in contact with men the world over."

BREAK, BREAK, BREAK!

(Continued from page 57)

frequency. Even if he isn't, you only have to call until he hears you and "breaks." In operation it works like this: If I wish to call W6VZT I just give his call once as "W6VZT BK." If W6VZT is listening he will say "BK" and I will say "DE W6ZRJ" and go ahead. If W6VZT isn't listening I would waste my time to give him a long call anyway. The "BK," an abbreviation for "break," means, in effect "Give a sign if you are listening. I am using a full break-in system."

C.w. operators who use full break-in a great deal often even shorten this procedure. Instead of W6VZT giving a BK to signify the go-ahead, he may just say "K" which means "go ahead," or often he will just give a single dit.

In operation there are many advantages of using this system. In DX operation, when there is a pile-up of stations calling a new rare one, how many times have you heard the stack still calling, even after the DX station has come back to someone else? If you don't have break-in, you, of course, don't know that this has happened until after you turn it over. With full break-in you can stop wasting your time when it happens, since you can stop calling as soon as the DX station comes back to somebody else.

Break-in is a must for good contest work. Here again, when calling another station in the contest, e.g., during Field Day or SS, if the station comes back to someone else, you can go ahead and try to work another station. Another advantage is that you don't have to waste as much time calling. You only have to give the other fellow's call once and BK. If he is listening you will get him right away, or hear him go back to someone else.

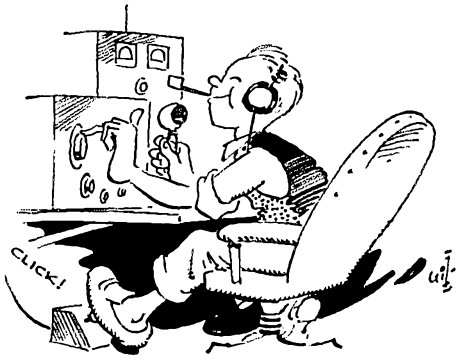
Full break-in is especially important to good traffic work. Since it is possible to hear the receiving station between your own dots and dashes, there is little need for "fills." In actual practice it works like this:

Suppose that W3XXT is sending a message to W3XLV. W3XLV gives the "go ahead" and W3XXT starts sending the message. Let's say he gets down somewhere in the address. Then because of fade or local QRM or just plain weak signals, W3XLV misses something. He reaches over and sends BK on his key, or sends a series of dots or dashes or just a long dash. W3XXT will hear this between his own sending and will stop. W3XLV then gives the last word he has correct by saying "AA (all after)" whatever the word is. In this way time is not wasted at the end getting fills. You might ask, doesn't this take up more time than would be spent on fills? Yes, it can, but the important thing to remember is that if heavy QRM should suddenly come on the frequency, and the sending station does not have full break-in, this small fill might turn out to be the whole message. Often a station sends a message in heavy QRM and when he finishes finds out that the receiving station lost him just after

(Continued on page 210)

he started. It's frustrating to have to repeat a complete message two or three times.

With full break-in, such is not the case. You know what is going on right on your own frequency even when you are transmitting. This is an advantage that will carry over into other types of operation besides traffic work, just as mentioned above in the case of DX or contests. This is an advantage even in the straight QSO. With full break-in the "double transmission" can be a thing of the past or at least minimized.



Full break-in makes c.w. fun by adding the final polish to the operation. Nothing is closer to "duplex" operation. Break-in systems are easy to build up and they take much of the strain out of operating. Try it and join the fun.

Strays

KN4OID wonders if WØOOO works any c.w.

—•••—

Leo Young, W3WV, an employee of the Naval Research Laboratory, has received the Ballentine Medal of the Franklin Institute, in recognition of his part in developing the first pulse radar system in the United States. The Ballentine Medal is presented annually in recognition of outstanding achievement in fields of communications or reconnaissance which employ electromagnetic radiation.

—•••—

K6CCT called CQ Ft. Smith, Ark., and raised K5DET. The K6 wanted someone with a phone patch, but K5DET doesn't have one and W5EUQ (also of Ft. Smith and who was standing by) couldn't get his working. K5DET then asked the K6 if he (K5DET) could be patched through to his brother, whose temporary QTH was only five miles away from the K6. However, K6CCT had a phone patch but no phone. Now, if you'll read this through again you'll be as confused as we are!

—•••—

Here's a switch. During the W/VE Contest W3LEZ heard W9NLJ/VE1 working VE3SR/W2!

"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

ALL-BAND VERTICAL ANTENNAS

GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

FREE! FREE! FREE! Details, specifications and characteristics of 50 antennas!

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.

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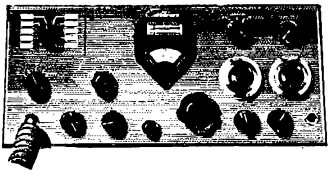

COLLINS KWM-1 TRANSCEIVER — For mobile or fixed station — no modification necessary. 14-30 mc — 175 watts P.E.P. input transceiver. Excellent frequency stability. Panel meter serves as S-meter during receive and as multi-meter during transmit. Break-in CW using VOX circuits built-in as a side tone for monitoring CW. Ten 100 kc bands available.

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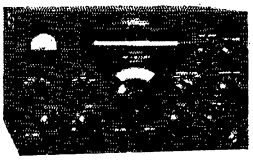

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HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

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(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave. New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 8-8262.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT/ARC1, R5/ARN7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, $85.00. Good condition. H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile, Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, 1-152C, Collins, Bendix equipment, tests sets, dynamotors, inverters. We pay highest prices. Advise quantity condition, price in first letter. Aircraft Radio Industries, Inc., 15 East 40th St., New York City. Tel. LExington 2-6254.

DX'ERS Notice! Save money? Save Time? Free info. DX QSL Coop, Box 5938, Kansas City 11, Mo.

MULTI-BAND Antenna, 80-40-20-15-10, $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Associated Electronics, 58 South P St., Livermore, Calif. W6KF, Skipper.

RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our twenty-first year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

HALLICRAFTERS, Central Electronics, ham gear — others. Swartslander Radio Limited, Fremont, Ohio. Call Jerry, W8EPI or write.

TECHNICAL Manuals TM11-273, 120 pages covering BC-312 receivers and BC-191 transmitters, $2.50. TD-60/APA-10 Panadaptor maintenance manuals, $2.75. Both postpaid in U. S. A. Electronicraft, Bronxville, N. Y.

"PIG-IN-A-Poke?" Not if you visit Ham Headquarters, USA, and take your choice from the hundreds of "Like New" bargains in the world-famous Harrison Trade-In Center! See photographs, p. 137, March *QST* and p. 133 April *QST*. Greater values, because tremendous turnover means lower overhead! Terms. Trades. BCNU, Bill Harrison, W2AVA, 225 Greenwich St., New York City.

SHAW Electronic Supply has new and used ham gear. Clyde, W9KLF, Darling at Gale, Angola, Ind.

QSL8? SWL8? Finest and largest variety samples, 35¢ (refunded). Callbooks (winter) $4.50 postpaid. Subscriptions, renewals to all radio publications accepted. "Rus" Sakkers, W8DED, P. O. Box 218, Holland, Michigan.

QSLS, Taprint, Union, Miss.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS-SWLS. Meade, W9KXL, 1507 Central Ave., Kansas City, Kans.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLS-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS. Twenty exclusive designs in 3 colors. Rush $3 for 100 or $5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Waterford, Conn.

QSLS. Neat, Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

QSLS, Sharp! 200 one color, glossy, $4.75; Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, Box 197, Frankfort, Ind.

QSLS. Reasonable. 3 Week Delivery. Samples dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples. 10¢.

QSLS-SWLS. Samples free. Bartinoski, W2CVE Press, Williamstown, N. J.

