AUGUST, 1949

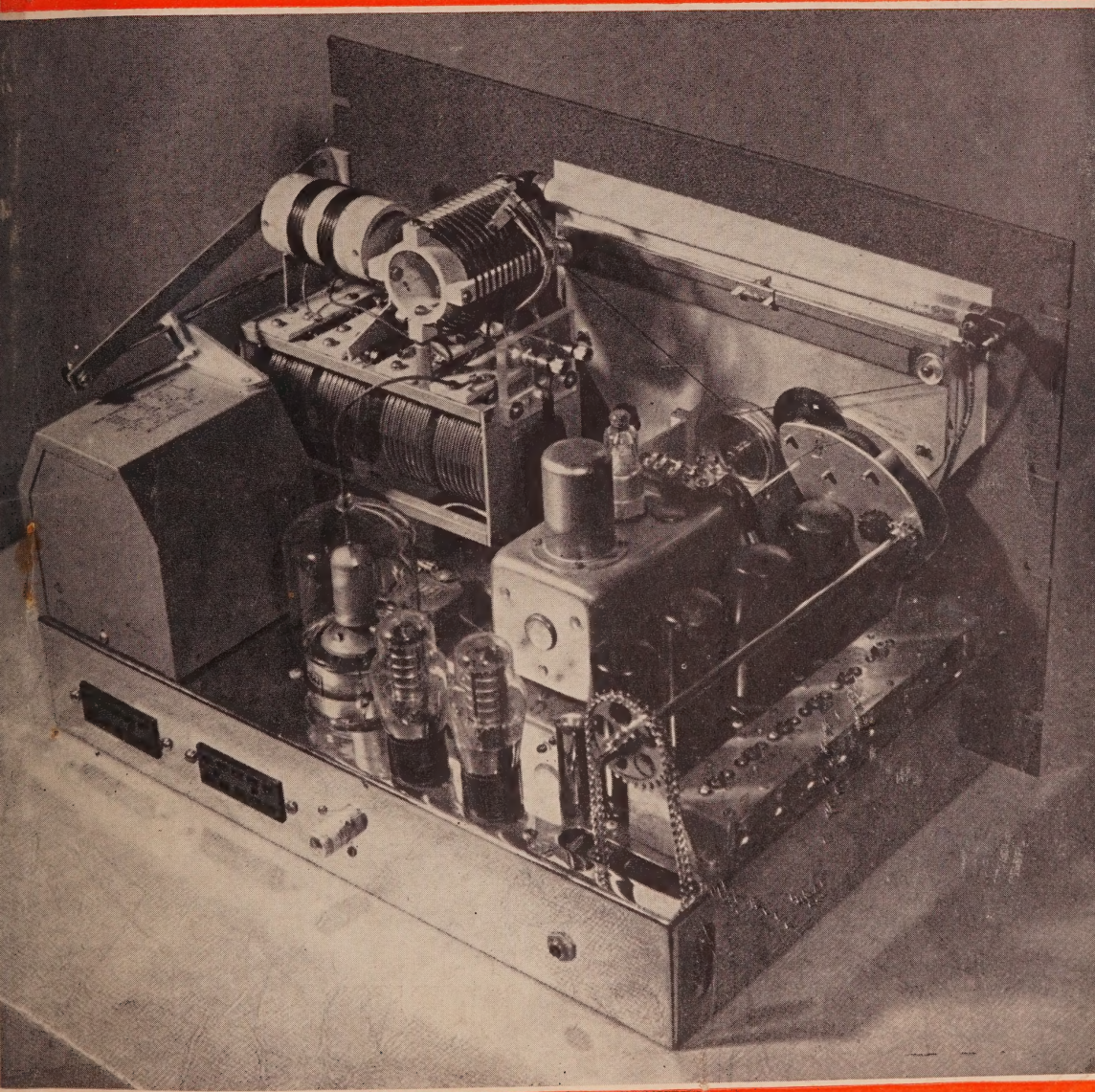
CQ

The Radio Amateurs' Journal

IN THIS ISSUE

- A V.F.O. for the Mobile Rig
- Amateur Scientific Observations
- Modifying the Prop-Pitch Motor
- A "Pint-Sized" Rig & Receiver

THIRTY-FIVE CENTS

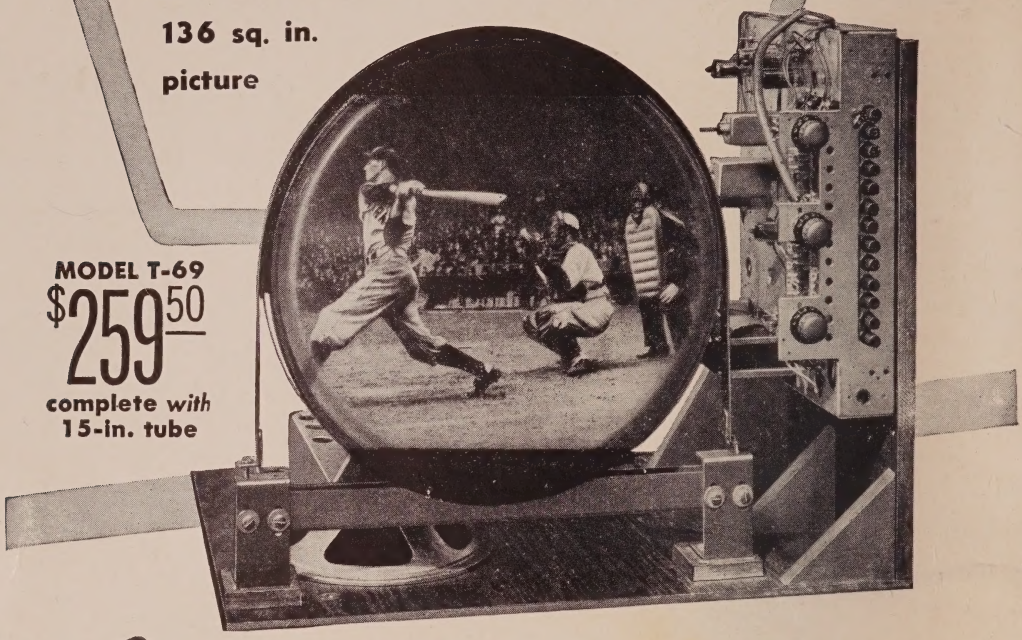


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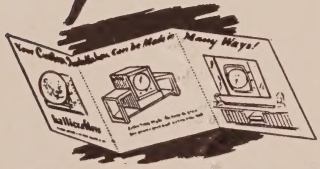
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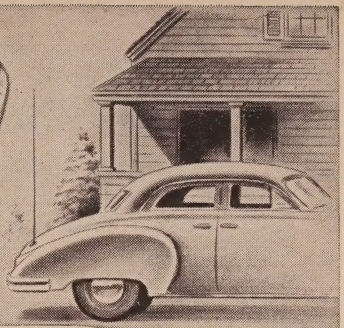
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V-h-f miniature beam power tube

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Filament voltage	6.0 v
current	0.65 amp
Max plate voltage	200 v
Max plate current	60 ma
Max plate input	12 w
Max plate dissipation	6.6 w

IF you were to write your own "specs" for an all-purpose tube for portable-mobile rigs, you'd end up describing the GL-2E30.

Compact—the max over-all height is only 2⅝ inches, which helps keep down transmitter size and weight. The special *6.0-volt filament* checks with your car's battery potential. The tube is versatile . . . it will handle *all stages* of your rig right through to final, where a pair in push-pull, using 200 v on the plate, readily will take 18 w phone input. That's ample power for many pleasant QSO's, or for a message to base camp miles away.

With a frequency range up to 165 mc, the GL-2E30 will operate wide-open on 2 meters; while the instant-heating filament—approximately 2/10 second—means (1) you're on the air as soon as you pick up your mike to talk, and (2) the filament can be turned off during standby periods, with consequent saving in power.

No neutralization is needed, which simplifies GL-2E30's application in your circuit. Here's a beam power miniature jampacked with usable performance! Study the tube, learn its low price, at your G-E tube distributor. Or write *Electronics Department, General Electric Company, Schenectady 5, New York.*

Series 4 in a listing, by areas, of tube distributors who can supply you with Ham News, G. E.'s bi-monthly magazine:

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Chattanooga, Tenn.: Specialty Distributing Co.
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Fort Smith, Ark.: Wise Radio Supply.
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New Orleans, La.: Columbia Radio and Supply Co.; Radio Parts, Inc.
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Shreveport, La.: The Electronics Co., Inc.; Koelemay Sales Co.
Springfield, Mo.: Harry Reed Radio and Supply Co.
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(List as of April 25, 1949)

GL-2E24 GL-2E26 GL-2E30 GL-4D21/4-125A GL-35T GL-100TH GL-203-A GL-211 GL-592
GL-802 GL-803 GL-805 GL-806 GL-807 GL-810 GL-811 GL-812-A GL-813 GL-814 GL-815
GL-826 GL-828 GL-829-B GL-832-A GL-837 GL-838 GL-1613 GL-1614 GL-1619 GL-1623

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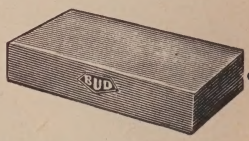
AC-405 - CR-1744 - AC-406 - CR-1728 - AC-407 - CR-1745 - AC-408 - CR-1741 - AC-409 - CR-1740 - AC-411 - CR-1739 -

BUD HAS YOUR NUMBER IN CABINETS AND RACKS

- CR-1743 - AC-402 - CR-1740 - AC-403 - CR-1742 - AC-421 - CR-1739 - AC-404 - CR-1743 - AC-422 - CR-1727 - AC-425

In response to wide spread demand Bud has now augmented its already large line of Deluxe Cabinet Racks and Aluminum Chassis by the addition of several new sizes. The table below lists these new sizes as well as the old ones. Now, more than ever, Bud is able to meet your needs in sheet metal as well as other radio and electronic components.





BUD DELUXE CABINET RACKS

These cabinet racks have rounded corners and attractive red-lined chrome trim. There is a recessed, hinged door on the top with a snap catch. These racks are made of heavy gauge steel and are of sturdy construction. The five large sizes have a hinged rear door, while the small sizes have a welded panel in the rear.

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Catalog No.	Overall Height	Panel Space	Shipping Wt.	Dealer Cost
CR-1741	10 9/16"	8¾"	29 lbs.	$10.05
CR-1740	12 5/16"	10½"	31 lbs.	11.32
CR-1742	14 1/16"	12¼"	32 lbs.	12.25
CR-1739	15 13/16"	14 "	36 lbs.	13.85
CR-1743	19 5/16"	17½"	40 lbs.	16.77
CR-1727	22 13/16"	21 "	45 lbs.	18.00
CR-1744	28 3/16"	26¼"	50 lbs.	19.20
CR-1728	37 1/16"	31½"	55 lbs.	21.20
CR-1745	36 13/16"	35 "	60 lbs.	21.57

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Write for literature on this newest Bud product. Find out how you can get more panel space in less floor area at lower cost.

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The construction and design of these chassis is exactly the same as our steel chassis. The aluminum chassis are welded on government approved spot welders that are the same as used in the welding of aluminum airplane parts. The gauges in table below are aluminum gauges. As a result, you can depend on BUD Aluminum Chassis to do a perfect job. Etched Aluminum finish.

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AC-403	5"	9½"	2"	18	.81
AC-421	5"	9½"	3"	18	.89
AC-404	5"	10"	3"	18	.99
AC-422	5"	13"	3"	18	.98
AC-405	7"	7"	2"	18	.81
AC-406	7"	9"	2"	18	.90
AC-407	7"	11"	2"	18	.96
AC-408	7"	12"	3"	18	1.14
AC-409	7"	13"	2"	18	1.02
AC-411	7"	15"	3"	16	1.68
AC-423	7"	17"	3"	16	1.43
AC-424	8"	12"	3"	16	1.38
AC-425	8"	17"	2"	16	1.52
AC-412	8"	17"	3"	16	1.77
AC-413	10"	12"	3"	16	1.44
AC-414	10"	14"	3"	16	1.92
AC-415	10"	17"	2"	16	1.80
AC-416	10"	17"	3"	16	2.04
AC-426	11"	17"	2"	14	1.89
AC-417	11"	17"	3"	14	2.40
AC-418	12"	17"	3"	14	2.52
AC-419	13"	17"	2"	14	2.25
AC-420	13"	17"	3"	14	2.67
AC-427	10"	17"	4"	14	2.36
AC-428	13"	17"	4"	14	3.05

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The Radio Amateurs' Journal

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Vol. 5 AUGUST, 1949 No. 8

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COVER— The unusual single-dial control all-band transmitter of Don Good, W6EPZ, so replete with features that all of them can't be covered in one article. The first, appearing in September *CQ*, describes a simple method of modulating the Collins PTO unit.

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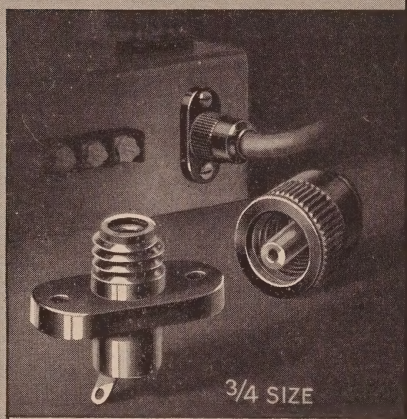
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★ ★ Letters ★ ★

Progress Remains the Answer

51 Pettits Lane, Romford, Essex

Editor, *CQ*:

Regarding the letter from W2IU in the April issue of *CQ*, the statements made are generally true as far as the communication bands (say up to 50 mc) are concerned, but surely the amateurs' opportunities for development and research lie in the 144, 420 and 2300-mc bands.

Only a small proportion of the amateurs in this country are actively engaged in work on the 420 and 2300-mc bands, but the results so far obtained lead us to believe that, with experience and research on the problems involved, these frequencies may be used for purposes, and to an extent, not at present visualised.

R. F. Stevens, G2BVN

880 N. Highland Ave., N.E., Atlanta, Ga.

Editor, *CQ*:

I would like to answer the letter by W2IU printed in April *CQ*. He decries the lack of technical advancement made by "ham" radio in recent years and seemingly in the present and, I suppose, future.

In the few years since I became interested in ham radio, and in the fewer since I joined the ranks, I have heard the game both cursed and praised. The "progress or die" adage is very apt. In fact, ham radio stands a good chance of "progressing" itself into oblivion. With every advancement has come another cut in the frequencies available for amateur use. For the purpose of this letter, however, that is beside the point.

W2IU seems to seek a solution to the question of "Why amateur radio is not advancing?"

The only answer will be to lower the power input to the final regulation and to enforce it. Less than a mile from me there is a cool kilowatt. He hangs out on twenty 'phone and covers over 100 kc on an SX 25 receiver with a DB 22A in front of it. On ten his harmonic over five miles away reads better than an S9. When a station like that works twenty he puts better than half of the 1000 hams in this town off the air for all practical purposes. He blanks out TV for miles around and who gets the credit for it The rest of the hams do. I do not think that he is unusual. I expect that half your readers know a ham just like him. Has he contributed anything to ham radio? Not in the least. But make him lower his power to 500 watts. Then instead of clearing the bands by the shock method he will have to work for his bread like the rest of the poor devils that he QRMs off the air. He will get to work on his antenna, his modulator and who knows, may even end up trying out single-side band. There is no future in my spending money and time working on SSB or antennas or anything else because when he blanks out the band what good will they do me?

William T. Clark, W4IZM

121 Sherman Ave., Staten Island, N.Y.

Editor, *CQ*:

It has long been argued that too many amateurs don't experiment enough and that others don't even bother to construct their own equipment but buy ready-made receivers and transmitters. There is a

(*Continued on page 67*)

PICK YOUR SPOTS!



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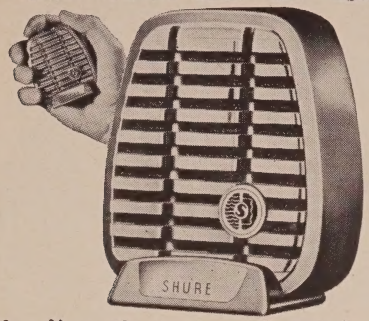
There's a tough winter ahead. All bands—phone and CW—will be screaming with signals. QRM is due for a new high! If you want to enjoy your radio, get set to move on spot frequencies with PR Precision CRYSTALS. PR has made it easy to select the spots you want—for all bands. This summer hundreds of PR Jobbers were supplied with new VISUAL DISPLAY CASES, stocked with all frequencies available to amateurs . . . and kept up to date! This means you can walk into your favorite jobber's store and get PRs for the EXACT FREQUENCIES (INTEGRAL KILOCYCLE) YOU WANT WITHIN AMATEUR BANDS AT NO EXTRA COST . . . NO PREMIUM . . . NO "PLUS OR MINUS" THE SPOT YOU WANT. If you buy your radio gear at a distance . . . your jobber can supply PRs at exact frequencies by return mail. Get set . . . go PR and KNOW WHERE YOU ARE!—Petersen Radio Company, Inc., 2800 W. Broadway, Council Bluffs, Iowa. (Telephone 2760)

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40, 80 & 160 METERS PR Type Z-2.	Rugged, low drift fundamental oscillators. High activity and power output with maximum crystal currents. Accurate calibration . . $2.75

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MODEL	CABLE	OUTPUT LEVEL	IM-PEDANCE	SHPG. WEIGHT	CODE	LIST PRICE
510C	7 ft.	52.5 db below 1 volt per microbar	High	1½ lb.	RUTUF	$12.95
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710S (with switch)	7 ft.	50 db below 1 volt per microbar	High	1½ lb.	RUDET	$12.00

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Deer Hon. Ed:

In case you have not been heering Scratchi on the air reently let me rushing to assure you that it is not because I have broken Hon. Leg or because I have become unwittingly dummy load for high voltage power supply. No, Hon. Ed., nothing like that. Matter of factly, it are now summer in Arizona, and that are meaning that it are reely hot.

Are you liking turkish bath? If so, you are having gold-plated invitation to visit my Hon. Ham Shack, where you are getting 1/c turkish bath in nothing flat. I are even having to remove thermometers from ham shack and putting in ice box to keeping them from reading S-9 plus-seddy plus.

You are not believing it, Hon. Ed., but I could be having sooper qso just by applying plate voltage to rig, without bothering with filament voltage, an acct. tubes are hot enough to emitting all by themselves.

Only thing around here now what are reely cool are the cacticusses, and they cool on acct. they all full of cactus juice. Which are reminding me, my glass are almost empty. Excoosing me. . . .

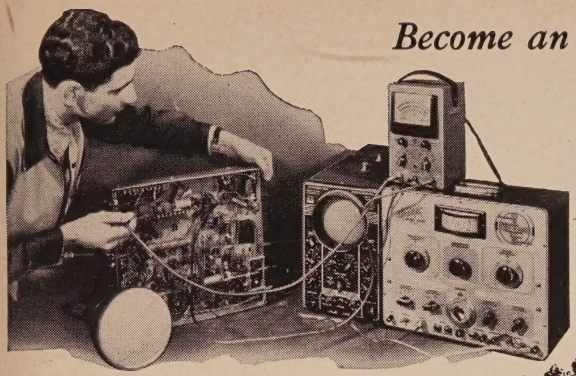
Now, to resuming, Scratchi are not wanting to waste his sooper genius just sitting around all summer on his brother Itchi's ranch, so I are getting red-hots idea. Hon. Ed., there are lots of gadgets that hams are needing like fury, and nobody is inventing them. That's where Scratchi rush into breach. I can inventing these things in my spare time.

Taking for example transformers. Most transformers are too big. When ham building high voltage power supply he are putting transformer on chassis and whoosh—no room left for toobs or chokes. What we are needing is small transformer with big ratings. Also needing audio transformers with no loss. Like when building speech amplifier which are giving good outputs from toobs, but output from transformer are way down. Now Scratchi are being able to invent lossless transformers as easy as any other kind.

Volt-ohmmeters are big problem too. Half the time when you use them they are on the wrong scale. Net result are need'e which are pointing east instead of west. Are you knowing any hams who having volt-ohmmeters that don't have bent pointers? No—there you are, seeing how much this Scratchi invention is needed? I will arranging something to put in series with leads so that no matter what circuit are being measured, meter pointer staying on scale. Isn't that a reel slicky?

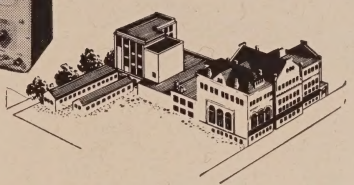
I are even thinking up gadget for see-w hams. When finishing qso you are plugging it into keying jack and it are automatically sending tiddle-de-bump-de-bump. Scratchi are also trying to figure out gadget for phone men, to plugging

(Continued on page 66)



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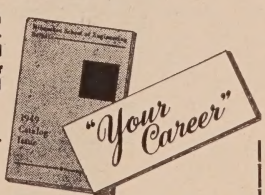
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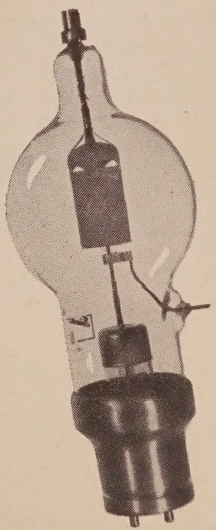
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EDITORIAL

SINCE THE resumption of amateur radio operation following the second great World War, amateur radio as a hobby and each participant as an individual has been forced to answer the question, "What are we doing to justify our existence . . . . our right to valuable frequency space?" In the columns of this publication, and all others with the interest of the hams at heart, there have been thousands of words written about the importance of the amateur justifying his right to operate. There have been excuses made as to why, in general, this has not been so since the war. Many of the reasons advanced have been logical, but few of them added up to constructive programs which would give the ham the means for survival.

As we have emphatically pointed out in many previous editorials, the greatly accelerated pace of wartime research performed by industrial, military and scientific laboratories of the country, accomplished perhaps two or three decades of scientific progress in four or five years. As a result they badly outpaced the individual amateur. There is no use in denying that insofar as circuit development is concerned, and even new equipment development, we cannot look for too much progress from the home experimenter.

But where the war stressed practical application, many fields of the more abstract sciences have been left far behind. Here the need is to resolve theoretical concepts with observed phenomena. Measurements and observations obtained during the war were found to be of little value and in most cases only served to scratch the surface. Today there is a definite need for competent observations of various effects in the very high frequency radio spectrum. Such observations are needed to fill in many gaps in the theoretical basis of radio wave propagation. The number of observations needed is far greater than the facilities of even the well organized government research establishments can provide. This is the one opening that the radio amateur can fill. Observations by amateurs when properly gathered, screened and tabulated are very likely to prove one of the most valuable instruments that our scientists have at hand.The possible results cover a wide variety of fields, including dynamic meteorology, rocket aeronautics, MUF predictions, astronomy and many others.

In this issue, *CQ* is honored to announce details of its non-profit Radio Amateur Scientific Observation project being conducted under the sponsorship of the Electromagnetic Propagation Laboratory, Cambridge Field Station, USAF. The technical details of the project are given in that write-up, but since it is possible that many amateurs not too interested in very high frequency operation might overlook it, we want to urgently call your attention to that story. It details a solid accomplishment which has already done a tremendous amount of good for amateur radio. Leading scientific organizations, government agencies, schools and individuals have been unanimous in their outstanding praise of the work being done by *radio amateurs*. Bear in mind that it is amateurs who are getting the credit for this project. *CQ* is the instrument for bringing the work of the hams to the attention of these distinguished scientists, but at all times we are making certain that it is the individual participant, the radio amateur, whose work is getting the recognition. It does not take a scholar to realize the importance of this project to ham radio and we believe that it is just the first of many that can be undertaken in the field of propagation by, what we modestly think, are the finest communication experts in the world, the radio amateurs.

Interest in the first sporadic-E study is widespread throughout the world and for the first time certain foreign governments who have never had very much regard for amateurs are seeing that the ham can make an important contribution that far outweighs the inconvenience that their government may have to suffer in granting amateurs frequencies to operate on. Foreign governments are beginning to realize that because of the very nature of the hobby, they must broaden their thinking to include not only their own handful of licensed hams but the tens of thousands in the United States.

We do not suggest that every amateur in the United States start to operate on 6 or 2, or even 1¼ meters, but what we do urge is that they support actively any project which makes use of available free time on frequencies on which they now are operating.

Response initially to *CQ*'s first project has been tremendous. There is no question that the will to survive is there! Now for the first time since the war important new tools to do it are being provided!

—*W2IOP*



Announcing the New 32V-2 and 35C-1 Low-pass Filter

The new Collins 32V-2 amateur transmitter is actually the 32V-1 with added features and refinements, which include:

1. Both fine and coarse antenna loading controls operated by a single dial on the front panel.

2. Trap circuits to attenuate spurious emissions of the multiplier stages.

3. A tune-operate switch on the front panel.

4. A coaxial antenna terminal at rear.

5. A harmonic attenuating L output network added to the single ended pi.

The net domestic price of the Collins 32V-2 is $575 at your dealer's. Through your dealer, you can have your 32V-1 factory converted to 32V-2 for $100.

The new Collins 35C-1 50 ohm three-section low-pass filter, with approximately 0.2 db insertion loss below 29.7 mc, provides approximately 80 db attenuation of harmonic emissions at the television frequencies. This high attenuation is added to that already provided in your present transmitter regardless of model.

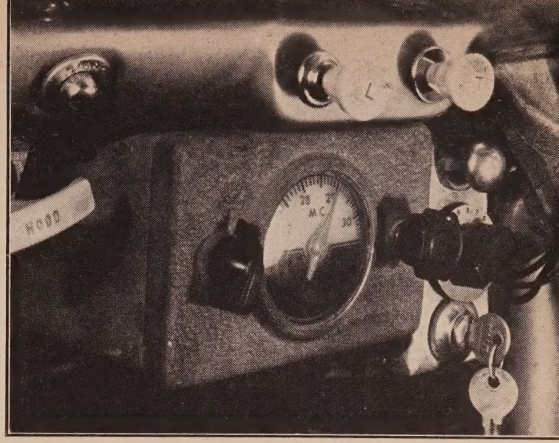
The net domestic price of the Collins 35C-1 low-pass filter is $40 at your dealer's.

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V.f.o. fits adjacent to Gon-Set converter, occupying negligible amount of automobile dashboard space.

JACK GRIMES, W4LLR*

A V.F.O. for the Mobile Rig

Consistent return to calls is the immediate result of flexible frequency control when mobile.

MOBILE OPERATION enthusiasts soon develop almost infinite patience, patience born out of many calls for a single QSO. Like the weather, they all talk about doing something about it, but never quite seem to work up the necessary ambition. Those hardy amateurs who are turning in ever increasing numbers to mobile operation soon learn that the surest way to make a QSO is to call only loud signals mighty close to your own operating frequency. Add to this requirement the handicap of low power and small antennas and you soon see why percentage-wise mobile work can become discouraging.

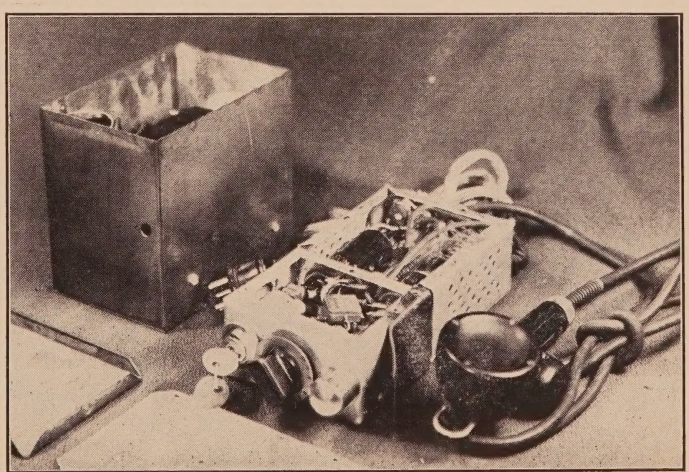
The obvious answer to this problem is the use of a variable frequency oscillator. But the apparent problems arising from a v.f.o. with the necessary stability, both mechanically and electrically, has generally discouraged even the most adventurous constructor. Out of sheer exasperation, after having had to stop in a gas station and telephone one of the locals to lend an ear to W4LLR/mobile, we decided to take the plunge. The result is this v.f.o. for mobile operation.

Our technical library is fairly complete and free recourse was made to literature in the field. But this is one topic notable for its lack of coverage. We consulted with numerous amateurs, none of whom could supply us with circuits or advice. Almost to a man they were skeptical and derided the possibility of a v.f.o. simple enough and stable enough to do the job.

A Basic Design

It was decided that the v.f.o would be a one-tube arrangement with enough output to drive a 7-mc crystal stage. It would have provision for

*c/o Henderson Gas Appliance Co.
227 N. Main St., Henderson, Ky.



Complete v.f.o. for mobile operation which includes integral transmitter control and vibrator power supply for v.f.o.

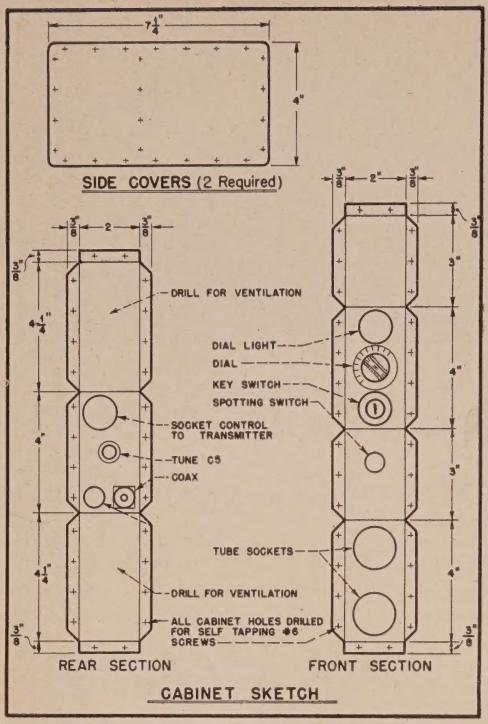


Fig. 1. Cabinet for the v.f.o. constructed from discarded aluminum transcription discs.

frequency spotting and the v.f.o. would become the control box for the transmitter, eliminating one gadget under the automobile dashboard.

Frequency spotting dictated the use of a separate power supply and stability demanded voltage regulation. For reasons of battery economy a 6K6-GT/G powered by a self-rectifying vibrator supply, was chosen. An OZ4 with a standard vibrator may be used with equal results. In order to obtain maximum power output only the screen voltage is regulated. The screen dropping resistor is located in the power pack to minimize heat in the v.f.o.

The cabinet is made from sheet aluminum obtained from old transcription discs from the local broadcast station and formed as shown in *Fig. 1*. Note that the physical size and shape of the cabinet was designed to fit beside a Gon-Set converter in this installation, but it may be modified for any mechanical layout.

The oscillator is straightforward in every way. The grid circuit is high C with the variable tuning condenser tapped down on the coil to give the desired bandspread. Fixed padding condenser C_3 brings the frequency range down to approximately 7 mc. The grid coil is tapped every half turn and the tuning condenser, C_1, and padding condenser C_2 are adjusted experimentally across the taps to cover the ten meter band from only 28,525 to 29,675 kc. All frequency checks must be made with the side panels in place. This is the only critical adjustment in the construction of the v.f.o.

The coil turns must be cemented in place after final adjustments. The plate coil is low C and tuned to the center of the band. The output is link coupled to the transmitter, in the trunk, through 15 feet of RG-8/U coax. This feeds to the crystal stage as shown in *Fig. 2*. Control switch SW_1 is an ignition type key switch available at auto supply stores and prevents the transmitter from being operated by unauthorized persons.

Make Lock Nuts Work

Needless to say, use lockwashers under every nut and screw. Make all connections tight. Remember, what "works" at home won't necessarily in a mobile installation. The v.f.o. may be mounted in any convenient manner and will vary on different cars. We used a "one-point" suspension since this type gives somewhat of a shock mounted effect.

The frequency spectrum you will be able to cover without retuning the transmitter will depend

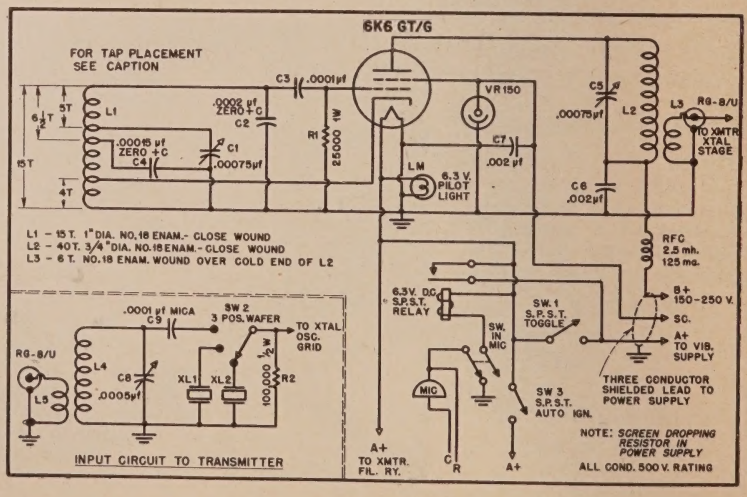
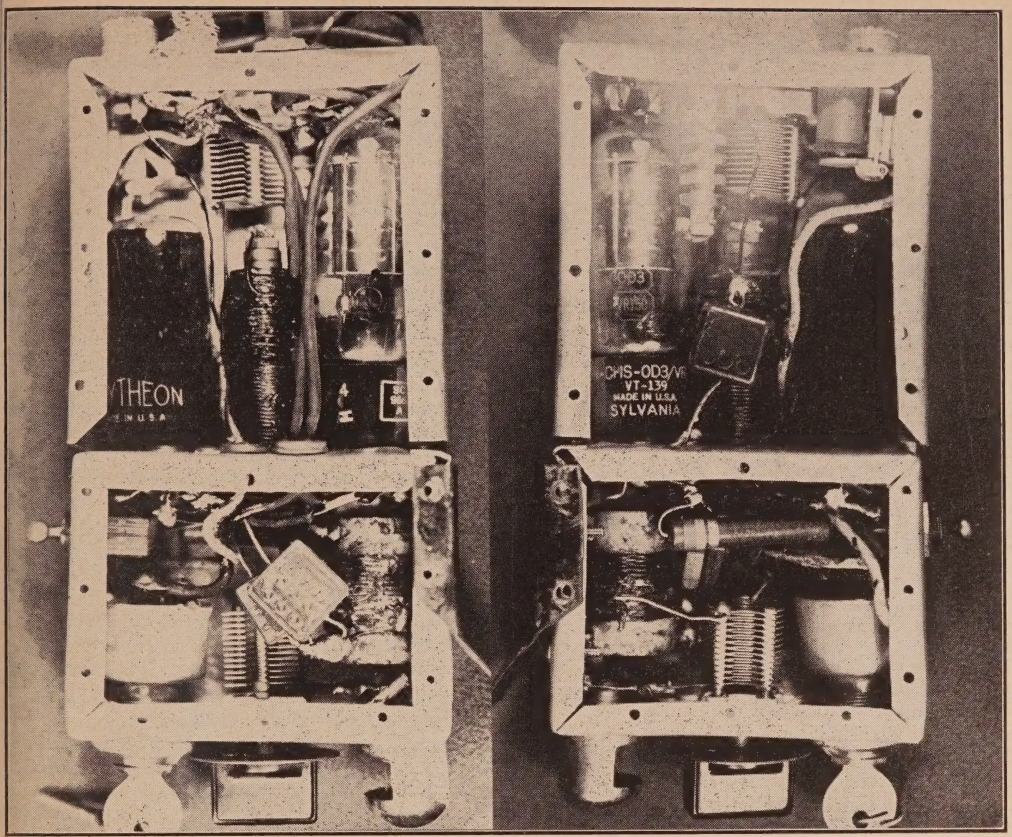


Fig. 2. Circuit diagram of the v.f.o. and input circuit to crystal controlled transmitter. Since there is no bandset condenser taps on L1 for C1 and C4 it must be determined experimentally if typical figures given are not satisfactory. Tap on C4 determines bandset, tap on C1 determines bandspread.