QSLS-SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSLS: Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

QSLS of distinction! Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Pa.

QSLS-SWLS that bring returns! Samples 25¢ (deductible). C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS. Plain and fancy samples 10¢. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS. SWLS. 3-colors, 100 $2.00. Samples dime. Bob Garra, Lehighton, Penna.

RUBBER Stamps for QSLS. C. W. Hamm, W9UNY, 542 North 93, Milwaukee, Wis.

GLOSSY QSLS. 100 one color, $2.50. Send for samples. K4JKK, 2004 Riverdale Rd., Roanoke, Va.

QSLS: Cartoons- Cartoons. 100, all cartoon varieties, glossy, colors, $5.00. Rush order for surprise. Chris, W9PPA 365 Terra Cotta, Crystal Lake, Ill.

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CREATIVE QSL and SWL Cards. Are you proud of your card? If not, let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob Wilkins, Jr., KN6ZMT, Creative Printing, P.O. Box 1064-C, Atascadero, Calif.

RECORDING & Brochure: Limited Edition. A tribute to Radio and Morse operators. "The Saga of Telegraphy" is a historical story of communications men and their progress since 1844. It highlights courageous deeds performed by them. Available in two parts: 33⅓ record, playing time 45 minutes, includes narration and code. Brochure is the written & illustrated story. Special price to amateurs: Brochure, $1.00; Recording, $3.00 or both for $3.75. J. R. Graham, W4RJX, P. O. Box 1556, Arlington 3, Va.

CASH Paid! Sell your surplus electronic tubes. Want unused, clean transmitting, special purpose, receiving, TV types, magnetrons, klystrons, broadcast, etc. Also want military, and commercial lab test and communications gear. We swap, too, for tubes or choice equipment. Send specific details in first letter. For a fair deal write, wire or telephone: Barry Electronics, 512 Broadway, New York 12, N. Y. Tel. WAlker 5-7000.

RARE Opportunity! Bound volumes *QST* complete, Vols. I through 31 (1915-1947 inclusive). Includes Special *QST* Bulletin issued after end World War One. Excellent condition. Best offer. Write to Mrs. K. B. Warner, 73 Mohawk Dr., West Hartford, Conn.

SELL Collins 75-A4, $500. Will have reconditioned. Sell BC-696 and power supply, $25 and 1D-59/APA-11 scope. James Quinby, W2EVZ, Copake, N. Y.

DOES It quicker, does it better: Diaxial Antenna Connector. Newest and easiest, no soldering with this connector. This is it for centerfed antennas using coaxial transmission lines. $4.75 net. Lakeland Electronics, 1327 Leonard Ave., Muskegon, Mich.

VIKING Valiant and Globe Champion-300. Schematics 18" x 24", $1.25 postpaid. Am cleaning house, surplus equipment, transformers, condensers, variacs, bargains. Send for list. W8ENS.

HARVEY-WELLS TBS-50C Bandmaster, Sr. transmitter with carbon mike; in excellent condx; Bandmaster VFO, APS-50AC power supply; 1 Johnson Key speed X 114-320 and 2 Amphenol 139-010; 139-020, all never used; 1 Shure 101C carbon mike; Mobile Mounts antenna 80 m., xtal; control box and all cable for mobile rig. Best offer. J. S. Kambourian, Jr., 19 Fay Lane, Needham, Mass.

IMMEDIATE answer to your request for new listings of reconditioned equipment and our new complete amateur catalog. We give you a realistic deal always on all brands, new or used. Check our offer first. We deal quickly, easily and on a personal basis. Our terms tailor-made to your budget. Stan Burghardt, W9BJV, Burghardt Radio Supply, Watertown, So. Dak.

FOR Sale: Collins 30K1 400 watt transmitter, like new condx. W8VYE, Orville Wood, Camden, Ohio. Tel. 243.

ETCHED-Circuit material, supplies, instructions, free catalog. Etched circuit, P. O. Box 2582, South Bend 14, Ind.

CASH for CR-88, CR-91, BC-610E, BC-312, BC-342, BC-939, BC-221, JB-70, Model 15, TG-7, TTY eqpt, parts in quantity, TS-, I, IE-, BC- and AN test equipment. Give complete info in your first letter. Amber Industrial Corp., 75 Varick St., N. Y. Tel. CAnal 6-7455.

WANTED: Used receivers and transmitters: Will pay cash or trade. 10% down with up to 24 months to pay. In stock: new 75A4s, KWS1s, KWM-1 SSB mobile transceiver, Johnson, WRL, B&W, National, Hallicrafters, Elmac, Hammarlund, Gonset, Central Electronics; Mosley, Hy-Gain and Gotham beams. Write for list of bargains in reconditioned receivers and transmitters with new guarantee. Shipped on approval. Write Ken, WØZCN, or Glen, WØZKD for your best deal. Ken-Els Radio Supply Co., 428 Central Ave., Fort Dodge, Iowa.

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, Hallicrafters, Hammarlund, National, B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048. Store: 60 Spring St., Newport, R. I.

MULTI-BAND Antenna, 80-40-20-15-10. $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

PITTSBURGH Area owner deceased. For sale: NC300 and spkr. like new condx. $325; partly finished 813 phone rig, all parts, tubes and cabinet, $65; 2-el. 15-M beam, rotator and RG8U, $30; Heath VTVM batt. elim., EV630 mike, bug, many misc. tubes and parts. Cannot ship. W3AEV, Ferguson, 336 Brookside Blvd., Pittsburgh 34, Pa.

SELL Or swap: Hammarlund SP600 revr, like new, best offer over $365; SX-25 revr, TBS-50C xmttr; Elmac A54H xmttr; Morrow 3BR converter; SWR bridge; T-R switch; Heath Q mult., 30 watt mod. xfrmr; many xfrmrs, relays, parts and meters. List free. Want Viking Ranger, also cabinet only for BC654. WØZOB, Box 273, Coleraine, Minn.

NEW Collinear type VHF beams. Write for information. .051 perforated aluminum sheet, 5/64" OD holes, 1/8" centers, $1.20 sq. ft. Radcliff's, Fostoria, Ohio.

MUST Sell for cash: Practically brand new slightly used Collins KWS-1 and HRO-60 with product detector, 2-el. 20-M Shortbeam with rotator, D-104 mike; equipment on the air. Come and see it evenings. Wallace Printz, W2KAN, 1177 East 14th St., Brooklyn, N. Y. Tel. DE 8-8343.

DX35, year old, $45. Cash and Carry deal. John Giulietti, K2UEJ, 39-11 220th St., Bayside, L. I., N. Y.

S-40B Hallicrafters, like new, never touched, spotless, $79; Remington portable mill $28; BC-357J, $3; BC-129 antique army transmitter, 1957 Callbooks, $3.25; Regency transistor pocket radio #TR-1, $32; soldering gun; Commercial Trades Institute kits: VTVM, frequency generator, bar generator. First $15 takes all three. R. Lackner, W:WFT, 2029 Bradley Pl., Chicago 18, Ill.

FOR Sale: NC-300 and calibrator, used one month, $345. Bandmaster Z-match, $63. Shipped express collect. Don Goodrum, K4DBH, 2819 Plantation Drive, East Point, Ga.

HQ-140X speaker, $169; Viking II, LP filter, coaxial relay, antenna switch, $219; BC-221, $59; Vibroplex, D-104, QST's. Miscellaneous. W3ZSP, 5067 Brownsville Rd., Pittsburgh 36, Penna.

PAIR BC-611-F Handie-Talkies, 3885 Kc. with tubes, batteries, manual. Operate perfectly, $80. K4GYO, 702 Jackson Dr., Williamsburg, Va.

VIKING 500 for sale, factory wired, less than 10 hours' use. Cost over $950. Delivered $700 takes it. W2FKH, 343 Fayette St., Bridgeton, N. J.

FOR Sale: Won at Convention. Cannot utilize. Central Electronics MM2 Multophase RF scope analyzer. Newest model factory-wired. Still in carton. $95.00. W9LNQ, 1701 W. 101st St., Chicago 43, Ill.

FLORIDA Hams! Collins 32V3, $450 and National 173, $100. Cash and carry. Both are in excellent condition. Both have extras. W9OZP/4, 1412 Poinciana Dr., Clearwater, Fla.

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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.

SELL Complete station: HQ129X, Viking II, etc. Pick-up deal, no shipping. Melvin Gardner, Batavia, Iowa.

FOR Sale: Viking Valiant with coax changeover relay both used three months, like new, $345; NC-183, excellent, $185; 35 ft. self-supported (3 legs) steel tower with ladder and platform, very nice, with 3-el. Telrex Minibeam, CDR rotor and 80 ft. new coax RG/8U, all for $140. Will not ship. Will sell all at once or in the order of transmitter, receiver, tower. Donald T. Dean, W5FHX, 1116 Churchill Rd., Ft. Worth 14, Texas.

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BARGAINS: ART/13 xmttr w/power supplies, SCR-522 revr converted w/power, also xmittr, TA-12 xmttr, Navy KW xmttr, Morrow 3BR. Drop a postcard and save. W3SVF, 163 Brown, Blairsville, Penna.

FOR Sale: Six Jennings vacuum condensers, 100 $\mu\mu$fd 32Kv; six 50 $\mu\mu$fd 32 Kv; $5.00 each; six TU-61, TU-62 tuning units, $4.00 each; BW 1663 transmitting coils, six 1.0-1.5 Mc.; six 1.5-2.0 Mc., $2.00 each. All brand new, in original cartons. Write B. Brendan, WITIP, 151 Walnut St., Manchester, N. H.

SALE: 2-way FM gear. Ideal 2 or 6 meters, CD, etc. Top shape, recent manufacture, save 80%. Write for list. Don Larimer, W9IYP, P. O. Box 9, Burlington, Wis.

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SELL: 387 copies QST 1924-1956. BC348A, SCR522, AR5 revrs and xmttrs, T23; Scott revr SLRM, Hivolt filter condx, 304TL's. Write for details. George Rapp, 2615 Sunset Blvd., Broomall, Penna.

SELL: More than 30 years of QSTs, over 375 back issues. Make offer. Eldson, W5AMK, Temple, Texas.

MOBILE singleband fixed converters. Compact, 80, 40 meters. $24.95 prepaid. Terri, 22710 Evalyn, Torrance, Calif.

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SELL: Hallicrafters S-85, $79; Globe Scout 65B, $59; both used just a few hours and in new condition. Vibroplex Zephyr key, like new, $8.50. Never used Astatic JT30 mike with stand and cord, $6; 125 watt modulator, $29. Bernard Witherspoon, W8GKM, Washington C. H., Ohio.

DX100, Elmac A54, transmitters, receivers, transformers, power supplies, modulators, tubes, meters, etc. Bargains: stamped envelope for list. W2CE, 55 East Bedell St., Freeport, L. I., N. Y.

FOR Sale: Tubes, brand new, 813's, $8; 810's, $7.50; 832A's, $3.50; 250TH's, $15; 4-250A, $20; complete Motorola FM 30-40 Mc. receiver, $125; Motorola FM transmitter $100; complete Collins heavy duty power supply, $35; Elmac 6 volt mobile receiver supply, $20; ARC-4 two meter transceiver complete with tubes, $45; plate transformer 115V-3200 C. T. 200 mils, $20; BC-221 AC frequency meter, original calibration book, $75. BC-322 transceiver, ideal for six meters, $25; have new parts for ART-13, BC-348, SCR-522. Write what you need. All guaranteed. Can ship C.o.d. Bill Slep, W4FHY, Box 178, Ellenton, Fla.

MERRY Xmas and a Happy New Year from WØCVU. "Heard around the world". Collins KWS-1, SC-101, Telrex 56 Deluxe Beams, 75A-4.

MERRY Xmas and a Happy New Year to you too, Chuck, from W2BB (Seldom Heard Anywhere).

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallicrafters S38 $29.00; S40A $69.00; SX99 $119.00; SX71 $149.00; SX100 $229.00; Viking Adventurer $39.00; Viking II $199.00; Ranger $179.00; Valiant $379.00; S40B; S85; SW54; NC98; NC183D; NC300; HQ129X; HQ140X; GPR90; A54; AF67; PMR6; PMR7; Collins KWS1; 75A1; 75A3; 75A4; 32V3; many other items. Easy terms. Write for list. Henry Radio, Butler, Missouri.

FOR Sale: Viking Valiant, factory-wired, new, perfect. Has latest circuits. Going kilowatt. First $350 takes it. Want full set of inked code tapes for TG-10 code keyer and D104 mike. Don Campbell, Wales, North Dakota.

VIKING II factory wired with Johnson VFO $225.00; HRO 50 T1 with seven coils, crystal calib., NBFM, and matching speaker $225.00. All in excellent condition. Latimer, W2FZB

FOR Sale: Morrow Mobile Converter #5BR-Z 1 yr. old Excellent Cond. $50. Grozinsky, Durham, Conn.

FOR Sale: HQ140X-Viking VFO sep. power sup. Viking Adventurer, modulator with power sup. Viking Signal Sentry. Misc ham gear. Everything like new, no reasonable offer refused. Write J. Cusumano, K2KJJ, 33 Willow St. Port Chester, N. Y. Ph. WE 9-5684.

NEW National NC-98 with 10" Spkr., $120.00; Magnemite 610-TD battery tape recorder. $100.00, Fred S. Eggert, 11833 Wisconsin, Detroit 4, Mich.

FOR Sale: Johnson Viking Two in very clean and excellent condition, ready to operate complete with instruction books, Johnson VFO, D-104 Microphone, Johnson low pass filter, coaxial antenna relay, and coaxial connections. Ship in heavy wood crate. $260 or make your offer. Cash. Ron Lusk, 503 East 10, Coffeyville, Kansas.

BC-221-T FREQUENCY meter by Zenith, good condition, accurate, with built in power supply, calibration book. $75. K4EEU, Adelbert Kelley, 2307 S. Clark Ave., Tampa, Fla.

FOR Sale: Viking II with VFO (Factory wired excellent condition) $240.00 Complete mobile station Gonset 66-B receiver with AC or DC power supply $190.00 Viking mobile & VFO $130.00 12 volt dynamotor $22.00 Shure 505 C Mic. $20.00 All items in excellent condition. Ewing, K5D8J

FOR Sale: Collins 51-J-3 Receiver, Rack mounting with cabinet mounted speaker. Excellent condition. Best offer over five hundred dollars. A. C. Smrha — 12 Mountainview Drive, Westfield, N. J.

TRADE: New Sako rifle (made in Finland) Mod. Lp46 cal. 222 for DX-100 or Johnson Viking Ranger. J. M. Ritter, Jr (W4MQB), 8714 Wick Place, Tampa 4, Fla.

FOR Sale: Viking II and VFO factory-wired, also low pass filter for $230; RME Preselector DB23, $35; Hallicrafters SP44 Pan adapter, $50; all in perfect condx. F.o.b. New York City. Reason for selling: going SSB. Mark Grossman, K2CON, 1665 Monroe Ave., New York 57, N. Y.

A Few hard-to-find, Hallicrafters HT-17 transmitter coils: 3.5 Mc. tank, $1.00; 14, 21, 28 Mc. doubler and final tanks, $2.00 per band, postpaid. Jerry Tannenbaum, W9JJN, 5240 Harper, Chicago 15, Ill.