Left: Side view of v.f.o. Although a tight squeeze for all components there is no tendency toward excessive heating. Right: Opposite side of v.f.o. showing placement of other major components. Cabinet dimensions may be enlarged at builder's convenience. Toggle switch is for frequency spotting.

on the individual transmitter. Ours will cover the entire 10-meter phone band without retuning. In actual operation this unit has far exceeded our fondest hopes. Working out, when crystal controlled, was an event. Now we are able to work almost as high a percentage of contacts when mobile as from the home QTH. The v.f.o. has been in operation for over a year and has been surprisingly trouble-free.

We realize that there are probably basic improvements that can be made in our unit, but not only does this break the ice, it is a workable model that is performing yeoman service at our station. Once you have used a variable frequency oscillator while working mobile the entire complexion of the operation changes. More contacts are, of course, possible; locals can be worked with regularity, and you can avoid "hot spots" when the band is open. A mobile v.f.o. is a wiser investment than an increase of power, which has been the tendency in recent months. Try it and you'll agree it is as important to your rig as the steering wheel in the old jallopy.

COIL TABLE

L1 15 turns #18 enam. close wound, 1" dia. form. Cathode tap 4 turns from ground end. Tap for C1 5 turns from high end. Tap for C4 6½ turns from high end. Taps for C1 and C4 must be determined experimentally since any changes in cabinet construction or coil location will affect frequency. (See text).

L2 40 turns close wound. #18 enam. ¾ dia. wound on lucite feed-through insulator.

L3 6 turns #18 enam. wound over cold end of L2.

L4 25 turns on 1¼" dia. form. #18 enam. close wound.

L5 4 turns wound over cold end L4.

Postscripts

Hams Assist in Mock Battle

During the recent maneuvers carried out by Second Army reservists in Western Pennsylvania, ham radio assisted by handling communications for the defenders against a mythical enemy. From the control station in Pittsburgh, relays linked Greensburg, Beaver Falls, Uniontown, Butler. Washington, Altoona and Erie.

Tone Modulating the BC -221

JOHN E. PITTS, JR., W6CQK*

A modification increasing the versatility of a popular surplus unit.

MANY HAMS who have purchased the BC-221 series of frequency meters have desired to incorporate some method of modulating the variable oscillator to use the instrument as a signal generator, and also to permit easy identification of its signal when spotting a receiver in the crowded ham bands.

After spending a hard-earned $2.50 at a radio supply house for an assortment of items supposed to make a modulator for the frequency meter, and after spending several hours trying to get the thing to work, that approach was given up. The following circuit was then incorporated in the BC-221, which provides sufficient modulation to easily identify the signal on a receiver permitting its use as a signal generator at least through 54 mc, which is as far as it has been tested. Besides it allows partial control of the frequency of modulation and complete control of the percentage of modulation by adjustment of the GAIN control on the front panel.

The only parts required are three condensers—two 0.01 μf, one of them preferably mica, one .002-μf mica, and one SPST toggle switch. The modification will be described for the BC-221-J model, since this seems to be the most common type available on the surplus market. The same circuit will work equally well on several of the other models checked.

A single tie point is mounted under the chassis secured by one of the screw heads which holds the 6A7 tube clamp in position. The 0.01-μf paper condenser (*C1*) is mounted between this point and *pin 3*, the screen grid lead, of the 6A7 socket. A double tie point is mounted under the head of one of the screws which holds the oscillator condenser compartment shield in place. This screw is close to the large grommet on the left-hand side of the chassis (viewed from the rear with the chassis in an inverted position). On this double tie point is mounted the 0.01-μf mica condenser (*C2*).

Modification Procedure

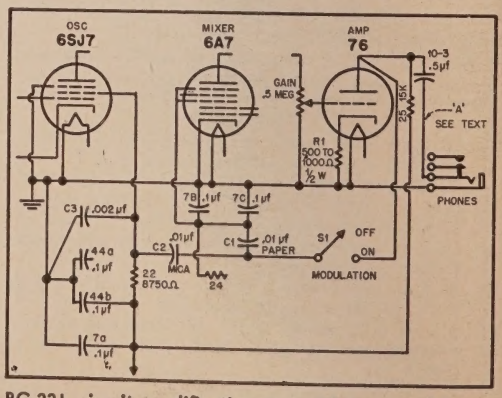
Remove the 6A7 mixer tube from its socket by loosening the clamp holding the base of the tube. Now very carefully, in order not to damage the low frequency oscillator coil (part No. 17), remove the wire connected to the terminal of condenser *44a*, which is the lead from the 8750-ohm screen grid dropping resistor and the screen grid pin on the variable frequency oscillator socket. If the leads of *C3* are cut off to a length of about ½" the condenser will be self-supporting and require no additional support. Solder one lead of the .002-μf mica condenser (*C3*) to the "C" or ground terminal of condensers *44a* and *44b*. To the other lead of *C3* solder the wire removed from condenser *44a* and also solder a 7" length of push-back wire and run it through the grommet near the condenser. Since this condenser now forms the screen grid bypass circuit of the v.f.o. it is important that it be capable of as little vibration as possible.

The toggle switch *S1* is mounted in the upper left-hand corner of the front panel. The ½" mounting hole is centered 1¾ inches down from the top of the panel and 1½ inches in from the left-hand edge. This lines the switch up with the CORRECTOR control on the right side and brings it in line vertically with the PHONE jacks below it.

The other end of the 7" lead from *C3* is connected to one side of *C2*, mounted on the double tie point. The other side of *C2* is connected to the lead from *C1* on the single tie point. A lead is also run from this single tie point to one contact of the SPST toggle switch. The other contact of the toggle switch is connected to *pin 2* of the 76 socket, the plate lead of the 76 amplifier. The last two leads mentioned, from the switch contacts, should be dressed neatly into the corners of the chassis, and where practicable should follow the cabling already in place.

In order to permit operation of the BC-221 on an a-c filament supply the cathode of the 76 amplifier should be removed from its connection to *pin 5* of the 76 socket and connected to ground

(*Continued on page 69*)



BC-221 circuit modifications to add tone modulator.

P.O. Box 846, Woodland, Calif.

The Good Housekeeping Approach to Station Design

WALTER A. BRAUER, W2LFY*

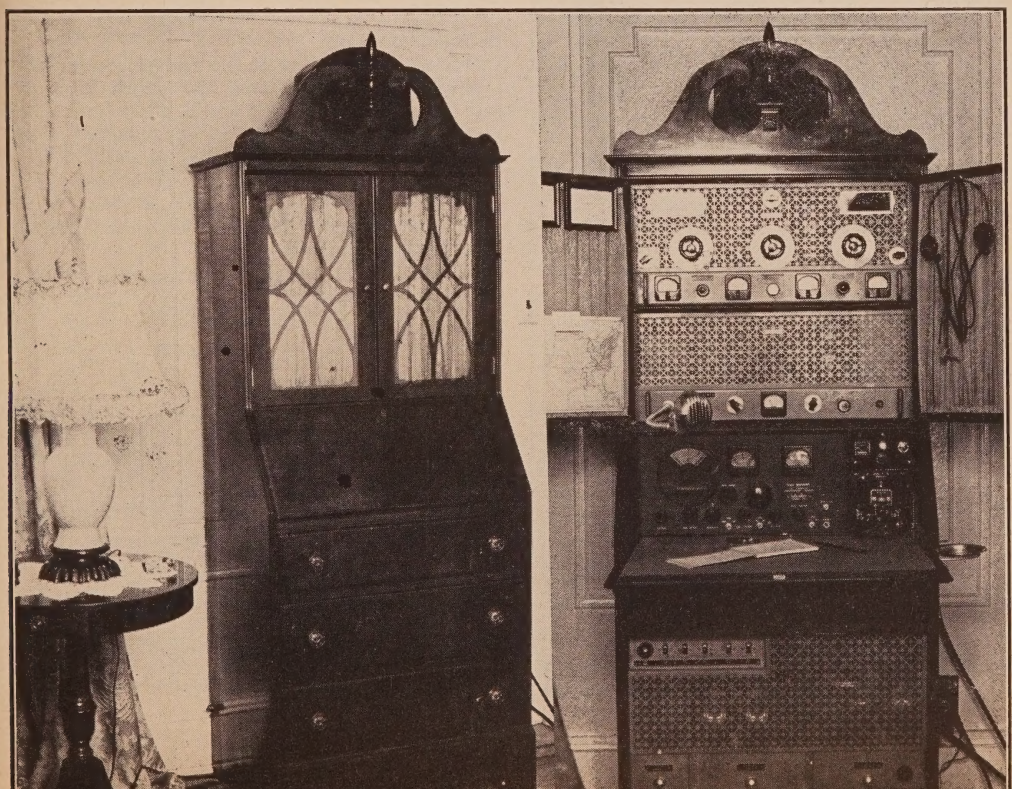
Superior station design and sound furniture have been combined into a station so replete with ideas as to inspire anyone faced with space limitations.

W2LFY IS ONE of the hundreds of hams living in a three-room apartment, with no basement, attic or spare room for a shack. This leaves only the living room as a possible location for the station equipment. In the average home the XYL is lord and master of the arrangement of furniture and the overall appearance of the home. With this in mind we suggested using the secretary desk in the living room. After much discussion and promises to the XYL not to ruin the desk, and that no ham "junk" would mar the orderliness of the room, we went to work. The photos show the result of our efforts. This description is not presented as a construction article, but is intended to show how a completely self-contained amateur radio station can be installed in a setting harmonious with any room.

*194-30 112th Ave., Hollis, L.I., N.Y.

All components, except the antenna system, are housed in a walnut finished cabinet, mounted on suitable rubber-wheeled castors. The desk was modified to accommodate the special chassis and equipments. A false back was provided for wire cabling and other essential parts. The lower two drawers were removed providing space for the high-voltage power supply equipment and the two drawer fronts were reassembled to make a removable front panel, while the top drawer was retained for log books, stationery, etc. The entire wooden cabinet is lined with copper screen for shielding

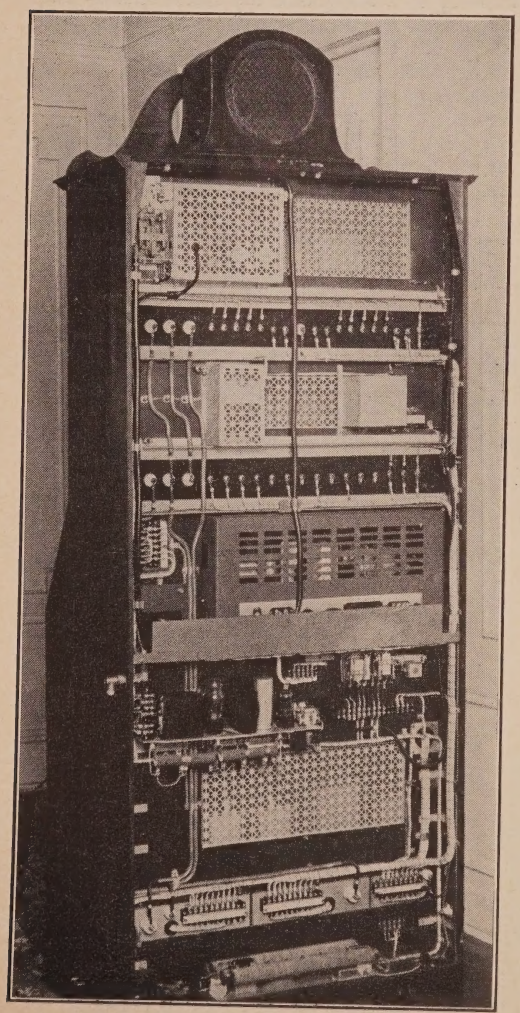
A complete 400-watt phone and c.w. transmitter, receiving equipment, and all auxiliary controls mounted in a secretary type desk. With the doors closed there is no indication that it serves any unusual function. Modifications to the cabinet require no extensive renovating of the furniture.



purposes and suitable aluminum angle braces were installed to reinforce the cabinet. All the chassis were constructed to fit the available space exactly and are of 14 gauge steel with welded corners. Each chassis is of the plug-in type and may be easily withdrawn from the cabinet for servicing or band change. All external connections are made by means of banana plugs at the rear of the chassis, mating with plug jacks mounted on bakelite and ceramic strips set in the back of the cabinet.

Radio Frequency Unit

The uppermost chassis contains the r.f. portion of the equipment and is designed for 10 and 20-meter operation. Band change is accomplished by plug-in coils. The unit is comprised of a 6AG7 crystal oscillator with eleven manually selected crystal positions. Plate voltage on the oscillator and 807 buffer-doubler is regulated by means of VR-150 tubes. Normally, the buffer stage is keyed for c.w. operation with provision for simultaneous keying of the oscillator when break-in operation is desired. Output from the buffer stage is capacitively coupled to a single-ended plate-neutralized 813 r.f. amplifier. This coupling capacitor is variable from the front panel and controls the excitation to the final Class-C 813 power amplifier. This final stage is capable of 400 watts input for A_1 and 300 watts input for A_3 emission. Plate modulation with simultaneous screen modulation is automatically provided when the speech equipment is turned on. Suitable fixed bias is applied to both the buffer and final stages from a multiple bias power supply located at the rear of the cabinet.



The self-contained station viewed from the rear. All of the inter-unit wiring is laced, cabled and firmly secured to the cabinet. The high voltage leads are individual lead-covered 5000-volt cables, while all other wiring has flame-proof insulation rated at 600 volts and is of suitable size copper for the particular circuit in which it is used.

Each of the four meters is individually illuminated by means of a "Lucite" rod which carries light from the indicating lamps between the meters to the dial faces of the meters. The meters are as follows, from left to right: Buffer grid current, buffer plate current, final grid current, and final plate current.

The indicating lamps are: left, "filaments on"; center, "oscillator and buffer plate voltage on," and right, "high voltage on."

Modulator Unit

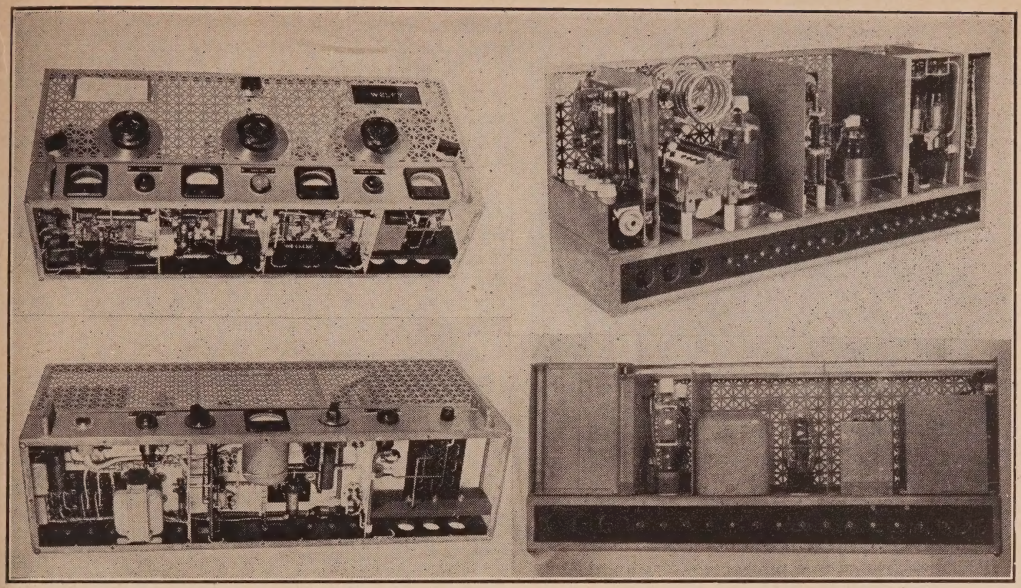
The speech amplifier and Class-B 811 modulator chassis is below the r.f. unit and contains the speech amplifier power supply and all the components, except the modulator power supply. A conventional speech amplifier is used, consisting of a 6SJ7 into a 6N7 phase inverter into a Class A pushpull 2A3 stage, all resistance coupled. An audio gain control is provided on the front panel. A crystal microphone is employed and an extension microphone cable is provided with push-to-talk facility when "easy-chair" operation, anywhere in the room, is desired.

Operating Controls

Located to the right of the Hallicrafter SX-25 receiver and mounted above the Millen R-9er is the "Operating Control" panel. Directly in the center of this panel is a "Test" push-button. This push-button energizes the crystal oscillator in the transmitter and is used to accurately align the band-set dial of the receiver to a particular crystal frequency. Below the "Test" button is a keying jack for c.w. operation.

To the left of the test button a small red-handled toggle switch is located. This switch is the "Master Transmit-Receive" control and when thrown to the transmit position the following functions are performed, through a series of auxiliary relays: The receiver is disabled, the coaxial antenna relay is energized connecting the antenna to the transmitter, while the main primary relay applies power to the high voltage plate transformers, placing the transmitter on the air.

To the right of the test button is placed the beam



Top. R.F. deck including voltage regulators for oscillator and buffer-doubler. The control at the upper center varies 813 excitation. Other controls, from left to right are: crystal selector, oscillator tank capacitor, buffer tank tuning, final tank tuning, and variable output link. Bottom. Modulator and speech amplifier deck. Controls from left to right are: microphone and push-to-talk cable receptacle, speech amplifier indicator, speech amplifier power supply control switch, modulator cathode current meter, audio gain control, modulator plate voltage indicator, and panel type fuse for speech amplifier.

antenna control. This control is a four-pole double-throw snap switch with a center or neutral "off" position, and controls the beam rotator for clockwise or counter-clockwise rotation.

In front of the receiver and set flush with the desk top is the Selsyn operated beam indicator. The indicator consists of a small compass dial with pointer set in a two-inch round meter case. The meter case is secured to the Selsyn receiver.

The lower section of the cabinet contains the power supply equipment and the "Main Primary Control" panel. This panel contains a main line indicator light and five double-pole single-throw heavy-duty toggle switches. These switches are so connected that only the proper sequence of power can be applied. It is impossible to apply high voltage until the filaments have reached operating temperature.

The left switch, next to the Main Line Indicator, marked "Trans. Filament," applies filament voltage to the r.f. tubes, the low-voltage rectifier tube and the 2000-volt rectifier tubes. This switch simultaneously applies power to the bias power supply, energizes the 2000-volt plate time-delay relay and supplies the necessary power for the various auxiliary relays in the control circuits.

The next switch marked "600 V. Plate" applies power to the low-voltage power supply plate transformer through a main line contactor controlled by the "Master Transmit-Receive" switch.

The third switch marked "2000 V. Plate" applies power to the 2000-volt power supply plate transformer through the main line contactor.

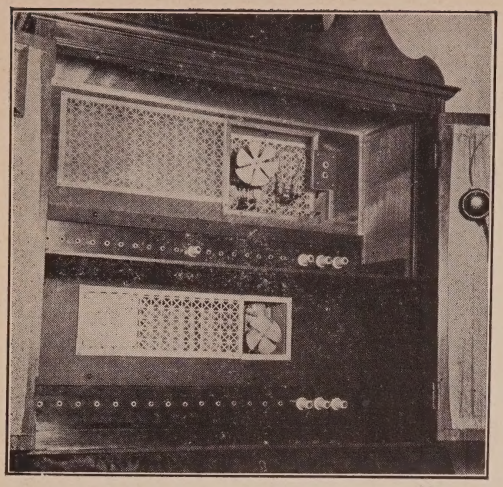
With the above mentioned three switches placed in the "on" position, the equipment is now set-up for c.w. operation and all operations are controlled by the "Master Transmit-Receive" switch.

For phone operation, switch number four marked "Speech Amp." is placed in the "on" position. This switch performs the following functions: Applies power to the speech amplifier, energizes the modulator tube filaments and the modulator high-voltage rectifier tube filaments. Three relays also are activated; one relay shorts out the key circuit, while the other, a high-voltage relay, opens the shorting contacts across the modulation transformer secondary winding. At the same time, this relay removes the fixed 400-volt screen voltage from the 813 screen and inserts a screen dropping resistor between the modulated high voltage plate supply and the screen of the 813. This arrangement provides simultaneous plate and screen modulation. The third relay is a time-delay relay with its contacts in series with the primary of the high-voltage plate transformer in the modulator power supply.

The fifth and last switch marked "1500 V. Plate" applies power to the 1500-volt power supply plate transformer through the main line contactor.

With all five switches placed in the "on" position, all necessary functions are performed to set up the equipment for phone operation. The single "Master Transmit-Receive" switch now controls all operations for transmitting or receiving.

An additional feature of this equipment permits the use of an extension cord on the Turner 33X microphone for remote operation. A small switch



R.F. and modulator decks with equipment removed. Notice the complete shielding against TVI. Plugs on the back of the chassis fit into the individual jacks. Fans provide additional ventilation.

installed at the side of the microphone activates an auxiliary relay which in turn performs the same functions as the manually operated "Master Transmit-Receive" switch.

Power Supplies

Below the "Primary Control Panel" are the three power supply chassis. Each of the rectifier tube sockets are recessed in the chassis top and supported by ceramic standoffs for additional high voltage insulation. Each primary circuit is individually fused.

The chassis at the left is the low-voltage power supply using an 83 rectifier. This unit supplies all



Power supplies with front ventilation louvre removed. Individual controls and lamps are provided for the 600-volt, 1500-volt, and 2000-volt units. A full description of the switching sequence is contained in the text.

filament, screen and plate voltages for the crystal oscillator and the buffer-doubler stages.

The center power supply uses 866 rectifiers in a conventional full-wave circuit. This provides the plate voltage for the 811 modulator tubes. The filament transformer for the modulator tubes also is located in this chassis.

At the right is the high-voltage power supply for the power amplifier tube. This supply also uses 866 rectifiers and is capable of supplying a maximum of 2000 volts d.c. at 300 ma. A fixed 400-volt tap is provided for the 813 screen voltage when operating c.w. A high-voltage self-restoring overcurrent relay also is provided.

Miscellaneous Components

Facing the rear of the cabinet, located at the upper left corner, is the coaxial antenna relay. Next to this relay is the air chamber and mounting for an air circulating fan. Because of the compact arrangement of components in the PA section, it was found necessary to use some form of forced ventilation. Adjoining the air chamber is an open grill work panel which provides ventilation for the oscillator and buffer stages.

Below this grill work is a black linen laminated bakelite strip on which banana plug jacks are mounted. These plug jacks are accurately aligned with the banana plugs on the rear of the r.f. unit and provide a means of electrical connections between the r.f. unit and the inter-unit wiring.

Another open grill section is placed behind the modulator unit for ventilation purposes. A portion of this grill is recessed behind the 811 tubes and contains another small air circulating fan.

The small box-like section at the right end of the grill contains a small 3" tweeter type speaker which may be used in place of the large 10" PM speaker at the top of the cabinet.

Beneath this grill is another bakelite strip containing banana plug jacks. This strip provides the same facility for the modulator chassis as the strip above does for the r.f. unit.

To the left of the receiver a small terminal strip is provided for electrical connections to the "Operating Control" panel.

Directly below is the bias power supply. An 80 rectifier tube is used in a standard full-wave circuit. The output is fed to a 6X5 tube connected to provide two isolated bias voltages, one for the 807 buffer and one for the 813 power amplifier. A 5000-ohm relay coil is used as a bleeder on the bias supply. The contacts on this relay are so wired in the high-voltage control circuit to act as a safety interlock switch, preventing operation of the equipment should the bias supply fail.

To the right of the bias supply, two of the auxiliary relays and an interconnecting terminal strip are mounted on the rear panel. It might be mentioned at this point that all relays, with the exception of the main line contactor, are operated at 70 volts d.c. supplied from small selenium rectifiers. This insures quiet operation of all the relays. One of the above mentioned relays is used for disabling

(*Continued on page 72*)

Radio Amateur Scientific Observations

Contributions to scientific research fully credited to amateur radio as a means of perpetuating the hobby, is the motivating force behind this non-profit CQ activity.

FOR WELL OVER one year, the staff of *CQ* magazine has been giving serious thought to the future of amateur radio. All of us, at one time or another, have been told that being an amateur radio operator is a privilege and is something that must be earned. Unfortunately, once earning the privilege does not ensure its continuance for years to come. Instead, the desirability of allowing amateur radio to continue is always under scrutiny. This surveillance has been much greater in the postwar years and it is for the benefit of many radio amateurs that a few have exerted considerable effort to cast the hobby in a favorable light. The public and emergency services performed by radio amateurs are well known. In addition, the international aspects of the art should always be borne in mind, and only within the past few years have the experimental circuitry developments of amateur radio lagged behind the commercial laboratories. But expansion of any of these was not the problem facing this staff. Rather, how could amateur radio most benefit the present scientific trends in adjacent fields?

A study showed that the collaboration between "Vince" Dawson, WØZJB, our V.H.F. Editor, and "Perry" Ferrell, our Assistant Editor, in the field of radio wave propagation above 50.0 mc had uncovered several distinct phenomena. It was felt that if sufficiently accurate data were at hand we would find that the surface has only been scratched. As a result, several informal talks were held with various Governmental laboratories which might be interested in following up the suggested line of research. At the same time (i.e. last summer) a test run of the proposed 50-mc project was made. The response, although not as great as had been expected, was nevertheless large enough to definitely warrant a full-scale project, provided more amateurs cooperated. Believing in the intrinsic good judgment of a very large majority of the amateurs, this organization began negotiations with the Watson Laboratories, Air Material Command, U.S.A.F., for the purposes of obtaining a cost-reinbursement non-profit contract to supply certain radio amateur observations to the Geophysical Research Division of the Watson Laboratories.

The program as outlined in the negotiations was for Radio Magazines, Inc., to establish a separate section within its business organization, and to carry forth a project of collecting Radio Amateur Scientific Observations. The *Scientific Observations* section would be directed by Mr. Ferrell and would initially collect suitable data on the prevalence, distribution and intensity of radio signals propagated by means of sporadic-E ionized clouds, or by other means. Also, the *Scientific Observations* section would screen all data to insure their accuracy and reliability for use in further scientific investigations. Working on this basis, negotiations were completed and a formal contract for services and data was signed between the Government of the United States of America and Radio Magazines, Inc., on May 26, 1949.

By arbitrary definition, scientific observations in this project would consist for the present time of any and all reports of reception of radio signals above 50.0 mc and beyond the limit of the Tropospheric Wave. Thus, no special tests or equipment are required in this project. The 6-meter band is ideally situated in the radio spectum to detect and observe certain forms of sporadic-E ionization. Also, the most consistently active 6-meter operators are individuals who have been fascinated by the peculiar openings and opportunity to work DX under pretty much unpredicta-

(*Continued on page 68*)

Observers as of June 27, 1949

KH6PP

VE1QZ

VE3AAJ, AGB, AJS, ANY, ATB, AXT, BYZ, DDT, YY.

VE5NC

VE7AEZ, CN, OE

W1ATP, BWJ, CGY, CGX, CLH, CLS, DEO, DGV, DJ, EIO, GJO, GJZ, GHZ, HIL, HMS, JQA, KEX, KHL, LSN, MEP, MPO, OIR, QXE, RDA.

W2ADA, BAY, COT, GYV, IDZ, LAL, MEU, ORA, PWP, RLV, RUA, SYR.

W3CIR, CUB, FWO, GUF, HC, IZL, JVI, KEM, KKN, KXI, MFY, MQU, MXW, NKM, NSI, OJU, PCB, RUE.

W4AVT, BEN, BSS, CDC, CNK, COS, CPZ, CVQ, DRZ, EID, ENL, EQM, FBJ, FI, FLW, FNR, FQI, FWH, GMP, GYO, HBE, HHK, HVT, IUJ, KIP, KKU, KYW, LEC, LNB, LNG, LVA, MS, NEE, OVT, QN, RBK, WMI.

W5AJG, ATJ, BAJ, BFA, BHO, CXS, DFU, EKU, ELL, FFM, FRM, FSC, GNQ, GTP, HKI, HLD, HVP, IRP, IVU, JBW, JLY, JNG, JTI, KSW, KXO, LF, LIU, LWG, MAW, MJD, ML, MXI, NHD, NLP, NS, ONS, PFC, PFD, PKX, UW, VV, VWU, WX, ZZF.

W6AMD, ANN, BLZ, CAN, DQY, EIB, ERE, FFF, FPV, IWS, JRM, NAT, NAW, PSQ, PUZ, QUK, SFL, SUK, TMI, UOV, WNN.

W7ACD, DYD, ERA, FDJ, FGG, FIV, FLQ, GBI, GCS, HEA, ILL, JPA, JRG, JXC, KOP, LLO, MWQ, OWX, QAP, QLZ, QNC.

W8CMS, DGG, EP, FAZ, LBH, NBM, NQD, NSS, RDZ, TDJ, TOB, UZ, WSE, YLS.

W9ALU, AQQ, BIQ, GWL, HGE, KAJ, LMX, MBL, NJT, PK, QKM, QUV, RQM, UIA, UNS, VZP, ZBK ZHL.

WØBJV, BPL, CJS, DER, DNW, GSW, IFB, INI, IPI, IZF, JHS, JON, JRP, KRZ, KYF, LQW, MVG, PKD, QDH, QIN, SHW, SII, TKX, UEL, URQ, VMY, YXS, ZJB.

XE1GE, QE.

SWL's — Stan Horton

A Quick Change of Pace for the

DICK SAUNDERS, W6MUO*

The prop-pitch motor is the foundation unit for a perfect beam rotator.

A FEW MONTHS ago one of the popular prop-pitch changing motors was obtained from surplus and plans were made to use this unit as an antenna rotating mechanism. As is well known, the motor is extremely rugged and there was little doubt that it could be made to support and rotate a heavy 10-20 dual beam.

Testing the motor brought several difficulties to light. Practically all of them, however, were the direct result of the unfavorably high gear reduction ratio between the motor and the beam itself. These prop-pitch motors are geared down to 9576 to 1 in normal operation. With the rated 24 volts applied (using a.c. for convenience) the output speed was considerably below 1 r.p.m. In the author's case, it was necessary to increase the applied voltage to slightly more than 30 volts before the beam would rotate at a near satisfactory speed. The disadvantages of using this higher voltage are that the motor now turns over almost 10,000 r.p.m. and makes enough racket to be heard several backyards away, particularly on a quiet night when you are in a DX-ing mood, and the neighbors are in the mood for peaceful sleep. Secondly, the excessive sparking at the brushes is sufficient to create quite a hash in the receiver.

At this stage of the game the prop motor was taken apart. As had been expected, the solution of the problem of inadequate rotation speed was to eliminate one of the gear reductions within the gear housing. This article describes in detail the process of making this alteration. Once completed your beam motor will rotate about 1 r.p.m. with only 9 volts a.c. applied. The chances are that you will scarcely hear the motor running when twenty feet away. Also, since the motor will just loaf along at about 1000 r.p.m. it will be as cool as a cucumber.

1430 Randall Court Los Angeles 31, Calif.

Disassembling

The original unit, as purchased, contains a magnetic brake, cam-operated limit switches, and a limiting stop, all of which should be removed before applying any a.c. voltage. It will be found that the gears are immersed in several cups of gear lubricant[1] which must be drained out. Merely remove the oil drain plug which is shown as *A* in *Fig. 1* and invert the whole unit over a clean container. At this time, also take off the limit stop plug *B* with a wrench and discard.

To remove the magnetic brake, the thin aluminum shell protecting the motor is taken off and the holding-nut on the motor shaft is removed with a wrench. The locking-lug located on the top edge of the motor assembly is removed next. Then the notched ring *C* in *Fig. 2* can be unscrewed by forcing it counter-clockwise with a hammer and screwdriver. This part may also be discarded. Now take out the composition braking ring *D* and the toothed wheel *E* and discard.

The next step is to remove the three nuts just below the lower brake plate *F* in *Fig. 2*. You may then remove and discard this plate. This will expose the magnetic brake coil which is connected between the two brass terminal screws *G*. This coil is of no use[2] and the two screws should be shorted. Depending on the quantity of your am-

1 I did not anticipate this with the first motor I took apart and so found an oily liquid leaking out all over the work bench and floor. It is much simpler to drain the casing and strain the liquid through a clean piece of cloth. Unless the motor has had considerable use, the liquid should be fairly clean. The lubricant does not smell like common motor oil and it probably would not be advisable to substitute motor oil when reassembling the motor and gear housing.

2 If you wish, the brake coil may be removed with a little digging into the wire. On some models, the coil is wound with enameled wire and in others it is wound with flat copper ribbon. This ribbon makes excellent connecting leads for transmitting tubes.

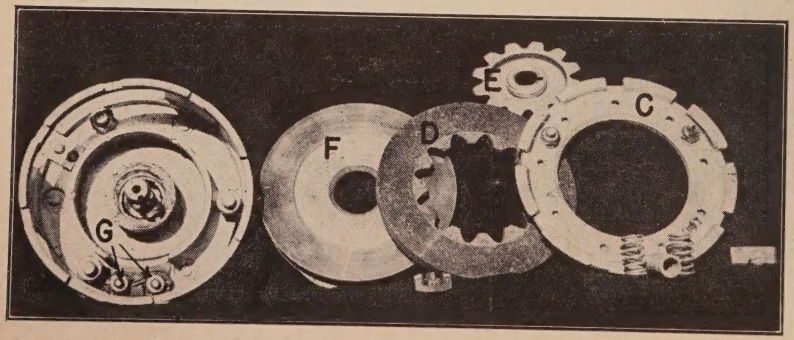


Fig. 2. Notched ring C, braking ring D, and toothed wheel E are discarded. Three nuts below brake plate F are unscrewed, allowing the plate to be removed. Terminal screws G are then shorted as shown. Photographs courtesy Harold Mandroian, W6RLX.

Prop-Pitch Motor

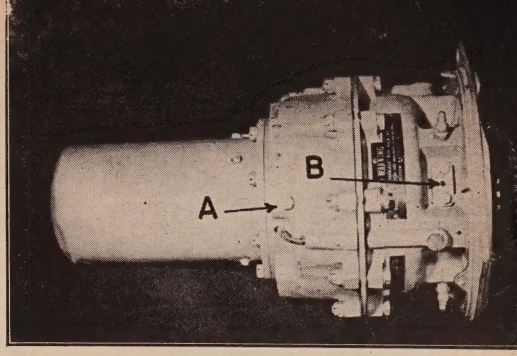


Fig. 1. Original prop-pitch motor. Indicated are oil drain plug, A, and limit stop plug, B.

bition, the motor armature may be removed and the six carbon brushes checked for wear. Taking out the armature is accomplished by removing the three collar-nuts visible in *Fig. 2,* and the brass nuts on the terminal screws. This will free the end bearing plate and permit extraction of the armature. After checking the condition of the brushes and the commutator, it is a good idea to bypass the six brushes.[3] The ring attaching the motor to the cast aluminum gear housing is removed and the motor pulled free. The author used six 0.01-μf Hy-Kaps soldered between the brush holders and the motor casing. One word of caution —be sure to arrange the condensers in such a manner that they will not be crushed when the motor is again attached to the gear housing.

Note that the four terminal plugs on the motor are labeled, *P, Q, R,* and *S* by the manufacturer. Wires *R* and *S* will permit reversal of the motor when using *P* as the common. The wire lead to plug *Q* can be clipped off since it is not to be used.

The Gear Reduction

As shown in *Fig. 3,* first remove the wire retaining ring *H,* then the bevel gear *I* and the steel mounting plate *J.* To remove the plugs *K* rotate the motor until the slotted heads of the plugs are visible through the hole where the stop *B* had been located. Now unless you want to learn the hard way, turn your screwdriver clockwise, instead of counter-clockwise, and the two plugs will move in and fall into the cup. Further rotation of the motor will expose two smaller screws which should be removed, but kept for the reassembly process.

The unnecessary hardware comprising the cam-operated limit switches is now removed and discarded. The wires *P, Q, R,* and *S* should be disconnected from the limit switch terminals and pulled free by removing the small screws imbedded within the four wax-filled holes on the outside of the gear housing.

Now separate the two halves of the gear housing by removing the nine bolts around the casing. This may be slightly messy, so don't do it on the living room rug. The idea is to do away with the gear reduction between the differential gear *L* in *Fig. 4* and the bell gear *M.* These gears will then be bolted together so that they turn as a unit.

Push the bell gear *M* out of the top casting. You will now be able to see that we must disengage the internal gear teeth of *M* from the step gears of the differential *L.* These internal teeth must be cut away so that only the cup remains. Possibly this could be done with a hacksaw, provided you are well supplied with patience, sharp blades, and files. A better idea is to chuck this gear in a metal turning lathe as shown in *Fig. 5.* Do not cut too close to the cup, since a small shoulder is going to be necessary as a thrust surface against the ball-bearing retaining ring in the gear housing. You will find it considerably easier to cut with the lathe turning over at its lowest back-geared speed, although it may be necessary to resharpen the cutting tool several times.[4]

3 "Suppression of Electrical Noise from Propeller Pitch-Changing Motors", C. C. Miller, QST, November, 1948, page 65.

4 Some machine shops may say that the gear will need to be annealed before cutting. This is not the case. I am informed by Harold Mandroian, W6RLX, 707 S. Findlay, Los Angeles 22, Calif., that he will do all the necessary cutting, drilling and tapping for $3.50, if sent the bell gear and the differential gear postpaid.

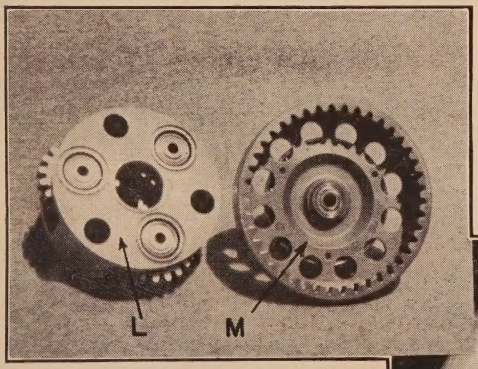


Fig. 3. (right). Retaining ring H is removed, followed by bevel gear I and steel mounting plate J. Plugs K are accessible for removal through discarded plug B mounting hole.

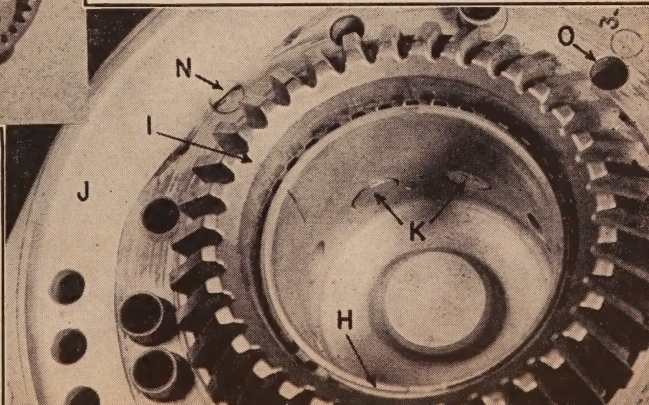


Fig. 4. (above). Differential gear L and bell gear M are modified to form single integral unit instead of two independently operating components.

The next step is to remove the differential gear *L* and its two ball bearing races. This is done by unscrewing the nut on the rotating spindle. To keep the spindle, which is an extension of the armature shaft, from turning push a screw driver through one of the three large holes in the differential. Allow the tip of the screwdriver to fall into one of the holes which will be seen in the small bell gear below. The gears will then be jammed and the nut can be easily removed from the spindle. When this operation is completed the differential gear must be drilled and tapped for six ¼-20 screws which will secure it to the cut down bell gear *M*. Once removed, you will find it convenient to place one of the ball bearings halfway into the small cup of the bell gear as pictured in *Fig. 4*, and then allow the other half to slide into the cup of the differential gear. This will permit the two gears to remain in proper position with less chance of a misalignment. Then six holes are carefully drilled through both gears as shown in *Fig. 6*.

Use a #7 drill and go through both gears in one operation to ensure perfect alignment. Redrill the holes in the bell gear to pass a ¼-20 bolt and then tap those in the casing of the differential gear for the same bolt. The casing is aluminum and the tap should not run completely down the hole. This will allow the bolt to tighten itself into place. Care must be taken to see that the bolts are not too long, otherwise their tips will touch the steel gears. The author used cadmium plated steel bolts ⅞" long with a round head.

Reassembling

The unit is now ready to be reassembled. Be certain that all parts are clean and free of metal shavings and chips. If possible, blow out the metal shavings using a high pressure air hose. Place the differential gear back in its original position over the rotating spindle, then place the first ball bearing in its position. Originally a small air space existed between the bell and differential gears. However, when the bell gear is bolted to the differential, it will become necessary to allow the differential to be pulled up as the six holding bolts are tightened down. To make this possible, leave out the second, or top, ball bearing and the nut that formerly screwed down over this bearing. Note in *Fig. 6* that this means that the ball bearing seen in the bell gear is discarded, using only the ball bearing seen in the differential gear. Do not be concerned about discarding this bearing as the spindle still has suitable bearings at each end.

With the exception of plugs *K* and the heavy metal band that was held in place by these plugs, push the modified bell gear back into its aluminum housing. Discard the plugs *K* and the metal band. Next fit the two halves of the gear housing together and bolt them. If the gasket looks to be in poor shape, swab it with gasket cement and this will prevent it from leaking at a later date. Using the six ¼-20 bolts, pass them through the six holes in the cup of the bell gear and into the tapped holes of the differential gear. Place ¼" lock washers under the heads. Tighten these bolts down as you would the lug nuts on an automobile wheel, or so that the differential gear is drawn up evenly and comes to rest against the bottom of the bell gear. Finally, reattach the steel mounting plate and the bevel gear. Do not place too much confidence in the three small flat-head screws *N* (see *Fig. 3*) which attach the steel mounting plate to the rest of the prop motor. If you intend to support your motor by the mounting plate, be sure to first run a half dozen ⅝" bolts into the holes provided at *O*, thus securing the plate to the housing.

Moisture condensation may cause some water to collect in the cup of the bell gear and leak around the six ¼-20 bolts into the gear housing. To prevent this, obtain some roofing mastic cement, such as used by roofers to prevent leaks around metal pipe vents. Spread the mastic liberally around the screw heads within the cup of the bell gear. If this layer is made about a quarter-inch thick the cup will be waterproof. Now refill the gear housing with the original lubricant.

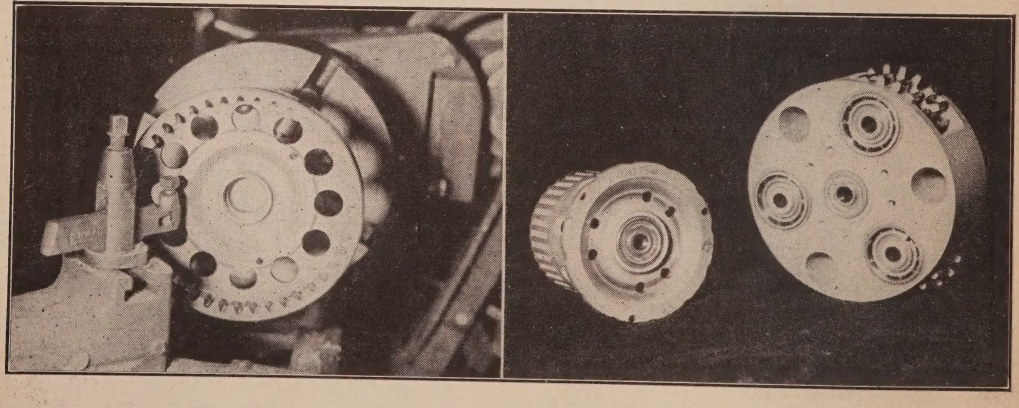
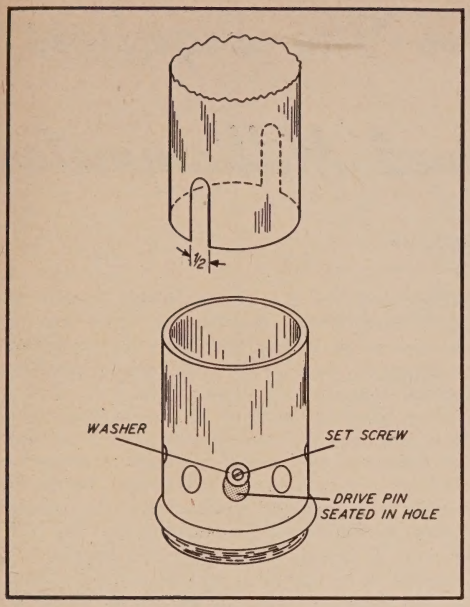


Fig. 5 (left). Lathe operation done by the author to cut away undesired internal gear teeth. Fig. 6 (right). Six drilled and tapped holes permit fastening the differential gear L to the cut down bell gear M.



Supporting the Beam

Now that the motor has been reassembled a few words about how to best support the beam may be apropos. This is a variation of the method described by W2CVV.[5] First secure a tube or pipe with a 2¾" O.D.[6] and a ¼" steel plate about one-foot square. This plate can be welded to the top of the tubing for the support of the beam. However, do not allow the weight of the beam to rest directly onto the bottom of the cup, as there is no thrust bearing at this point. Instead, the weight should rest on the bevel gear.

To couple the torque of the motor to the supporting tube pass a ½" diameter steel pin through the cup of the bell gear. The two holes already provided in the cup may be used. This work is best done when the gears have been disassembled. First, push the drive or support tube into the cup as far as it will go and then using a ½" drill, drill into the wall of the tube using one of the holes in the side of the cup as a template. Repeat the drilling operation from the opposite side of the cup. Now withdraw the tube and using a hacksaw cut two ½" wide notches in the end of the tube (see *Fig. 7*).

Slip a ½" diameter drive pin through the opposite holes in the cup and cut the pin off flush on both outer sides of the cup. To keep the pin from sliding out, drill and tap the ends for a machine screw. Use a lock washer and a flat washer and this will keep the pin from sliding out. Now again push the tube down into the cup, allowing the notches to slip over the drive pin. Push the tube all the way down as far as it will go and then withdraw it about ⅛". This will allow the drive pin to supply torque to the tube, but at the same time the pin is not made to support the weight of the beam.

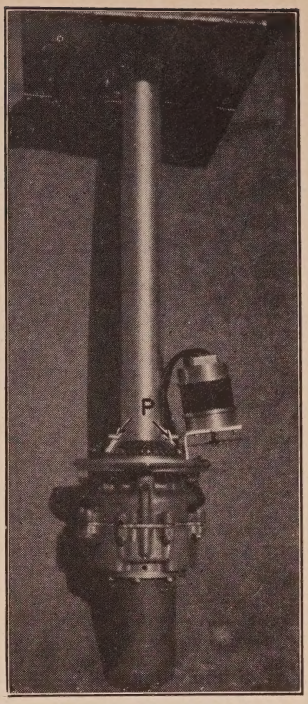


Fig. 7. Suggested method of notching the steel pipe and locking the drive pin in place. At the right is the completed rotator showing Selsyn coupled to bevel gear by means of homemade gear. Entire weight of beam rests on bevel gear by means of thrust pin P.

When the tube has been pulled out, drill a ½" hole through the tube even with the top of the bevel gear. Put a ½" thrust pin throngh these holes and allow the weight of beam and the support tube to rest on the bevel gear. The author is using this method and has supported a 190-pound 10-20 beam with complete success. It will, however, be necessary to place a collar bearing around the drive tube so that the strain on the rotator is not excessive when a strong wind causes a lateral pressure on the beam. This collar bearing can be located about six to nine inches below the mounting plate at the upper end of the drive tube.

As a last measure, it is advisable to plug up any openings which will allow rain to enter inside the drive tube. Again the roofing mastic may be used to advantage. It will also be desirable to coat the entire surface of the steel mounting plate and the teeth of the bevel gear, otherwise these may rust. The grease on the teeth of the bevel gear will also permit smoother operation of the selsyn coupling device.[5] Another worth-while trick is to drill a small hole in the very bottom of the thin aluminum shell covering the motor. This hole will allow drainage of any condensed moisture within the shell.

(*Continued on page 72*)

5 "Direction Indicator for the Prop Pitch-Change Mechanism", G. M. Brown, CQ, April, 1948, page 38.
6 The author discovered that tubes are generally expressed in outside diameters and pipes are expressed in inside diameters. A three foot length having a wall thickness of ⅛" was obtained from a scrap yard for 30c a foot.

"OSCAR II" — For The Sightless Amateur, an Improved Milliammeter

W. A. SPERRY*

OSCAR, subject of an article[1] describing a milliammeter designed for the sightless amateur, was of great personal interest to me because of similar work undertaken on behalf of W7FRT and W7KDU.

Not having a 15-henry 150-milliampere choke or a core I could wind an Oscar reactor on, I started some research to see if I could find a circuit that would work with only a two-terminal transformer. The negative resistance oscillator circuit was tried experimentally but there was so much absorption in the circuit that it would not oscillate with the d.c. load connected. About this time I came across the October, 1948, issue of *Electronics*. In it was an article on transductor fundamentals, showing saturable reactors using two identical transformers (*Figures 1a & b*), and also three windings on three legs, as in the original Oscar reactor. I tried two transformers in the negative resistance circuit and although it worked, I could not obtain enough pitch change, or current capacity with available transformers. Discouraged, I wrote to the Pacific Transformer Co., 233 N.W. 9th Ave., Portland, Oregon, and had them build us a reactor to the original specifications of Oscar; but told them if they could improve on the design to do so and send two . . . result—*Fig. 2*.

When the reactors arrived, W7KDU, Glenn Walker, and I ran some design checks on frequency-against-current change, on both the original Oscar Hartley circuit, and the negative resistance circuit. The results showed up in favor of the negative resistance circuit, the frequency change per change in current being greater. It also was very stable as to volume, the Hartley circuit having a change in both volume and pitch at the same time, sometimes in opposite directions. This resulted in the circuit shown in *Fig. 3a* being built for W7FRT. When the circuit was duplicated for W7KDU, it would not respond to changes in current below 8 ma. The circuit was modified as in *Fig. 3b*, the cathode current of 12 ma run through *L2*. This meant that all currents to be measured have to observe the polarity marked. Evidently there was some slight difference in the reactors to account for the variance in operation of the two units.

After Oscar had been put into operation, we found that when, for example, the current was dropped from 250 ma to 200 ma, the pitch was about one-half tone higher than when it was raised from 150 ma to 200 ma. This is due to the lag in demagnetizing of the iron core, called hysteresis. If the d.c. current is disconnected from the Oscar reactor, after it has become stable, then connected again, the pitch will be right for that current value every time. If plugs and jacks are used, just pull out and replace the plug-in jack.

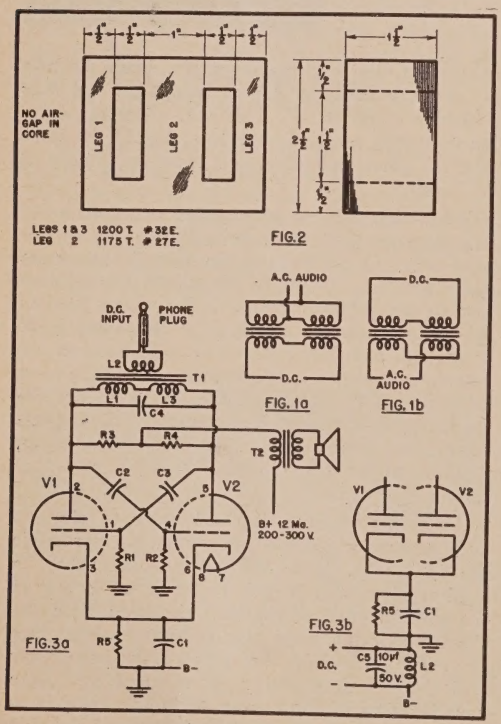
After W7FRT, Orval Nunn, who does most of his own transmitter building, had used his Oscar a day or so, remarked:

"Now if Oscar would only measure voltages, I would be all set."

This brought to mind an earlier experiment with two 3:1 Pilot audio transformers; secondaries in

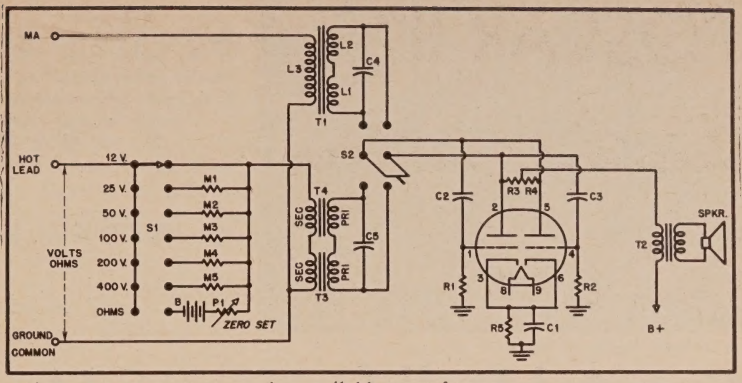
*895 N. 20th St., Salem, Ore.

1 Brier and Christman, "Oscar" — A Milliammeter for The Sightless Amateur," *CQ*, July, 1948.



C1—10 μf, 50 v.
C2, C3—0.01 μf, 600 v.
C4—0.1 μf, 600 v.
R1, R2—100,000 ohms.
R3, R4—22,000 ohms.
R5—2,200 ohms.
T1—See Fig. 1.
T2—Output transformer.
V1, V2—6SN7 or equivalent.

Fig. 4. Circuit of Improved Oscar Model.



C1—10 μf, 50 v.
C2, C3—0.01 μf, 600 v.
C4—0.1 μf, 600 v.
C5—Value that gives most pitch change.
R1, R2—100,000 ohms.
R3, R4—22,000 ohms.
R5—2,200 ohms.
S1—Multipoint switch.
S2—D.p.d.t. switch.
T1—Oscar reactor (see Fig. 2).
T2—Output transformer.
T3, T4—Identical audio transformers 3:1 ratio or higher.
M1, M2, M3, M4, M5—Multiplier resistance. Depend on value of T3 and T4.
B, P1—Depend on value of T3 and T4.

series for d.c. and primaries in series for a.c. This circuit was rebuilt and responded with about an octave frequency change with a current change of from 0 to 1 ma, or a voltage change of from zero to 12 volts. This may be multiplied with series resistors. Similarly, a battery and variable resistor could be used as illustrated in *Fig. 4*, to make a volt-ohmmeter and milliammeter. The values of multipliers and other components will depend on the available transformers.

Construction Details

Any small transformer power supply that has 6.3 v. at 0.6 amp. and 200 to 300 v. at 15 ma available, will work. There will be one set of connections for *L1* and *L2* that will make no change in pitch when terminals *L3* are shorted. These are the connections to be used. Placement of parts is not critical. Individual jacks for currents to be measured are desirable; one side of each jack is grounded. We tried a rotary switch with high resistance shunts (500 ohms), but results were poor as we either had to have too large a cathode resistor or too small a current change for good results.

The Other Fellow's Station -- EL3A

ONE of the first and most consistent stations on the air from the African republic of Liberia was that of Rupert A. Lloyd, Jr., EL3A. Lloyd, holder of W4OJU when Stateside, and ex-W1TC, W3CGF, W3AGT, is a career officer of the U.S. Foreign Service, now attached to the American Embassy at Monrovia. EL3A was first licensed and began operation on June 3, 1946. The initial rig was a modified Collins 32-RA transmitter and a long wire. The new station was installed in June, 1947.

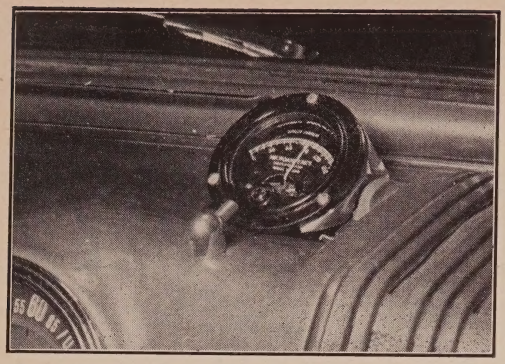
EL3A's present transmitter sits on top of the high voltage power supply which is a separate unit in its own steel cabinet. This unit is a deluxe commercial job whose output is continuously variable in 20-volt steps from 20 to 1200 volts d.c. by means of two front panel controls. A third control regulates line voltage. This power unit also furnishes a.c. filament voltage and 12 volts d.c. for external relays, interlock relays, meters, time delay relay, overload relay, a thermostatically controlled blower, and several additional gadgets.

The transmitter proper, which was designed and built by EL3A's brother, W3HV-W4KPE, consists of the following: 700-volt d.c. supply modulator and supply, Millen exciter, push-pull 812 final and a pi-network antenna tuner. The modulator consists of a 6C5 fed with a carbon microphone driving four 6L6s in push-pull parallel class AB_2 and is capable of fully modulating the final at its usual input of 250 watts. for frequency shifting, a large selection of crystals is used in lieu of v.f.o. All controls, except the antenna tuner, are accessible from the operating position.

On the operating table may be seen the HRO and at the right a BC-221 frequency meter and loudspeaker. Under the operating table is a constant voltage transformer for the receiver supply.

Antennas are a vertical folded dipole for 28 mc and an end-fed, stub-matched, two section 8JK beam for 14 mc. The 8JK, feeders and all, is used as a long wire on 7 mc with fair sucess. A long wire is used for reception on all bands. The station is located on a high bluff overlooking the Atlantic ocean.





The Crystal Ball installed in one of the ash tray spaces of the author's car. The device in front of it is a special hood, containing a 12-volt pilot bulb running on 6 volts, and designed to direct just sufficient light on the scale for reading it at night.

GEORGE M. BROWN, W2CVV*

Crystal Ball for your Mobile Rig

For mobile installations, a combined S-meter, carrier meter and modulation level indicator.

IN THE DAYS OF absorption modulation and three-circuit tuners, all that was necessary to adjust and check an amateur station was a flashlight bulb and a loop of wire. Nowadays a well-dressed amateur station is not complete without from several to several dozen meters of various and sundry types, not to mention 'scopes and other indicating devices.

Yet, when the operator of the average mobile station pushes the transmit button and orates into the microphone, he has no information concerning transmitter performance and modulation level other than what he can deduce from the whine of the dynamotor. The percentage of responses to low-power calls from mobile equipment being what it is, some sort of device to give an indication of whether or not the transmitter is on the air, if it is modulated and how much, can be a great comfort, and in case of a broken or shorted microphone cord, or other similar misfortune, can save hours of fruitless calls. There is hardly room in the family car for the array of instruments we would like to install, but by a bit of ingenuity a great deal of information can be gleaned from the readings of a single meter.

The usual start toward mobile metering was made at W2CVV by connecting a milliammeter in the cathode of the r.f. tube of the receiver, to act as an S-meter. Of course this read high for weak signals and low for strong ones, and the reading with weak signals was so dependent on battery voltage that no reliable calibration was possible. The next step was to add the balancing circuit shown in *Fig. 1*, which corrected both of these conditions. The resistance values given in this figure are typical and may need to be varied if your receiver has different plate voltage, if the no-signal cathode voltage of the r.f. tube is different or if you use a different meter sensitivity. If any of these parameters are appreciably different from the ones specified, the values of the resistors may be calculated as follows, after measuring the r.f. tube cathode voltage (E_k) with no signal coming in and the plate voltage (E_b) to which you connect R_1:

$$R_1 + \frac{R_2}{2} = E_b \times 1000;$$

$$R_3 = E_k \times 1000;$$

$$R_4 + \frac{R_5}{2} = \frac{E_k}{I_m} \times 1000;$$

where I_m is the full-scale current of the meter in milliamperes. The nearest standard values can be used in most cases, and still be within the range of the variable resistors. The variable, with half its resistance in, should form from one quarter to one half of the total resistance of each leg.

To adjust R_2 and R_5, proceed as follows:

1. With R_5 somewhere near the center of its range, and no signal being received, adjust R_2 for

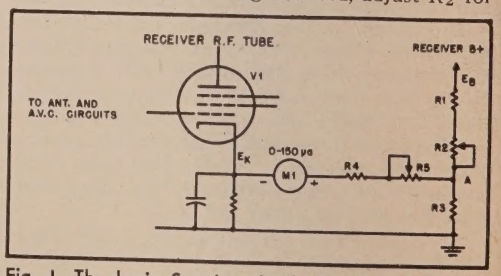


Fig. 1. The basic S-meter circuit. The tube, which is usually the r.f. amplifier tube of the receiver, must be on the a.v.c. circuit.

R1—150K, ½ w.
R2—100K, pot.
R3— 2K, ½ w.
R4— 5K, ½ w.
R5— 10K, pot.

*14 Kingsland Rd., N. Tarrytown, N. Y.

zero (S zero) on the meter. This of course occurs when the voltage at "A" is the same as E_K.

Now tune in an S9 signal. You will have to decide for yourself what an S9 signal is. I used 50 microvolts, but I refuse to get into that argument. Adjust R_5 until the meter reads at the point which you want to call S9. With the 150 microampere meter that I used, 90 microamps is called S9, leaving room for 9-plus signals, and making calibration for other S readings simple, since 80 microamps is S8, 70 microamps S7 and so on all the way down to S0. Surprisingly enough, on two entirely different receivers and meters set up in this fashion, each S unit came out between 5 and 7 db, much closer to the preferred 6 db than on the usual communication receiver.

Transmitter Monitoring

This very nicely took care of the S-meter requirements, but during transmitting periods the meter was idle and the transmitter unmetered. While transmitting, the plate voltage was removed from the receiver to mute it, and incidentally was used to power the low-level r.f. and a.f. stages of the transmitter. Under such conditions, the meter read zero and was available for other functions. The addition of a pickup loop, coupled to the p.a. plate tank, and associated crystal rectifier circuit provided a small amount of rectified r.f., which could be passed through the meter as an indication that the transmitter was putting out. It was merely necessary to connect the output of the crystal rectifier to the high side of the meter, since the series resistance of the receiver cathode resistor and the shunting effect of the balancing resistors is negligible. The pickup loop will have to be adjusted for each transmitter, but to give an idea of where to start, one turn about ½ inch from the low end of the tank coil was found to be correct on both 4 mc and 29 mc with 40 watts in the final. Be sure to make final adjustments under load, since the tank current and crystal rectifier output both go up together with no-load operation. About five volts d.c. output is a safe value for the crystal and provides enough power for feeding a good level to a pair of phones for aural monitoring. This arrangement alone permitted monitoring the carrier level, but to permit visual monitoring of modulation also, a second 1N34 crystal rectifier and associated *RC* network was added. This produced the complete circuit, shown in *Fig. 2*.

In *Fig. 2*, r.f. from the final tank is sampled by the pickup loop and rectified in X_1. The output of this portion of the circuit is d.c. varying in amplitude at an audio rate with modulation. R_6 is included to protect the crystal from possible overload and burn-out. It should be mounted near the crystal, certainly on the same chassis with it, in order to protect against possible shorts in interconnecting cables and plugs. A portion of the d.c. output of X_1 is bled around the second crystal circuit, and fed directly to the meter through R_7. This is intended to provide from ⅓ to ½ scale deflection of the meter from carrier only, as an indication of carrier level. The remainder of the

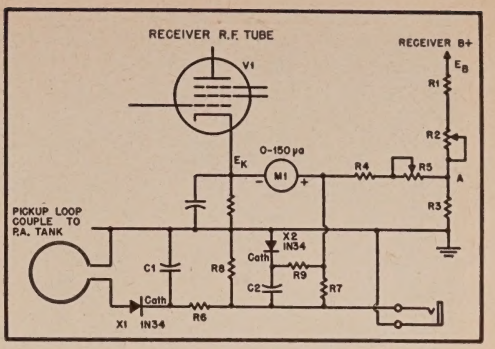


Fig. 2. The complete S-carrier level-modulation indicator circuit.

C1—500 μμf, mica.
C2—.05 μf, 200 v., paper.
R1—150K, ½ w.
R2—100K, pot.
R3— 2K, ½ w.
R4— 5K, ½ w.
R5— 10K, pot.
R6— 1K, ½ w.
R7— 82K, ½ w.
R8— 5K, ½ w.
R9— 10K, ½ w.
X1—1N34, crystal.
X2—1N34, crystal.
L1—One turn ½ inch from cold end of p.a. tank coil. Adjust per text.
M1—0-150 microamperes d.c.

d.c. from X_1 is bypassed to ground by R_8, but the audio components corresponding to modulation are rectified in X_2 and impressed on the meter through R_9, causing it to swing from its carrier level toward full scale with modulation.

The constants shown in *Fig. 2* are intended to produce approximately ⅓ scale deflection on carrier, provided the coupling loop is so adjusted as to produce five volts d.c. across R_8, and just about full-scale peak swing under 100 per cent voice modulation. Although this characteristic results in off-scale deflection on 100 per cent tone modulation, it was chosen to be most useful for quick observation during mobile work. If it is desired to reduce the modulation sensitivity, increasing the value of R_9 will do the trick, and of course R_7 may be varied to control the carrier sensitivity.

A jack is included across the output of the first rectifier. Plugging a pair of phones into it will permit checking modulation quality.

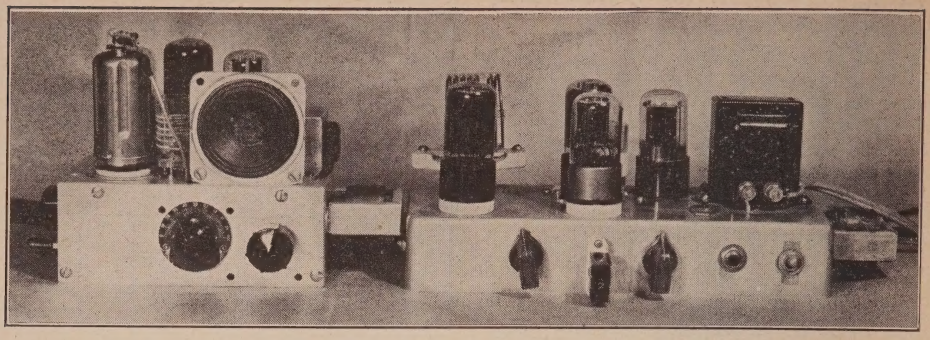
A word of caution: Be sure that the plate voltage is removed from the r.f. tube of your receiver and from the balancing network while transmitting, since otherwise the S-meter current will be flowing through the meter at the same time it is trying to monitor the transmitter output.[1]

1 Brown, "Mobile with the SCR-274N," *CQ*, Jan., 1948
Brown, "A Converter for 75 and 10 Mobile," *CQ*, Aug., 1948

Postscripts

Nevada Contacts

The Southern Nevada Amateur Radio Club will hold its first "Nevada Weekend" QSO party on August 5-6, to assist amateurs everywhere to work this hard-to-get state. Club members will monittor from 160 down to 2 meters and as many stations as possible will be contacted during the two days.



Small enough to fit in any out-of-the-way corner, this is the complete station of W2PPT.

A "Pint-Sized" Station

CLIFFORD PATERNO, W2PPT*

A flea power transmitter and a companion receiver make a novel spare-time project. Under reasonable conditions performance is excellent.

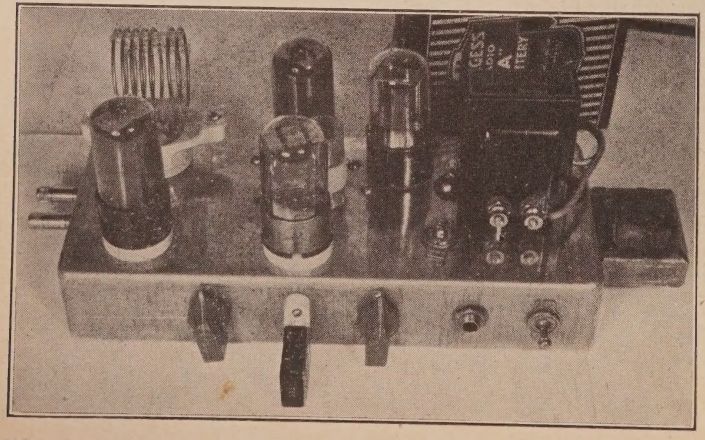
THIS is a transmitter and receiver for the beginner, or the experimentally minded old-timer. It has a number of useful purposes including portable or vacation operation, and testing the effectiveness of that newly erected high-gain beam antenna. I have used this rig in conjunction with my 4-element 10-meter beam and have worked W5DFC, WØEYF, WØJRY and WØTTF with S4 to S8 reports. On two other occasions, G5XK and G8SY were worked with Q5 and S2 reports. Naturally, anyone on or near your frequency will wash your low power right out of the picture. However, for local work, where BCI or TVI is a problem due to the location, this low power and a high-gain antenna may be the answer.