VIKING II and Viking VFO, time sequence keying, identical to latest production, very good condition $210. Ranger, time sequence keying good condition. $185. A. M. Pichitino, P.O. Box 46, Waseca, Minn.

WORK the rare ones. Cruise the romantic Bahamas in luxurious 32 ft. sailboat equipped with maritime mobile. Weekly and monthly cruises. W4DN, Yacht "Aloha" 1918 Pine Tree Lane, Largo, Fla.

SELLING Out: Viking II, VFO and Match-box; BC348, A.C.; 10 meter beam, prop rotator, cable, indicator, Gonset 10 meter convertor; crystal mike, bug, key; 75 watt open rack phone and c.w.; ACR 155 receiver; surplus R2/ARR-3; Teleradio 3BZ transmitter; bandswitching exciter QST Dec. 1949; tubes; transformers, etc.; 2 low pass filters; all for $3.50. W2LKR, F. W. Voosen, 115-71 227 St., Cambria Heights 11, L. I., N. Y.

SX-100 factory new with matching speaker, $240; Sola transformer 1800-0-1800, 500 mills 220 primary, $16.50; Hallicrafters S38C, excellent, $29.50; 800v. 200 mill 5.5v. input dynamotor, $10. F.o.b. W5APM Box 586, San Marcos, Texas.

QST Complete run, September 1934 to and including September 1940 except Nov., 1938. Best offer over $18. McFarland, 2439 Cory Ave., San Jose, Calif.

DX Antenna Cubex 10-15 meter dual quad original cartons, never opened: $30. A. Rugel, WØPRM.

NYC Hams! Cash and carry bargains! Viking Ranger, factory-wired, $175; Precision ES-500 5" 'scope, $95; PE-103, $10; assembled and tested Heath units: 3" 'scope, $20; 6/12 volt battery eliminator, $15; radiation counter, $50; Conelrad alarm, $10; condenser checker, $10; RF power meter, $9. W2DJJ, Phone Bayside 5-5384.

SELL: HQ-129X clean, gud condx, local only: $125. Tel HY 7-1978. Joseph Spoto, K2RAI, 300 Troutman St., Brooklyn 37, N. Y.

NC-183D, $150. Van, Box 1332, Prescott, Ariz.

TRADE Brand new, never started, Johnson 5½ HP outboard for DX-100 or gud revr; pair Bendix 140 Mc. to 170 Mc. FM hand-pak sets, $195; trade or sell for ham band xmittr or recvrs, 56 model blonde Motorola color TV set, about 50 hours use. Want: BC-453 and pwr. supply, and complete VOR Omni installation for light airplane. W9DSV, Box 87, Webster, Wisc.

FOR Sale: Johnson Viking Ranger (like new condx), $200; Hallicrafters SX28 with speaker, gud condx, $130. W9CYI, Walter Rivinius, 415 12th St. So., Moorhead, Minn.

MUST Sell due to other interests. Viking II, matching VFO, factory-wired and balun coils. In immaculate condx, $230; NC-300 matching speaker, calibrator, 3 months' use, $340; D-104 mike, $12; Bud calibrator, $12; cash deals only. K4AHG, Gene Cagle, Rte 1, Hickman, Ky.

BW 5100-B transmitter; BW 515B-B sideband, perfect, like new, $550.00; NC-300, speaker, calibrator, perfect, $330.00; commercial tower, two beams, rotator, indicator, $150. Am building home, financial strain, must sell. W4CHO, Lanett, Ala.

SALE: Millen VFO 90711; James C-1050 Vibrapack; complete multiband mobile antenna system, bumper mount, relay; Ranger 505C microphone. Write for details. W9PWV, 821 Waveland Rd., Lake Forest, Ill.

WANTED: BC-610E, BC-614E, JB70 Junction Box, BC-939; ART-13, BC348, BC312, BC342, ARC-1, ARC-3, other military and aeronautical surplus. Give condition, name price. We pay C.o.d. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

FOR Sale: Viking Ranger Kit, partly wired, latest model, $100; also NC-300-6 meter converter, used only 1 hr., $80. Will trade for mobile gear. Thomas Dalton, K2QCP, 18 Broad St., Newark, N. J.

FM Rcvrs, new, 30/40/50 Mcs., xtal controlled, less tubes, power, $20; mobile xmttr, $25; electronic megaphone, $25; outdoor speakers, heavy duty, $20; walkie-talkies, new 6/10/11 meter beam, Premax, $25; BC639 VHF revr, $50; 152/162 Mc. RCA xmttr/revr, $70; Command xmttrs, $10; 2-4 Mc. revrs, $15; wanted: Lampkin Lab freq. meter; signal generator; Gonset Communicator. W2OEA, 82 Lower Main St., Matawan, N. J.

1 K.W. Triode modulator with Multi-Match xfrmer, $125; power supply, $60; 500 watt 6-meter rofo final, $60; power supply, $40; VHF revr 108-150 Mcs.; 15 tubes, 2 r.f. stages, tuneable, with squelch, $75; RCA sweep generator 1-100 Mcs., $20; Telrex 8-el. 2-M. beam, $8; Telrex 5-el. 220 Mcs. beam, $5.00; WRL Triple Globe Spanner, 3-el. beam, $70; 1 K.W. 6 meter xmttr, complete, pr. 450TL triodes modulated by pr of 450TL triodes, $895 cash or trade. W4UCH, Broad Run Drive, Sterling, Va.

SALE: Pulco Bantam 65 mobile xmttr; VFO-xtal 80-10, like new, (make an offer); 6v. Master Mobile matcher with "Z" match coil, $18.00; Heath 6v. Vibrapack, 260v. 60 Ma., $6.00 (new). Will ship. Sgt W. H. Wiley, W6OWD/1, 961st AEW2C, Sqdn, Otis AFB, Mass.

URGENTLY Wanted: for cash: Collins 310C-2, VE5VZ, Lloydminster, Sask., Cana.

"MERRY Christmas and best wishes for DX to all old and new friends. Uncle Charlie How".

TECRAFT 6-Meter converter, CC5-50 10-14 Mc. I. F. and Johnson SWR bridge are in perfect condition. Used less than ten hours. Will sell to best offer. K2OOG, David Herskowitz, 1590 East 26th St., Brooklyn 29, N. Y.

SELL 20A SSB exciter complete with 458 VFO power supplies, built-in 'scope, and 400 watt linear final; Morrow revr FTR-2 with 5BR-F, a.c. and d.c. power supplies and spkr. E. O. Johnson, 231 Snowden Lane, Princeton, N. J.

SELL Surplus transformers, meters, capacitors. List on request. W2EZM, 431 Oakland Ave., Maple Shade, N. J.

HALLICRAFTERS SX100 for sale. Only 3 months old. Looks like new. In perfect condx. Best offer around $250. Sidney Kaplan, 2469 Ocean Pkwy, Brooklyn, N. Y.

PAIR Amprex 833A, $35; pair 2C39A, $15; 500 watt final amplifier complete; Johnson coils for 40, 20, 15 and 10 meters. Gordon dials and Triplett meters, tubes included, $50; 1 set (7) BC610 type 500 watt tank coils, $10; 300 watt Multi-match modulation transformer, $20. All items are F.o.b. Ed Tompkins, W9LYJ, 818 James Court, Waukegan, Ill.

TRADE Or cash: Navy Model HRO complete with power supply, all coils and rack or V-20-M Variac new for high quality Hi-Fi amplifiers, speakers. W4JYH, 1384 Alamo, Memphis, Tenn.

FELLOWSHIP non-profit organization of hams. Details write Gil Van Wynen, P. O. Box 10, Holland, Mich.