*104-44 108th St., Ozone Park, N. Y.

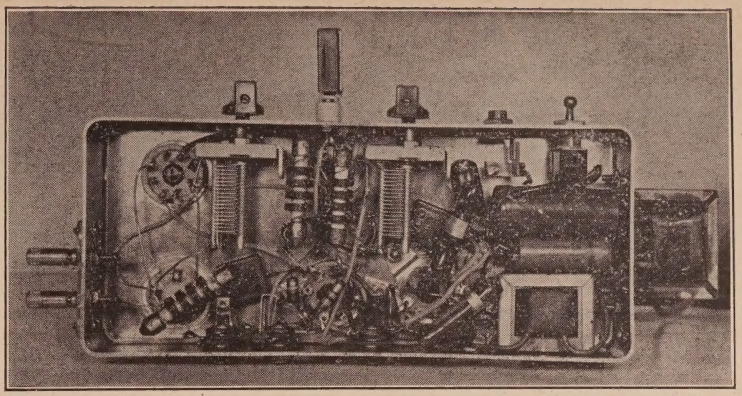
The Transmitter

The transmitter uses a 6J5 oscillator and a 25L6 final amplifier. The modulator is another 25L6 and a 25Z6GT supplies the power. Straight-through operation should be used at all times. Doubling from 40 down to 20 meters is possible, but the note is not too good. It is best to use separate crystals for each band. Only two coils are necessary for the plate of the 6J5 to operate four bands. The eighteen-turn coil should be used on 10 and 40 meters, while the forty-turn coil should be used on 20 and 80 meters.

The plate tank coil for the 25L6 can be either the Bud OEL type, or the swinging end link type. Both have been used satisfactorily, although it may be necessary to remove one turn of the OEL coil on 10 meters. Otherwise, the transmitter is of



Front view of the 1-watt transmitter. Back row, from left to right: r.f. final amplifier coil, 25L6 modulator, oscillator coil, 25Z6 rectifier, single button microphone transformer. On the side of the chassis is the filter choke. Front row, from left to right: 25L6 final amplifier tube and tuning knob below, 6J5 oscillator and crystal below, and oscillator tuning knob. On top is the a.c. switch. Below that is the microphone jack and stand-by switch.



Bottom view of the transmitter. From left to right: final tuning condenser, oscillator tuning condenser, microphone jack and standby switch. On the back of the chassis, from left to right, are the final amplifier meter jack, key jack, and oscillator meter jack. Also on the back, inside the chassis, is the modulator choke.

simple and foolproof design. The modulator uses a single 25L6 and a carbon mike. No gain control is necessary since with this circuit and Heising modulation, it is practically impossible to overmodulate. The rectifier is half-wave with both plates tied in parallel. The plate voltage on the tubes when operating is about 75 volts. The schematic appears in *Fig. 1.*

Tuning up is a matter of inserting the proper crystal and coils in their respective sockets. Then plug in a 0-to-50 or 100-ma meter in the oscillator plate jack. Press the key and tune the oscillator tank for a dip. Detune it slightly so that when the final is tuned to resonance it will not pull the crystal out of oscillation. Now plug the meter in the final amplifier plate jack and tune for a dip. The minimum reading should be about 12 ma. Load the final to about 15 or 20 ma.

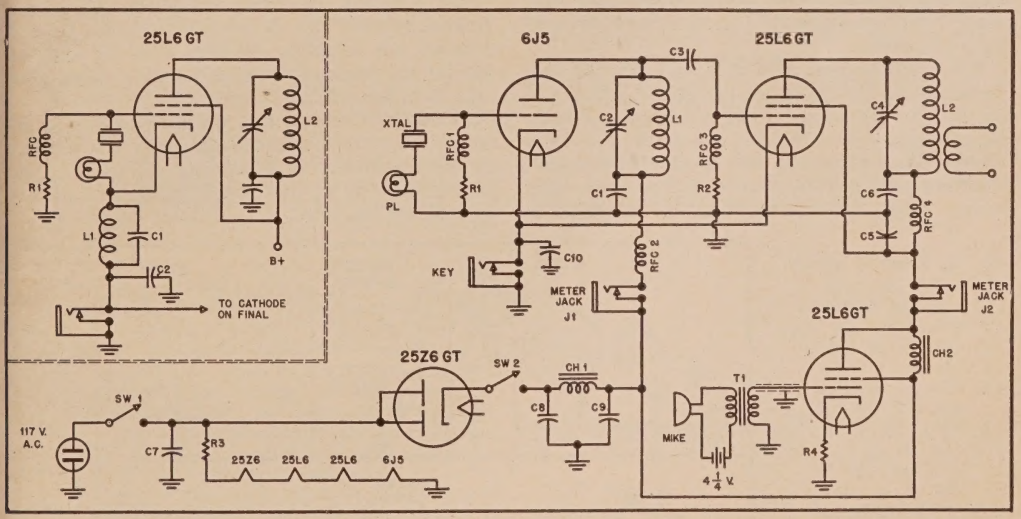
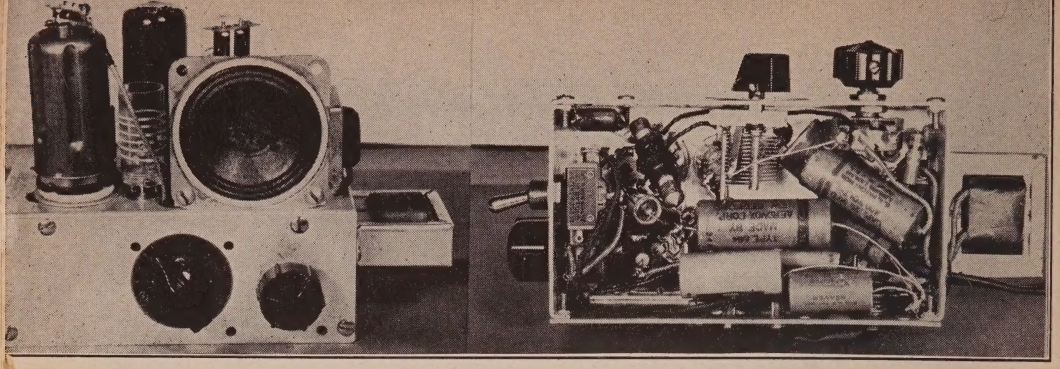


Fig. 1. Transmitter circuit and alternate Tri-tet oscillator circuit.

C1, C5, C6, C10—.005 μf, mica.
C2, C4,—100 μμf, variable. variable.
C3—.00005 μf, mica.
C7—.05 μf, paper.
C8, C9—20-20 μf, 150 v.
R1—15K ohms, 1/2 w.
R2—250K ohms, 1/2 w.
R3—100 ohms, 10 w.
R4—150 ohms, 10 w.
Ch1, Ch2—10 to 30 h., 50 ma, 100 to 200 ohms
T1—S. B. microphone-to-grid transformer.
RFC1, RFC2, RFC3, RFC4—2.5 mh choke.
J1, J2—Closed circuit jack.
PL—60 ma. pilot light.
L1—7-28 mc: 18 turns No. 22 d.c.c., 3/4" diam., close wound on 5-prong plug-in form. 3.5-14 mc: 40 turns No. 22 d.c.c, 3/4" diam., close wound.
L2—Bud OEL, or swinging end link type.
Mike battery 4 1/2 v.

Tri-tet

C1—.0001 μf, mica.
C2—.005 μf., mica, 300 v.
R1—200K ohms, 1/2 w. Change line resistor on filament to 50 ohms.
L1—11 turns No. 22 d.c.c. close wound, 1/2" diameter under the chassis.
L2—12 turns No. 22 d.c.c. space wound to 1" on a 3/4" form. Run the transmitter straight through on 20 and double in the final for 11 and 10 meters using a 7-mc crystal.



Left: Front view of the receiver. From left to right: volume control, stand-by switch, and on the front, tuning knob, regeneration control, and filter choke on the right side. On the top is the plug-in coil, and next to that is the 12J7, in back of that is the 12J5. Next to the 3-inch speaker is the 50L6 and the 50Y6.

Right: Bottom view of the receiver. From left to right: on the side there is the volume control—a.c. switch combination and the stand-by switch. On the front panel is the tuning condenser and regeneration control, and on the opposite end of the chassis, mounted externally, is the filter choke. On the back of the chassis are the two terminal strips, one for the antenna and the other for the antenna relay on the transmitter. Next to them is the phone jack.

The Receiver

The receiver shown in *Fig. 2* is an autodyne regenerative with two stages of audio amplification. It is fairly sensitive on all bands, including 10 meters. At 28 mc there is a slight tunable hum when the receiver is in regeneration. For local work it has proven quite successful and certainly very economical.

The receiver consists of a 12J7GT detector, 12-J5 first audio and 50L6 audio output. A 12SF5 can be used as the second audio affording a slightly higher output. The half-wave rectifier is a 50Y6 with a single choke and two 20-μf filter condensers. The hum level is very low. The audio gain control is put in the grid circuit of the 50L6 so that it will not upset the regeneration in the detector. This grid lead should be shielded, as are the two leads going to the standby switch from the cathode of the 50Y6.

The antenna input is for either a doublet or a single wire—by grounding the lower end of the antenna primary coil. Best results with this type of receiver are naturally obtained with an antenna cut for the particular band, although a single wire will do a fair job.

WARNING: Note that the a.c. plug can be inserted only one way to prevent either the receiver or the transmitter from blowing out the a.c. line fuses. Check to see that you do not ground the hot side of the a.c. line.

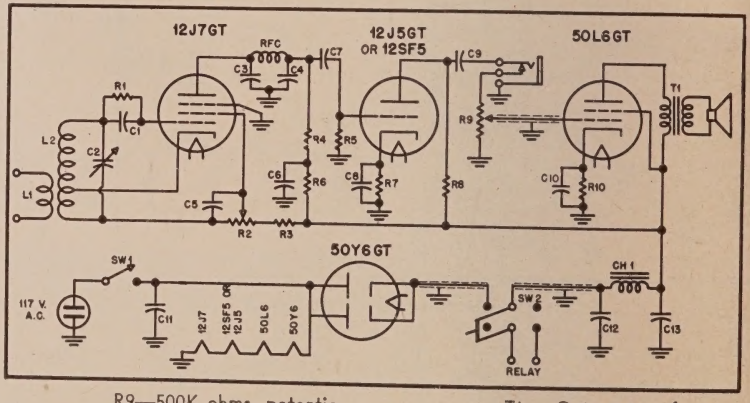


Fig. 2. Receiver circuit.

C1—.0002 μf, mica.
C2—100 μμf, variable.
C3, C4—.0005 μμf, mica.
C5, C6—.25 μf, 200 to 400 v.
C7, C9—.01 μf, 200 to 400 v.
C8—10 μf, 25 v.
C10—25 μf, 25 v.
C11—.05 μf, 200 to 400 v.
C12, C13—20-20 μf, 150 v.
R1—1 meg., 1/2 w.
R2—50K ohms, potentiometer.
R3—50K ohms, 1 w.
R4—250K ohms, 1/2 w.
R5—100K ohms, 1/2 w.
R6—50K ohms, 1 w.
R7—2000 ohms, 1/2 w.
R8—50K ohms, 1 w.
R9—500K ohms, potentiometer.
R10—150 ohms, 5 to 10 w.
Ch1—15 h., 50 ma, 100 to 200 ohms.
T1—Output transformer for 50L6.
SW1—S.p.s.t.
SW2—D.p.d.t.
J1—Closed circuit jack.

Coils

3.5 mc: L1—5 turns, 1/16" from L2.
L2—57 turns No. 33 d.c.c., 3/4" diam., close wound, taped 4 turns from ground.

7 mc: L1—4 turns No. 34 d.c.c., spaced 1/8" from L2.
L2—31 turns No. 22 d.c.c., 3/4" diam., close wound, taped 5 turns from ground.

14 mc: L1—3 turns 3/16" from L2.
L2—12 turns No. 22 d.c.c., space wound 1", taped 3 turns from ground.

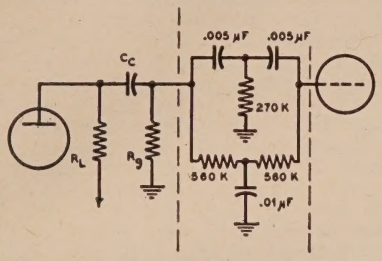
28 mc: L1—2 turns 1/4" from L2.
L2—5 1/2 turns No. 22 d.c.c., space wound, 3/4", taped 2 turns from ground.

L1 is wound with No. 34 d.c.c. Coil forms are 5-prong 3/4" polystyrene. Amphenol.

Inside the SHACK AND WORKSHOP

60-Cycle Null Circuit

In attempting to remove objectionable 60-cycle hum from speech amplifiers by the conventional (and not always successful or convenient) methods, I have often wished that it were possible to merely put a "hole" in the frequency response curve of the amplifier at 60 cycles, while still maintaining good bass response in the rest of the spectrum. The bridged T null circuit (or popularly called the "gismo") has been found to be a simpler answer and 60-cycle attenuation of the order of 20 to 30 db is easily obtained.



To cure 60-cycle hum in audio equipment, start at the front end of the amplifier and remove tubes until the hum is no longer objectionable. Then put the "gismo" in the grid lead of the next tube. If one is not enough, sometimes a second "gismo" in the next stage may be required. Those interested in the theory of this circuit are referred to page 918 of Terman's 1943 Handbook.

W. E. Behnken, W4ESP

Littelfuses on High Voltage A.C.

In a search for high voltage protection for a newly built power supply, we hit upon the idea of using the standard "Littelfuses" of ¼ and ½ ampere ratings for protection of the rectifiers against surges and overloads. It was found that the smaller rating is sufficient protection for 816's and that the ½ ampere fuses were OK for 866's. The fuses are inserted in each plate lead between the tube and the transformer.

Some fellows may raise their eyebrows at the use of standard type fuses on higher voltages than 110 or 220. In this instance, the 60 cycle a.c. seems to have a sufficient period between cycle peaks to allow any arc to extinguish. This would not be possible if the same fuse were inserted in the d.c. section of the high voltage power supply. I have used this scheme on power supplies delivering up to 1500 volts each side of center tap; the fuse holders should be mounted in such a manner that they cannot be touched while power is on without some positive warning.

Neil A. Johnson, W2OLU

QRM Eliminator

The design of the "QRM Eliminator" shown in a recent article[1] really works and can be used to soup up some of these older communication receivers. However, there are a few suggested improvements which might be used to advantage.

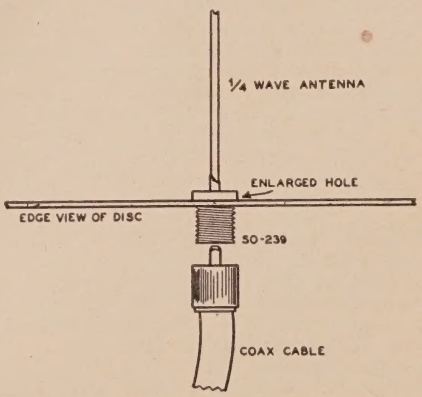
1. Instead of the 6H6 or 6AL5 noise limiter tube, use the 1N34 series crystal diodes, or the new GE 1N48 diodes. These are possibly a little more expensive, but it reduces the power supply drain while at the same time makes the unit more compact and efficient. Actually, if the limiter tube is removed and the crystal diodes substituted in its place, then there is no necessity for an extra power supply. With only the 6SN7 to draw current the circuit may be hooked into the receiver power supply as described by Black.[2]

2. If you tend to be forgetful, then don't use the penlight batteries. Rather use regular size Ray-O-Vac, or equivalent steel-cased cells. These are guaranteed not to corrode and will probably last indefinitely in this application.

D. L. Devendorf, W8EGI

420-mc Ground Plane

If you want a simple 420-mc ground plane then try this one that has been used by W3FDJ. It consists of the aluminum base of a 16-inch transcription disc as the ground plane and a short length of wire soldered to an SO-239 coax receptacle as the antenna. The acetate coating may be peeled or stripped off the disc by immersing it in boiling hot water for about 5 minutes. Then enlarge the center to ⅝ inches and mount your coax receptacle. A ¼ wave rod is soldered on and the RG-8/U connected and you're in business.



Another variation, if you are using transmitters similar to the APS-13 is to mount the transmitter right under the ground plane using two coax fittings and a short connecting coax coupler. Plug in your antenna, run in your filament, ground and modulated B-plus wires and you have eliminated line losses. Both arrangements are effective, as W3GBJ has heard me over 38 miles using this antenna and 9 watts input. The receiving antenna was only a dipole, too.

William Hoos, W3FDJ

1 G. L. Countryman, "A QRM Eliminator," *CQ*, June, 1949, page 21.

2 E. Black, "Peaked Audio," *CQ*, June 1948, page 20.

Monthly DX Predictions-Aug.

OLIVER PERRY FERRELL*

THE DX Predictions are based upon the following parameters:

A. 1000 watts effective radiated power.
B. Antenna gain factor is equal to 1.
C. Noise discrimination factor is equal to 1.
D. Service gain factor is 14 db.
E. Propagation over the shortest, or the direct route.

Values of maximum usable frequencies were obtained from "Basic Radio Propagation Predictions for August, 1949" (CRPL Series D-57).[1] Calculation of the optimum working frequencies (FOT) for radio amateur transmission was according to methods shown in "Ionospheric Radio Propagation" (NBS Circular 462).[1] In addition material appearing in the November, 1948 issue of *CQ* was also used.[2]

West Coast to South Africa

40 meters: Probably a scattered type opening with weak signals coming out of the noise around 1700 PST. A broad peak with generally fair to good signals from 1930 to 2200 PST. Definite improvement towards latter part of the month. Band closes rapidly after 2200 PST. *20 meters*: Gradual buildup starting around 1530 PST. Phones after 1630 PST. Band closes down suddenly between 1715 and 1745 PST. Reopens suddenly around 2130 PST with strong signals that rapidly weaken until band closes around midnight. *10 meters*: Some possibility of a few openings during the latter part of the month centered around 1000 PST. Not dependable.

West Coast to Europe

40 meters: Continuing high polar region absorption and not too many openings during August should be expected. Possibly some weak to fair signals between 1915 and 2100 PST during the last two weeks—only when ionospheric conditions are quiet.[3] *20 meters*: Gradual buildup with signals improving after 1500 PST. Phones possibly readable before MUF at far end drops to 13 mc after 1730 PST. Band may reopen with strong signals around 2200 PST—although this latter opening may be of very short duration. *10 meters*: No openings. MUF about 21 mc.

West Coast to Southeast Asia

40 meters: Band opens with weak signals under the atmospheric noise around 0245 PST. Probably they will not hear our signals during this opening, although there will be a peak from 0345 to 0445 PST. Band closes rapidly after 0500 PST. *20 meters*: Band opens just before midnight and builds up through the early morning hours with possibility of some phones from 0300 to 0630 PST. High atmospheric noise level at far end of the path, so try not to blame their receivers, if they cannot hear you calling. Band closes just after 0900 PST. *10 meters*: Possibly during the last week of August—a few scattered signals of good strength between 1715 and 1845 PST. Not dependable.

West Coast to South America

40 meters: First signals may be audible around 1700 PST, although best conditions will probably be noted from about 2030 to 0230 PST. Band closes around 0330 PST due to normal absorption over the southern end of the path. Closing varies with path length. *20 meters*: Band closes due to lowering MUF just after 0100 PST. Reopens suddenly with weak signals about 0345 PST and then closes again after 0530 PST. This latter opening probably best for c.w. with phones fairly weak over long paths. C.W. signals reappear well in the noise level after 1530 PST. Phones probably audible after 1815 PST, remaining well up in strength until closing. Peak from 2200 to 0030 PST. *10 meters*: Unusual conditions with possibility of certain sections of the continent not being audible while band is good to other sections. Band first shows signs of opening around 0945 PST. Erratic signals, possibly very strong at times, until just after 1530 PST.

East Coast to South Africa

40 meters: Atmospheric noise will increase this month at the southern end of the path. Band will probably open around 1700 EST with weak signals. Weak to poor signals until 1900 EST, then fair to good signals until midnight. Band should close suddenly. *20 meters*: Low MUF on the southern end will determine first opening. Probably of short duration between 0030 and 0200 EST. Phones readable, but expect band to be erratic. Band reopens with c.w. around 1430 EST and phones after 1615 EST. Closes suddenly after 2130 EST. *10 meters*: Possibly in the last two weeks of the month there will be a few scattered openings between 1200 and 1400 EST. Signals may be surprisingly strong whenever heard.

East Coast to Australasia

40 meters: Gradual opening mostly limited by the atmospheric noise at this end of the path just before midnight. Signals weak until after 0200 EST, then fair until about 0500 EST. Band closes just before 0700 EST. *20 meters*: First signals around 2300 EST slowly building to good

(*Continued on page 59*)

**Assistant Editor, CQ*

1 Obtainable from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

2 O. P. Ferrel, "A New Method of Predicting Band Conditions", *CQ*, November, 1948, page 26.

3 Some assistance in ascertaining whether or not "quiet" conditions exist over this particular path may be obtained by carefully noting the WWV ionospheric storm warnings at 19 and 49 minutes after each hour. In these broadcasts the "N" stands for normal or quiet conditions. The "W" stands for disturbed, or a forecast of disturbed conditions.



Conducted by HERB BECKER, W6QD*

LAST MONTH, Andy, W6ENV, did a pinch-hitting job for me, and I think he did an excellent job as usual. This month, we are announcing in detail the rules of *CQ*'s 1949 World-Wide DX Contest. You will find them on page 36 of this issue. Just to touch on a few of the highlights, I would like to say that most of us feel that the changes in the rules, which you will note, will make a much more interesting contest for the majority of DX men. For example, this year the contest will be confined to 27/28, 14, and 7-mc bands. We are omitting the 3.5 mc band. No doubt there will be some who will let out a moan on this change, but we have had many, many requests to give it a try and run the contest on the bands that are considered DX bands the year around.

Another important change that will help the boys who, in the past, had felt handicapped because of being able to only operate on one or two bands is the awarding of 1st, 2nd, and 3rd place certificates to the highest scoring stations on each *SINGLE BAND*. This is in addition to awarding certificates to the three stations having the highest combined total on *all bands* (or more than one band). Competition will be divided into four sections: (1) One-operator phone section, (2) Multiple-operator phone section, (3) One-Operator c.w. section, (4) Multiple-operator c.w. section. This should afford a golden opportunity for the boys who feel they are stuck on one or two bands to give it both barrels and go to town. Nothing special need be done to become eligible for SINGLE BAND awards. As last year, certificates will again be awarded to each operator working in a multiple operator station. The last weekend in October will be the phone contest, and the c.w. boys will take over on the first weekend of November. To help you fellows with the bookkeeping, we have a quantity of log forms available, and they can be had by writing to the New York office, and letting us know how many you want, including enough for a carbon copy for yourself. Send a large size envelope, and a couple of stamps so my boss won't go broke mailing them out!

Congratulations to the following DX men whose cards have been okayed by the DX committee and have been awarded W.A.Z. certificates.

127	W6BAX	O. P. Taylor	40-155
128	W6GAL	George W. Sinclair	40-193
129	W6LDD	Edward F. Peck	40-137

I feel something more must be said about W6BAX. Many of you will wonder why.

Briefly, "Opie" worked all zones using no more power than a single 807 would handle. Did you get that? A single 807! Many of you will remember W6BAX in the years before the war when he was grinding away on his rock crusher. He made quite a DX name for himself then. When the war ended, like many of us, he lashed up something to get on the air, and in his case, it was an 807. He found that with persistence and patience, and, of course with his DX know-how he got out, so he vowed that he would stick with an 807, at least until he made W.A.Z. For an antenna, BAX uses a 3-element rotary. In looking over his cards, we think his reports compare with most submitted for W.A.Z.

W6GAL, of course, is well known to everyone, and in addition to that, he is another one of our DX committee to grab off W.A.Z. In fact, George has had the cards for quite a while, but just didn't have the time for the bookkeeping necessary in figuring out the country list. . . . W6LDD, one of the Northern California boys, has been consistently at it, and his persistence has paid off also.

**Send all contributions to Herb Becker, 1406 South Grand Ave., Los Angeles 15, Calif.*

Contest Errata

SEVERAL ERRORS in the published results of *CQ's* First World-wide DX Contest have been noted. One of the most glaring was the failure to include the score of "Mick" Meunier, ON4QF. among the outstanding c.w. performances. Listed under Zone 14 with a final score of 246,246 points, ON4QF had the sixth highest score in the world. Always an outstanding signal on the air, ON4QF recently made a trip to Belgium Congo where OQ5QF gave many a DXer a new country. The transmitter used at ON4QF during the contest ran 27 to 35 watts input on all bands and fed into a 330' long wire as a radiator. The receiver was a German superhet.

Also incorrectly listed was the phone score of J. Ostle, G2DYV, carried under the c.w. heading. With a score of 12,935 points G2DYV should have been listed as fourth highest competing station from England.

W1ONK's score was erroneously listed in the c.w. section. His 17,920 points made on phone place him high in the first district and first place award goes to him.

In the c.w. scores of Zone 14 LB8R, highest score for Norway was a multiple operator station and was so listed on the original log submitted. Operated by LA8B and LA8R station LB8R will receive the multiple operator station award. The award for the highest score by an individual operator will be made to LA6U.

W4NLA's score was also erroneously listed in the c.w. section. His 2,672 points made in the phone competition place him second in the fourth district.

W. A. Z. HONOR ROLL

C. W.-PHONE			C. W.-PHONE			C. W.-PHONE			C. W.-PHONE			PHONE ONLY		
W6VFR	40	223	W6KUT	40	161	W8LEC	39	166	W9FKH	38	135	W6VFR	39	162
W6EBG	40	217	KH6IJ	40	161	W4DKA	39	165	W4FPK	38	131	W7HTB	39	143
W6ENV	40	217	W6IBD	40	161	I1KN	39	165	G8IL	38	131	VE7ZM	39	121
W3BES	40	214	W6RLN	40	160	W2EMW	39	163	G5CI	38	130			
W6PFD	40	213	LA7Y	40	159	W6EAK	39	163	W2PQJ	38	130	W6DI	38	176
G2PL	40	213	W6DLY	40	158	W4BRB	39	162	W3ZN	38	129	W4CYU	38	167
W2BXA	40	212	W6UZX	40	158	W3JKO	39	162	G6LX	38	126	W2BXA	38	162
W6ADP	40	212	G3DO	40	157	G5DQ	39	160	W9MZP	38	126			
W6ITA	40	212	W7BD	40	157	W9LM	39	159	W8WWU	38	125	W1JCX	37	158
W6GRL	40	211	W7BE	40	156	W9MXX	39	159	GW3AX	38	123	G2PL	37	154
W3GHD	40	211	W6BAX	40	155	W6EPZ	39	158	W9TB	38	122	W8REU	37	149
W6MEK	40	210	G3AAM	40	154	WØGKS	39	158	GW4CX	38	120	W8BF	37	146
W8BHW	40	208	W6BPD	40	152	W4OM	39	158	W6EHV	38	119	W6WNH	37	145
W2AQW	40	208	VK2QL	40	151	WØAIW	39	157	W8KPL	38	117	W3JNN	37	136
W8HGW	40	208	W6LEE	40	150	W8SDR	39	157	W5CPI	38	113	G3DO	37	136
W6SN	40	207	W6FHE	40	150	G8KP	39	156	GM3CSM	38	112	W1HKK	37	136
G6ZO	40	206	OK1FF	40	148	W9YNB	39	155	W7EYS	38	107	W6TT	37	130
W4BPD	40	206	W6BVM	40	148	G6QB	39	152	G3ZI	38	107	G6LX	37	124
W6SAI	40	206	W6TS	40	147	W2RDK	39	152	G8IP	38	105	G2AJ	37	121
WØYXO	40	205	I1IR	40	147	G2AJ	39	151	C1CH	38	84	F8VC	37	115
W6TT	40	201	W7DXZ	40	146	W9VND	39	151	G3BI	38	75	C1CH	37	83
W9KOK	40	200	W6AYZ	40	146	SM5WI	39	148						
VK3BZ	40	199	W9NRB	40	145	G2WW	39	147	W2HMJ	37	166	XE1AC	36	161
W4CYU	40	197	W6MUC	40	145	DL2KW	39	147	W1KFV	37	162	W1NWO	36	155
W6MX	40	196	W6QD	40	145	W2COK	39	146	W2ZA	37	160	W3LTU	36	154
LU6DJX	40	195	W6LER	40	145	W2GUR	39	146	W2CNT	37	153	W9RBI	36	153
VE7ZM	40	195	W6PH	40	145	WØEYR	39	145	W4IWO	37	146	W1MCW	36	152
W6NNV	40	195	ON4TA	40	144	W2MEL	39	145	W8EYE	37	141	W6PXH	36	146
ZL1HY	40	195	JA2KG	40	143	W9FKC	39	143	W3WU	37	139	W9HB	36	136
W6MJB	40	194	W6LRU	40	141	W6JZP	39	141	W4ML	37	135	W2DYR	36	135
W3LOE	40	194	OK1LM	40	141	W9DUY	39	140	GM2UU	37	133	W9BZB	36	130
W7GUI	40	194	W6LN	40	139	G6BQ	39	140	W2AYJ	37	130	W4ESP	36	130
W6GAL	40	193	W6LDD	40	137	G3FJ	39	139	W2WZ	37	129	W1FJN	36	128
W6FSJ	40	193	W6CEM	40	136	W8VLK	39	137	W9TQL	37	129	GM2UU	36	127
W6DI	40	192	WØOUH	40	134	OK1AW	39	133	WØAZT	37	129	G6BW	36	127
W6MVQ	40	192	G3AZ	40	133	OK1CX	39	133	W3FYS	37	119	W4INL	36	125
W6ZCY	40	191	W6RDR	40	133	G5RV	39	132	G4CP	37	117	W6KQY	36	122
VE7HC	40	191	W6YZU	40	129	G2VD	39	132	VE1EA	37	116	G5YV	36	106
ZS2X	40	191	OK1WX	40	129	KH6PY	39	131	W6CTL	37	111	G6WX	36	105
VK2DI	40	191	W7GBW	40	127	VK4RC	39	131	W7BTH	37	110	VE3BNQ	36	101
W3EVW	40	191	G8IP	40	127	W2BJ	39	131	G4AR	37	108	W3DHM	36	96
W6PKO	40	189	G5BJ	40	126	WØOUH	39	131	W8HSW	37	104	W6SA	36	92
W6AVM	40	188	PK6HA	40	124	W6WWQ	39	130	G5MR	37	100	F8DC	36	87
W6OMC	40	187	W6NRQ	40	123	W6ID	39	130	W2BLS	37	99			
W6AMA	40	186	W6MLY	40	123	W6RLQ	39	130	G3AAE	37	99	VK3BZ	35	143
W2IOP	40	186	W6BIL	40	110	G2FSR	39	130	W2SGK	37	95	W6PCK	35	126
ZL2GX	40	185				W6BUD	39	129	KL7KV	37	88	G8QX	36	123
W2CZO	40	185	WØNUC	39	204	W6LGD	39	129				W2GHV	35	118
W6RM	40	185	W2PEO	39	202	G5VU	39	124	W4LVV	36	147	W6CHV	35	117
W6PB	40	185	W9IU	39	202	VR5PL	39	124	W2RGV	36	136	G3FU	35	115
W6SA	40	184	W4AIT	39	201	G3AAK	39	122	W2GVZ	36	132	W9CKP	35	114
W6AM	40	184	W2HHF	39	199	G5WM	39	120	W4DIA	36	129	W5LWV	35	108
W9VW	40	183	W2NSZ	39	197	G8RL	39	120	OA4AK	36	128	W4OM	35	106
W6DZZ	40	182	W2GWE	39	195	W6MI	39	118	W3AYS	36	124	W3PA	36	104
W6KRI	40	181	W3KT	39	194	G6BS	39	117	W2WC	36	119	W6AM	35	102
W6SRU	40	181	PY1DH	39	194	W6NRZ	39	117	SV1RX	36	119			
W6SC	40	180	F8BS	39	191	G3QD	39	116	MD5AK	36	118	W8BIQ	34	120
VK2ACX	40	180	W1JYH	39	191	W7ETK	39	115	W2BF	36	115	W4HA	34	120
W6RW	40	179	W2HZY	39	191	G3TK	39	114	G2CNN	36	114	W8ZMC	34	113
W7DL	40	177	W3JNN	39	191	W6MUF	39	112	G2AKQ	36	112	W2RGV	34	110
W7AMX	40	177	W3DPA	39	191	W7GXA	39	105	W5CD	36	108	W1BPH	34	105
VE4RO	40	177	W3JTC	39	191	KG6AL	39	104	WØRBA	36	107	W8UIG	34	100
W6UCX	40	176	W6SYG	39	191	W6LEV	39	103	W9ABA	36	102	W4IWO	34	99
CX1FY	40	176	W8NBK	39	190	W7ENW	39	101	W2JA	36	102	W8QFB	34	92
W6PCS	40	174	W1ENE	39	190	W6WJX	39	101	G2AO	36	100	WØBFB	34	70
W6WKU	40	174	W9RBI	39	186	W6AX	39	93	W5BK	36	99	W2NXZ	34	65
W7FZA	40	174	W9ANT	39	185	G6PJ	39	76	G6WX	36	95			
W6RBQ	40	174	W8RDZ	39	184				W7PK	36	91	W7MBX	33	120
WØNTA	40	174	W1BIH	39	184	VE3QD	38	190	GM2AAT	36	75	W9RNX	33	119
CE3AG	40	172	W2CWE	39	183	W2PUD	38	176				W5ASG	33	119
G5YV	40	172	W6OEG	39	181	W3DKT	38	168	W4DHZ	35	132	W2ZW	33	115
W1AB	40	171	W3EPV	39	179	CM2SW	38	167	W8ZMC	35	131	W5ALA	33	111
W6BAM	40	170	W4INL	39	177	W3OCU	38	167	W4HA	35	131	WØHX	33	107
W5AFX	40	169	W5ASG	39	177	KP4KD	38	162	W1BFT	35	130	W4LZM	33	104
ON4JW	40	169	W3DRD	39	175	W3IYE	38	161	W9WCE	35	127	W6UZX	33	104
WØUOX	40	169	W4GG	39	174	W3KDP	38	155	VE3AAZ	35	123	WØANF	33	102
W6ANN	40	167	WØSQO	39	171	W8FJN	38	153	W9CKP	35	122	VE3ZM	33	100
W6GDJ	40	167	W9LNM	39	170	VO6EP	38	151	CO6AJ	35	119	W2PQJ	33	100
W6PZ	40	166	W1NMP	39	169	WØDU	38	151	VE3ACS	35	117	W2DRH	33	60
W6PQT	40	166	W6IFW	39	168	W4VE	38	144	W6ZZ	35	113			
W6DUC	40	166	W2CYS	39	167	W8CVU	38	141	W8AVB	35	113	W9MIR	32	110
W6AOA	40	165	W1ZL	39	166	W3LVJ	38	141	W9LI	35	112	W9WCE	32	107
W6TI	40	164	KH6MI	39	166	TF3EA	38	137	VE1PQ	35	111	WØEYR	32	101
												W8BFQ	32	101
												WØSQO	32	95

Israel, Palestine, Etc.