FOR Sale or trade: 813 rig per Jan. 1954 QST in cabinet and 1400 v. 500 mil. power supply, $150; Linear amplifier with pr. of 813s capable of 900 watts. Coils for 80, 40, 20, $100. Want Pacemaker or 20A. Howard McDonald, W8DWI, Shelby, Michigan.

FOR Sale: Hallicrafters R-46A speaker, like new condx, $9.50. Gerst, 2674 W. 25th, Cleveland, Ohio.

CUBICAL Quad antenna, tri-bander by Skylane (W4YM), never used, $40. Johnson Matchbox, 275 watt, $35; 60 ft. new RG63/U coaxial cable (125 ohm), $7.00. National SW54 receiver, $20. Elmer Caldwell, W3ROA, 2309 7th Ave.. Altooona, Penna.

SELL: Globe Chief, new tubes and meter with two Novice crystals, $50; transformer 920v. CT 410 Ma., 664v. CT, 475 Ma; 404C. CT 25 m., new original cost was $35. Will sell for $15. Will not pay shipping costs. David Kovach, K2RSM, LaGrange St., Vestal, N. Y.

TRAFFIC Hounds' Roundup, 0001 to 2400 local time, January 1, auspices Traffic Hounds' Morning Watch. For all message pushers. No scoring. Just ragchews. Call CQ TFC. Activity centers: 3540, 7080, 14090, 21090 Kcs. Get acquainted with fellow traffickers. Mark your calendar!

CREI course section 2 (1st fifty lessons) and section 6, good condx, $25 or best offer by 20th. W3BUD, 32 Salamaua Court, Lexington Park, Md.

FOR Sale: Gonset Super Six converter; Viking I TVI-suppressed; Knight VFO; 3-803, 2-811, 1-813, 3-4E27, 2-829B tubes; 8-9 UTC interstage and BC375E mod. xfrmrs; 2¼ x 3¼ Speed Graphic, 6X30 binocs, 22 LR Woodsman. Swap choice above and some cash for Valiant. W6QBO, 828 Nevada, San Jose, Calif.

FOR Sale: Viking Ranger, excellent. Reasonable. Lawrence H. Lapinske, W9EWM, Box 179, Wausau, Wis.

PAIR Amprex 833A, $35; pair 2C39A, $15; 500 watt final amplifier complete, Johnson coils for 40, 20, 15 and 10 meters. Gordon dials and Triplett meters, tubes included, $50; 1 set (7) BC610 type 500 watt tank coils, $10; 300 watt Multimatch modulation transformer, $20. All items F.o.b. Ed Tompkins, W9LYJ, 818 Court, Waukegan, Ill.

COLLINS 75A-3 with 3.1 Kc and 800 cycle mechanical filters. Also 100 Kc calibrator. Original owner. $400 cash. No trades. A. Spiro, 3239 Corsa Ave., New York, N. Y.

SELL: Hy-Gain 1-element Tribander. Practically new. Best offer takes. K2RVY.

SELL: SSB transmitter, Eldico 100A with Manual. 100 watts PEP output, full coverage ham bands. In perf. condx, $400. Bough KW81. Joe W. Jensen, 2304 Country Club Pkwy, S.E. Cedar Rapids, Iowa.

SWAP: 35 mm Contessa camera with f 2.8 Zeiss lens, Golde 300 watt slide projector for DX-100, SRT-120 or similar transmitter. Jack Walters, 2017 AACSRON, McGuire AFB, N. J.

WANTED: Navy RBM revr. Sell: SX-100 revr, $200. Collins 32V2, $375. Both in a like-new condx. W2JRV, Robert Collins, 33 McKinley Ave., Westwood, N. J.

NC-173 with speaker; recently realigned, $115. Gonset Triband converter, $20. John R. Vick, 2334 Lyde Place, Scotch Plains, N. J.

VAN SICKLE, Gene, W9KJF, invites you to shop his fabulous new electronic supermarket for latest gear at lowest prices. Van Sickle Radio Supply Co., 4131 N. Keystone, Indianapolis, Ind.

FOR Sale or trade: Pr 100THS, 1-803, 1-832, 2-3C33, 3-5763 and others. New: 1 Kw jackbar, swinging link shielded 1 kw; dual variable; new and surplus parts. Want: 2 meter receiver or VHF152A. W9LBJ, Abilene, Kans.

TRADE: 4 x 5 Speed Graphic, in excellent condition with loads of accessories, including roll film adapter. Cost over $500. Will sell for $300. Also have homebuilt transmitter, 80 thru 10 M., 6146 final, modulator, VFO, 1000V power supply, $90. Trade or sell either or both for factory built transmitter of comparable value. Make offer. Phil Morris, KN6ZWP, 22426 Dolorosa St., Woodland Hills, Calif.

FOR Sale: Power supply, 1500, 1250, 1000 v. at 300 Ma. Potted components on 17 x 11 x 4 chassis. $35. Jim Ladd, W8BJO, 592 Markle Ave., Pontiac 16, Mich. Will not ship.

FOR Sale: 75A4, practically new condition, presently surplus at our Laboratory, $525 f.o.b. Asbury Park. Also 83 ft. commercial Aermotor Tower, cost $1200, sale: $550 f.o.b. Asbury Park. Contact Telrex Labs, Asbury Park, N. J. or M. D. Ercolina, W2BDS, RD #1, Asbury Park, N. J.

WANTED: National SW-3 10, 20 meter bandspread coils, series 60A, 61A, also general coverage coils 60-70 series. State price, condition. K4BNI, 224 Norfolk Drive, Warrenton, Va.

FOR Sale: ART-13 xmttr, in fair condx, now on air, 80-40-20 M. band, $75 f.o.b. Oakland. W. Walters, W6PAD, 15724 Paseo Largavista, San Lorenzo, Calif.

FOR Sale: NC-300, matching speaker, National 2 meter converter. No scratch or spot. $300. Factory wired 20A exciter with Eldico 10/20 VFO. $200. K9CJV.

SELL: Heathkit AT-1, VF-1, AR-3, OF-1, Matchbox (WRL). $75 takes all. Will not ship. W3JBJ, 4739 Cedar Ave., Philadelphia, Penn.

VFO Plymouth Tubeless for Gonset six or two, $29.50. WIIY Westford Road, Littleton, Mass. or Evans Radio, Concord, N. H.

VIKING II factory-wired, all modifications, like new condx, $219. K6HAG, 2316 Edith, El Cerrito, Calif.

HAMS! In Central Illinois it's Knox Electronic Supply, Galesburg, Ill.

SELL: Globe Chief, $45; Heath AR-3 in cabinet, $25; RETMA code and Theory course, $7; New Mon-Key, $26. K2UZL, 194 Weimar, Buffalo, N. Y.

FOR Sale: Electron Corp. model 1001 TV camera. Won Ham Day at State Fair of Texas; $495 value. First m.o. for $295. W5ONQ, 1413 Randolph, Garland, Texas.

WANTED: Navy RAL receiver. Augenblick, W3EON, 137 Forge Road, King of Prussia, Pa.

BARGAINS: With New Guarantee: HQ-100C $145.00; HT-20 xmtr. $209.00; Collins 32V3 $495.00; SX-100 $229.00; TBS-50C $69.00; TBS-50D $69.00; APS-50 p.s. $29.50; TBS VFO $35.00; Lysco 382 VFO $19.95; Lysco 600 $69.00; Eldico TR-75TV $25.00; B&W 5100 $299.00; Adventurer $34.50; Knight CW xmtr. $34.50; Gonset #3024 VFO $45.00; Sonar SRT-120P $129.00; Globe Trotter $29.50; Globe King 500A $495.00; Globe King 275 $199.00; Globe King 400B $275.00; Scout 65A $69.00; Scout 65B $75.00; Globe King 400C TVfied $299.00; Globe King 500B $599.00. Free trial, terms, write Leo. W9GFQ for best deals. World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

SELL: BC-348N, 110V AC, extra set new tubes, service manual, exc. condx, speaker, the BC-453 Q5'er included is free. 200 Kc to 18 Mc. continuous. First $50 takes. F.o.b. Moose Lake, Minnesota. R. F. McLeer.