There seems to be no small amount of confusion existing as to what station or stations are in Israel, Palestine, or what have you. To the best of our knowledge, here is the way the situation stacks up. In the first place, Israel began its existence as a sovereign state May 15, 1948. Obviously, any stations worked before this time, regardless of where they were geographically after this date, cannot be in Israel. Therefore, prior to May 15, 1948, all ZC6s were in Palestine, and for a while after this date, a few ZC6s, mainly United Nations Stations, continued to sign their calls, although at this point, they were in the new country of Israel. A couple of months after the 15th of May, the prefix 4X4 was assigned, and most ZC6s located in the now existing country of Israel were assigned new 4X4 calls. ZC8PM entered the picture sometime during all this transition in the Middle East, and being located in Nablus, which is about the center of Arab held Palestine, of course counts as Palestine. The two main cities of Israel with amateur activity are Haifa and Tel-Aviv. In view of the confusion surrounding Jerusalem, it seems best to continue to consider it as part of Palestine until its status is definitely determined.

W7EYS says there will be an FY8 on by the time this appears in print. Apparently, he will be the first in seven years and will operate 14 mc c.w. Another good one for a lot of you is *VP5AL* on 20 and 40 c.w., but most important, he is in the Caymans. *VP3TR* will be closing up shop there shortly, and back to the States it will be for him; there, he will get into operation again under his Stateside call of W6SMU. During the last 19 months, VP3TR has sent 2200 QSL cards. The transmitter is a Collins 32RA, running 80 watts input. The antenna is a 3-element close spaced rotary . . . the receiver in use has been a Super Pro.

After being off the air for 12 years, W6ALQ is after the stuff again. Working DX now, he will find, is done with a little different technique (I hope you don't mind if I use the word loosely) than was used 12 years ago.

W9LNH is getting started in the W.A.Z. business and, thus far, has logged 36 zones. You will hear more from Lindy as the next few months roll by, I am sure. He is using a BC-610, running 500 watts on phone, and 800 c.w. .. .. .. receiver is an HRO, the antenna being a 2-element close-spaced rotary.

WØFET is happy after snagging UAØKFD. Doc Westervelt, W4VE, is also happy, having worked SV6AA on Crete and receiving his card "already yet." Considering the fact that Jules, SV6AA, had only 55 QSOs, that's a good one to get tucked away. And thanks to OM Bates of Philly for a batch of QTHs.

4X4BX, who is handling the QSL Bureau for the I.A.R.C., writes to say that he is holding approximately 300 QSL cards for various ZC6 stations, and he would be grateful if the following former ZC6s would write and give him their present QTH. He would then be glad to forward the cards which he is now holding. It would be well to enclose a reply coupon or two. Here are the ZC6 stations for which he is holding cards: AD, AE, AK, AL, AM, AN, AH, AR, AS. AV, AX, AY, BF, BH, BK, BO, BS, BU, BUU, BV, CB, DA, EA, EE, FT, FQ, GM, HB, HC, HJ, IF, IS, JA, JJ, JL, JP, JV, LE, LI, LJ, LO, LS, MA, MC, ND, NJ, NO/MD5, NN, OW, PC, PM, Q, RA, RF, RD, RS, SY, TN, UC, UJ, UK, UP, URJ, US, UT, UU, VN, WI, WF, WL, XJ, XR, XW, XX, YX, and ZC. Write to: I.A.R.C., QSL Bureau, P.O. Box 4099, Tel-Aviv, Israel.

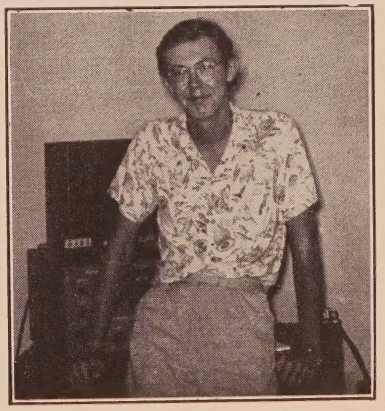
W2IOP, when in one of his best snooping moods, discovered that *LA2FB* was on Svalbard Island. Thinking that this would be a nice country for someone, especially himself, he decided to investigate. As an aftermath of the investigation, LA2FB has promised to get on sometime this summer. He will give us more info regarding frequency and exact time in the near future.

Due to uncertain mail schedules in China, *C1JH* wants all QSLs sent to the new QTH as listed in the section at the end of the column. Fred Holt is the second operator, the first being his brother Jimmy. They QSL 100%, and as soon as they receive their new batch of QSL cards, they will send them out as fast as they can. In the meantime, be sure that cards for C1JH go to their new QTH.

KX6AF has been on Kwajalein for some time and only recently has returned to the States. He plans now to operate from the Great Falls Air Base, Montana, under W7NMJ. Jim says he is answering all cards that were sent to him direct or in care of W7ED. Any of you who have worked KX6AF and have not received his card, you can get in touch with him as follows: Jim B. White, W7NMJ, Arlee, Montana. Of course, send your card along too.

KH6VP has sent out all cards for the contacts he made while on VR4. Any of you who would like your card direct from him can just drop him a line, and he will be very happy to oblige. I would suggest that you send him a stamped envelope too. Bill is now going after W.A.Z. with this call, having, of course, made it under W7BE. As things now stand, he has reached 33Z and 83C running about 100 watts. As soon as his old beam arrives from the States, his DX will probably pick up.

W4BA almost slipped off the page in the June Honor Roll, so he promptly went out and worked a couple of new ones with the hope of boosting up the phone section a bit . . . W1JYH has discarded his long wire antenna in favor of a 2-element rotary. JYH tells me that *VK4KD*



Bill Fells, ex-KP6AB!

CQ's World-Wide DX Contest

For the 1949 contest, separate 48-hour periods for phone and c.w.—awards for individual and group-operated stations—no limit on contacts per country—and a new feature, awarding prizes for the highest 1-band scores as well as multiple-band scores.

1. Contest Period:
   PHONE SECTIONS: 0200 GMT October 29 to 0200 GMT October 31.
   C.W. SECTIONS: 0200 GMT November 5 to 0200 GMT November 7.
   (See time chart for local times and dates.)
2. Bands: The contest activity will be confined to three amateur bands, 7, 14, and 27/28 mc.
3. Competition will be divided into four sections as follows:
   (1) One-operator phone section
   (2) Multiple-operator phone section
   (3) One-operator c.w. section
   (4) Multiple-operator c.w. section
   Stations in both phone sections may contact each other, and stations in both c.w. sections may contact each other, but no contacts between phone and c.w. stations will be allowed.
4. Equipment: There will be no limit to the number of transmitters and receivers allowed, and competitors may use the maximum transmitter power permitted under the terms of their licenses.
5. Serial numbers: C.W. stations will exchange serial numbers consisting of five numerals, the first three being the RST report, and the last two being their own zone number. Stations in Zones 1 through 9 will prefix their zone number with zero (01, 02, 03, etc.) Phone stations will exchange serial numbers consisting of four numerals. The first two being the readability and strength report, and the last two being their own zone number. Phone stations in Zones 1 through 9 will prefix their zone number with a zero (01, 02, 03, etc.).
6. Contacts: Contacts between amateur stations on different continents shall count three points; contacts between amateur stations on the same continent, but not in the same country, shall count one point; contacts between stations in the same country, for the purpose of obtaining zone and/or country multipliers, shall be permitted, but no points will be allowed for these contacts.
7. Multipliers: Two types of multipliers will be used: (1) a multiplier of 1 for each zone contacted on each band, (2) a multiplier of 1 for each country worked on each band.
8. Awards: 1st, 2nd, and 3rd place certificates will be awarded for each of the four Sections as follows:
   A. To the highest scoring stations on each **SINGLE BAND** in the following areas:
      (a) Each call area of the U.S.A.
      (b) Each licensing area of Canada and Australia
      (c) All other countries
   B. To the stations having the highest combined total on **ALL BANDS** (or more than one band) in the following areas:
      (a) Each call area of the U.S.A.
      (b) Each licensing area of Canada and Australia
      (c) All other countries
   Certificates will also be awarded to each operator of each winning station in the multiple-operator sections.
9. Scoring: The contest score will be the sum of all contact points multiplied by the sum of the zone and country multipliers.
   A. Everyone who sends in a log for a single band is eligible for a **single band** award only.
   B. Those who submit logs for two or more bands will be eligible for the all band award, as well as the single band award.
10. Zones and Continents: The W.A.Z. boundaries as defined in CQ and the CQ DX Handbook, as well as on the W.A.Z. maps, will be recognized, and for continental boundaries, the same as used for W.A.C. will be recognized. Should any question arise as to the positive location of any station, the official definitions will be final. Copies of the country list and contest logs are available from the CQ editorial offices upon receipt of a stamped, self-addressed envelope, or in the case of overseas stations, unattached postage stamps.

Operating Suggestions:

We suggest that overseas phone operators indicate which end of the band they are tuning, or which portions of the phone band (American or foreign) they intend to tune. On 28 mc, where the band is 1700-kc wide, it is extremely important that overseas phone stations specify the approximate frequency they intend to tune. C.W. stations, likewise, could greatly assist by indicating where they intend to tune. We think if the above principle is used by all, it will result in far less QRM, as well as fewer useless calls.

Foreign amateurs, remember scores are based on the greatest number of different countries and zones as well as stations worked. Do not concentrate on working only U. S. stations, this is a world-wide competition!

CQ WORLD-WIDE DX CONTEST SCHEDULE

TIME ZONE	STARTING TIME	ENDING TIME
GREENWICH MEAN TIME (GMT)	SATURDAY, OCT. 29, 0200	MONDAY, OCT. 31, 0200
	SATURDAY, NOV. 5, 0200	MONDAY, NOV. 7, 0200
U.S.A. EASTERN STANDARD TIME	FRIDAY, OCT. 28, 9:00 P.M.	SUNDAY, OCT. 30, 9:00 P.M.
	FRIDAY, NOV. 4, 9:00 P.M.	SUNDAY, NOV. 6, 9:00 P.M.
U.S.A. PACIFIC STANDARD TIME	FRIDAY, OCT. 28, 6:00 P.M.	SUNDAY, OCT. 30, 6:00 P.M.
	FRIDAY, NOV. 4, 6:00 P.M.	SUNDAY, NOV. 6, 6:00 P.M.

LOG OF W2IOP ZONE 5 COUNTRY U.S.A. DIVISION C.W. OP. 1

DATE & TIME (LOCAL OR GMT)	STATION	COUNTRY	SERIAL NUMBER		ZONE & COUNTRY MULTIPLIERS						PTS
			SENT	RECEIVED	7.0 mc		14 mc		27/28 mc		
					Z	C	Z	C	Z	C	
10-28 1002	KR6AZ	OKINAWA	58905	58925					1	1	3
1007	VK2DI	AUSTRALIA	58905	57930					2	2	3
1045	PY1DH	BRAZIL	57905	56911			1	1			3
1056	G6QB	ENGLAND	57905	56914			2	2			3
10-29 1202	ON4JW	BELGIUM	57905	56914	1	1					3
1215	W6OD	U.S.A.	57905	57903	2	2					0
1218	ON4QF	BELGIUM	56905	57915							3
1230	XF1A	MEXICO	59905	59906	3	3					1
				TOTALS	3	3	2	2	2	2	19

COUNTRY MULTIPLIER 3+2+2 = 7
ZONE MULTIPLIER 3+2+2 = 7
TOTAL MULTIPLIER 7+7 = 14
CONTACT POINTS = 19

TOTAL SCORE 14 x 19 = 266

is on Thursday Island which is located twenty miles north of Cape York, Australia. He wants it to count as a separate country. Nuts! I haven't even been able to convince my DX committee that Catalina Island should count as a country, and that's about 21 miles off our coast. . . .

TF3EA adds three good ones in *VK9GW, ZD9AA, and UP2AA.* W3GRF reminded me that cards from *ZP3AW, ZP2BL, YV4AW,* and *HC1AW* were sent via A.R.R.L. about three months ago. Since W3GRF has the logs of these stations, he will be glad to send another card to those who have not received theirs. Nope, Joe, it wasn't GRF doing the operating.

I1KN is still wondering if he will ever hook up with Zone 23. This is the only zone he needs. Better try hard, there's three of them on over there now. . . . *AC4YN, AC4RF,* and *AC4NC.*

W8SYC is handling the QSL duties for *PK4KS* who is operating under about the same handicap that *PK4DA* is. In case you have worked him and would like his card, you can send yours along with a stamped, self-addressed envelope to W8SYC whose QTH you will find in the section at the end of the column.

JA2BQ is another one who QSLs 100%. He operates in Tokyo and runs 450 watts to a pair of 813s. His antenna setup consists of three Vee beams on 20 meters; each having 4 waves to a leg.

W9FNR wants it known that he has TVI in the family and will be on more as soon as the stuff is cleaned up a bit. . . . . It is good to see WØANF in the Honor Roll, phone section. He is one of the lucky guys who snagged *C8KY* during *CQ*'s contest last October. . . . . W3FYS grabs off Zone 19, as well as a flock of countries.

Sob Story

ZL2GX writes in to say that VK2DI tipped him off on *SV6AA.* Jock says, "I was all a flutter, just like a flapper on her first date. Hi!" Anyway, he just barely *heard* the SV6, and that is where it ended. He tells another hard-luck story about ZL2CU who had had all zones worked for a long time but still hasn't received his card from *C8KY. ZL2FA* is in the same boat. That is really tough on these fellows, as both ZL2GX and 1HY worked C8KY *after* 2CU, but they were lucky enough to get his card.

W3KDP is still praying for Zones 23 and 26. Ren, OM, I hope you get an answer.

According to W1HX, *ZA1B* says to wait for his QSL card through A.R.R.L., and then reply undercover to the QTH shown on his card. How do you reply "undercover?" Maybe I am missing something. . . . Anyway, Norm worked the guy on 14 mc c.w., as well as being lucky enough to hook *SV6AA.* Speaking of SV6AA, W1FH worked him on phone as well as c.w. . . . W4AIT lost a lot of shut-eye in chasing *ZS7B,* but it finally paid off in the end.

I see in the F.E.A.R.L. News that *JA2AS* is leaving Japan. His station has had the distinction of being licensed longer than any other ham in the occupation forces in Japan. Other calls used while there were W2CDJ/J2, and J2CDJ.

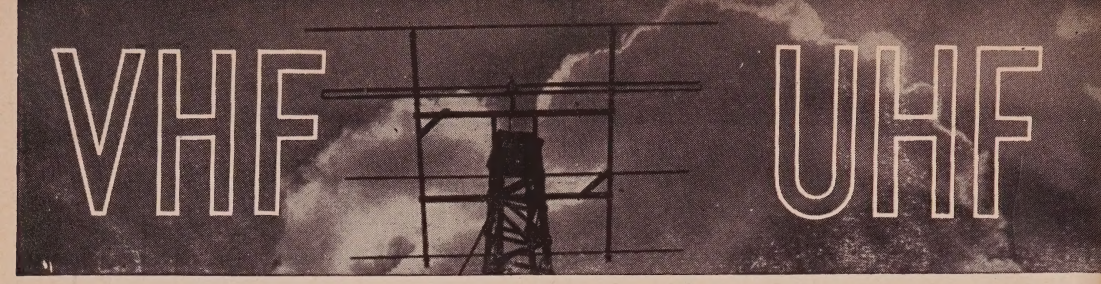
W9FKC thinks the DX men should get together and finance expeditions to Zone 23 so all W9s could W.A.Z. He says it would probably amount to $500.00 per QSL card, but figures he has spent that much time in lost sleep listening for a C8 or AC4. Mike, don't give up . . . there's three of them over there now.

Welcome to Margaret Roberts, W8BFQ, upon her entering into the phone section of the Honor Roll. She operates 28-mc phone exclusively. It looks like I am grabbing a little stuff away from the YL column of W2OOH's. Think nothing of it, Lou—you can put one of our guys in your section sometime. . . . [Take a look, Herb!—*Lou*]

G6QX wants to know how to get a card out of FM8AD. Frankly, I can't answer that. FE8AB, good old Ivan, has sent in his zone and country list for entering the Honor Roll. Ivan will be in FE8-land until March, 1950.

A letter from *MP4BAD* was passed along to me which contains some interesting news. In the first place, he says that BAB has left and is up around MD5 way and expects to be on the air as soon as the ban is lifted. Stations now operating in the Persian Gulf are *BAD, BAC,* and *BAJ.* BAC is located about 150 yards from BAD and concentrates on the high end of the phone band, around 14,340. BAJ works 14 mc c.w. and phone and is located in Bahrein Island. MP4BAD works c.w. only on 7 and 14 mc and runs around 100 watts. He uses a v.f.o. Incidentally, his approximate hours on the air are 1700 to 2100 GMT Monday to Friday/Saturday. On Sunday, the hours are 1700 to 0400 GMT. Ken will be there until December, and likes to work Ws. From now on, he suggests that all his cards should go through R.S.G.B. Ken relates

(*Continued on page 52*)



Conducted by VINCE DAWSON, JR., WØZJB*

LITERALLY SPEAKING, many pages could be filled with the v.h.f. happenings during the month of May and June. The skip openings have for the most part been something not within the memory of the old-timers. Activity has been exceptionally high throughout the North American continent and stations are either on, or will soon be on in Alaska, Cuba, Virgin Islands, Greenland and Bermuda. During the first part of June a common east coast comment was "When was the band closed last?"

The 2-meter gang have started watching 6 meters in hopes of sporadic-E contacts. This reminds us of the old days when 10 meters was used for the same purpose and told us when 5 meters would be expected to open. Several breakthroughs that have all the appearance of super-intense sporadic-E have already been observed and possibly by the time this appears in print the 144-mc record will have been broken. Grazing incidence propagation at 144-mc has also gotten in a few good swings with at least one path equalling the standing DX mileage record.

Those 144-mc Mileage Records

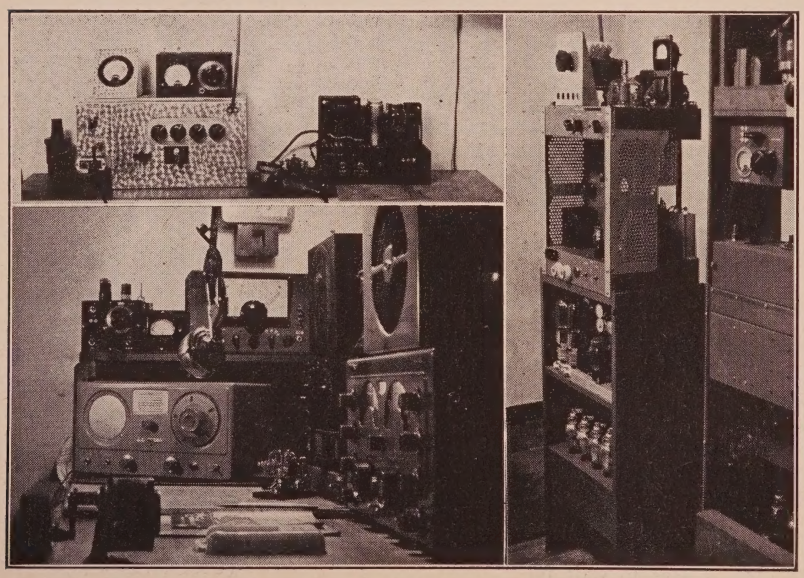
On June 16 at 2301 CST, WØNFM, Solon, Iowa, and W5JTI, Jackson, Miss., contacted on 144 mc with S9 signals in both directions. Just before this contact WØNFM had worked W4HHK, Collierville, Tenn. and W4BYN in Memphis. This had been Clair's first opening that far south. Following the contact with W5JTI, Clair then worked W5NYH in Lexington, Miss. which is about 60 miles north of Jackson.

Based upon definite information obtained from both W5JTI and WØNFM as to their respective locations this breaks down to a distance of 654.1 miles. This falls just two miles short of the standing record at this writing of WØWGZ W3GV of 656.3 miles.[1] To make the whole situation a little bizarre it is to be remembered that the distance of W2RH-W2TDW/4 was 651.5 miles!! What is it that makes all extended ground wave 144-mc DX records come out to about the same mileage?

Last month we mentioned the reception of W7FGG, Tucson, Arizona, by W4HHK. Then just too late to fit in the issue we heard of the reception of W5JTI by W7KOP, Sinclair, Wyoming (was called Parco, Wyoming and is several miles from Rawlins). This is a clean hop of 1107 miles. Even a cross-band contact was missed on May 8 since W5JTI and W5NYH both blame themselves for not tuning up to W7KOP's frequency at 50.998-mc. Gosh, fellows is that so

Send all contributions to Vince Dawson, Box 887, Gashland, Mo.

1 The mileage record figures published in our January, 1949 column were found to be in error. Correspondence with all interested parties has suggested the formation of a National DX Record Committee. More information on the proposal will be given in forthcoming issues.



The business-like station of XE2C, Monterrey, Mexico. On 6 a 4-250 runs 500 watts. Receivers are an HFS and NC-183. On 2, XE2C uses a 522 and a homemade mobile rig.



BIL HARRISON'S TREASURE HUNT



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THORDARSON 6.3 Volts CT, 10 Amperes	T21F12	3.56
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THORDARSON 7.5 Volts CT, 8 Amperes	T21F16	3.56
KEN-O-TAP Modulation Xfmr 125W Audio	T-441	16.58
UTC 900-750-0-750-900 at 200 MA	S-45	11.76
THORDARSON 7.5 Volts CT, 12 Amperes	T21F17	4.41
UTC 5/25 Hy Swinging Choke—550 MA	S-38	13.72
THORDARSON 10 Volts CT, 5 Amperes	T21F18	3.56
UTC 20 Hy Choke, 550 MA, 60 Ohms	S-37	13.72
COMMERCIAL GRADE 12Hy, 110 Ma Choke.	CH-12	1.39
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NATIONAL HRO-W War model of famous HRO!	135.00
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high? Anyhow, on June 2 while W7KOP was in contact with W5JTI the latter again tried 144 mc. On this occasion, both W7KOP and a visitor in the shack could hear a carrier with the b.f.o. and finally identified that the station was calling them before it faded into the noise level.

The publicity of these two near openings on 144 mc, together with the special material sent out by the RASO office in Philadelphia, caused a sudden flurry of stations calling CQ and "listening on both 2 and 6." The Texas lads immediately threw out their chests and yelling the battle cry of the Alamo on 50 mc had everyone in a dither. On june 13 at 1920 EST W4QN at Orlando, Florida heard W5JLY in San Antonio, Texas on about 144.1 mc. A sked had been arranged during a 6-meter opening. W4QN had clamped on the earphones and immediately had had them blown off as W5JLY came rolling in. Apparently, W4QN was looking for a weak signal. This is a clean hop of 1037 miles. Only about 30 minutes before this W5VY had checked with W4EID and had heard a weak carrier with only the word "Jackson. . . . " being audible enough to read. This could have been W4EID in Jacksonville, Florida or even W5JTI, who was also on 6 meters and was noting these test schedules across the Gulf of Mexico

As it appears at the moment, these four instances are due solely to various manifestations of sporadic-E. Except in the case of W7KOP hearing W5JTI on May 8, the rest seem to be due to a bursting variety of sporadic-E right in the heart of the cloud. These bursts will probably be quite tricky and will need to be correctly oriented to reflect 144 mc. Possibly these bursts might be due to additional ionization in the sporadic-E created by meteors. If so, then it would be extremely profitable to look for such DX during the morning openings rather than the afternoon and evening openings, meteors being more prevalent and having a much greater Mach number during those hours, thus creating considerably more ionization. The long reception period experienced by W7KOP is entirely without precedent. This seems to have been due to a super sporadic-E cloud.

In any case, the ionization necessary to refract 144 mc is tremendous and according to information at hand, has never been observed by our ionospheric sounding recorders in this country. While this doesn't preclude the possibility of these openings, it does nevertheless call for some advance thought on parameters. Most important is going to be that of distance. Theoretically speaking, 144 mc would open for normal sporadic-E if the 50-mc skip distance went down to less than 250 miles. (Skip distance is related to the ionization density in the sporadic-E cloud. The lower the skip distance at any one frequency, the greater the maximum usable frequency) Based upon past and present experiences, it would be extremely unlikely for sporadic-E to propagate a signal to a distance less than 1000 miles. Your best bet, if working both bands is to look for an occasion where signals around 500 and 1000 to 1100 miles are being heard simultaneously. Then arrange skeds with fellows around the 1000 mile mark. Don't waste time to sked fellows only 700 miles away, as it would appear impossible for sporadic-E to ever reduce the 144-mc skip to that distance. If it did, then everyone would know it and would be on the band.

We surrender — trying to update the 50-mc and 144-mc Honor Rolls with both bands open day after day has proven impossible. Until a breather comes along, we regretfully omit this CQ feature.

50-mc News and Views

It seems rather difficult for this columnist to run in competition with the newsletter being issued to cooperating observers by the RASO office. The first letter included a valuable frequency listing which was appreciated by many of the 6-meter gang. With the fire that Perry Ferrell has put into the initial steps of RASO there can be little doubt that it is going to go a long ways in improving the band and getting more activity. At this writing a system is being worked out for this columnist to receive the data turned in to the RASO office for the 6-meter sporadic-E project. In addition, it is possible for anyone to send us dope for this column by the roundabout method of enclosing it in with your 6-meter report. Our home address is still good and any dope strictly for the column should be passed on to us through that address in order to cut down the double handling problems and the delay involved.

Catching up with those boys on 6 meters who are rapidly closing in on WAS is getting to be a problem. As this goes to press, WØCJS has successfully run the gauntlet and should receive WAS 4. Stations like W7HEA, W5AJG and W9ZHL are up to the 47 marker and have one to go. The dearth of activity suddenly in North Dakota since WØYSJ went off the air is keeping some of the fellows on the coasts from increasing their totals. Nevada and Utah are also States where some real good v.h.f. men could be put to work.

Looking at the start of the season, there has certainly been more double-hop than in the last three years. Naturally, some improvement in recognizing these openings has been noted, together with the installation of better equipment. With XE1GE and XE1FU leading the parade, double hop to the south has been possible on a number of days. Even the VE-XE path has been traversed with XE1GE-VE3ANY holding the first good two-way QSO on June 19. Double-hop from coast to coast on June 25 was the best that many operators had seen.

VO2BN made his initial appearance on 50.2-mc when W1BWJ heard him weakly on June 16 at 1839 EST. At this time Les was calling CQ. Contact was not made due to local QRM at W1BWJ. However, this shows that Les is on the air and plugging away. We hope to have more information from him next month . . . . During the opening of June 13 WØUEL worked five new States and then added an XE. After the fourth new state Johnnie started gurgling and laughing to himself and now his wife is wondering if this sporadic-E affects people that way . . . . Shortly after noon on May 29, VE5NC heard VE1GE. The signal was very weak, but identification was positive. This was the longest haul that Basil has heard on 50 mc . . . . The next evening

(*Continued on page 61*)

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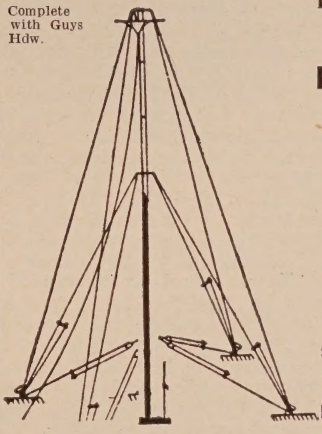
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SCOOP! 110 (MC) Rec. Bargain

BC-733 D Localizer Receiver

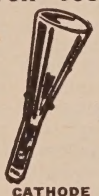
Freq. 108-110 Mc. Tube complement 10 tubes—1—12SQ7, 2—12SR7, 1—12A6, 1—12AH7GT, 2—12SG7, 3—717A. USED CONDITION. Companion to the glide path receiver. Also contains 90 and 150 cycles band-pass filters. Has the best AVC system yet developed. Can use parts or use as a model for construction. 10 tubes, crystals, relays, etc. Schematic included, with dynamotor. Don't pass this up.



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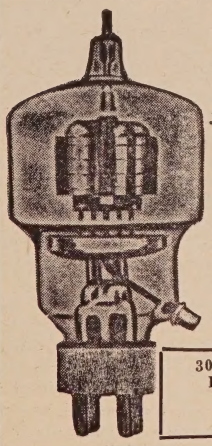
24 G	**$1.00**
28 D7	**.29**
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HY-615	**.39**
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3 Coils **$1.00**

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150 ohm Amphenol, Per hundred	**2.16**
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Conducted by LOUISA DeSOTO, W2OOH*

ANOTHER TWELVE MONTHS have rolled around, and once again it's time to report new officers for the YLRL. This year officers-elect are all on the East Coast, with Helen Morrison, W3OLY, being chosen president, and Anabel Gifford, W3NNS, vice president. Marion Kurtzner, W3NHI, has been appointed secretary-treasurer, while Barbara Houston, W3OQF, will be editor of *Harmonics*. Some highlights on these YLs next month, when we'll also have the list of District Chairmen.

They're a grand bunch of YLs with lots of enthusiasm—we know, for W3OLY's enthusiasm already has persuaded yours truly to take on the post of Publicity Chairman, with a little pep talk that went in part like this: "We've got to publicize YLRL more and let everyone know about our club. There's so much we could do providing we get better known and get all the old members back plus new members." . . . You know what that means, gals—more than ever we'll need your cooperation and contributions.

Aloha!

Now this letter from Margaret Carpenter, KH6UR, whose QTH is Ulupalakua, Maui, T.H., represents just the sort of cooperation we like.

Writes Margaret: "I've been reading your column with tremendous interest ever since the OM first pointed it out to me in hopes of getting me on the ball to get a ticket of my own. It served that purpose well, and I finally landed KH6UR.

"The prime mover of this letter, however, was Dell Johnson, KH6TI, who just came over from Hawaii. I'd worked her several times on 40 c.w. and 10 phone, so it was a great thrill to be able to meet her and have a good rag-chew about hamming and the YL's place in it. She tells me, however, that I've really been missing the boat by passing up the YLRL, and has promised to submit my name for admission to the YLRLeague. So this is by way of introducing myself.

"When I met Russ, now the OM, I was completely innocent of the ways of the ham—was, as a matter of fact, completely unaware that there was any such critter. Russ was then W6VYQ, and he flexed his muscles and invited me up to see his QSL cards. So how could a gal help succumbing? Right after we were married we came to the Islands, and before so much as looking for a roof to shelter us from the Kona storms, he applied for a KH6 call. Then as KH6NB he started in burning up the ether on 20 phone and c.w., while I sat around in a daze. But when I started chewing the arms off all his phone contacts he decided I'd better have a call of my own.

"There ensued six months of study far more grueling than anything they'd thrown at me at UCLA, where Russ and I met. Finally the great day came, and after spraying my throat with DDT to squelch the butterflies milling around in my stomach, I sallied forth to do battle with the R.I., who turned out to be a real good Joe, sans the expected horns and pitchfork.

"There was a royal celebration in the Carpenter household when that little manila envelope from the FCC finally found its way out here, you can bet. But it was just one jump ahead of the junior op, who is now four and a half months old. Consequently, I haven't been as active as I'd hoped during the months of studying, and Russ hasn't been reduced to stamp collecting by the sight of my impressive DX total, as I'd confidently expected.

"However, between the two of us, we manage to keep the rig on the air about six nights in the week. Right now said rig consists of an ART-13, which I use spasmodically on 20 c.w. when my conscience hurts for too much rag-chewing on the phone bands. It also gets out nicely on 160 for some good inter-island roundtables. On 10 we run about 80 watts with a transmitter consisting of 7C5 crystal oscillator, 807 buffer and doubler and 829B final. Up till now we've been getting along with a V-beam and a doublet for receiving, but if Dell keeps on singing the praises of her cubical quad much longer, we're going to have to get one up, too. The receiver is an HQ-129X with an R9'er ahead.

"We've a good QTH for hamming—miles out in the sticks on a cattle ranch, and 2600 feet up the side of Haleakala, the largest extinct volcano in the world. Such isolation has its drawbacks, however. The junior op decided to arrive during a Kona storm with a 70-mph gale which had

(*Continued on page 60*)

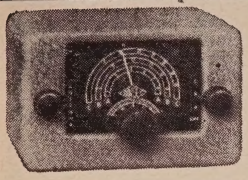
Assistant Editor, CQ. Send all contributions c/o CQ, 342 Madison Ave., New York 17, N. Y.



Russ and Margaret Carpenter, KH6NB and KH6UR, (refugees from W6QD's DX column?).

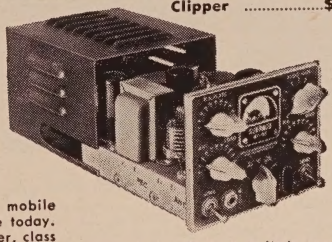
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VARIETY-BARGAINS



GONSET'S LATEST

The new converter which covers all bands from 3 to 30 mc. Same size as all Gonset mobile converters.
Model 3-30 .....$39.95
The still current, and highly popular, 10-11 or 6 meter models $39.95
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THE NEW SUBRACO MT 15X

The finest in mobile rigs available today. 30 watts power, class B 100% modulation, with push-to-talk and built-in coaxial type antenna relay. Xmttr complete with tubes, coaxial antenna connector, mounting brackets, etc.....$87.50
BRAND NEW—MT15X for 20 meters.....$87.50
ALSO NEW—MT15X for 75 meters.....$87.50
(MT15X for 20 and 75 have same features as MT15X for 10-11)
Speech input. Any of the MT15X can be ordered with high-gain speech input for either xtal or dynamic mikes at an additional cost of.....$9.95



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Dynamotor supply. 6 V. DC input, 400 V. at 175 ma. output. Complete with built-in control relays, filter, etc.....$59.95
AC Supply for operation of any of above Subraco xmttrs indoors. Complete with rectifier and built-in control relay.....$39.50

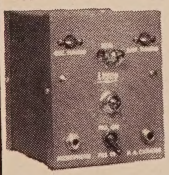


STANCOR'S NEW ST-203-A

Mobile xmttr kit. Uses 2E26 in final, PP 6V6 modulator. Weighs 9¼ lbs. with tubes and xtal. Built-in push-to-talk relay. Complete kit of parts, less tubes and accessories.....$44.70
Completely assembled, wired and tested, less tubes and accessories $58.90

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Auto receiving type, collapsible, 96".....$3.60
Premax Model AS196, solid stainless steel, 96" whip..$3.60
Type NA bumper mount for antenna.....$3.60
Type R mount with SA spring adapter.....$14.40



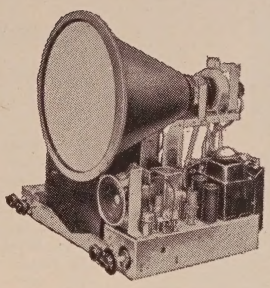
LYSCO'S NEW MOBILE XMTTR

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Also available completely factory wired and tested. Prices incl. all tubes except kine.

10"	$205	12"	$215
15"	215	16"	225

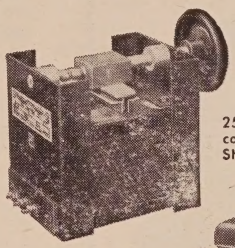
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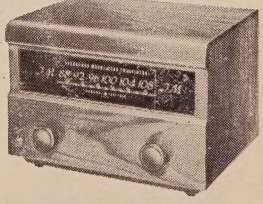
Complete kit, net	$18.74
Additional 5 amp rectifier for increasing output	8.95
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250 watts. Input 115 volts, 60 cy; commutator range 103-126 volts. Shpg. Wt. 15 lbs.....$5.95

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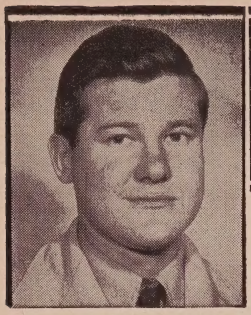
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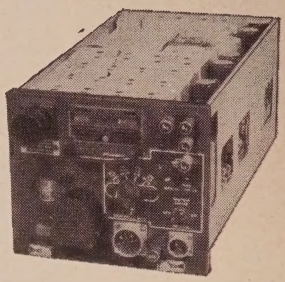
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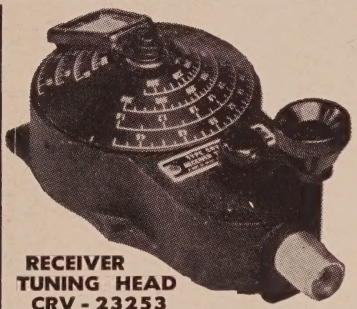
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NAVY CRV-46151 AIRCRAFT RADIO RECEIVER



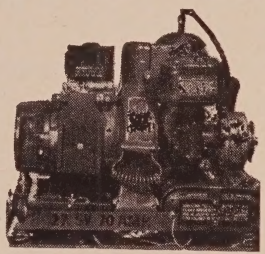
Four bands including broadcast (195-9,050 KC). Circuit is six-tube super-heterodyne with mechanical band change or remote operated electrical band change. Remote band change and tuning controls included, making this set readily adaptable to mobile ham use. Powered from self-contained 24 V. DC dynamotor.

The sets are complete with tubes and remote controls. No cable or plugs. Including case..... **$20.00**



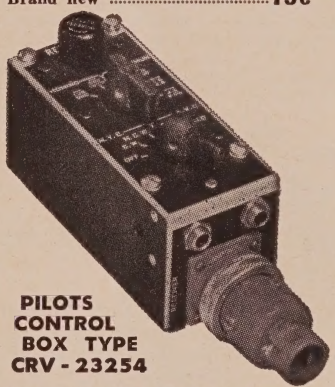
RECEIVER TUNING HEAD CRV - 23253

Used with CRV-46151 Receiver for vernier tuning. Has beveled dial with hairline cursor. Bands are 200-560, 560-1600, 1600-4450, 4450-9050 Kcs. Each band spread over about 280 degrees of dial edge. Has provision for flexible tuning shaft or can be adapted for direct drive on any tuning shaft. Black crackle finish. Size 5" x 3" x 2" overall. Brand new **75c**



(HRU) DC POWER SUPPLY

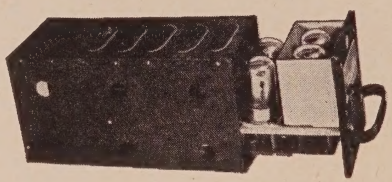
24-28 V. at 70 amp. 2000 watts gasoline engine generator with electric starter. Power supply which can be used to operate 24-28 V. equipment, start airplane engines, charge batteries, as a welding machine, lighting system, or for amateur radio station. 21½" x 17½" x 24⅝". Wgt., 115 lbs. **$45.00**



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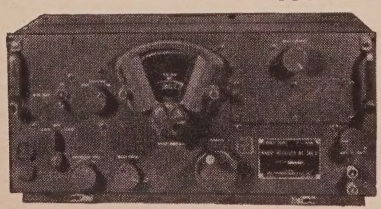
Used for parts—shipped complete with the following tubes:
2—7C5's 1—7Y4 1—7F7
PRICE — Carton of 10..... **$7.50**

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3 conductor, stranded, insulated and weatherproofed. Ideal for intercommunication systems, telephones, selsyn indicators. Use it inside or out of doors.
525 Foot roll, brand new,.....**$4.25**

BC-221 FREQUENCY METER

Covers 125 - 20,000 Kc. Battery operated. Beautiful equipment.
$69.50



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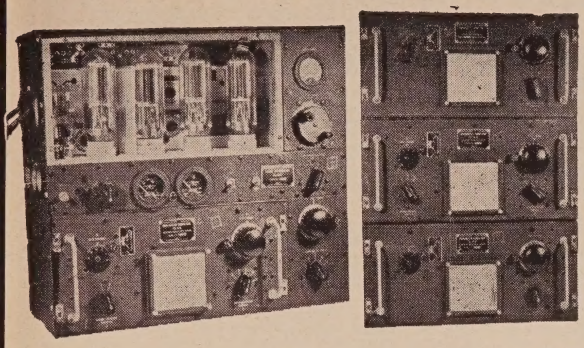
6 bands, 200-500 Kc. and 1.5-18 Mc. 2 stages RF, 3 stages IF, BFO, crystal filter, manual or AVC. Complete with tubes and 24 V. dynamotor. These receivers have been thoroughly checked in our work-shop and found in excellent condition. Converted to 110 V. AC 60 cycle **$60.00**

24 v.d.c. operated suitable for airline use.....**$100.00**

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Esse's Special Offer

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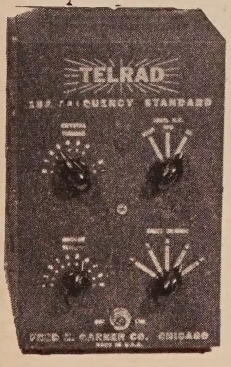


BC-375 GE MOPA TRANSMITTER

The most famous of all surplus transmitters. Was used by the Army bombers and ground stations during the War. Frequency range is covered by means of plug-in tuning units as shown below. Each tuning unit has its own oscillator and power amplifier coils and condensers, and antenna tuning circuits all designed to operate at top efficiency within its particular frequency range. Transmitter and accessories are finished in black crackle, and the milliammeter, voltmeter, and RF ammeter are mounted on the front panel. **Frequency Range:** 200-500 Kc. and 1500-12,500 Kc. (Will operate on 10 and 20 meter band with slight modification). **Oscillator:** self-excited, thermo-compensated, and hand calibrated. **Power Amplifier:** neutralized class "C" stage, using 211 tube, and equipped with antenna coupling circuit which matches practically any length antenna. **Modulator:** Class "B"—uses two 211 tubes. **Power Supply:** Dynamotor which furnishes 1000 V. at 350 Ma. **Conversion** instructions and diagram for 110 V. AC furnished upon request for.....**$1.00.**

PRICES: As follows—

Transmitter only	**$8.50**
Tuning units TU-6B, TU-7B, TU-8B, TU-9B, TU-10B, TU-26B, choice	**2.50**
Dynamotor PE-73C	**3.00**
Antenna tuning unit (BC-306A)	**3.00**



TELRAD 18-A FREQUENCY STANDARD

Checks signals in the range of 100 Kc. to 45 Mc. with a high degree of accuracy. Self-contained power supply is 110, 130, 150, 220, and 250 V. 25-60 cycle AC. Complete with tubes, dual crystal, and instruction book. Brand new.

Price **$17.50**



ATTENTION! PROSPECTORS, MINERS, OIL COMPANIES PLUMBERS, etc. Below is the finest metal detecting mine detector ever constructed . . .

SCR-625 MINE DETECTOR

Brand New

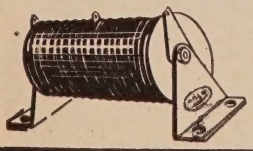
Metallic Objects Only

Used by the Army to detect buried metallic mines. Its private use suggests the location of underground or underwater pipes, cables and ore bearing rock, the location of metallic fragments in scrap materials, logs, etc., and the screening of personnel in plants for carrying of metallic objects.

The unit consists of a balanced inductance bridge, a two-tube amp. and a 1,000 cycle oscillator. The presence of metal disturbs the bridge balance, resulting in a volume change of the 1,000 cycle tone. The tubes used are low-battery drain types such as 1G6 and 1N5. The circuit may be modified for control of warning signals, stopping of machinery, etc., when metal is detected. Operates from two flashlight batteries and 103 V. "B". However, a power supply operating from 110 V. may be used. Comes complete with spare tubes, spare resonator and instruction manual—in wooden chest 8¼"x28¾"x16". Weight in operation is 15 lbs. New, complete in original overseas packing container. Originally sold by War Assets for $166.00. The U. S. Forestry Service has recommended procedure for using the SCR-625 Mine Detector to find concealed metal in tree logs and other timber products.

PRICE $45.00

BATTERIES .....$4.00 EXTRA



BL-SELENIUM RECTIFIER TYPE 23751

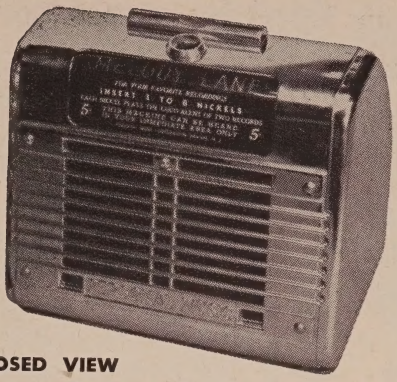
A must for the radio man for the much needed 110 V. DC source. 110-120 V. AC input, 110-135 V. DC output at .75 amp. Connect in parallel for highest current requirements. Size 3⅛x2⅝x1¾ inches.

PRICE—New .....**$1.00** ea.

ESSE RADIO CO.

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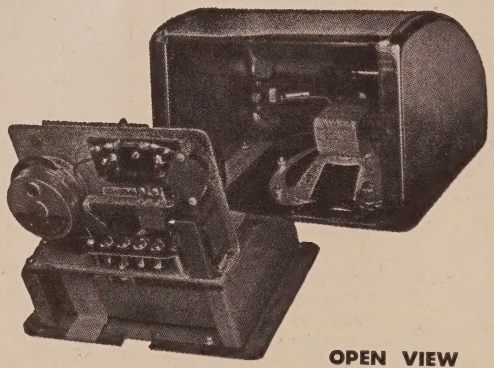
INDIANAPOLIS, INDIANA



CLOSED VIEW

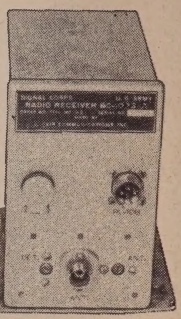
- Sloping front
- PM Speaker 5" size
- Has 2 Pilot Lights for illumination
- Finished in chrome metal and grill with red plastic
- Accepts 1 to 6 nickels
- Each 5c coin gives about two phono records of music
- Should be mounted on a flat base
- Has Haydon Mfg. Co. timer
- Has provision for locks (not furnished)
- Easily removable coin box, size 6" x 3½" x 1½"
- Requires 4 wires from power unit
- A beautiful piece of equipment that could be built to house coin operated radio.
- Worth several times our asking price.
- Price brand new

Box of 8 $25.00 each **$3.75**



OPEN VIEW

MARKER-BEACON RECEIVER

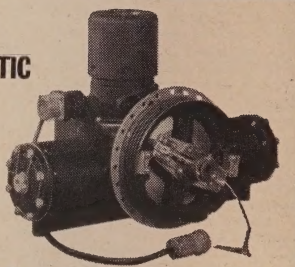


Can be adapted to radio controlled devices. Was used by pilots to flash a signal lamp on aircraft instrument panel when in range of a beacon transmitter. Responds to modulated signals over a variable range of 62 to 80 Mc. Tube plates and filaments operate directly from 24 V. DC. Can be adapted for radio control of experimental apparatus opening garage doors, etc. Circuit diagram and parts list included on either model shown below:

BC-357 — contains 12C8 and 12SQ7 tubes and sensitive relay (size 5⅜" x 5¼" x 3¼"). **$2.95**

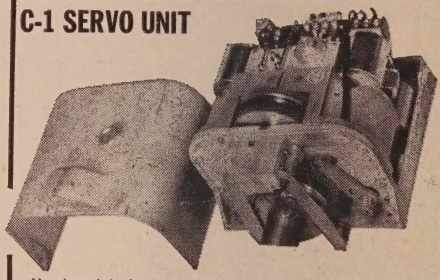
BC-1033 — contains 6SH7, 6SL7 and 12SN7 tubes, sensitive relay (size 5⅜" x 5¼" x 3¼"). **$3.50**

A-5 AUTOMATIC PILOT SERVO M1



Made by Delco-Remy. Has ¾ horsepower shunt type DC motor, 27.5 V. 11 amps input, speed 6000 rpm. Has hydraulic lift — (Intended use—Hydraulic lift actuates Ailerons on airplane). Overall length 16", width 12", height 11". Net weight 28 lbs. Shipping weight 35 lbs. Hardware for cable drum included. Brand new in original packing boxes..... **$4.95**

C-1 SERVO UNIT



Use to rotate beam antenna, actuate boat rudder control, etc. Contains 24 V. motor, clutch, relays, etc. Reversible. Size overall approx. 10½" x 8½" x 6½" **$4.50**

AMPHENOL LOW-LOSS UHF CONNECTOR for RG type cable. Rugged construction, heavily silver plated. provides easy assembly and positive connection. Type 83-1AP Angle Plug Adapter polystyrene insert, pin and socket—very special ..... **$2.00** per doz.

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Orders Shipped F.O.B. Collect

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ATTENTION FACTORIES, HAMS, DEALERS, INDIVIDUALS — JUST ANYBODY . . .

Some of the equipment listed below is urgently needed by our company to meet the demands of customers and we will pay the highest cash prices.

Send letter with full description describing condition and quote price. We will immediately answer and if we can use your equipment, we will authorize you to send it to us COD.

Our prices will amaze you. We will perhaps pay you quite a bit more for some of the below listed equipment than what you paid for it. Please don't hesitate to write us immediately.

WE NEED AT ONCE

BC-348 Receivers, AC or DC models
BC-312 Receivers
BC-221 Frequency Meters
Telrad Frequency Standards
SCR-522 transmitters & receivers
APN-4 Radar Scopes
Hallicrafters BC-610 Transmitters
Any factory built transmitters and receivers such as Hallicrafters, National, Temco, Collins, RCA, RME, Hammerlund, Millen, Meck, Harvey-Wells, Meissner, Sonar, McMurdo-Silver, Gonset, Stancor, Bud, etc.
Amateur or commercial sets
Public address systems & equipment
Large stocks of tubes
Large stocks of transformers
Large stocks of condensers
Large stocks of resistors
Large stocks of speakers

BC-224 Receivers
BC-342 Receivers
BC-412 Radar Oscilloscopes
BC-645 Transmitter-receivers
Command Set Transmitters & Receivers
TBY Transceivers
PE-103A dynamotors
BC-1068A Receivers
Police type VHF transmitters and receivers for mobile application
Propellor pitch motors
Collins ART-13 Transmitters
APS-13's
SCR-269F or G Fairchild or Bendix ADF's
Headphones in quantity lots
Microphones in quantity lots
Field telephones
Sound-powered telephones

We are especially interested in any factories, dealers or other outlets giving us a list of surplus electronic equipment that is for sale so that we may submit our bid.

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Hamfests and Conventions

British Columbia Convention

The British Columbia Amateur Radio Association is sponsoring its 8th ARRL Convention at the University of British Columbia in Vancouver on August 5-6-7. There will be prizes, banquet, dance, program and prizes for the ladies. For reservations and tickets write P. McIntyre, VE7JT, 981 W. 26th Ave., Vancouver.

Northern Iowa Picnic

The North Iowa Radio Transmitting Assn. will hold its annual ham picnic on August 7 in Mason City, Iowa at East Park. Tickets $1 in advance, $1.50 at the gate.

Pennsylvania Hamfest

The South Hills Brass Pounders and Modulators Club is holding a hamfest at the Spreading Oaks Grove in South Park on August 14. There will be prizes, entertainment and lunches. Tickets $2.

Hamfesters Picnic

The Hamfesters Radio Club is sponsoring a picnic and hamfest on August 21, to be held at 112th St. and Avenue B in Chicago. There will be contests, entertainment and prizes. Tickets are $1 in advance, obtainable from W. Roberts, W9HOV Secy., 7921 Woodlawn Ave., Chicago, or at the registration booth at the picnic. Advance sales will predicate to some extent the amount of the prizes, so get your ticket early. Sandwiches, ice cream, beer, etc., available (but not included in cost of ticket).

Ohio Hamfest

The Columbus (Ohio) Amateur Radio Assn. will hold its annual picnic and hamfest on August 28th at the Maple Shade Picnic Ground. To be a basket lunch affair, activities will begin at 10 a.m. and will include swimming, bingo and other games, contests, prizes and transmitter operation. Admission 20c per person at the gate; everyone invited.

New York Amateur Radio Convention

The Greater New York Amateur Show, termed the "Biggest Show in Ham Radio," will be the stellar attraction of the 1949 ARRL Hudson Division Convention which is to be held October 7, 8 and 9th at the Ninth Regiment Armory, 125 West 14th Street, New York City. This is the first time in many years that a radio show has been held primarily for others than the engineering profession. A concerted effort is being made by means of the "show" to interest the younger generation in amateur radio and the convention has adopted the theme "how to get started."

There will be features for the licensed amateur operators, young and old, as well as activities specially planned for their XYLs.

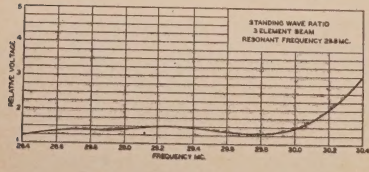
The advance convention registration fee is $1.25. Registration after October 1st will be $1.75. This will cover the 2½ days of the Convention. Advance registration may be made with Registration Chairman, P. O. Box 1198, Church Street Station, New York City 7, N. Y.

Cleveland Club Certificates

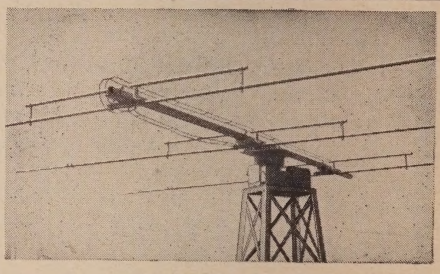
The West Park Radiops of Cleveland, are offering certificate awards to any station outside of the State of Ohio who contacts at least ten West Park Radiop member stations after Aug. 15, 1949. QSLs are unnecessary; merely send the calls of stations worked, time, date, band and emission used to W8AJW, Chairman of Awards.

BEAM ADJUSTMENT MADE EASY with ROTOMATIC PHASED DRIVEN ELEMENTS . . .

The new JOHNSON ROTOMATIC has many features marking its superiority. When equipped with the new Rotomatic unidirectional, phased driven elements, the usual laborious element adjusting and tuning is largely eliminated. The beam is symmetrical. Element lengths, "T" match settings and spacing between elements are the same for each element. Under nearly all conditions, these values will be very close to theoretical values. In fact, the elements can be set up on the ground to the lengths and spacing given in the instruction manual and the beam used without further adjustment. It's much less affected by the proximity of surrounding objects and height above ground than the parasitic array. For this reason, it will frequently be more efficient than the parasitic array that can't always be "tuned on the nose" because of its inaccessibility at the top of a tower.



The broad band characteristic of the "T" match, for instance, permits use of the entire 10 meter band without significant change in SWR.



Three element 10 meter unidirectional phased array with open wire feed line connecting all elements.

Features Galore

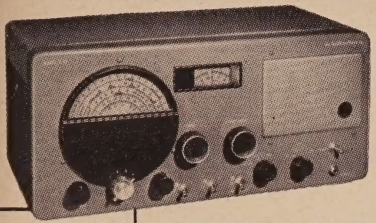
- High Gain
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- Easy To Erect
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- Will Safely Handle 2½ KW

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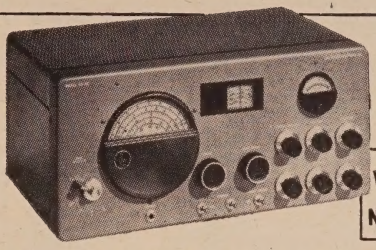
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Here's more value in popular Hallicrafters communications receivers packed with advanced features. Covers 540 kc to 43 mc in 4 bands. Highlights include: full electrical bandspread; inertia flywheel tuning; calibrated main dial; automatic noise limiter; adjustable pitch BFO; standby switch; code-phone switch; headphone jack; shock-mounted PM speaker; separate sensitivity and volume controls; 3-position tone control. All tubes included. In handsome all-steel cabinet, 18½x9x11". Shpg. wt., 32 lbs.

97-546. S-40A, for 105-125 v., 50-60 cy. AC.
97-588. S-52, for 117 volts AC or DC.
EITHER MODEL, reduced to..... **$79.95**

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You save $30 on this great receiver preferred by Amateurs, DX fans and AM-FM listeners! Delivers professional performance over the entire range of 540 kc to 55 mc—plus the 88-108 mc FM range. Features: accurately calibrated main tuning and electrical bandspread dials; accurate carrier-level meter; 4-position control for broad or sharp tuning; variable-pitch BFO; tone control; automatic noise limiter; dual IF system; RF gain control; crystal phasing control; selectivity control; standby-receive switch; 500 and 5,000 ohms output impedances. Complete with tubes. In rich satin-gray steel cabinet; 18½x8⅞x13". For 105-125 v., 50-60 cy. AC. Shpg. wt., 45 lbs.

97-743. SX-43, less speaker, reduced to..... **$159.50**
97-785. Matching R-44 speaker in steel cabinet. *NET*. . **$24.50**

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Save $19.55 on this quality, professional-type communications receiver! Covers 540 kc to 54.5 mc in 5 bands. Advanced features include: full electrical bandspread; large slide-rule dial accurately calibrated for all ranges; automatic noise limiter; adjustable pitch BFO; tone control; code-phone switch; headphone jack; phone jack; separate sensitivity and volume controls; built-in PM speaker. Includes all tubes. In satin-black steel cabinet with chrome trim; 12⅞x6⅞x7⅞". For 105-125 v., 50-60 cycles AC. Shpg. wt., 20 lbs.

97-573. Hallicrafters S-53, reduced to..... **$69.95**

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ALLIED STOCKS ALL HALLICRAFTERS MODELS

SX-42 (less speaker)....	$275.00	S-38 (complete).....	$ 39.95
SX-62 (less speaker)....	269.50	HT-17 Transmitter.....	39.50
S-51 (complete).....	149.50	HT-18 Oscillator.....	110.00

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SURPLUS RADIO CONVERSION MANUAL IN TWO VOLUMES

This set of reference data has become standard for the most commonly used items of surplus electronic equipment. All conversions have been proven by testing on several units; each yields a useful item of equipment. For list of items covered see ad in **July 1949 issue of CQ** or write us.

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Mobile Corner

A new department covering the specialized activities of the amateur operating mobile on land, in the air, or on the sea.

MOBILE CORNER inaugurates a new feature which takes cognizance of the growing importance of mobile operation in amateur radio. More and more amateurs throughout the United States are turning to mobile transmission as a novel field of exploration that is rich in entertainment as well as community benefits.

On the high seas American amateurs working maritime mobile on the 28 and 27-mc bands have served to keep themselves and their associates in close touch with home. With the revitalization of the American Merchant Marine, more maritime mobile stations are coming on the air. As a consequence, there seems to be a need for one central point for an exchange of ideas and news concerning land based, maritime and airborne mobile operation. That will be the primary purpose of Mobile Corner. The regularity of the feature will be entirely dependent upon reader response.

Among the ideas suggested is one by W6YYT who proposes an award for amateurs communicating with a certain specific number of maritime mobile stations. The possibility of expanding this idea to include all mobile stations is being seriously considered. W1AVY, for example, already has communicated with 31 different maritime mobile amateurs in all parts of the world. Bill Harrison, W2AVA, of Harrison Radio is awarding a trophy for the first U. S. station to work all states and another for the first one to work all continents after July first.

The possibilities in this field have just barely been scratched. *CQ* is devoting extensive editorial space to the development of this very important phase of amateur radio operation. Articles on mobile v.f.o.s, low frequency mobile antennas, installations, and other similar material is all planned for future issues of *CQ*. Mobile Corner will serve as a bulletin board for such organizations as the North Jersey Mobile Assn. Technical hints and kinks, notes of position reports on maritime mobile stations, new mobile operators, and unusual performances will all be reported through the medium of this column.

Typical of the special information that will fall into this category is the mobile operation of WØNFA, now operating by special permit of the Mexican authorities as XE1PC. Apparently, bona fide licensed U. S. amateurs can receive permission, while touring throughout Mexico, to operate portable mobile. Using two ART-13s and an ARR-7 receiver, Ches is having a wonderful time hamming and vacationing. Apparently, the fact that such permission can be obtained is not well known and Mobile Corner will attempt to bring such license-travel reports to its readers.

For information the department will have to depend largely on material submitted by its readers, so it's up to the mobile gang.

Address all correspondence for Mobile Corner to Editor, Mobile Corner, CQ, 342 Madison Ave., New York 17, N. Y.

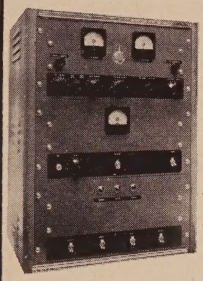
WORLD FAMOUS WRL TRANSMITTERS *deliver* MORE WATTS *per* DOLLAR!

"Deal with the World's Most Personalized Radio Supply House"

I FINANCE MY OWN PAPER — MAKING IT EASIER AND CHEAPER FOR YOU TO BUY FROM ME — LIBERAL TRADE-IN ALLOWANCE ON YOUR PRESENT EQUIPMENT. LET'S GET ACQUAINTED!

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350 Watt Phone — 400 Watt CW

An outstanding value—for the first time a transmitter at less than $1.00 per watt! Unconditionally guaranteed! A versatile, advanced design transmitter that will give you efficient performance on all bands from 10 to 160 on phone and CW. 350 watt phone 100% modulated, and 400 watt CW make this XMTR the outstanding buy on the market. Provisions for ECO. Complete with one set of coils.

$399.45 WIRED $379.45 KIT FORM



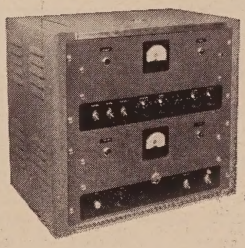
GIANT RADIO REFERENCE MAP

Just right for your control room wall. Approximately 28"x42". Contains time zones, amateur zones, leading short-wave stations, monitoring stations. Mail Coupon Today and **25c**



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WRL 175 WATT GLOBE CHAMPION

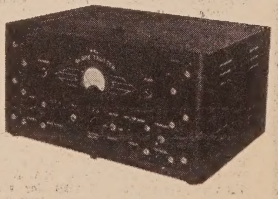
R.F. Section a complete 175 watt XMTR—provisions for ECO—Automatic Bias on Final and Buffer—voltage regulated Oscillator and Buffer—class B Speech Modulator—175 watt input from 10 thru the 160 meter band—complete with tubes and meters including 1 set of coils — specially crated for safe shipment.

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- ☐ "400" Globe King
- ☐ 175 Watt Globe Champion
- ☐ 40 Watt Globe Trotter

Name_____

Address_____

City_____ State_____

DX

(*from page 37*)

that MP4 calls are assigned to Trucial Oman and Bahrein Island. VU7 is now the prefix for Nepal and any VU7 giving his QTH as Bahrein probably should be ignored.

Al Hill, W6JQB, ex-W1QMI, who, as you will remember used to handle the DXCC is now trying to get on the air in a little town in the Northern part of California.

From the looks of things, *KP6AB* is shoving off from Palmyra, and to those who have not received his card, he will answer via KH6BA. As yet, Bill doesn't know where his next assignment will be, but might be some other remote spot in the Pacific. Bill says *W5VMI/KP6* is now active, while *KP6AA* will be QRT in two or three months. You will find the mailing address of KP6AB in the QTH section.

Stuff on Zone 2

VE8NY, who has been operating at Resolute Bay in Zone 2 for quite some time, is about ready to sign off. Other active stations in that neck of the woods are *VE8MB*, (this belongs to the combined U.S. and Canadian weather station); in the same shack with 8NY is *8ME*, and *8NS*, as well as a newcomer, *8NU*. VE8NY is ex-VE3AWQ and expects to wind up in VE4 sometime this fall. Other Zone 2 calls in his district, but still farther north, are *VE8MD* on Isahksen Island, *VE8MA* on Prince Patrick Island, and *VE8MC* at Eureka Sound. 8NY has been using an 8-tube home-brew receiver, while the rig consists of a 6L6 into a pair of 807s in parallel. He has been using one crystal at about 14,023 kc. With this equipment, he worked 24 zones and 50 countries, but, of late, he has been using a BC-610 and finds this helped his DX considerably.

For months, KH6PY has been trying to find out what happened to C8YR. Now he doesn't care much any more, because he snagged *AC4RF*. Jack says maybe some of the boys would like to know that *ZP8BL*, *TG9FC*, and *VP9CC* QSL promptly. . . . W9RNX worked *KH6VX/KB6* on phone and says this station QSLs promptly also . . . . W6IFW sneaked in there and worked *YJ1AA* and *EA8MC* and says he bets some of the W6s will hate him for doing it.

VE8AS is working on a new stacked 8JK which will be beamed on South Africa and the South Pacific. He is raising the triplex up to 45′, and this is the one on South America and Asia. Jack says his current DX is practically nil, what with several fade-outs lasting two and three days, and otherwise poor conditions. . . . After several months, W6EPZ shoots in a report, at the same time telling me he has been having various and assorted TVI problems. In addition to this, his harmonics have caused the Naval Air Station, C.A.A., and Police Radio Station to conduct two-way land-line communication with him." Just a local ragchewer at heart.

KL7PJ blames some of this inactivity, on the air that is, to the arrival of a Jr. Op. However, he said during junior's first night at home, right after the first early feeding, he hooked *XZ2FK*. I wonder what he got at the 2:00 a.m. feeding. Some of you DX YLs may like to know that

GN-45 GENERATOR — only Price, Used **$5.00**
LEG and SEAT ASSEMBLY for Hand Generators **$2.75**
CRANKS F/Hand Generators **.75 Ea.**

SELSYN 2J1G1 - WITH CAPS—Can be used as position indicator for antennas; 110 Volt 60 cycle, with instructions. Normally operates from 57.5 Volts 400 cycle. Price per Pair **$3.00**
Price - Caps only ..... **.50 Ea.**
SELSYN #C-78248—115 Volt AC 60 cycle. Size V 3½″ x 5½″. Price per Pair **$5.95**

MP-22 MAST BASE Mounting with spring action and mounting bracket insulated at top to receive MS-53 Mast Section listed below. Mast Base only **$2.95**
MP-47 BASE only. **$5.95**
MAST SECTIONS: For above bases, tubular steel, copper coated, painted—in 3 foot sections. Bottom section any length. MS-52-51-50-49 section — Price: . . **.50 Ea.**



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FT-237 MOUNTING BASE for BC-604 and 603's; and for BC-684 and 683's.
Prices: USED **$7.00** NEW **$9.95**
PI AIRCRAFT GENERATOR 200 amp. 28 Volt.
Price: NEW **$30.00**

BLOWER — 110 Volt 60 cycle, 4″ intake, 2″ outlet. Approx. 100 cu. ft. dis. Motor size 3″ x 3″ — 1750 RPM.
NEW **$6.95**
Motor ONLY **3.95**

MOTOR FOR ANTENNA ROTATION: High torque ¾ RPM; 110 V. 60 cycle; 10 MFD cond. Size: 4¾″ x 4″. Normally 110 V. 400 cycle, reversible. With instructions: **$2.95**; 10 MFD Cond. only: **$1.00**; Switches: SPST **35c**; DPDT **.75**.

COMMAND RECEIVER & TRANSMITTER SETS AND ACCCESSORIES

DYN. 6 V. Can be used for Comm. Rec. No. 0515 .... **2.95**
TRANSFORMER CH-109 for Comm. Rec.—110 V. 60 cycle input; Output 250-0-250 V.A.C. at 60 MA, 24 V.A.C. at .6 amps; 6.3 V.A.C. at .6 amps—NEW **3.00**
TRIPLE RECEIVER RACK—Black **1.50**
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CONTROL BOX BC-450 ..... **1.95**
CONTROL BOX BC-451 ..... **1.50**
BC-458 5.3 to 7 MC. New: **$8.95** ..... USED: **5.95**

T-18 ARC. 5 2.1 To 3 MC. Like New $8.95

T/20 ARC-5 4 to 5.3 MC. NEW: **$9.95** .... USED: **6.95**
BC-456 MODULATOR—Like New **2.50**
DUAL TRANSMITTER RACK—New **1.50**
TRANSFORMER CH-108 for Comm. Trans. 110 V. 60 cycle input; output 600-0-600 V.A.C. at 250 MA. 12 V.A.C. at 3 amps; 12 V.A.C. at 3 amps; and 5 V.A.C. at 3 amps—NEW **6.90**

DYNAMOTORS AND INVERTERS

INPUT:	OUTPUT:	STOCK NO.	PRICE
12 V. DC	220 V. 100 MA	D 402	$3.95
12/24 V. DC	440 V. 200 MA & 220 V. 100 MA	D 104	9.95
24 V. DC	400 Cycle Inverter (Recon.)	MG 149F. .	14.95
13/26 V. DC	F/BC-645	PE 101 ...	2.95
12/24 V. DC	500 V. 50 MA	D 0515 ...	2.95
28 V. DC	F/Comm. Receivers	DM 32	1.95
14 V. DC	230 V. 100 MA	DM 20	3.95
9 V. DC	450 V. 60 MA	D 9450 ...	3.95

AC POWER SUPPLY AND SPEAKER:
Completely wired power supply and speaker with volume control C.W. and on & off switch, housed in metal cabinet. For command receivers with connections to plug into receiver and 110 Volt 60 cycle line. Voltage output: 250 V. 60 MA., 6.3 V. .6 amp and 24 V. .6 amp. Price: Completely wired. . **$14.95**
Kit of Parts **$9.95**

TRANSFORMERS—110 VOLT 60 CYCLE PRIMARIES:
Sec. 12 V. 1 amp. . . . **$1.50** Sec. 24 V. .5 amp. . . . **$1.50**
Sec. 24 V. 1 amp. . . . **1.95** Sec. 36 VAC 2.5 amp. **2.95**
Sec. 14-14 or 28 Volt 7½ or 15 amp. **4.95**

MISCELLANEOUS

TU-17 or 25 for BC-223 — Price: NEW ..... **$ 4.50**
Coaxial Cable—125 OHM cotton covered - 50 Ft. . . . **1.00**
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Cable—4 conductor. Rubber covered, shielded - 50 Ft. **2.00**
BC-645 A Transceiver **14.95**
AC-Meter 150 Volt 400 Cycle 2″ **3.95**
Cable for BC-223 w/PL-150 each end **1.75**
Plugs for BC-375 - PL-64 or PL-59 ..... **.55**
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CD-365 Cord for LP-21 Loop **1.50**
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Complete with 2 T-30 mikes, 2 CD-508 switches, 2 CD-307 cords, and 2HS-30 headsets—Ideal unit for aircraft, boats and shop installations. Manual included.