SELL: RMEDB23, 3-813's, QST solid run 1930 1956; TR switch, Mod. 380, 100 Kc xtal, Gonset converter 10-11 Mts. Offers? J. Powell, 150 Yale, Audubon 6, N.J.

MOBILE Complete, 1-AF/67; 1 Gonset Super Six converter, noise clipper 6 volt dynamotor and relay controls. Shure mobile mike Web allband antenna, heavy duty mount, cables, $200. Floyd E. Cummings, Jr. W6OSX 16437 Bixler Ave., Paramount, Calif.

WANTED: Johnson KW Matchbox. W9KYE.

SELL: NC300 xtal calibrator, matching spkr, National 2 and 6 meter converters and cabinet, $385; Hallicrafters SX-100, matching spkr, $225; never station operated due to illness. All gear perfect. Ex/3BUX of 1923. Ken Stroud, C-18, Grip's Trailer Park, Black Horse Pike and Crescent Blvd., Camden 4, N. J.

FOR Sale: QSTs, long runs from 1930's. Misc. copies back to early 1920's. Runs 40¢ per copy and mailing. W4KQM. 5454 South Angela, Memphis, Tenn.

TELREX 15M-56-99 deluxe 3-el. 15 M. beam. Used very little. Condx like new. $50 or best reasonable offer. W5MY, Hot Springs, Ark.

WANTED: Johnson Matchbox for $35. Victor Piche. Gravelbour, Sask. P., Canada.

VARITYPER and two type faces for sale. Excellent mill for bulletin and radio club work. First sixty dollars takes it. Komp, Meridian, N. Y.

WANTED: Coils for HRO-7 or HRO-7R receiver. Tom Ramsay, W4ZMR, Brevard, N. C.

SELL: Viking Valiant factory wired, $385; DX35, $58; VFL, $23; AR-3 with cabinet, $30; SG8, $24; W-3A Hi-Fi amp. & preamp, $65. All above absolutely perf. condx. K2SRO/MM, RFD #1, Millville, N. J.

GONSET Communicator, 2 meters, deluxe model, like new condx, 110-12V. With S meter. Used only 6 months. In original carton, $145 F.o.b. Alexandria, Va. W4DWD, Telephone SOuth 5-6928.

FOR Sale: Gonset Super-Six. In exc. condx: $43.50. Jim Cluba, 2924 Line, Apt. C, Camden, N. J.

SELL: 75A2, good condition, with calib. and manual. $275. Robert Nelson, W9EXG, 927 Madison Street, Evanston, Ill. Tel. DA 8-2783.

FOR Sale: Two ham revrs, 8 and 5 tube jobs. Also 4 watt xmttr, vy cheap. Write VE3EGG, 64 Barrie St., Galt, Ont., Canada.

FOR Sale: 234-258 Mc. test oscillators. $1.50 each; BC-906 frequency meter. $4.00. R4/ARR-2 receiver, $5.95. All with tubes and in gud condx. All for $12.00. Cecil Baumgartner, Box 343, Milton, Pa.

FOR Sale: RME DB-23 preselector, excellent condition. $30. W1DNJ, 38 Whitney Ave., Southington, Conn.

SALE: DX-35, $50; RMEDB 23 Preselector, $30; pair Balun coils mtd., $5.00; NC98 w/spkr, $125. Alvin Berger, 362B Chance St., Ft. Devens, Mass.

INSTRUCTOGRAPH, A.C. 10 tapes, instruction book, oscillator tube installed, 2-way connecting cord, like brand new, $36 complete. Passed General code test. Mannie Teitch, 628 E. 8th St., Brooklyn 18, N. Y. Tel. UL 4-0083.

HRO Receiver, 1.5 to 30 Mc.; 10 m and 40 m. doublets; 50 ft. RG/59-U; five coaxial connectors; Dow-Key antenna relay; Triplette 0-1 RF ammeter; Heathkit Handitester; D-104 microphone with push-to-talk. Will sell separately. Tony Morris, 195 North Beacon St., Hartford 5, Conn.

FOR Sale: QSTs 1935 through 1946, complete. 1947 on, incomplete. You price it. K8GIJ.

TIMES Facsimile transceiver and television camera equipment. R. Delaplane, W8MEP, 2661 Medary Ave., Columbus 2, Ohio.

WANTED: HQ129X in gud condx with matching spkr. Bill Mueller, 10 Dover St., Pittsfield, Mass.

RME-4300, in excellent condx, $145; 2.0 Kc mechanical filter for 75A4, F455J20, $30. Gene Lang, W4FWW, Box 2929 University Station, Gainesville, Fla. Need money for college.

75A2 and CE slicer, combination $325. Window neon sign reading Radio Repairs (value $75-100) for trade. W2ADD

WANTED: 458 Kc xmittr with modulator, 6V, for Civil Air Patrol. K5GPG, 4544 Forest Park Drive, Jackson 6, Miss.

32V2 new condx, new tube checker, commercial battery charger. Send for list. L. Blum, 396 E. Whittier St., Columbus 6, Ohio.

LOW Capacity filament transformers, readily interchangeable coils, hypersil core. Choose either 115 or 230 V. 50/60 cyc. primary; any one CT secondary, 2.5 V.-30 A. or 5.0 V-30 A. o 6.3 V.-20 A or 10 V.-15 A. Check or money order, $14.95 complete. Write for special units; also power supply transformer rewinding. Chenoweth, W8CAE, Engineered Products Co., Springboro, Ohio.

WANTED: BC-1031-A Panadapter. Must be in good operating condition. W9YSM, 75 N. Highway 59, Barrington, Ill.

FOR Sale: Complete mobile outfit. Gon-Set 3-30 PE-103 dynamotor, 75 meter VFO fone transmitter and microphone, complete, $75. You pay shipping at this price. WØIWV, 5945 Estes St., Arvada, Colo.

WANTED: ARRL publication, "How To Become a Radio Amateur" as purchased in 1945. Includes plans for 6L6-83 CW transmitter with antenna tuner. W4ISS, 2643 Hillcrest, Augusta, Georgia.

TRADE: Brand new Hasselblad F-1000 camera with Zeiss Tessar-lens. Wanted: Ham receiver of comparable quality. For details write C. W. Smith, W4EOQ, 2801 Parkwood Dr., Brunswick, Ga.

WALKIE- Talkies, 2, BC-611F with Vibrator supply, $75; Elmac AF-67 with PS-2V and 12 volt supply, $200; Gonset G-66B with 3-way supply, $200; Elmac PMR-6A with AC supply and Central Q-multiplier, $150; 2 FL-8 filters, $5.00; Heath grid-dip, $18; Master Mobile #321 antenna mount with extra gaskets, $5. Will consider offers. W5IEN, 3115 Napoleon Ave., New Orleans, La.

"HAM-AIDS" — Booklet describing over 350 commercial amateur receivers and transmitters, manufactured between 1932 and 1957. An aid for buying or selling or just finding out what the other fellow has. $1.00 to K6PXG, Don Lasswell, 420 West Point Drive, Claremont, Calif.

MOTOR Scooter wanted. Have DX100. Want $180.00; DX 35 want $55.00. Will trade or sell. Have Hallicrafters Skyrider 23 and S11 receivers. Trade or swap. Gilbert Rice, K2KFA, Tel. NI 8-5900. 3043 Voorhies Ave., Brooklyn, N. Y.

SELL: Lettine 240, all coils; Heathkit VFO; both like new. $75 postpaid. 2321 Materhorn, Dallas, Texas.

SELL: Prop pitch motor, converted per CQ article, with 24 volt transformer, mast adapter, pair selsyns, $45; Gonset Six Meter mobile converter, $35; CW3 receiver with book, $25. Richard Vogeley, W2IPB, 554 Seventh Ave., New Hyde Park, N. J.

BAY Area Hams! Must sell: Viking I with Heathkit VFO and antenna coupler, $100 or best offer; NC240D receiver with spkr, $100 or best offer. All in good condition. Frank Hilf, K6PSI, 1079 Lombard, San Francisco 9, Calif.

FOR Sale: 2-meter crystal control converter, W2AZL design. With spare set of tubes and power supply, $65; 522 transmitter in nice cabinet with power supply, $50. Pick them both up for $100. W2EBG, 3 Washington Pl., Crangord, N. J.

WANTED: Ranger with D/K. Write prices to Richard Trevisan, 11280-C Bubb, Cupertino, Calif.

BC1031 Panadaptor, HRO-7 receiver, Meissner signal shifter, RA62 rectifier (for SCR522), BC639 receiver, 100-156 Mc with AC power supply and BC638 frequency meter. BC221 frequency meter, KW modulation xfrmr. Will sell or trade on Gonset G66 or G77. M. D. Haines, W5QCB, 1316 S. W. Military Drive, San Antonio 21, Texas.

WANT: HRO50TI coils and scales E, F, G, H, J, AC, AA, AB. Also calibrator 50XCU2 and S-O-J 3. State condition and lowest price in first letter. M. Marshall, 455 Washington Ave., Dumont, N. J.

CARTER Change-a-Volt dynamotor, 12 volts to 6 volts; output 15 to 45 amps. Almost new, $65; Harvey-Wells kilowatt micro Z match, $70; Gonset DeLuxe clipper-squelcher, new and unused, $20; Gonset Triband converter 3 to 30 Mc., $30; Sherrick antenna coils complete with mount 80-40-20-10, $15. John Cathle, K2PMD, Alexander, Genesee Co., N. Y.

FOR Sale: HQ-129X receiver, $140; SCR522 transmitter, dual power supply, in 12 in. cabinet, motor controlled frequency selector, $40. W2ALM, H. Newman, 91 Falmouth Pl., Albertson, N. Y.

FOR Sale: 10 oil filled condensers 2 μfd 6000 volts, $125.00; also a 701A linear with low capacity filament transformer for $65 less than one-half the parts cost. W9UE, Ben Woodruff, 6140 N. Harding, Chicago 45, Ill.

SLIGHTLY Used guaranteed Elmac 4-125As, $12 each (pair); 2500 volt 400 Ma. power supply with Collins 400 Ma. choke and 6 μfd 4000 volt filter and time delay panel controls mounted in 28 inch deluxe ICA. 28 in. grey cabinet (12¼" panel space for final open), excellent, $75.00; 350 volt 100 Ma. 700 volt 200 Ma. dual power supply, not assembled, $20.00; 325 v. d.c 100 Ma. and 85V. negative 50 Ma. for scan and bias on 5 x 7 chassis complete, $12.50. Cardwell 400 μμfd 3000 volt, $5.00; Hammarlund dual 55 μμfd 7000 volt, $7.00; Weston 3" square 0-50 Ma., $5.00; all items F.o.b. Greensboro, N. C. Neill A. Jennings, W4NWW, 112 Beverly Pl., Greensboro, N. C.

SELL: Motorola FM transmitter-receiver units, $35; RCA-MI-7802 AM receiver units, 27-40 Mc., $8.50; DM34 Dynamotor, $1.50; DM-36 dynamotor, 50¢. Ralph Villers, P. O. Box I, Steubenville, Ohio.

COLLINS 32V3, with spare 4D32, $425.00; B&W 51-S8 generator, $175. Evans, Simsbury, Conn. OL 8-5579. W1DCE.

SELL: DX100, $180; HRO7 with power supply, four bandspread coils and matching speaker, $140; Lysco 600 with Lysco antenna coupler, rewired and bypassed for TVI suppression, $75; SCR522 and dynamotor, $30. W3NCF, 718 Carl, New Kensington, Penna.

DON'T Fail! Check yourself with an up-to-date, time-tested "Sure-check" Test. Novice, $1.50; General, $1.75. Amateur Radio, 1013 Seventh Ave., Worthington, Minn.

FOR Sale: Collins 6KC mechanical filter F455J-60, $35; Gonset 30-40 megacycle F.M. converter, $57; Eldico AT-1 antennascope, $23. All items still in original cartons. A. A. Abraham, W4ODK, 480 Skain Ave., Lexington, Ky.

SALE: National NC-88 revr, $90; Viking Adv., xmttr, $40; Knight VFO, $20; Electro-Voice mercury microphone, $10; 16 Novice xtals, $8; Vibroplex Zephyr bug, $10; 40-meter doublet ant. and 75 ft. of 59/U coaxial cable, $5. Please include money for shipping. K4HQH, 2228 Vaughan Street, South Boston, Va.

WANTED: 220 Mc. transmitter. Richard Light, K2UOY, 610 Riverside Dr., New York City.

SELL: Eldico TR-75-TV5 75 watt xmttr with coils for 15 meters, $50. Also Knight VFO, $20. W9JGV, 8235 Strong St., Chicago 31, Ill.

STATION Sale: HQ-100 w/clock, speaker, 3-el. 15 meter beam, Heathkit VFO, hundreds of miscellaneous parts, unfinished 90 watt phone and c.w. xmittr which need vy little wk for completion. All for $300. Write about this unusual bargain. KØGUP: 4915 East 53rd Terrace North, Kansas City, Missouri.

WANTED: Operating and maintenance manual for Hammarlund model SP-600-JX receiver. William M. Long, 7th ADS, APO 677 NY, N. Y.

INSTALLED mobile in excellent 1954 Chevrolet; Viking trans., VFO, Elmac PRM 6A rec., "Q" multiplier, Bassett all-band VC-1075 coil with whip, $1000 or swap. All replys answered. Henry Bivins, 1220 Judson Ave., Evanston, Ill. DAvis 8-7018.

TOP Quality workmanship equipment construction. Kits, magazine articles or your own dream rig specifications. You get equipment expertly constructed and absolutely debugged with guarantee. Higgins, 1 Enterprise Drive, Brunswick, Maine.

SALE: E-Z Way Tower GP840-45 with driveshaft perfect, $135 (cost $180); TR4 rotator, complete, $20-24 el. two meter beam (4-6 el. yagis) perfectly matched, $30; 45 ft. 50 ohm Spiralfi cable with fittings both ends, $30; 150 watts 2 meters 5894A final, all RF chassis shielded, Parmet cabinet separate VFO and speech, $110; Two meter converter line up similar to "T-Craft" noise fig. 4DB, exc. constrx, complete w/pwr supp., $35. Won't ship. W2UTT, 408 Glen Road, Woodcliff Lake, N. J. PA 6-3026 after 7 P.M.

COMPLETE S.S.B. station for sale. Central 20A exciter, 458 VFO, 1 KW commercial linear final in 6 ft. dolly rack with attached operating table. Spare final tubes. $350 complete. Operating daily from K2MGE or K2HEA. 12 Elm St., Lynbrook, L. I., N. Y. Lynbrook 9-2356. Irv Strauber.