New (less batteries) **$7.95**

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BD-77—Dynamotor Unit 14v in, 100v. 350 ma out with relay fuse box and filters. FOB Chicago only .. **$5.75**

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PE-206—Inverter unit, rotary converted, 28v. in, 80V at 500VA, 800 cy. out. F.O.B. Chicago only..... **$3.95**

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500 to 600 Mc—used, good condition..... **$7.95**

BC-604 XFM TRANSMITTER

35 Watt FM transmitter, frequency range of 20-27.9 MC. Can be easily converted to an AM transmitter. Has magnetic mike pre-amplifier complete with tubes. With dynamotor and less side covers **$9.95**

ALTIMETER TRANSCEIVER RT-3/ARN-1

Frequency 418-462 mc. FM with 14 tubes including 3- 12SJ7, 4- 12SH7, 2- 12H6, 1- VR150, 2- 955, 2- 9004. 24v Dynamotor, used, in working condition **$4.95**

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20 pounds assorted radio parts.

A $25.00 value for only..... **$1.95**

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2 MFD,	4000V, Pyranol	ea.	**$2.95**
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304TL	ea.	$ .90
Four for		3.00
5BP1	ea.	1.95
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SPECIAL!

VHF Transceiver with Phantom Antenna

Ideal substitute for SCR-522, freq. range 140-144 mc, crystal controlled, 10 watts. The receiver section has two individual RF sections, feeding a common 3 stage 10mc IF amplifier. Both RF sections may be operated simultaneously, or either one individually. The receiver unit has 13 tubes. The transmitter is of straightforward design. Transmitter unit has 7 tubes, one No. 832 as final modulated by a pair of 6L6 and push-pull. Complete unit in case with tubes, crystals and diagram less dynamotor.

EXCELLENT CONDITION **$14.95**

New Phantom Antenna for above unit: 3 lamps in parallel with sockets, complete for **95c**

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New equipment: Trnsmitter-Modulator and coil sets to cover 2.5-7.7 mc, transmitter tubes 2 No. 10 special and 2 No. 45 special, receiver (less the receiver coil sets), receiver tubes 1—37, 1—38, 4—39/44, shock mounts, dynamotor, antenna switching relay, receiver control box, transmitter control box, charts, dials, and instruction book.

Ideal substitute for BC-696 and BC-459.

What a sweet buy! Only **$9.95**

FREE! Jack box with volume control, 3 separate mike and phone circuits with each SCR-283.

R-89 ARN-5A

Glide path receiver. Crystal control of local oscillator. 332-335 mc, complete with relays, 7—6AJ5, 1—12SR7, 2—12SN7, 1—28D7, and 3 crystals: 6497 kc, 6522 kc, 6547 kc. 90-cycle band pass and 150-cycle band-pass filters, excellent for making an intermodulation checker. Beautiful cabinet and chassis as foundation for many interesting experimental and construction projects. Broad pass band on 20.7 mc IF's ideal for television. Schematic furnished, less covers.

Used, excellent, Only	**$ 3.95**
New	**12.95**

EE-8 ARMY FIELD TELEPHONE

Sturdy, highest quality telephone at less than price of a better-class toy. With ringer. Requires only two flashlight batteries for each phone and two wires between each phone. Excellent condition. Used, Each **$7.95**

GEARED TUNING DIAL

5 band, vernier. Freq. range from 3.2 to 32 mc. BRAND NEW. Ideal for many applications. An excellent buy. .. **95c**

APS-13 UHF ANTENNA

Suitable for 400 mc citizen band, ideal for UHF experimenters. With director and reflector elements mounted. BRAND NEW. 2 for **$1.49**

BC-620 TRANSMITTER-RECEIVER UNIT

FM transmitter-receiver, crystal controlled, two channels, freq. range 20-27.9 mc. 13 tubes, dual meter for testing filament and plate circuits. Used, good **$9.95**

PE-117 UNIVERSAL POWER SUPPLY

6 or 12 v input; out. 145 v and 90 v. less, vibrator, voltage regulator and rectifier tube; ideal mobile power supply unit; excellent condition. FOB Chicago, only. each **$2.45**

VERTICAL ANTENNA

½ wave vertical dipole antenna, complete with 36 inch whip, 36inch skirt, 7 ft. aluminum pole, mounting brackets and 8 ft. of coaxial cable with PL-259 plug.

New **$9.95**

All shipments FOB Chicago or Los Angeles unless specified. 20% Deposit required on all orders. Minimum order accepted—5.00. California and Illinois residents, please add regular sales tax to your remittance.

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KL7PJ's better half has a ticket also, the call being *KL7YG*.

W4CYU is happy after working *VS1AY* on phone and considers this to be his best DX since the war ended. Bob says in 15 years on the air, this is the only VS1 or VS2 he has heard on phone.

G6ZO is trying hard to get a QSL card out of a good LX. Seems like Jim should get at least one good one, as there are a few on the air. Of course, there are many more bad ones on than good ones. G6ZO is also trying as hard as he can to work *WØHWI/KS6* and *KC6EA*.

W1MCW still manages to snag them on 10 phone, getting stations like *ZS9D, PJ5KO, FO8AB, 4X4AA,* and *VP1SJC*. . . .W2BXA has logged a few nice ones on phone. Take a peek at them: *UG6AB, YJ1AA,* and *F9QU/FM8*. Yes, he is another one who has deleted *CZ2AC*. . . . W6GRL brings himself up to date with a batch of new countries now giving him 213.

Zeros and Tonga

"Boy, have condx been rotten!" This was the way WØOUH started out his letter. Anyway, the guy added four new ones, and with making W.A.Z. last month, don't think he has too many complaints. . . . I guess the summer heat is getting a lot of you boys off the dime, as now WØNUC gives with his list of 11 new ones. Leo says he has been somewhat subdued in his DX activities due to a little trouble with his pump. We all hope he is feeling O K. now. . . . And, please take it a bit easier, will you, Leo? NUC goes on to say that in a recent letter from *VR5PL*, he related that he has just signed a three-year contract with the Tongan government, so it looks like he will be a permanent fixture in VR5 land. He has obtained a house in Nukualofa, but, as yet, says he has no wife to put into it. About the time you are reading this, VR5PL will be on the air again with a new rig and an Eddystone receiver. 5PL also says that *VR5IP* will become one of those married men you hear about, sometime in September, and will be settling in New Zealand. Thus endeth the great combination of "The Tropical Terrors." VR5PL winds up by saying his P.O. box number is 45. It seems as though he had just recently changed to box number 47, and then the lock broke, so now it's number 45.

W2WZ mentioned something about lousy conditions with 10 and 11 being "skipped out" and 80 and 40 ridden with QRM. He is using NFM, as well as c.w. in his 20 meter rig. A1 wants me to know that this is the first time in 28 years that he has been on with a phone transmitter that uses something more than loop modulation. In a month's operation using NFM, he has logged 40 different countries.

Here's a letter from *ZK2AA* written from Niue which I believe should be read by everyone:

"I wonder if you would be so kind as to publish the following in the next issue of *CQ*.

"Some KH6s have been shooting off their mouths that ZK2AA *never* QSLs, and I am a bit hot under the collar about it all. Out of about 550 QSOs, I have sent cards for 400, and it is only because I have run out of cards that the rest have not received one also. Of course, I am not saying that an odd station hasn't been missed,

ARC-5 TRANSMITTERS

CONVERSION KIT, consisting of 1-M O coil, PA coil. 1-ANTENNA COIL, in 80 meter range. . **$2.00**
80 METER VFO KIT. Kit consists of the following: 1-6029 M.O. coil; 1-5632 tuning condenser; 1-4990 padding cap; 1-ARC-5 Xmtr. schematic. Complete kit **$2.75**
Time Delay Relay Vacuum, Time Delay 30 sec. 117v 60 cy Metal Tube, 4 Prong, Edison **$2.25**
Grid Cap H.V. Bakelite ⅜" w/wire lead 10 for **$1.00**
Tube Clamps. Birtcher 926-A-B-B5-C-A2-B1 etc. 10 for **$1.10**
Fuses 250v indicators amps 1, 2, 3, 4, 5, 6 @ 22c 5 for **$1.00**
Fuses 1000v amps ¼, ⅜, 1, 1½, @ 18c. 5 for **75c**
Fuses 2500-3000v amps ¼,¾,1,1½,20c. 5 for **90c**
RF Indicator contains neon bulb, 20c. . . . . 5 for **90c**

AN/ARC-3 Audio Transformers

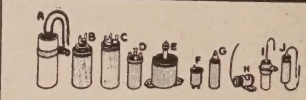
T-102 #55545; T-104 #55547; T-206 #55530; T-103 #55546; T-105 #55554, Each. **95c**
A-14, A-10 Oxygen Masks, each. **1.95**

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Kit Lugs—Small Radio Type, 300 for. **$1.00**
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Kit Trimmer Condensers—Was used as sample kit of famous condenser Co. Some list for $2.50 ea. **Special** **4.95**
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Kit Coil Forms—Thd'd H.F. 50 for. **1.00**
Kit Power Rheostats—25 and 50 watt. 6 for **3.49**
Kit Vitreous WW Ress.—20 for **1.00**

Write for CEC Flyer of Bargains Galore:



Electrolytic and Paper Condensers

Fig.	Mfd.	Voltage		Price
D	2500	3VDC	35c	3 for $1.00
I	400	6WV	20c	6 for .95
D	50	12WV	15c	6 for .85
I	10	25V	12c	10 for $1.10
C	3x20	25WV	25c	4 for .95
E	25	25V	15c	6 for .85
C	2000	25WV		@ $1.19
D	30	50V	23c	5 for $1.10
C	25-25	50V	23c	5 for $1.10
C	100	50V	25c	4 for .95
G	.13	100V	8c	10 for .75
J	.05	120V	8c	10 for .75
G	.5	120V	10c	10 for .95
G	.13	150V	8c	10 for .75
G	.25	200V	8c	10 for .75
J	1	200V	5c	20 for .95
I	.01	300V	15c	6 for .85
I	.02	400V	12c	10 for $1.01
I	Dual .1	400V	20c	5 for .95
G	.25	400V	35c	3 for $1.00
B	40	400V	40c	2 for .75
SQ	Case			
(as is)	3x8	450WV	28c	4 for $1.00
C	.32	450WV	60c	2 for $1.15
J	(plastic cover) .01	600V	15c	6 for .85
I	.05	600V	10c	10 for .95

BASIC TV 5" & 7" POWER SUPPLY
Consists of Xfrmr 2300V/-4MA, 2.5V/2A, 1 Condenser .1.1 mfd 7500V GE Pyr, 1-2x2 Tube. 1-Socket, 1-100,000 ohm Resistor. Special Price **$8.95**
5BP1. . **1.95** 5BP4. . **4.95**
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BASIC TV 3" & 5" POWER SUPPLY
Consists of Xfrmr 1080V/-55MA, 2x6.3V/1.2A, 1 Condenser .1.1 mfd 7590V GE Pyr. 1-2x2 Tube 1 Socket, 1-100,000 ohm Resistor. Special Price **$6.95**
3BP1. . **2.25** 3DP1. . **2.25**
3EP1. . **2.95**

3" OSCILLOSCOPE KIT
BC 929 Indicator uses nine tubes 3BP1, 6SN7, 6H6, 6B6G, 6x5, 2x2 (now 400 cy) easily converted to 115V cy. New Complete w/Tubes and conversion list, including diagram **$22.50**

5" OSCILLOSCOPE KIT
BC 704 less Power Supply Uses 8 Tubes 5BP1, 6AC7, 6H6 includes all tubes, wooden carrying case and Schematic Diagram **$29.50**

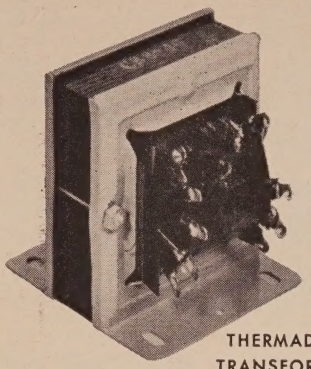
15 WATT POWER SUPPLY
Consists of Xfrmr 600VCT/-155MA, 6.3V/5, 5V/3A, 2 Condensers. 7 MFD 600V dual choke, 10HY 200MA, 1 Tube 5T4, 1 Socket. Price **$7.95**

50 WATT POWER SUPPLY
Consists of Xfrmr 800VCT/-150MA, 5V/3A, 6.3V/6.-25A 2 Conds. 7 mfd 800V, 5T4 Tube, Socket. . . **$9.95**

INSTRUCTION MANUALS
BC312, BC342, SCR281, SCR 508, MARK II, ZA, PRICE $1.25 ea.

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THERMADOR TRANSFORMER

for any Voltage and Amperage Rating



VICKERS SELENIUM RECTIFIER

R.P.S. Power Conversion Units specially designed to convert any d-c Receiver, Transmitter, etc., into a-c use. No rewiring necessary; simple, easy, quick installation. No Tubes! Instant Warm-up! Cool Operation! No Maintenance! Low Cost!

Installation Diagram with each unit.

When ordering—be sure the input rating of your dynamotor does not exceed the d-c output rating of the rectifier. For example, 12 V. 2 amp. dynamotors require Rectifier No. S-295A and Transformer RPS-8883.

Weights listed—contact freight agent for cheapest means of shipment and include charge with remittance.

All prices F.O.B. Los Angeles (California purchasers add 2½% sales tax). Include 25% with orders—balance on delivery. Foreign orders cash. Address correspondence Dept. Q-7.

ALL NEW—FULL WAVE VICKERS SELENIUM RECTIFIERS					ALL NEW—THERMADOR TRANSFORMERS 50/60 Cyc—117 Volt Primary Rating (For Taps, see Note A)				
Code No. Rectifier	d-c Output Volts	Amps.	Ship. Wt. Lbs.	Amateurs Net Pr.	Code No. Transformer	Secondary Volts	Amps.	Ship. Wt. Lbs.	Amateurs Net Pr.
S-295A	14	2	1.25	$ 6.95	RPS-8883	18	3	3.5	$ 3.75
S-458A	14	4.5	1.75	7.25	RPS-8884	18	5.2	5.5	4.25
S-167A	14	10	3.75	10.95	RPS-8885	18	12	12	6.15
S-292A	14	40	12	29.95	RPS-8886	18	46	35	19.65
S-296A	28	1.8	1.25	5.75	RPS-8888	36	2	5	4.15
S-344A	28	5	5.75	11.50	RPS-8889	36	6	12	6.75
S-172A	28	10	6	16.50	RPS-8892	36	12	25	11.65
S-291A	28	20	12	29.95	RPS-8890	36	23	32	19.25
S-297A	28	40	23	52.25	RPS-8891	36	46	78	51.25

NOTE A: All transformers have 3 extra taps—for example: 20, 19, 18, 17 volts and 38, 37, 36, 35 volts.

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as that is quite possible. The difficult conditions under which I work here make it almost impossible for me to keep a 100 per cent perfect system for QSOs and QSLs, but I do my best.

"However, I have decided that, until I have sent a card to all stations worked in the past, I will not work any new ones. (That is Ws, KH6s and VKs). Shipping-calls at Niue sometimes are very few and far between, and it is often 2 or 3 months between boats, so there is always bound to be some sort of delay with QSLs.

"Kind regards to my many good friends in U.S.

Bill Scarborough, ZK2AA"

This is another example of how serious the QSL system can get. Bill, ZK2AA, is not working under the most ideal conditions, and certainly should not be arbitrarily condemned because some of the boys haven't received a card from him. It certainly isn't possible for all DX stations throughout the world to QSL with the same regularity or same percentage. When a guy does the best he can, I believe that's all one should expect, although to some of the ultra-rabid QSL artists, this probably won't be good enough. Let's not be too hasty in condemning someone who lives in a remote spot just because you don't get your card from him the following day.

W6ETJ has really been bitten again by the bug of the DXer, and is slowly, but surely, climbing up there. . . . We're glad to see W8EYE being added to the Honor Roll.

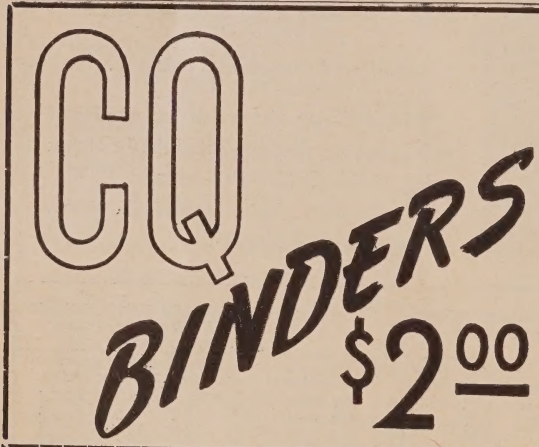
W6PXH still works them on phone, his newest being *W3CHH/J9*, *VK1ADS*, and *PK6CS*. . . . W4GG picked up *PK4DA* and *VP5XX* on Caicos Island. He says to QSL via W4LVV.

In case you haven't heard, G2FK is now in Rangoon, Burma, and is on 20 c.w. Read on for the QTH.

From the "DXer" of the Northern California gang, I am snatching the following. W6MX has information that YR receiving stations are now being licensed, and maybe transmitting licenses will follow. . . . W6ZEN of Ventura, Calif., is handling cards for *PK6CS* and *PK6XG*. Cards have been coming through from *EA8MC*, and there is another one on the air with a chirpy T6 note signing *EA8AN*. . . .

I hope you fellows read carefully the rules for our second World-Wide DX Contest. I hope, too, you will like the minor changes incorporated into this year's rules. They were brought about by many, many requests from you fellows all over the world. Furthermore, it would prove of great mutual benefit if in working overseas stations you would remind them that they may have all the log sheets they desire for this contest, and, at the same time, we will send them a complete set of rules, as well as a country list if they request it. This is the type of contest that should appeal to DX men the world over.

Action around the shack of W6QD during the last couple of months has hit an all-time low. No new countries . . . no new zones . . . no new W9s. In fact, what the dickens do I know about DX anyway??? Well, with our contest coming up this fall, I am definitely going to put aside some time so I can get in there and work all the stations I can in Zone 4. . . . That's the works—see you next month. 73.



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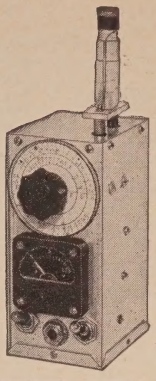
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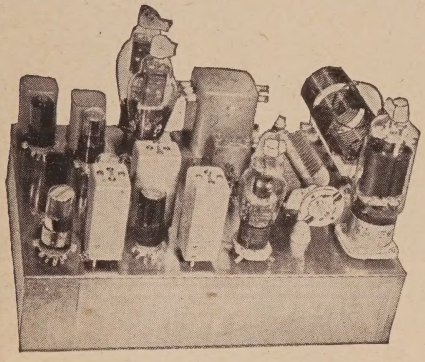
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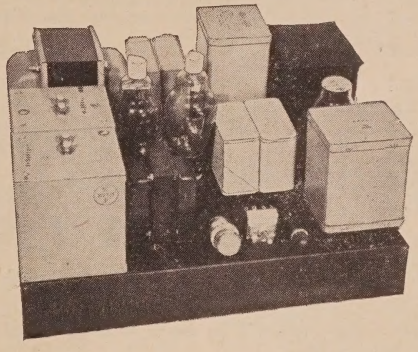


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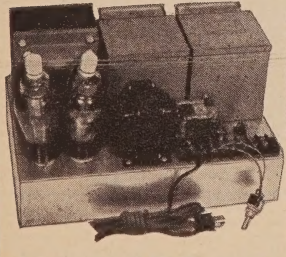
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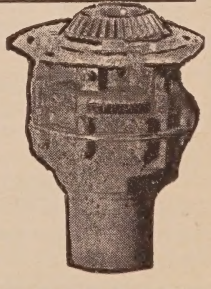
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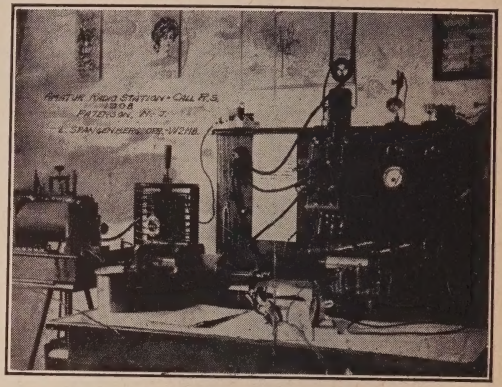
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HZ1HZ	Ahmed Zaidan, MET Office, Mecca, Saudi Arabia
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HL1AI	Walter W. Burt, c/o RCA Communications, Inc., APO 235, c/o P.M. S. F.
KX6AP	Via W7ED
KP6AB	William Fells, 342 Habron Lane, Honolulu, T. H.
LA2FB	Kaare Skevik, Longyearbyen, Svalbard Island
LZ3SD	Box 49, Sofia, Bulgaria
MD2NA	APO 21, c/o P.M. New York, N.Y.
MP4BAC	c/o Sharjah Fort, Trucial Oman, Persian Gulf
MP4BAD	c/o RAF Sharjah Fort, Trucial Oman, Persian Gulf
MP4BAJ	c/o I.A.L. Muharraq Airfield, Bahrein Island, Persian Gulf
PK4VD	Serg. Maj. G.K.v.d. Pol, L.T.D. Werkpl. Radio, Veldpost MEDAN, Sumatra or via VERON
PK4KS	Via W8SYC, 907 Boone St., Piqua, O.
PK5RU	J. D. Rugebregt, Bos 12, Bandjermasin, South Borneo
ST2WB	John Birch, Juba, Anglo Egyptian Sudan
VK9FO, GM, YT	c/o Dept. of Civil Aviation, Norfolk I.
VU4CN	Sg. Forsyth, Nicobar Det., via RAF Changi, Singapore
VQ3KIF	P. O. Box 599, Dar-es-Salaam
VP2AJ	APO 855, c/o P. M. Miami, Florida
VS9AJ	E. J. Regan, R.A.F. Station, Aden, Khormaksar
VR2BL	Nadi Airport, Fiji Islands
VQ4RF	R.F.B. Featherstone, Box 264, Nakura, Kenya, B.E.A.
VQ5PBD	P. B. Dodd, P.O. Box 444, Kampala, Uganda, B.E.A.,
VP5XX	Via W4LVV
W3ORD/C3	P.O. Box 10, Navy 3930, c/o F.P.O. San Francisco, Calif.
XZ2FK	Frank King, Morton Air Service, c/o B.O.C., Rangoon, Burma
YI1FC	AC2 Crisp, Hq. Flight, No. 2, AC Sqdn, RAF, Habbaniya, Iraq
YU5RP	Bost Box 180, Ljubljana, Yugoslavia
ZD2S	Radio Officer Sherwood, c/o West African Airways, Lagos, Nigeria
ZD4AX	Elmina Castle, Gold Coast
ZP5BL	College Int'l., P.O. Box 241, Asuncion
ZP9FA	P. O. Box 716, Asuncion
ZS3G	Bramie Fouche, Box 513, Windhoek, South West Africa

Quarter Century Wireless Club

One of the many members of the Quarter Century Wireless Club is Less Spangenberg, W2MB. His work in ham radio dates back to 1906, the



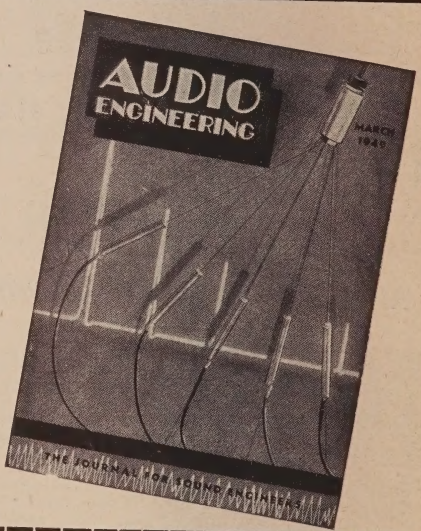
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accompanying photo being one taken of his station in 1908. QSO's then were with stations around N.Y.C., Paterson, Newark, etc., DX for those days, but after having one good kw. transformer made he worked along the coast and into Central America. In 1912 when licenses were required he took the exam at the old Brooklyn Navy Yard and came up with W2IM which he held until the first World War. After the war he took an exam for 1st commercial, needed to use phone on 315 meters, and got the call W2ZM which he held until 1924. After letting it lapse he was re-examined and received class A with his present call. Les is also a member of the Old-Timers Club, with the requisite of 40 years as a ham and still active.

DX PREDICTIONS

(*from page 32*)

strength just after midnight. Band should close suddenly between 0515 and 0600 EST. Phones best 0200 to closing *10 meters*: Doubtful that any signals will break through, unless aided on this end by sporadic-E. Not dependable.

East Coast to Japan

40 meters: Much the same conditions as during the last month, although some improvement in signals, if and when, heard. Try mostly in the last two weeks of the month between 0515 and 0615 EST. *20 meters*: Band closes around 0130 EST then reopens between 0530 and 0615 EST with fair signals. Band slowly fades out after 0830 EST. Poor to fair opening depending on polar conditions after 2300 EST. *10 meters*: No openings. MUF about 20.5 mc.

East Coast to Middle East

40 meters: Depends upon unpredictable polar region conditions, but on ionospherically quiet days the band should open around 1700 EST with weak signals. Peak strengths from 1900 to about 2230 EST. Band closes after midnight due to absorption. *20 meters*: Band opens with weak signals for a short period between 0415 and 0545 EST. Probably only c.w. will be usable, although this depends on polar conditions. Band reopens for c.w. around noon until about 1500 EST when phones start building up. Fair conditions until closing between 2100 and 2200 EST. *10 meters*: No openings. MUF about 20.5 mc.

East Coast to South America

40 meters: Band opens rather gradually after 1800 EST with weak signals slowly building up below the noise level. Best conditions extend from about 2100 EST to 0330 EST the following morning. Band finally fades down into the noise after 0530 EST. *20 meters*: C.W. after 1600 EST, although bothered by noise level. Conditions improve rapidly after 1800 EST with phones readable from all of South America by 2130 EST. Band continues good throughout the night, although it may close down suddenly for a short period about 0500 EST. Final fadeout around 0630 EST. *10 meters*: Marginal conditions with possibility of an opening daily around 1030 EST with weak signals. During the last week some chance of an opening around 1630 EST with strong signals.

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BC-1160 XMITTER
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THE YL's FREQUENCY

(*from page 42*)

knocked out our power and phone, and blocked the roads to the hospital with giant eucalyptus trees. But she is well worth one harrowing night, and should be a real ham baby. Look for her on 40 about six years from now!"

New XE-YL Licensee

It never fails but that when you say "first and only," you promptly find there are others. In our June column in a writeup about Helen Whittlesey, XE1SE, we said she was the first and only foreign (non-Mexican) YL to be granted an XE license. But close on the heels of that we learned Jean Eliot received her license on May 14th, making her the second non-Mexican YL.



Jean Eliot, XE1KE

To which Jean adds: "And now for some explanations. First I was granted the call XE1-PS, but did not use it on the air. All XE calls ending in E are given to foreigners from outside Mexico. I might add that the Mexican government has been very kind in granting these calls. B. J. Kroger, ex-XE1KE, released his call to me, and I am on the air with that call. We had a letter from BJ saying he was releasing his call to me—and also one from Communications authorizing the change. Arni (the OM) and I dashed down to Communications immediately and within two hours after receiving BJ's letter I was XE1KE. I am extremely grateful to him, as it not only gave me an E call, of which there were none left, but it has given me many very pleasant contacts—which I probably wouldn't have made otherwise. It's amazing how many Ws have known and worked BJ.

"You will be interested to know that when BJ got a temporary rig going in Santa Barbara as W3PH/6 his first out of town, first out of State, and first DX contact was to his ex-XE1KE call. BJ says he gets a big kick out of listening to me explain that 'no, I'm not Mrs. BJ, but am Mrs. XE1ZE,' and go on from there.

"We are on 10 meters only at present, but expect to go on 6 later this summer—and *then* won't I have fun trying to keep up BJ's reputation! This is my first call, and I'm very proud of it. Arni has held licenses since 1934 and is ex-W7EKK and now holds W3MYC as well as XE1ZE.

"We have enjoyed living in Mexico and have been down here for some six years. The OM is a radio and meteorological technician and is on assignment here as liaison officer and technical adviser to the Mexican Meteorological Service from the U.S. Weather Bureau.

"We are using a WRL transmitter at present with pp V70Ds in the final, with from 250-275 watts input, but will probably go to 500 watts

later this summer when a new transmitter is finished. Also a 2 or 3-watt job for me to play with. The beam is a 3-element Workshop. The OM is now busy getting his portable/mobile in good working order. In fact, Louisa, I'm rather taking a beating on that score, as 'tis said that Arni's only chance at the rig now is taking to the hills and working mobile—hi! Just 75 per cent true!!"

XE1ZE and XE1KE probably will be silent through July and August as they plan a vacation trip to California, Oregon and Washington. They won't be out of touch, though, as the 50-watt rig in the car will be going strong as W3MYC mobile.

YL Club News

Congrats to the New York City YL Club on the success of its first hamfest. There was a good turnout with OMs far out-numbering the YLs, a good dinner, and interesting speakers including William Kiser of the FCC; Gay Milius, W2NJF, ARRL Hudson Division alternate director; Dot Hall, W2IXY, and Amelia Lobsenz, W2OLB. Surprise of the evening was to find as guests Alicia Rodriguez, KP4CL, (see Nov. '48 *CQ*) and OM, KP4CK, visiting from Puerto Rico.

At the May meeting of the YL Club of Los Angeles new officers were elected for the coming year. The new president will be Evelyn Scott, W6NZP, succeeding Maxine Willis, W6UHA. Secretary will be Vada Letcher, W6CEE, succeeding Violet Sasse, W6CBA, and the new treasurer will be Naomi Turk, W6YZU, taking over duties carried by Ida Carney, W6BIS. They took office on June 25th at a special installation luncheon held in Long Beach, which W6YXI, W6AWW and W6BLF of the San Diego club attended. New officers received corsage tributes, and Maxine was presented with an inscribed gavel.

The San Diego Club also recently held election of officers with Neva Fredenburg, W6YXI, chosen president; Eleanor Baldwin, W6AWW, vice president; Shirley Lucks, Secretary, and Ellen White, KH6QI/6, treasurer.

SK

Our deepest sympathy to Alice-May Stewart, WØGOJ, whose OM, WØWOS, passed away of a heart attack on May 21st.

My heartfelt appreciation to all of you who have been so thoughtful in expressing sympathy in my own recent loss. I'll do my best to continue contributing in my small way to this hobby of amateur radio to which W2IU had dedicated his life, and to which he introduced me. 33.

V.H.F.-U.H.F.

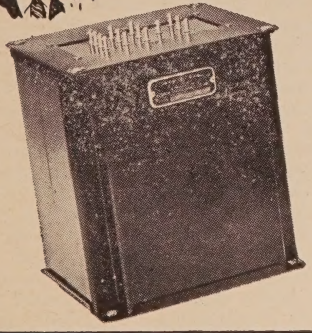
(*from page 40*)

W1LSN was working the locals down towards Boston and while looking around the band at 2121 EST he heard a Spanish voice calling CQ and finally signing LU6DO. This occurred during an aurora session and it is reported that W1DA heard the same signal with his antenna aimed into the north. The signal peaked S3 and R3 and soon faded out completely.

W7FIV and W7JPA, Yakima, Washington found 6 meters open to the south each day after 1000 local time from May 26 to May 31, inclusive. Both boys feel that the W7-KL7 path should open as harmonics have been heard up to 49.3 mc. According to the RASO information, KL7KV has returned to the States from Anchorage and is now stationed at Tinker Field AB. However, Glen Jefferson, KL7NT is on regularly, as is KL7UT. It is understood that KL7UT was heard in Australia last January 24. He runs about 100 watts and is going up to a half kw. KL7NT is using a converted 522 . . . . Speaking of out of the way places, W4JEA should be set up on Mount Mitchell and on 2 and 6 by the time this is in print. Mitchell is in the western part of North Carolina and is the highest point east of the Mississippi River. The location is used for the transmitter of FM broadcast WMIT and is actually a little city within itself. John has heard some locals (nearly a hundred miles) using just a piece of



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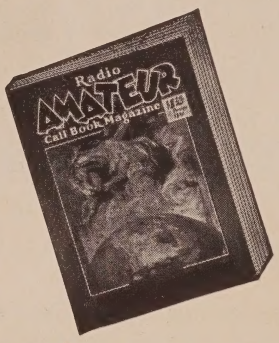
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wire and poor receiver. With new equipment this location should provide many interesting contacts.

After four years of steady trying W3OJU, Washington, D.C. finally added W1GJZ in Greenwood, R.I. This was during an aurora type opening on June 4. Rick says that activity around Washington is good with W3PCB and W4HVV on the air consistently. I'll bet that even W3RE gets on once in a while between making his bucks. The rumor that W1DEI/3 had a breakdown is strictly untrue, Mel has suffered a collapsed lung, but is in fairly good condition . . . . W7QLZ and W7FGG have finally bridged the Phoenix to Tucson path on 6 meters. Although this is only 106 miles and comparatively short by eastern standards it crosses some pretty rugged and mountainous territory. On 5 meters this path always seemed to distort the signal, probably due to multi-path effects, but on 50mc the signals have been FB. The Desert Rats are now about to propose FCC regulations covering long winded CQ calls. Especially during these short openings where the fellow shouts CQ for over a minute without mentioning his own call. Sounds like a good idea to us . . . . Red, W1EIO, Berwick, Maine says he managed to get 12 sections in the recent QSO Party (ah! to live in New England where there's another section every 25 miles or so.) He has also moved up to 32 states and 5 countries, adding XE1GE on June 19.