FOR Sale: Complete, operating, amateur station consisting of one B W 5100, one B W 51SB, one Jones MicroMatch, one Johnson Matchbox, one D-104 mike, one Collins 75A4 with 10 and 3 Kc. filters, speaker, one 2400 hour clock, $1,150.00. No trades. Also:one HQ100 receiver with clock, xtal BFO (not installed), $150. Instruction manuals for all. Nothing modified or boogered! Will not crate or ship! Every item is guaranteed in perfect condition. Original cartons for most. Richard B. Diamond, K2DVD, 571 Allenhurst Rd, Buffalo 26, N. Y.

DISTRESS Sale! Need the cash, OMs! For parts or you finish job: (1) partially wired Handbook single 813 500W VFO rig, less PA meter. Looks good; (2) 300W modulator-driver-SA with CVM4 Varimatch xfrmr, 2-811A, SA-driver PS; (3) dual PS 450 M 300, 1500-2100 M 300 (8-49). New quality parts. All assembled. Shielding, panels, etc. Cost approx. $415. Will sacrifice for first $205 check or money order. Crated, F.o.b. Tyer, Texas. Yeary, 1810 Blossom Lane, K5HZG

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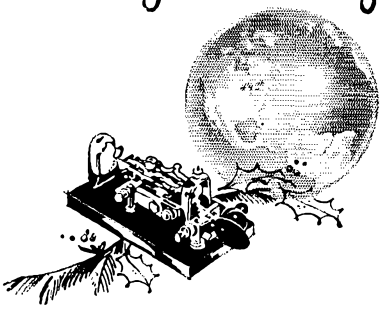
Holiday Greetings *to all our Ham Friends*

the world over...



from the Hams at ALLIED

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ALLIED RADIO *Serving the Amateur Since 1921*

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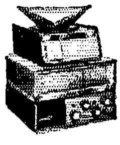
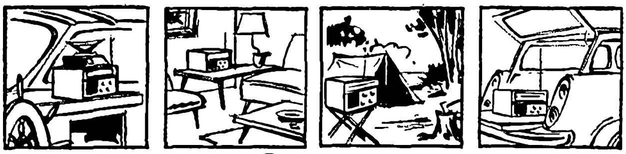
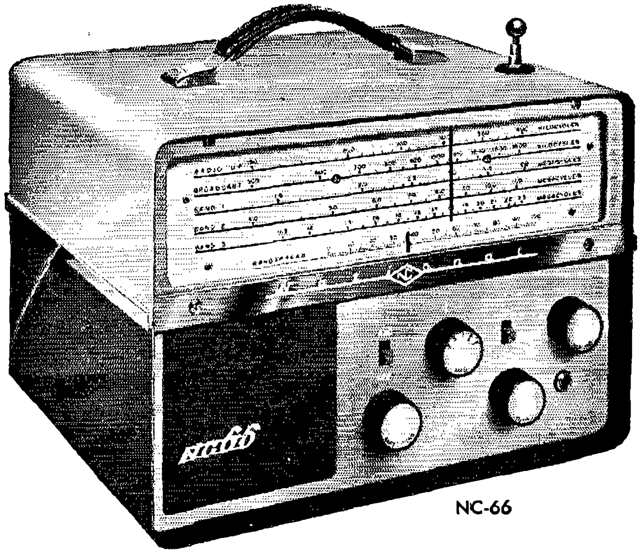


NC-66 is shown with RDF-66 Direction Finder Accessory



PORTABLE RECEIVER

for home and away—indoors and outdoors



NC-66

WORLD'S MOST VERSATILE RECEIVER! . . . a ham receiver, a 3-way portable, a marine receiver, and an SWL receiver.

For home and away—indoors and out.

National's new NC-66 offers you AC/DC-battery operation, five-band coverage from 150 kc to 23 mc, electrical bandspread with logging scale, plus a fixed-tuned CW oscillator. Housed in a handsome, rugged metal cabinet with a carrying handle, National quality is evident throughout this great new portable. You'll find it attractively functional with a long "Full-Vue" slide rule dial, a quality 5″ PM speaker, *and* a phone jack. It also has *two* antennas: whip and loop stick.

For boat owners a special marine band from 150 kc to 400 kc covers maritime DF beacon service. And, of course, CD positions are clearly marked.

FEATURES:

- ★ Continuous coverage of DF beacons, AM broadcast, amateur and world-wide shortwave bands. 150-400 kc, .5 to 23 mc.
- ★ Operates on 115 volt AC or DC or self-contained batteries, or 220 volt AC with accessory adaptor.
- ★ Full electrical bandspread.
- ★ Provisions for external direction finder for marine use.
- ★ Salt spray tested.
- ★ Built-in ferrite loop antenna for DF and BC bands.
- ★ Built-in whip antenna for shortwave bands.
- ★ Receives voice or code. Has CW oscillator; and provision for phones.
- ★ "Full-Vue" slide-rule dial with easy-to-read scale. Amateur and principal shortwave bands as well as CD positions clearly marked.
- ★ Logging scale provided.
- ★ Complete with built in speaker.
- ★ Separate switch for stand-by operation.
- ★ Handsome, modern styling: two-tone metal cabinet, chrome trim, with carrying handle, and enclosed back.

*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

TUNING SYSTEM: Separate general coverage and bandspread tuning capacitors connected in parallel on all bands. Three gang capacitors tune antenna, RF and oscillator circuits. Bandspread knob can be used as a vernier on all frequencies.

AUDIO SYSTEM: Two-stage audio amplifier with 3V4 output tube. Has speaker and phone output jack.

CONTROLS: Main tuning; bandspread; volume control; band selector switch; AM-CW switch; stand-by-off — receive switch.

TUBE COMPLEMENT:

RF	1U4	Audio output	3V4
Converter	1L6	Rectifier	Selenium
CW on-IF Amp.	1U4		
2d Det. — AVC — 1st audio	1U5		

OTHER SPECIFICATIONS:

Antenna input: 50-300 ohms, unbalanced.
Size: 12-5/16″ wide x 9-11/16″ high x 10″ deep (overall).
Finish: two-tone gray.
Shipping weight: 16 lbs. less batteries.
Optional accessories: RDF-66 Loop, 220V. adaptor.

Only $12.95* down
Up to 20 months to pay at most Receiver Distributors.
*Suggested Price: $129.95**
RDF-66 Direction Finder Accessory available at additional cost
**Prices slightly higher west of Rockies and outside U.S.A.

NC-66

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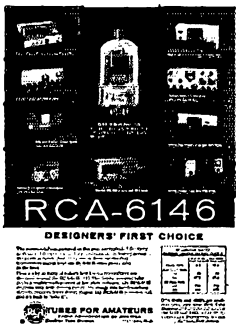

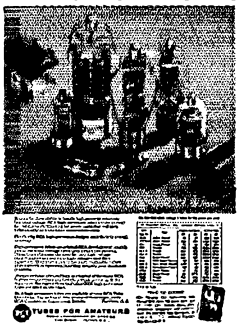

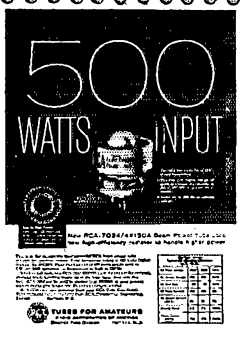

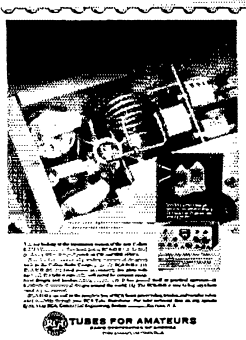

HAPPY HUNTING and Solid QSO's in '58.

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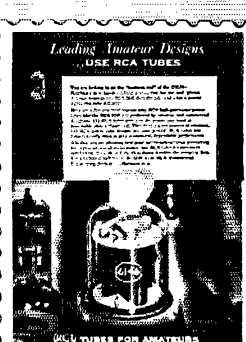
RCA

ELECTRON TUBE DIVISION



RADIO CORPORATION OF AMERICA

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