Down Texas way W5VV says the biggest news is that when the W1's came barreling through (for the first time since 1947), W5VY wasn't around to work them—the first time that ever happened. Guess Pat's psychic prognosticator on 50-mc openings was on the fritz. Wilmer also tells us that Steve, HC2OT arrived back in the States just about 5 minutes before time to give his daughter away in marriage. Then the next day Steve had to go into the hospital for an operation on his shoulder. It is rumored that he got too close to his feedline one day while in contact with W5VY, resulting in an r.f. burn. Hmm, never heard of v.h.f. affecting the shoulder before?? Up north in Texas, a v.h.f. SWL is plugging away by the name of Phil Patterson. Phil hopes to be on the air himself shortly and none of this 20-40-80 stuff for him. Speaking of SWL's, if you know any that are active in listening on 6 meters tell them to get in touch with the RASO office. There are quite a few already helping out in this project. One of the best is Stan Horton outside of Toronto, Ontario.

W5JTI says his backyard is full of dirt—now, there is something odd. Anyhow, I suspect he means he wants to do some landscaping, but hasn't found time with 2 and 6 meters acting up this way. V.h.f. interest in the lower Mississippi valley is on the way up, due partially at least, to the recent hamfest which devoted considerable time to that field. W5HQC is expected to be on by the time this is in print using a new converter and 100TH final amplifier . . . . WØINI, Pleasant Hill, Mo., the original Missouri hill billy now has 46 states and is looking for Nevada and Nebraska. Harry has a new 16-element beam on 2 meters, but the high noise level from local power leaks has prevented any DX work on this band. Harry has written his Congressman, but the leak keeps right on leaking.

W2ZUW, Bliss, N.Y., has a nice location right

up there with FM station WFNF. John sends in an impressive list of stations worked on aurora and sporadic-E running only 15 watts into a folded dipole . . . . And, whatdaya know, a communique from B. J. Kroger, ex-XE1KE, etc., etc. B. J. has received the call K6BF and is going strong on 6 meters from Santa Barbara, California. B. J. moans that now when he calls no one gives him that deferential attention accorded the XE stations. Ah, such is life . . . . WØTKX, Minneapolis, Minn., now a land-lubber says that the W7 stations are nearly as thick as W5s this year. He reports that WØRAJ is going great guns and that WØWVJ in North Dakota has been heard on low power . . . . W2RLV recently hooked some of those tough ones east of the Mississippi River including New Hampshire, Delaware and South Carolina. Bill says that so far this year has really been a corker with so much double-hop.

W6BQR got started in ham radio in 1922, but admits that this TVI problem really had him going. He finally disposed on a kilowatt rig on the Herb Becker bands and moved down to 6 and 2. The net result seems to be a renewed interest in amateur radio without too many TVI troubles . . . . Speaking of TVI, VE5NC passes on a newspaper clipping from his local rag saying that TV reception in Boston of the Ft. Worth station was due to *tropospheric bending*. No wonder Ferrell's hair turned gray—and him slaving away all this time under Government contract thinking it was sporadic-E. Such engineers as these TV people have—and they dare call us amateurs.

W5ELL operated 2 and 6 portable from atop a mountain range outside of Sandia Park, New Mexico from May 25 to June 12. Plenty of equipment was taken along, but no report has come to hand on how the expedition made out. Maybe Ed will let us know in time for our next column. . . . . W7HEA agrees with the distribution of more openings this season, but feels that signals have been weaker than last year. This is funny, because conditions on the east coast are just the opposite. Signals have for the most part been very strong when compared to the 1948 season. Bish has his seeing eye receiver running up and down the band practically all the time now.

The Calling Frequency vs Beacons

As a part of the special insert that accompanied the announcement letters of the sporadic-E observing project, opinions were requested on the use of a standard calling frequency to be used on 6 meters whenever the band sounded dead, or likely to open. In this way, the other fellows could leave their receivers set to this one frequency and if anything did break, then they would hear it and be able to get in on the opening. As part of this question the information about station equipment was to be considered. This showed that only 37% of the registered observers (about 275 at this writing) were v.f.o. controlled. In addition, v.f.o. was almost entirely concentrated in urban areas, while crystal control predominated in many wide areas where first order hops were likely to fall. Such an arrangement would then be found to be far from workable, although further study is being spent on a possible alternative plan.

The use of beacons at 5 and 6 meters is not a new practice. W9ANA at one time had a 500-cycle note on the 56-mc band during certain hours

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of the day. However, with some of the war-surplus material still available, *CQ* in conjunction with provisions set forth in the RASO contract is seriously studying plans for the installation of five or six fixed-frequency automatically operated beacons in the 6-meter band. These beacons would be spread to locations so that each area of the United States and Canada would be covered by possible signals from three or more directions. All the beacons would operate on the same frequency and would be keyed to send their own calls and locations. The interference problem of having them all on the same frequency is negligible since their principal purpose is to indicate band openings. Whether or not this plan can be put into operation remains to be seen at this writing. Further details will be issued in the monthly newsletter from the RASO office.

50-mc Mobile

In case most of you don't know it, your conductor of this column has, in addition to his duties as a scribe, a job with Sylvania Electric traveling some 12 states here in the mid-west. Recently we installed our mobile rig on 50 mc, and much to our surprise, find that we can work regular ground wave where 28-mc mobile is dead. And on 50-mc Es skip some surprising results have been obtained. We have found in several instances that during an Es opening, on the mobile rig we can work closer in than when using the beam or the fixed station. During one of our escapades in Omaha, Nebr., we were able to work, via bending 125 miles to WØJOL, north of Des Moines, Ia., the date that WØNFM and W5JTI contacted on 144 mc, June 16. While some of this may seem old stuff to other 50-mc mobile operators, it is good food for thought to put those emergency mobile stations, as well as fixed station on 50 mc. Already it has the Kansas City emergency net thinking of moving to 50 mc, for during several drills QRM on 28 mc made perfect copy impossible, and several mobile units have been caught in dead spots where 50-mc mobile was perfect. The mobile rig at WØZJB is 40 watts o a 2E26, powered by a PE-103, a quarter-wave antenna for transmitting and a half-wave receiving antenna. The converter is a Gonset, and as mentioned previously compares favorably to the home station, under normal conditions. If any emergency nets, including mobile units are now operating on 50 mc, how about hearing from you on this subject?

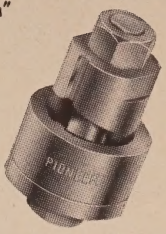
The 144-mc Gang

A station for all of you to watch is W4HHK in Colliersville, Tenn., near Memphis. Paul has a 16-element array, horizontal, some 70[1] in the blue, and his reception of W7FGG in Tucson is well known. Now that the tropospheric nights are on us, Paul has been doing his share of the long range hauls. On June 16, he worked from 2115-2329 CST, WOKYF, WØHQA, WØNFM, W9UED, all in the 300-450 mile region. On June 23, W4HHK got W8CYE and WØIHD to bring his states to 7 and 5 call areas. Paul's rig is an 829B with 80 watts and a cascode amplifier in front of an HFS into an HQ-129X.

During the weekend of July 2, W9LWE is planning another of his summerly expeditions into Caledonia, Minn., where the lower frequencies will be used for liaison to arrange skeds on 144 mc. Last year he had good luck and this year is

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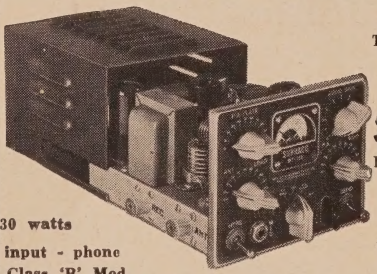


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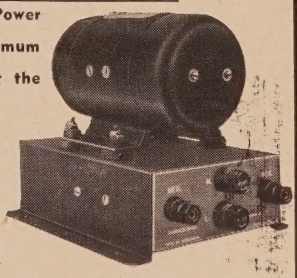
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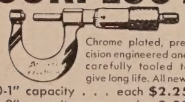
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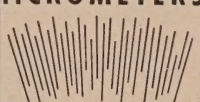
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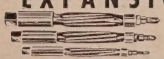
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Miles, at W4EID in Jacksonville, Fla., says that 144 mc is down as compared to April and May, although good nights were May 22 and the mornings of May 21-24. Sporadic E was noticed on 100 mc on May 28 around noon for east Texas and on June 10 from N. Mich., and Minn., but no 2-meter contacts as yet.

WØNFM says that W4HHK and W5JTI were still rolling in on June 16 as late as 0100 on the 17th, and if someone south of Jackson, Miss., had been on it would have been a record for sure. Clair contacted during the same evening, WØBJL in St. Louis, plus all the W4s and W5s on. The rig at WØNFM is 400 watts to VT-127As into a 16-element horizontal beam, with a 152 ahead of an NC-183. This makes Clair, at WØNFM, 14 states and 7 districts on 144 mc, and after the June 16 opening he expects anything, even a signal from WØZJB!

Al Gross, W8PAL, has decided to end the polarization problem, by using circular polarization or to use both vertical and horizontal components from stacked circular arrays. Al thinks this is the answer and preliminary results have been very satisfying. He would also like to see the V.H.F. Congress take place, some time very soon. Any others thinking along this same line? W8PAL has the only F.C.C. approved walkie-talkie on the new citizens band of 465 mc.

Again the v-h-f gang are planning on making the Mid-West Convention their meeting place, as they did at Topeka in 1946. This year it is to be held in Omaha, Nebr., on Oct. 8-9, at the Fontenelle Hotel. Those planning to be there include: W5JTI, W5NLP, WØTOZ, WØQIN, WØYKX, W9QUV, WØZJB and plenty of others. Any more of you planning to be there let us know. At the last minute Perry Ferrell says that he will be able to make it, so how about a good v.h.f. showing. We will be looking for you! Watch this column each month for the latest on who will be there.

SCRATCHI

(*from page 6*)

into mike input jack. It would automatically send out whistles. Howsomever, haven't figured out how to doing this, unless I using little canary in a cage, and this not practical on acct. if I telling ham to be sure to dropping bird seed into gadget every day he liable to get suspicious and then he find out how gadget are working.

Scratchi's piece of resistance (this are Hon. French expression) is Scratchi's Sooper Image Identifier. This one are strictly for ten meter hams. When you are tuning on the ten meter band above 29 megacycles, you are never sure whether signal you are heering is reel signal or some image. I can inventing gadget which are putting 1000 cycle whistle on signal that are image. On second thoughts, maybe this not too goods in heavy qrm, but I sure I can figuring out something slick.

Before I can get started on these inventions, there are one little thing Scratchi are needing, and I are writing to you, Hon. Ed., to fixing me up. I are knowing that you are having plenty of bux, and will be glad to helping me out so I

can making big inventions which be boon to all amateurs.

Scratchi's workshop are in ham shack, so naturally workshop are as hot as hamshack. So, Hon. Ed., please sending me money so I can buying air-conditioner unit to making it comfortable. No stamps or coins, please, just money. Will even taking check if it big enough.

Of course, if shack are nice and cool, Scratchi may putting transmitter on air a little bit, but I still be working like fury on inventions. What saying, Hon. Ed?

Yours respectfully,
Hashafisti Scratchi

LETTERS

(*from page 4*)

great deal of justice in this accusation, but some of the blame must be shouldered by the radio periodicals for failing to fire the naturally inventive imaginations of amateurs. In the old days, the novelty of radio was sufficient to fire the imagination of everyone—and everyone built sets, fooled with "B" eliminators, honeycomb coils and what have you.

Today I believe the amateur is still as imaginative but due to a great amount of standardization in radio, for one thing, and lack of expensive scopes, vacuum tube voltmeters, etc., at his disposal, his imagination has been somewhat stifled. Lack of articles in radio periodicals of an imaginative nature cinched the dormancy of the amateurs' mind.

Accordingly, I propose that *CQ* initiate a new type of department which could be called, for instance, "Radiovisioneering." Amateurs who are struck with a new idea but who have neither the equipment nor knowledge to test their theories could contribute their "food for thought" to this department. If the idea is good, amateurdom as a whole could develop it, and if the idea appears unsound to some amateurs, their letters could be printed in subsequent issues of *CQ*. This department would be different from Shack and Workshop in that a complete idea would not be necessary but a germ of an idea that could be developed by the entire amateur body. This would accomplish a great many things. It would give amateur radio a shot in the arm. It would advance radio in the name of hams. It would recapture the feeling of fellowship in the amateur world, give it a common goal and imbue it again with a "ham spirit" that is sadly sagging.

To be sure, many of the ideas sent in would be technically unsound, but the hashing of them by amateurs would prove very educational. Of course, ridiculous letters would not be published.

Such a department in your magazine would be something new in ham radio and would be a stimulating departure from the present format of amateur periodicals.

Peter N. Saveski, W2JFE

Break the Bank

1303 Clairmont Ave., Cambridge, Ohio

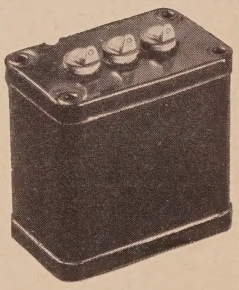
Editor, *CQ*:

If the commercial broadcast stations can jump the amount of their listeners so high by simply giving away a new car, electric kitchens, airplanes, motor boats, etc., why not pull activity down to 6 meters by the same method?

May be it would not be exactly ethical, but why not a big contest on 6 meters with plenty of build-up. Prizes could be rigs, transmitters, receivers,



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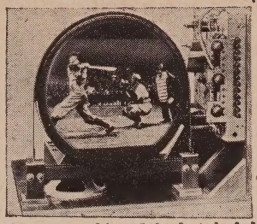
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converters or beams. If one of the big club outfits would start the ball rolling, it might catch on pretty fast. The big thing is to balance up the scoring, but that can be worked out if some of the 6-meter regulars would help out in boiling down the stumbling blocks.

R. A. Cohagen, W8NBM

SCIENTIFIC OBSERVATIONS

(*from page 19*)

ble conditions. The basic idea behind this project is then that these operators would report their observations to project headquarters. Said observations consisting of the date, time, call, location, frequency and character figure[1] of reception of 6-meter DX signals. The project supervisor would institute a uniform reporting system, and would then collect, screen and tabulate observations for use in advanced scientific studies by the Watson Laboratories.

To each cooperating observer, the project involves the minimum of effort and expense. To insure uniformity in reporting and consistent mailing of reports to the project headquarters, each observer is being supplied with printed forms and stamped envelopes for their return. Reports are requested from each observer at least once a month. Project headquarters also serves a dual purpose in that it becomes a clearing house for news and information on 6-meter activities. Recognizing this factor, the *Scientific Observations* section is publishing at least once a month a special newsletter which is distributed to cooperating observers. In addition, observers are also receiving special notices of important events currently happening on 6 meters. Operators attempting to build up their WAS are also able to write project headquarters and ask for a listing of stations active in certain areas along with their usual operating frequencies. The proposal to establish a "calling frequency" has also been well received. Although originally intended to cover only the North American continent, liaison is being established with amateurs in foreign countries who express an interest in this work. In this manner, it is hoped that a world-wide observing project may be instituted.

As proof of their cooperation, "Participation Certificates" are being designed and will be awarded observers on an activity/reporting basis. Also, at the completion of the first year of the project a number of plaque awards will be made to observers performing outstanding services. Similar or equivalent awards will be made to foreign observers and SWLs.

The birth of this project conforms with the present trend toward the gathering and analysis of scientific observations in order to better understand radio transmission. The sweep frequency ionospheric recorder has provided a fairly accurate vertical cross section of the ionosphere. However, the number of such recorders is pitifully few and only by the most astute extrapolation have we been able to make any predictions of radio frequency usability. Much about radio propagation probably remains to be discovered. Partially this is due to the fact that we have no

1 The character figure is based on a CRPL sponsored arbitrary 1 to 9 scale ranging from "useless" to "excellent" signal reception.

spatial picture of the ionosphere. As shown in a recent article[2] the analysis of sporadic-E data may provide the answer to many geophysical and meteorological questions, but, whether or not that will ever be possible depends upon the quality and the number of observations received in this project. Reviewing the possibility of materially aiding scientific research can leave little doubt that the success of this project will create another useful service of amateur radio.

2 O. P. Ferrell, "The Radio Amateur and Upper Atmosphere Research," *CQ*, Feb., 1949, page 25.

MODULATING THE BC-221

(*from page 14*)

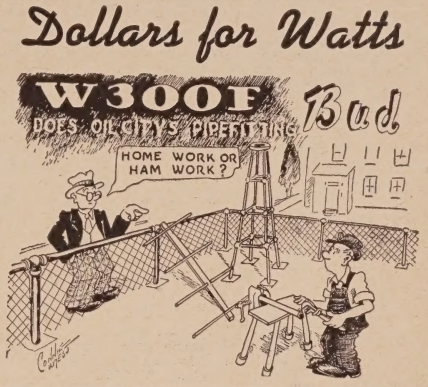
(*pin 1*) through a ½-watt resistor (*R1*) of any value between 500 and 1000 ohms. Otherwise the six volts of a.c. injected into the cathode from the filament circuit renders the instrument useless as a c-w monitor and also makes it very difficult to calibrate the oscillator when setting up a frequency accurately.

It is to be noted that when using the variable oscillator as a signal generator the earphones must not be inserted in the PHONE jack, a dummy plug being inserted instead, in order to keep the filaments lighted. This is necessary because the output circuit of the 76 is loaded by the phones to such an extent that very little output is obtainable to modulate the 6SJ7 variable oscillator. An added refinement would be to substitute a DPDT toggle switch for the SPST switch illustrated, and so connect it that when it is thrown to the modulated position, the earphones are disconnected from the plate circuit of the 76 amplifier tube. This is shown as point *A* in the diagram. This would obviate the necessity of a dummy plug when using the BC-221 as a signal generator.

Operation

In operation, the frequency meter is turned on and set up in the usual manner, with the dummy plug inserted in one of the PHONE jacks and the modulation switch thrown to the "on" position. The GAIN control is advanced in a clockwise direction until the desired percentage of modulation is obtained. In the particular BC-221-J modified by the author the tone is about 300 to 400 cycles. However, by adjustment of condenser *C1* it could

(*Continued on page 72*)



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10-METER 3-ELEMENT BEAMS—$19.50. Send card for free information. Riverside Tool Co., Box 87, Riverside, Illinois.

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WANTED: AN/ART-13, BC-348, RTA-1B, AN/APN-9, R5A/ARN-7, AN/ARC-1, AN/ARC-3, BC-788-C, I-152, MN-26, test sets with TS- or I- prefix, dynamotors, control boxes, transmitters, receivers, power supplies, etc. State quantity, condition and best price first letter. HI-MU Electronics, Box 105, New Haven, Conn.

FOR SALE: Collins 30K transmitter, complete. Used about 40 hours. Cannot be told from new both inside and out. Guaranteed perfect. First $1200. F.O.B. Wakefield. R. I., Transmitter Exchange.

WANTED: Several 300-1000 megacycle tuning units for APR-1 or APR-4 receivers. Also want ASB-5 receivers. Advise number, condition, price. W6LWP, 2140 Ocean Blvd., Balboa, California.

QSL, SWL quality cards, W5FAY Press, 6118 Goliad, Dallas, Texas.

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CASH AND CARRY SALE: BC610E complete with spares, factory converted for 10, excellent condition, $650. SX28A with speaker, excellent condition, $150. VHF-152-A, like new, $65. Webster, model 80, wire recorder with push button head, extra wire, sacrifice, $105. Leslie B. Babcok, W2EGM, Osbornville, N. J.

600 W. PP 8005 FINAL; 1500 v, 400 ma. 115/230 v supply; 4 Westinghouse meters. 3 black panels in open table rack. Components workmanship beautiful. Includes Variac, 80-20 varilink coils, $125 f.o.b. Watt squeezer (Sept. '46 CQ), 807 power supply, $25. KW antenna matcher, $5. W2KVY, 145 East 49th Street, NYC. Plaza 3-9831.

BC-453 Q-5'r, $12.50, 28 volt 50 amp. aircraft generator with voltage regulator and cutout, tested, go mobile with high power, $17.50. W4JYB, Qtrs 435, Maxwell AF Base, Ala.

FOR SALE: 300 watt all band AM phone and CW transmitter. Xtal osc. Semi band switching, complete with mike, $115.00. L. Bevan, Jr., W2TZO, 189A First Street, Hicksville, Long Island, New York.

RELAYS: Dunco DPST 110 vac coil. Contacts rated 30 amps., $1.95. Arrow Radio, 125 East First, Duluth, Minn.

KILOWATT TRANSMITTER PP 810's 810 mod. 6' rack, gray crackle, well built, excellent appearance and operation. Reason selling—traveling. Take bids over $375. Fred Jones, WØSTM, 323 S. Atchison, El Dorado, Kansas.

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WANTED: Broadcast band command receiver SCR274 series. WØEJP. 4232 London Road, Duluth, Minn.

BC459's—new, $12.95 each; two for $25.00. Write for electronic catalog. Aero Distributors, P. O. Box 5117, Oklahoma City, Okla.

FEDERAL 167-BY TRANSMITTER complete with power supplies. Like new. See January 1948 CQ for description. Rock-solid v.f.o. final runs 600 watts. As c-w transmitter: $350. With modulator and speech amplifier: $425. Complete station, with BC-348 receiver fitted to 10½" panel and installed, fone and c.w.; $500. Reason for selling: moving to apartment QTH. Write for details. W4ALR, Route No. 1, Prospect, Ky.

MULTI-MATCH MODULATION TRANSFORMERS, 300 watt, $15.95; other sizes. Plate transformers, all center tapped, rated 300 ma. 1000-1250-1500, $15.95; 1500-1775-2050, $19.95; 2000-2500, $24.95. All new, fully cased. Money back guarantee. Frampton Transformer Shop, Box 109, Blackwell, Okla.

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NYC HAMS: ART13 converted 3-35 mc with calibration and ac supply, $150 or swap for Dumont 208-B or RME99 and cash. W2NYC, NI 8-4136.

FOR SALE: SCR-522's like new with tubes; PE94 dynamotor; 24 volt Exide storage battery, new, dry charged, wt. 100 lb. 50 amp. 24 volt generator like new; voltage regulator; vertical ant.; all for $59., eight for $450. Extra batteries, $12.95. Generators, $11. WØEQD, P. O. Box 433, Parson's Kansas.

ATTENTION W5's! West Gulf Division Convention meets air-conditioned Baker Hotel, Dallas, August 27, 28. Pre-registration prize, Collins 75-A. Fine technical program, dance, banquet, big prizes; $700 in SPECIAL LADIES' PRIZES AND PROGRAM. Registration $7.50 per person. EXTRA for Friday; Barbecue dinner, regular and square dancing; $1.50 per person (free cokes and ice). Mail registrations: Howard Davenport, Box 2995, Dallas.

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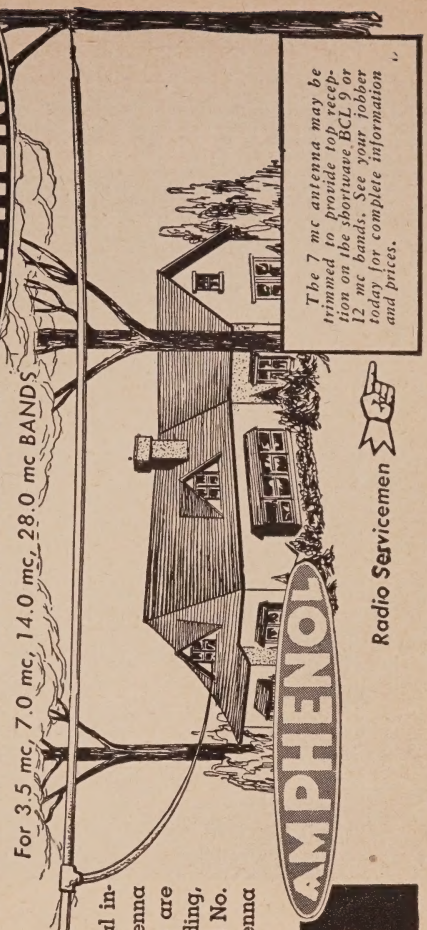
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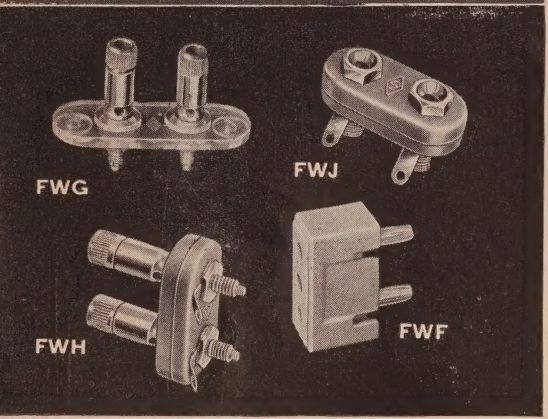
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National
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NATIONAL COMPANY, Inc.
MALDEN, MASSACHUSETTS

be adjusted to any desired frequency in the audio range around 400 cycles.

It was felt that although a greater percentage of modulation could be obtained by connecting the junction of condensers *C1* and *C2* to the injection grid of the 6A7, since this is directly connected to the output circuit of the 6SJ7 oscillator tube, the accuracy of the frequency meter might be impaired—hence the screen grid feedback path was chosen.

When using the BC-221 as a frequency measuring device, it is desirable for most accurate results that the modulation switch be in the "off" position, as a natural product of modulation is the carrier plus and minus the modulation frequency.

The short time required to modify the BC-221 for modulation is well spent, and it also enhances its use as a test instrument. As a final caution, *do not touch or change* anything connected with the frequency determining circuits, since to do so may throw the meter out of calibration.

STATION DESIGN

(*from page 18*)

the receiver when transmitting. If break-in operation is desired, this relay can be bypassed by the transmit-receive switch on the receiver front panel. The other relay is the auxiliary control relay for the main line contactor.

Behind the power supply section another grill-work panel is installed for ventilation of that section. Below this grill are the terminal blocks for connection to the three power supplies. In the lower left-hand corner may be seen the main line fuse block.

All metal parts, chassis, grill-work panels, aluminum angles, braces, copper mesh, etc., are securely bonded together with ½" x 1/16" copper strap which terminates at a large binding post in the lower rear right-hand corner of the cabinet. A length of #8 wire from this binding post to a water pipe provides a substantial ground.

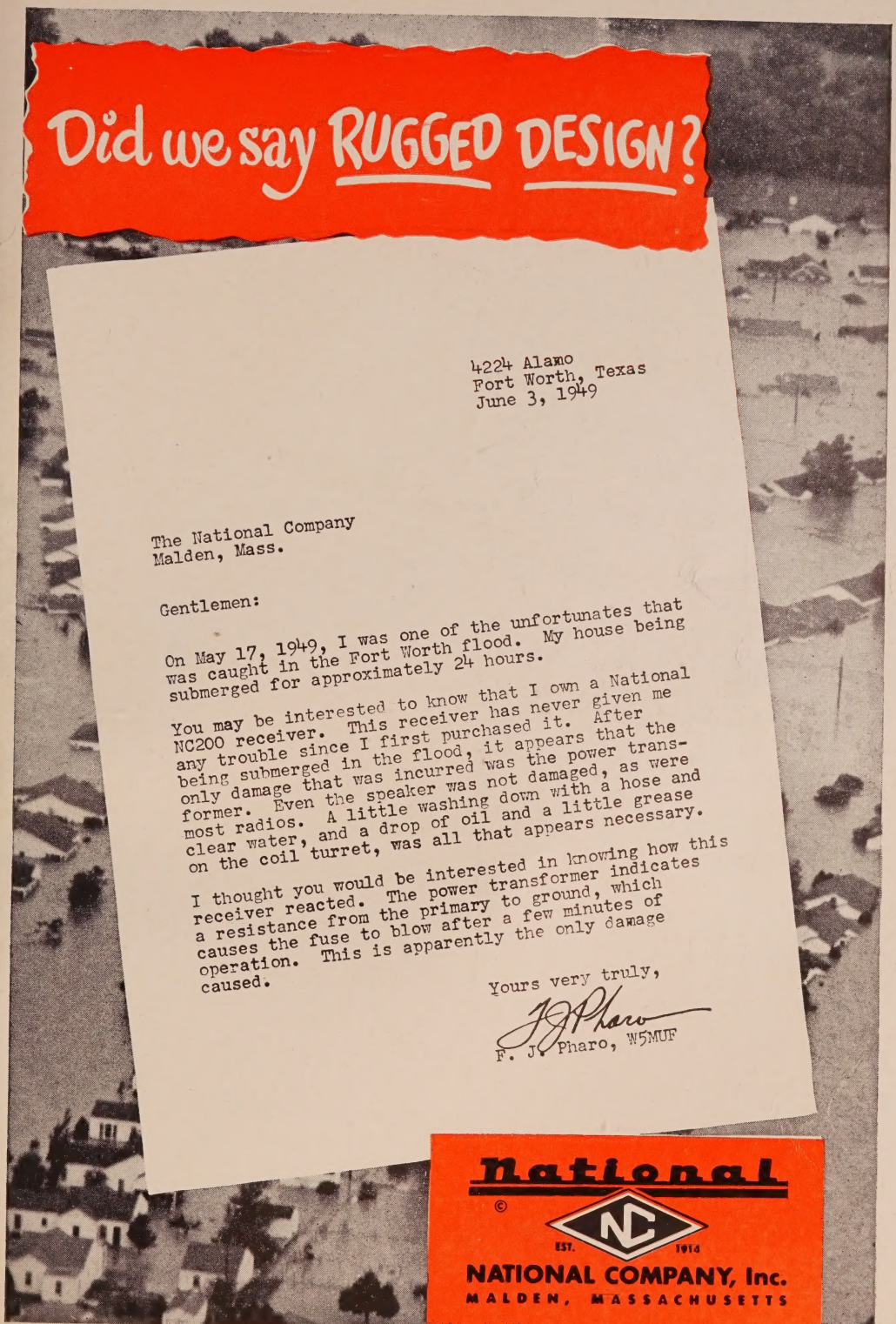
Seven wires of an eight-conductor, shielded, rubber-covered cable furnish the control circuits for the drive motor and Selsyn generator of the dual 10-20 beam. The eighth wire and the grounded shield are connected to phone jacks, one at the transmitter and the other at the antenna. A pair of sound-powered phones plugged into this circuit provides a convenient means of communication when adjusting or tuning the antenna.

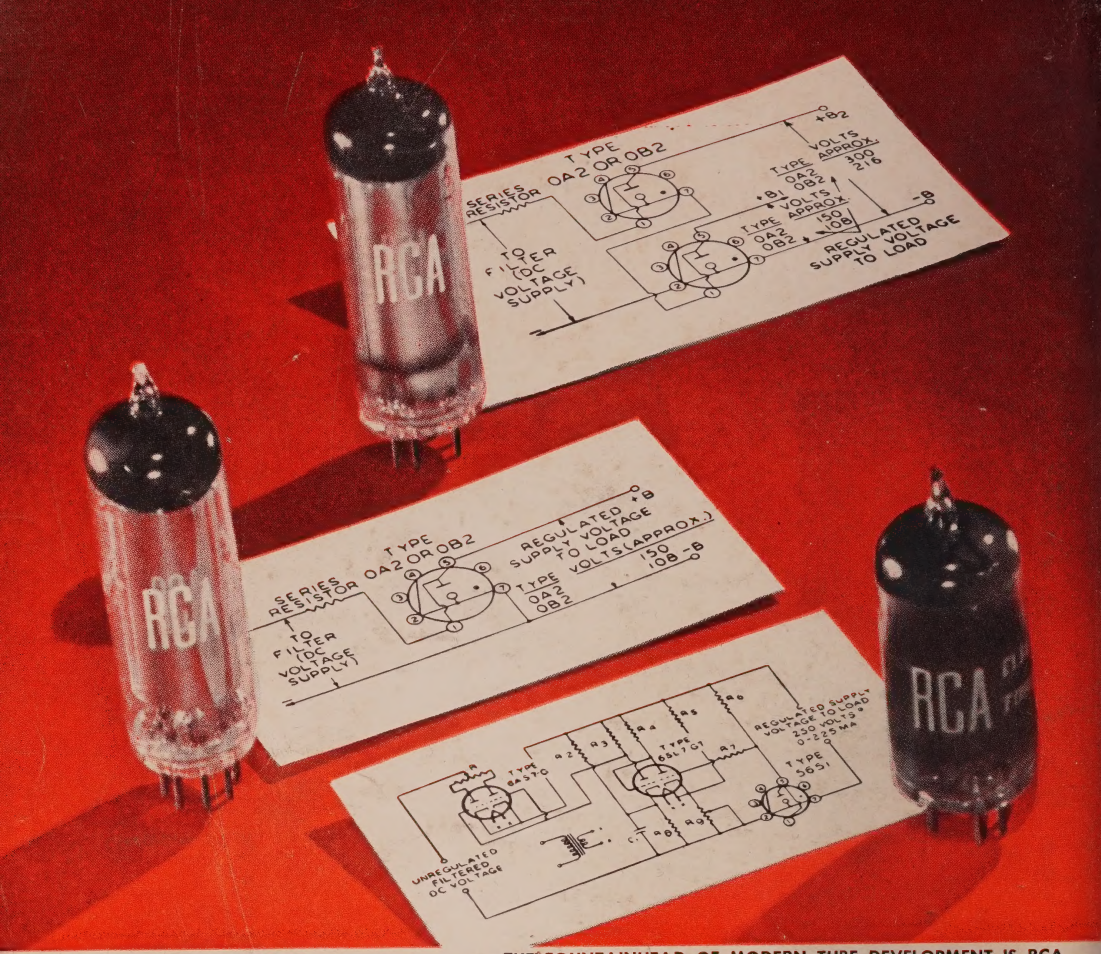
PROP-PITCH MOTOR

(*from page 23*)

With the conversion completed and the beam up in the air you will find the beam rotating much smoother and much quieter. An input of about 9 volts at 3 amps will drive it around at about 1 r.p.m. The brush noise is a thing of the past as the motor consumes considerably less power.

What? You have left over parts? Don't ask me what they are good for.


Did we say RUGGED DESIGN?
4224 Alamo
Fort Worth, Texas
June 3, 1949
The National Company
Malden, Mass.
Gentlemen:
On May 17, 1949, I was one of the unfortunates that was caught in the Fort Worth flood. My house being submerged for approximately 24 hours.
You may be interested to know that I own a National NC200 receiver. This receiver has never given me any trouble since I first purchased it. After being submerged in the flood, it appears that the only damage that was incurred was the power transformer. Even the speaker was not damaged, as were most radios. A little washing down with a hose and clear water, and a drop of oil and a little grease on the coil turret, was all that appears necessary.
I thought you would be interested in knowing how this receiver reacted. The power transformer indicates a resistance from the primary to ground, which causes the fuse to blow after a few minutes of operation. This is apparently the only damage caused.
Yours very truly,
F. J. Pharo, W5MUF
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